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By

Josep Rota

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ABSTRACT

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The purpose of this dissertation is to submit to empirical test Linear Force Aggregation Theory in two different areas of substance abuse. The dependent variables are attitudes and behaviors toward alcohol and marijuana.

The central postulate of the theory proposes that any given attitude or behavior is determined by the simple linear aggregation of all the information and influence an individual perceives to have received from all external forces of communication that reach him or her with messages relevant to the attitude for behavior. Thus, each message if construed as an incoming force that pulls the attitude or behavior with some intensity and in some specific direction, although the end result will not depend on one single message or source but rather on the aggregation of all incoming forces. Messages can procede from the definers (what others say), either interpersonally or via media, or from models (the exemplary messages represented by what others do).

Given the dependent substances, the set of relevant sources of communication for the population we studied was ascertained in an exploratory study done before the final survey. Thirteen sources were obtained, including five mass

media definers (television, radio, popular songs, newspapers and magazines), five interpersonal definers (parents, siblings, other relatives, friends at school and friends outside of school), and three sources of exemplary messages (father, mother, and friends).

Theoretically, it was hypothesized that the "aggregated message intake" from (a) each set of sources of communication and (b) from all sources combined would positively correlate with the respondents' attitude and behavior toward alcohol and marijuana. Differences between sets of sources were also predicted.

Generally, practically all our research hypotheses were supported by the data, although the coefficient of multiple correlation were, for the most part, lower than expected on the basis of what the theory claims and of previous tests of the theory. The coefficient ranged between .069 and .548. The result led us to conclude that this study provides only moderate support for the theory as developed so far and that an attenuation of the claim made by its principle populate (i.e., that attitudes and behaviors are determined by the aggregation of the information an individual has received from all relevant sources of communication) should be considered.

The comparison of the various sets of communication sources clearly indicates that the main correlate of the dependent attitudes and behaviors is the exemplary messages

of some significant others (i.e., what the respondents perceive that others are doing). Mass media and interpersonal definers make only marginal contributions of the total variance explained in the dependent measures.

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This dissertation was based on a larger study funded by the Centro Mexicano de Estudios en Farmacodetendencia (Mexican Center for Studies on Drug Dependents) through contract AS.03-73. The exploratory study and some of the final data were processed at the Institute for Research on Applied Mathematics and Systems at the National University of Mexico with the most competent help of Dr. Feverico O'Reilly. The remainder of the data were processed at Michigan State thanks to the facilities provided by the Department of Communication.

Berta Diaz, my secretary at Universidad Anahuac in Meciao City, patiently and ably typed the first drafts of

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CHAPTER I

INTRODUCTION

It is a well known fact that the use and abuse of drugs has become an important social problem, particularly among youth, during the past several years. It is also true that the concept of social problem tends to be rather ambiguous and quite dependent upon subjective evaluations in defining and operationalizing it (see, for example, Becker, 1966, and Rainwater, 1974). In fact, one of the classical and still widely used definitions of social problem states that it "is a condition which is defined by a considerable number of persons as a deviation from some social norm which they cherish. Every social problem thus consists of an objective condition and a subjective definition. The objective condition is a verifiable situation which can be checked as to existence and magnitude (proportions) by impartial and trained observers, e.g., the state of our national defense, trends in the birth rate, unemployment, etc. The subjective definition is the awareness of certain individuals that the condition is a threat to certain cherished values" (Fuller and Myers, 1941). Further ahead in their paper, the authors (op. cit., p. 320) emphasize that "social problems are what

people think they are."

The behavioral phenomenon of drug use and abuse would certainly seem to fit very well with such a conceptualization of a social problem. The objective condition; namely, the consumption of legal and illegal drugs, undoubtedly exists. Its magnitude has been investigated and, even though it can vary markedly among various population subgroups, particularly for the less dangerous drugs such as tobacco, alcohol and marijuana, it has been found to be important and to occasionally reach substantial levels in the various countries where it has been analyzed.* In addition to the magnitude of various substance abuse behaviors, other objective conditions have been established, such as the physical and psychological effects of drug consumption (e.g., Chafetz, 1974) which contribute to the definition of drug abuse as a social problem.

Needless to say, a variety of subjective definitions of the problem are equally present, ranging from a vehement opposition to their use to an equally strong stance in their favor. Subjective definitions about the nature of drugs as social problems can be very strongly held and lead to conflict situations like the ones that can be found between those actively in favor of the decriminalization of marijuana

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*A review of the substantive literature is presented in one of the following sections.

and those opposed to it. Drug abuse behaviors can be classified as "moral problems" according to Fuller and Myers' (op. cit.) categorization of social problems* (see also Rainwater, 1974, pp. 1-13). Moral problems are the most difficult to deal with; they generally are value laden and frequently there is not even agreement regarding the problematic condition itself as undesirable. Moral problems are subject to value judgments and conflict.

While recognizing the significance of drugs as a social problem as well as the important moral and value considerations involved, this dissertation does not start from an evaluation of drugs as "good" or as "bad." No such value judgments shall be made. Rather, the purpose of this study is to relate attitudes and behavior about two popular drugs to a set of sources of communication, postulated as significant predictors of the dependent attitudes and behavior, and chosen for theoretical reasons. In this regard, the goal of this study is to test a theory of communication.

That there is a relationship between communication influences and attitudes and behavior about drugs appears to

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*The authors include two additional categories: (1) physical problems, which tend to be value-free in terms of their definition and where generalized consensus can be reached (e.g., earthquakes, floods, etc.), and (2) ameliorative problems, where there is consensus about the objective condition but disagreement about actions to be taken or programs for the amelioration of the condition (e.g., crime and prisons, mental disease, etc.)

be a priori evident. However, although such relationship seems to be assumed by much of the substance abuse behaviors literature, it has not been adequately investigated. As a result, we still do not know much about the relationship between communication and drugs on data derived from empirical research and supported by theoretical foundations. In general, a search of the substantive literature shows that even though the number of drug related publications is impressive (cf. National Clearinghouse for Drug Abuse Information, 1972; Nellis, 1972), very little is derived from empirical research and even less from theory-based research.

Therefore, this dissertation will analyze, within a communication theory framework, what relationship exists between a set of sources of information and influence and the attitude and behavior that adolescent and young students in Mexico City have towards two selected drugs, based on the perception of the respondents. The theoretical framework that guides the research for this study is Linear Force Aggregation Theory, as developed by Joseph Woelfel and others.* This theory enables us to examine the comparative and aggregated impact of selected mass media and interpersonal sources of information, as well as other sources of information and influence, on specific attitudes and behaviors of their receivers.

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*Woelfel, 1970; Woelfel and Haller, 1970; Woelfel et al., 1972; Woelfel and Hernandez, 1973; Woelfel et al., 1974; and Woelfel and Saltiel, 1974.

The two drugs that have been chosen as dependent attitudinal and behavioral phenomena are alcoholic beverages and marijuana. This will enable us to do a replicated test of Linear Force Aggregation Theory with the same respondents in two different areas of drug abuse. Additionally, marijuana has also been previously used in a related test of Linear Force Aggregation Theory by Woelfel and Hernandez (1973) with a sample of college students from four American and one Canadian universities. This will permit further theoretical as well as cross-cultural comparisons.

As is well known, of the two drugs, alcohol is of legal use for adults and extremely easily available to all, including minors to whom wine, beer and liquor cannot be legally sold (in Mexico as in the United States). Marijuana, on the other hand, is an illegal drug for minors and adults alike, but easily available and inexpensive.

As previously indicated, the locus of the empirical study is Mexico City. The drug scene there, as well as in the rest of the country, is a very old one, although until recently it was very limited in terms of the variety of drugs used, the magnitude of use and the number of people and population subgroups involved (see Urdapilleta, 1970, and Belsasso, 1970). Hallucinogens, derived from the ingestion of psychotropic plants, were well known and used in pre-Columbian cultures, although exclusively as part of religious or mystical experiences. Some Indian population groups

living in relatively isolated areas still use psychotropic plants for the same purpose; however, hallucinogens also have recently been incorporated to the modern urban drug culture, both in the form of natural plants and as chemical products such as LSD.

Alcohol has long been a popular drug in Mexico, widely used by most sectors of the population and a common part of the content of some mass media, like popular songs (Donneaud, 1975) and the cinema. Inhalants are much more recent; however, they have already become one of the most common drugs in Mexico, its use being circumscribed to the lower socioeconomic classes and, in those classes, mainly to children and adolescents.

Marijuana is also a popular drug. During the last decade and a half it has climbed the social ladder and is now a relatively frequently used intoxicant among members of some upper class groups, mainly university students, intellectuals and in some professions (Urdapilleta, op. cit.). Prior to its present high status, marijuana was identified with soldiers and other low class groups. During the Mexican Revolution, at the beginning of this century, marijuana was a particularly popular drug, frequently extolled in the songs of the time (including "La Cucaracha" - "The Cockroach" - a still popular song, especially outside of Mexico where it is accepted as a prototype of Mexican folk songs. This song has the recurrent line: "The cockroach can no

longer walk, because it has no marijuana to smoke").

Milder intoxicants, like tobacco and caffeine, are of course very widely used throughout the country. Stronger drugs, like heroine, morphine and cocaine, are extremely rare in the country except as part of an increasingly heavy traffic of drugs from production centers in Mexico and in foreign countries, through Mexico, to the United States, which is by far the world's richest drug market.

The present panormama of drug use in Mexico clearly seems to be on the rise. Data at the Centro Mexicano de Estudios en Farmacodependencia, CEMEF, (Mexican Center of Studies on Drug Dependence) indicate an increase in the volume of drug used, in the number of persons and population subgroups experimenting with or regularly using drugs, and in the variety of drugs used. This trend is consonant with William McGlothlin's generalization that

> one of the consistent historical observations about drug using behavior is that excessive use flourishes during periods of social upheaval. Where family, community, and cultural structure are strong, abuse is low; when wars, massive migrations from rural to urban settings, unemployment, and breakdown of family influence occur, abuse tends to be high. In short, lack of structure, discipline, and involvement are conducive to patterns of excessive drug use. If one projects a future society in which large segments of the population are unemployed or otherwise alienated and uninvolved, then a high rate of drug abuse can be anticipated (McGlothlin, 1971, p. 4).

McGlothlin's observation seems to be particularly applicable to Mexico City. A city that along with undeniable

virtues and positive qualities also has the inherent problems of one of the world's three largest and most crowded cities. It has a population of approximately 14 million people concentrated in a relatively small area. Between 400 and 500 thousand impoverished people from rural areas immigrate each year to the city, which in addition has a natural population growth of about an equal size. According to official estimates, unemployment and underemployment may be as high as 40% of the labor force. It also has excedingly high mean levels of anomie for the population as a whole,* in addition to experiencing social, economic, family, and other changes that constantly and rapidly are taking place.

This study was done among Mexico City high school students enrolled in 7th, 9th and 12th grades in public and private schools in February and March, 1974. A usable sample of 1,928 students was obtained by means of probability sampling methods.

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*Two separate studies in progress by this writer, both with random samples of the Mexico City adult population where the respondents were interviewed in their homes, one analyzing patterns and correlates of mass media use with a sample of about 700, the second one studying the comparative diffusion of three news events on a sample of about 1,000, have yielded a mean level of anomie of close to four, on Srole's five point scale.

Rationale for the Study

A fundamental motivation behind the present study is a consideration about the extant research on the effects of communication. Unquestionnably, the quantity of research published in this area is very impressive. In the case of the effects of television on human behavior, for example, Comstock and Fisher (1975) list over 2,300 studies; a number similar to the one reported by Rogers and Shoemaker (1971) for communication of innovations. Other fields of inquiry have also been very active, such as those that study communication influences on political behavior, processes of attitude formation and change, national modernization and development, consumer socialization, and organizational communication, among others.

Substantive fields of research on the effects of communication like the ones mentioned above can be considered as instances of study of complex attitudinal and behavioral phenomena. Such phenomena usually result from a process of socialization where not one, nor a few, but many antecedent variables--including communication variables--are needed in order to adequately explain the resultant effects. What makes a child aggressive, or a user of marijuana, or a consumer of a given brand of chocolate, is not the omnipotent effect of only one relevant message or even of one source of communication advocating the resultant behavior. Rather, those behaviors are the outcome of an aggregate of messages,

some in favor and some against, some strong and some weak, that the focal child has received over a period of time.

Therefore, multivariate approaches to the study of complex attitudes and behaviors which can be construed as the resultant effect of multiple and disparate sources of information and influence through a process of socialization should be the norm, rather than almost an exception, in the study of communication. However, a search of the literature shows that the analysis of the effects of communication has mostly been limited to the study of the relationship between only one medium of communication as an antecedent variable, or a limited set of antecedent variables, and a dependent measure. In this regard, Comstock and Lindsey (1975, p. 39) explicity state that "in the kind of theory-oriented cause-and-effect research under discussion (on television and human behavior), it is the custom to control all variables except one and measure the effects on a single other variable, thereby controlling all the varied complex real-world interactions out of existence in the data." This situation has led these authors to call for research that reflects the complex interactions of real-life events (at least for the particular case of the effects of television on human behavior).

In a more general way, Kerlinger and Pedhazur (1973) similarly emphasize the complexity of natural phenomena and the need for multivariate analysis. They state that "the

phenomena and constructs of the behavioral sciences . . . are especially complex. "Complex" in this context means that a phenomenon has many facets and many causes. In a research-analytic context, "complex" means that a phenomenon has several sources of variation" (op. cit., p. 3).

Certainly, research designed to study whether or not one medium is significantly associated with a given effect is needed, both for theory construction and as a contribution to our state of knowledge. However, it is also of obvious great importance to analyze the combined effect of an aggregate of relevant sources of communication in order to be able to arrive at better explanations of the dependent phenomenon, as well as to allow us to formulate better communication predictor models of attitudes and behavior. Furthermore, if we are interested in the study of the relationship between only one medium of communication and a dependent attitude or behavior, we can better achieve that purpose if we analyze the effect of that medium in the presence of other relevant sources of information and influence whose effect is statistically controlled or cancelled out or, at least, compared.

Specifically, the case of drugs such as alcohol and marijuana constitutes a clear example of attitudes and behaviors developed over time, as a result of the combined differential effects of repeated exposure to multiple sources of information and influence. Hanneman, for example, has shown that young people (college students in his case) do

utilize a diversity of sources of information about drugs (Hanneman, 1973). In order to be able to explain a very high percentage of the total variance in the use of marijuana, Woelfel and Hernandez (1973) also had to take into account multiple sources of information and influence, together with other factors, as predictor variables. Fejer et al., (1971) and Johnston (1973) have shown that young people do seek information about drugs from many different sources of communication. Smart and Fejer (1972) also found multiple media use, both mass and interpersonal, as sources of information about drugs.

However, and in spite of examples such as these, very little communication research has been done in the area of attitudes and behavior about drugs (cf, Blumberg, 1975, and Kinder, 1975a and 1975b). Additionally, practically no research can be found in the literature analyzing the combined and/or aggregated effect of multiple communication predictors, including mass media and interpersonal channels, on substance abuse behaviors. This is precisely what the present study pretends to do. We shall examine, within the framework of Linear Force Aggregation Theory (the empirical test of which is the main goal of this study), the relationship between a set of mass media and interpersonal sources of communication and attitudes and behaviors that high school students in Mexico City have towards alcoholic beverages and marijuana, as perceived by those students.

Objectives of the Study

The objectives of this dissertation are:

(1) To do a replicated test of Linear Force Aggregation Theory with the same respondents in two different substance abuse areas; namely, alcoholic beverages and marijuana.

(2) To make some modifications to previous and related tests of Linear Force Aggregation Theory that exist (mainly Woelfel and Hernandez, 1973), particularly regarding (a) the addition of key interpersonal sources of information and salient sources of exemplary messages (represented by how frequently the respondent perceived his friends and family to consume selected intoxicants), (b) the elimination of the main source of circularity that was present in previous tests of the theory and which, as we shall argue, tended to boost the amount of explained variance, and (c) the test of the theory solely as a communication theory; that is, one which is concerned mainly with the analysis of the effects of selected sources of communication and not so much with the effects of other contributory variables.

(3) To test the theory in a different cultural setting and thereby to enable us to make cross-cultural comparisons with previous and related applications of the theory. Cross-cultural replications have the added dimension of allowing us to test factors such as the universality of propositions and theories (Marsh, 1967; Durkheim, 1965).

Communication and Drugs: Review of the Substantive Literature

In reviewing the substantive literature on drug use and abuse, three things immediately strike the social science and particularly, the communication researcher. In the first place, there is an impressive amount of literature accumulated in this area. The National Clearinghouse for Drug Abuse Information (1972), for example, cites a total of 4,367 titles in a bibliography of drug abuse literature.

Secondly, only a relatively small minority of the published studies that can be found on drug use and abuse are based on empirical social science research. The majority of the empirical studies come from the medical and biological fields (both with human and animal subjects). Many other publications deal with aspects such as moral and subjective evaluations of substance abuse behaviors, law and public policy, approaches to drug use as a criminal activity, treatment and rehabilitation of drug addicts, guidelines for drug education, community action about drugs and drug abuse, and others.

Thirdly, of the relatively limited number of studies that can be classified as empirical social science research, only a few are written from a communication (theory) perspective based on knowledge derived from empirical studies. Most of the communication publications concerning drug-related behaviors deal with aspects such as proposed

communication strategies to deliver drug prevention messages to adolescent and young audiences. These publications tend to be based on past experiences or proposed guidelines for message dissemination strategies, usually not checked against data derived from quantitative social science analysis. Furthermore, it is apparent that these publications generally do not utilize scientific knowledge accumulated in theoretically based communication studies published in the social science literature.

Many of the studies that can be classified as empirical social science research have been summarized in recent literature reviews. Berg (1971) summarized more than 50 surveys done among American high school and college students until the late nineteen sixties and dealing with patterns and correlates of drug use. Blumberg (1975) continued Berg's work summarizing American, Canadian and British surveys of drug use among secondary and college students that were published between 1968 and 1972. Kinder (1975a and 1975b) concentrated on attitudes toward drugs. He analyzed and synthesized data published between the mid sixties and the early seventies regarding attitudes toward the use and abuse of alcohol and other drugs and attitudinal correlates. McGlothlin (1975) reviewed the use and abuse of various drugs, including prevalence and trends of use of each of several drugs (opiates, marijuana, hallucinogens, stimulants and depressants); frequency, amount and duration of use; etiology

and methods of spread; effects of marijuana and hallucinogen use; prevention, and treatment. Blum (1970) reports cross-cultural data. Braucht et al. (1973) have reviewed the psychosocial correlates of drug abuse among adolescents. Einstein and Allen (1973) edited a book that collects a number of studies on drug use among students.

In general, the studies included in these reviews, as well as other studies that can be found in the literature, indicate that

(1) the level of use of the various drugs varies so widely, not only between different populations but also within relatively similar ones, that no generalizations can be made in this respect except that at least some level of drug use will always be found in any population studied. In a more general way, however, Blumberg (1975) indicates that "users in most secondary schools still constituted* a minority group who (more often than non-users in some samples) were regarded as troublemakers at school and given lower grades, whereas users in some colleges and universities were close to becoming a majority and were doing comparatively well in

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*In the early nineteen seventies.

their studies";

(2) even though a number of presumed correlates of drug attitudes and use has generally been incorporated in empirical studies--including age, grade, sex, racial and ethnic background, religion, socioeconomic status, place of residence, personality correlates, and others, --there has not emerged any single or consistent pattern of correlates;

(3) a more consistent pattern can be found regarding sources of information and influence about drugs. In general, the mass media have had little effect on attitudes and behavior about drugs, although they have been more important in creating awareness about those substances and in affecting other cognitive dimensions. Interpersonal sources of communication, on the other hand, have generally been found to be significantly associated with knowledge about drugs, as well as with attitudes and behavior;

(4) almost the totality of the studies have been done on two types of populations: (a) high school and other secondary students, and (b) college students. Most of the studies also come from only one country, the United States,

and relatively little is known about substance abuse behaviors in other cultures. (For a short, selected list of non-American drug surveys see Blumberg, 1975, p. 700).

In this review, we shall concentrate on high school populations surveys since the present study was done among high school students in Mexico City. For the same reason, we will also limit our review to two substances: alcohol and marijuana (including a third category, "drugs," for those studies that refer to the generic term instead of a specific substance). We will divide this review in three sections: (a) level of drug use, (b) correlates of drug use and attitudes, and (c) sources of drug information and influence.

Level of Drug Use

Research into the use of drugs constitutes a relatively recent research tradition. It started in the nineteen sixties as a response by the research community to the sudden popularity that the use of drugs acquired among certain segments of the U.S. population, mainly the middle class, youthful ones. The first studies on the use of drugs centered on college populations "where drug use appeared to be more overt and received a large amount of publicity. However, as indications of drug abuse were found among adolescents in junior and senior high schools, surveys began to focus on

these specific, younger populations" (Frenkel et al., 1974, p. 179). Consequently, whatever knowledge we may have about the level of drug use among high school students is based almost exclusively upon relatively recent surveys.

These studies, furthermore, present the additional and serious problem of being very inconsistent and controversial from a methodological perspective. Quoting from Adler and Lotecka:

> One of the few facts almost universally agreed upon in the currently prominent, always controversial, and frequently hazy area of drug use and drug abuse is that there is real absence of solid data about prevalence in the nation as a whole and in most communities. There is much speculation in the news media--usually in the form of vague and undiscriminating estimates of drug usage among students ranging as high as 75%, in which the one-time marijuana smoker and the habitual heroin user are lumped together in one frightening statistic. Reports in the scientific literature are sparse and often found only in obscure sources. . . . Those reports which do exist of surveys of college or high school students . . . often reflect the general lack of discrimination about drug usage patterns. The most commonly reported statistic is percentage of subjects reporting that they have 'ever used' or that they currently 'use' one or another substance. Again, figures from 0 to 75% are reported. Relatively few studies are even concerned with frequency of use or dosage, and even these may report vaguely defined categories of 'abuser' or 'regular use'. . . . An additional factor in the confusion is that changing drug-use patterns make surveys obsolete (Adler and Lotecka, 1973, pp. 537-538).

Against such current state of research on drug use, especially for the adolescent population, the most precise statement about the level of drug use that can safely be made at this time is that it is probably fairly high, particularly

for alcohol. At best, the precise level of use can be placed anywhere in a fairly broad range that can be constructed from the data currently available. In any case, and according to these data, the level of alcohol use has consistently been much higher than that of marijuana. The percentage of high school students who reported having ever used alcoholic beverages was higher than 50% in all studies reviewed and which presented this type of data, with the highest figure being 95.8% (Nelson and Schmitz, 1969; Gossett et al., 1971; Jackson et al., 1972; Fejer and Smart, 1973; Johnston, 1973; Adler and Lotecka, 1973; Lerner et al., 1974; Galli, 1974; Morales et al., 1975; and Single et al., 1975). By comparison, most studies reporting levels of marijuana use presented figures typically ranging between 10 and 33 percent of adolescents having ever used the substance (Hager et al., 1969; Nelson and Schmitz, 1969; Gossett et al., 1971; Jackson et al., 1972; Tec, 1972; Fejer and Smart, 1973; Johnston, 1973; Adler and Lotecka, 1973; Frenkel et al., 1974; Kandel, 1974; Galli, 1974; National Institute on Drug Abuse, 1975; Morales et al., 1975; and Single et al., 1975); however, some studies reported figures between 38 and 48% for senior high school students or students with some special characteristics (National Institute on Drug Abuse, 1975; Kandel, 1974), and one study (Lerner et al., 1974) reports a high figure of 71.9%. Furthermore, by plotting the percentage of high school students who have ever used alcohol or marijuana, according to the studies reviewed,

over time, we can observe a marked increase in the percentage of users of alcohol and a slight but consistent increase for marijuana.

The problem of determining the actual level of drug use is further obscured by the implicit or explicit classification of usage categories employed by most published surveys. The most common classification dichotomizes the population into "users" and "non-users." Typically, "users" is defined as anyone who answers affirmatively to a question such as "have you ever tried or used substance X?". As Adler and Lotecka state (v. supra), this kind of classification lumps together the one-time marijuana experimenter with the chronic heroine abuser. This results in a very serious measurement deficiency. Another common classification divides the respondents into "nonusers," "experimenters," and "users," the latter category being frequently sub-divided into "occasional" and "habitual" users.

The National Commission on Marijuana and Drug Abuse (1973, pp. 30-32 and 93-98) has proposed the following typology of drug using behavior:

1. Experimental use, the most common type of drug using behavior, defined as 'a short-term, non-patterned trial of one or more drugs, motivated primarily by curiosity or a desire to experience an altered mood state.'

2. Recreational use, the most common non-experimental drug using behavior, defined by the Commission as that 'which occurs in social settings among friends or acquaintances who desire to share an experience

which they define as both acceptable and pleasurable. Generally, recreational use is both voluntary and patterned and tends not to escalate to more frequent or intense use patterns. . . . Reinforcement for continued use is strengthened by non-drug factors.'

3. Circumstantial use, which is 'generally motivated by the user's perceived need or desire to achieve a new and anticipated effect in order to cope with a specific problem, situation or condition of a personal or vocational nature' such as the use of stimulants by students to prepare for exams.

4. Intensified use, a much less common type of use according to the Commission 'which occurs at least daily and is motivated by an individual's perceived need to achieve relief from a persistent problem or stressful situation, or his desire to maintain a certain self-prescribed level of performance.'

5. Compulsive use, 'the most disturbing pattern of drug using behavior, encompassing the smallest number of drug users . . . which consists of a patterned behavior at a high frequency and high level of intensity, characterized by a high degree of psychological dependence and perhaps physical dependence as well. The distingushing feature of this behavior is that drug use dominates the individual's existence, and preoccupation with drug taking precludes other social functioning.'

The typology proposed by the National Commission on Marijuana and Drug Abuse seems to constitute a very adequate classification of drug using behavior. Its generalized use would have the added advantage of standardizing empirical classifications of levels of drug use and, therefore, making comparisons (among drugs, among studies, and over time)

possible and realistic. Unfortunately, this typology (or a similar one) has not yet appeared in any published study.

In any case, and comparing the data on level of drug use among high school and college populations (cf. Blumberg, 1975; Kinder, 1975a; Knight et al., 1974; DeFleur and Garrett, 1970; Greenwald and Luetgert, 1971; Bowker, 1974; Spevack and Pihl, 1976, for college students' surveys) it is quite clear that the high school years are the critical and high risk years when attitudes toward drugs and patterns of drug using behavior are formed.*

Correlates of Drug Attitudes and Use

Table 1 synthesizes the relationship between the attitude toward and/or use of alcohol (ALC), marijuana (MAR), and "drugs" (when only the generic term was used by the authors of the studies) and the five correlates that have most frequently been analyzed in the literature under review.

As we indicated above, the most consistent relationship is that between age or grade on the one hand, and drug attitudes and use on the other. Table 1 shows that only two studies failed to find a statistically significant relationship between age/grade and the dependent variables. The other

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*It could also be observed that the motives imputed to drug use and nonuse by both users and nonusers vary quite extensively. (See Weinstein, 1976, for data and a summary of previous studies with statistical and nonstatistical data on motives for marijuana behavior.)

Table 1. Correlates of alcohol, marijuana and "drug"* attitudes and/or use among high school students

	CORRELATE:	AGE / GRADE			SEX**			S. E. S.			PEER DRUG USE			PARENT BEHAV.		
Author	SUBSTANCE:	ALC	MAR	DRUGS	ALC	MAR	DRUGS	ALC	MAR	DRUGS	ALC	MAR	DRUGS	ALC	MAR	DRUGS
Fejer, Smart (1973 & 1972)				+			+			0/+						+
Blechman et al., (1976)				+									0			0
Adler, Lotecka (1973)				0	+		0				+		+			+
Galli (1974)		+	+	+		+	0			0						
Lerner (1974)		+	+	+												
Frenkel (1974)				+			0			0						+
Bowker (1974)							+						+			
Kandel (1974)												+			+	
Johnston (1966)								0		+						
Morales et al., (1975)					0		+			+						
Wiener (1970)				+			0			+						
Hager et al., (1971)							+			+						
Gosset et al., (1971)										+						
Baker (1971)				0												

LEGEND:
+ indicates that a positive correlation was found,
- indicates a negative correlation,
0 indicates that no statistically significant relationship was found,
BLANK indicates that this association was not measured.

*"Drug" refers to the generic use of the term by the authors, without specifying any particular substance.

**Values for male = 1, for female = 0; therefore, a positive correlation indicates more positive attitudes and/or higher use by males.

six studies found significant positive correlations between these variables. In addition, other studies that did not specifically test this relationship (and not shown in Table 1) present data which are consistent with this pattern; that is, as the age or grade level of the students increases throughout the high school years, so does the percentage of students who have used each substance.

Sex has also frequently been analyzed in relation to drug use and attitudes. Six of the eleven relationships summarized in Table 1 indicate that boys have significantly more positive attitudes toward alcohol, marijuana, and drugs in general, and also use these substances significantly more than girls do. The remaining five correlations did not show any statistically significant differences between the sexes.

A similar pattern of association was found between the dependent variables and the socioeconomic status of the students' families. Six of the ten studies that assessed the relationship between these variables found a significant positive correlation; that is, as the socioeconomic status increases so tends to do the level of alcohol and marijuana consumption and the favorability of attitudes toward these substances among adolescents. The remaining four associations failed to find any significant differences.

A clearer general pattern has been found between the dependent variables and (1) drug use by peers and (2) general parental behavior, which refers to the parents' own behavior

about drugs (mostly alcohol, tobacco and medicines). Even though in both cases one out of five relationships reported in the literature under review was not statistically significant, the remaining four allow us to generalize that (1) as the number of peers who use alcohol and marijuana increases, so does one's own use and favorability of attitude, and (2) students whose parents manifest a behavior more favorable to drugs (including legal ones) exhibit greater use of drugs and a more positive attitude toward those substances than students whose parents behave less favorably to drugs.

In addition to the correlates summarized in Table 1, others can be found in the drug abuse literature that we shall briefly synthesize. Racial and ethnic characteristics have generally been found not to correlate significantly with drug use and attitudes (Greenwald and Luetgert, 1971, Frenkel et al., 1974; Johnston, 1966), (although Johnston found that blacks use significantly more alcohol than whites during high school, but this difference disappears afterward). However, Cockerham et al., (1976) found American Indian youths to have a more favorable attitude toward marijuana and other drugs than white youths; they were also more likely to try using marijuana and other drugs but no more likely than whites to continue use after trying them.

Two studies report data on the relationship between drugs and religion in high school. Cowan and Roth (1972)

and Blumenfield et al. (1972) both found a negative correlation between religiosity and drug use. Drug users attend services less and are less devout than non-users.

There also appears to be some relationship between place of residence and drug use. Bowker (1974) reports a positive correlation between community size and use of drugs in general. Johnston (1966) found significantly different levels of marijuana use in different regions of the United States, but no differences in the level of alcohol use.

Several variables pertaining to "home atmosphere" have also been found to correlate with drug use and attitudes in several surveys. Adler and Lotecka (1973) in the United States, and Morales et al. (1975) and Marin (1974) in Colombia report a negative correlation between home atmosphere and drug use. Morales et al. (op. cit.) also found that those adolescents who live with their family or with relatives use drugs significantly less than those who live elsewhere. Kandel (1974) found a positive correlation between parental attitude toward drug use and parental use of drugs (mainly legal ones) with their children's use of marijuana. Regarding the number of parents, Blechman et al. (1976) did not find any difference in the level of drug use between adolescents from one- and two-parent families; nor did Johnston (1966) for alcohol. However, Johnston (ibid.) did find that adolescents from broken homes, either by death or divorce, use more marijuana than their counterparts from intact homes.

Academic performance has consistently shown to be negatively related to drug use (Cowan and Roth, 1972; Fejer et al., 1972; Smart and Fejer, 1971; Galli, 1974; and Frenkel et al. 1974), except in Blumenfield et al.'s study (1972) where no statistically significant relationship was found. School absenteeism has also been reported to be related to drug use (Galli, 1974).

The use of drugs has also been found to correlate with the use of other drugs. Frenkel et al. (1974) and Vincent (1972) report positive correlations between the drinking of alcohol and the use of other drugs. Single et al. (1974) document patterns of multiple drug use in high school; all intercorrelations among adolescent use of fifteen legal and illegal drugs were significant at the .001 level.

The above correlates refer mostly to demographic and other structural variables. Unfortunately, no studies were found in the pertinent literature reporting personality and psychosocial correlates of drug use among high school and other adolescent populations. (For personality correlates of drug using behavior among college students see Stokes, 1974, who also cites other studies).

Sources of Drug Information and Influence

Studies devoted to the analysis of sources of information and influence about alcohol, marijuana and other drugs among high school and other adolescent populations are not

very abundant. Those that can be found in a search of the pertinent literature, however, are quite consistent in their results. They can be synthesized in the following generalizations:

Friends in the first place, and the mass media, are clearly the two most important sources of information about drugs, including alcohol and marijuana, for young people. However, their respective role may vary depending on the substance and the specific population (Hanneman, 1972 and 1973; Linsky, 1970; Fejer et al., 1971; Kowitz and Clark, 1973; and Morrison, Kline and Miller, 1976). Hanneman (op. cit.), for example, found significantly different patterns of information seeking between drug users and nonusers. Dembo et al. (1977), on the other hand, report a less important role for the mass media. These authors found that interpersonal sources, in general, are significantly more credible than the mass media for information about drugs; additionally, they also found that the more a person is involved with a substance, the less credible he or she perceives the media to be. Furthermore, it should be indicated here that the data pertaining to friends are consistent across studies, while some published reports present contradictory data for the mass media (Kinder, 1975b; and Pollock, 1972). It is possible that individuals who do not use drugs rely on the mass media for information, while users rely more heavily on other sources (Kinder, 1975b; and Fejer et al., 1971).

Generally, the literature shows that the mass media are particularly important in affecting cognitive dimensions about drugs (Linsky, 1970; Fejer et al., 1971; Smart and Fejer, 1972; Kinder, 1975b; Kline, Miller and Morrison, 1976; and Atkin, 1978b). The media have also been reported to affect cognitions and perceptions about proprietary drugs; particularly, it has been shown that the more a person is exposed to commercials about proprietary drugs, the more he or she believes that medicines are effective, likes them, and tends to use them slightly more often. However, drug commercials do not appear to produce more favorable attitudes toward illicit substances (Milavsky et al., 1975; and Atkin, 1978b). In point of fact, Milavsky et al. (op. cit.) even found a negative relationship between exposure to drug commercials on television and illicit drug use, including marijuana. This finding contradicts many critics' concern (e.g., Louria, 1968) that this type of commercials will lead to increased illicit drug use. In this regard, it should also be observed that commercials about proprietary drugs on TV occur about once per hour in the United States (Barcus, 1976). In Mexico, it appears to be perhaps only slightly less frequently, although no data could be found on this point.

The mass media appear to be one of the initial sources of awareness about drugs for many adolescents. They are also important as a source of additional information for the same audience (Hanneman, 1972 and 1973; and Fejer et al., 1971);

although Hanneman (op. cit.) reports that young people do not seek additional information about drugs in the mass media in general, but rather in specialized media, such as certain magazines and radio stations.

Finally, regarding the role of the mass media, it has been found that different media exhibit a different role or level of importance as sources of drug information depending on the study, the population surveyed, or the specific substance (Smart and Fejer, 1972; Milavsky et al., 1975; Kline, Miller, and Morrison, 1976; and Dembo et al., 1977). More generally, the electronic media appear to be more important sources of information than print media.

Friends clearly emerge as the most important source of awareness, information and influence about drugs for the majority of adolescents. Their importance increases sharply as sources of post-awareness information about those substances. In general, the influence of friends appears to be greater among drug users than nonusers; for the latter, friends, even though still an important source, lose some of their preponderance in favor of family, doctors and other clinical sources, and, occasionally, other institutional sources like teachers at school and the church (Hanneman, 1972 and 1973; Lipp et al., 1971; Grant, 1971; Adler and Lotecka, 1973; National Committee on Marijuana and Drug Use, 1974; Kandel, 1974; and Tolone and Mermott, 1975).

Parents seem to be particularly influential through their exemplary behavior, their manifest attitudes toward drugs, and their lifestyles. Parents' exemplary behavior is usually not expressed toward illegal drugs but rather toward legal substances, including alcohol, tobacco, and prescription and over-the-counter medicines (Adler and Lotecka, 1973; Kandel, 1974; Frenkel et al., 1974; National Committee on Marijuana and Drug Use, 1974; Tolone and Dermott, 1975).

Regarding the role of peers and parents in general, Tolone and Dermott (1975, p. 776), emphasizing the dominant role of these two interpersonal sources of drug information and influence, state that "in support of previous research, we conclude that drug use is a form of behavior learned through peer and parent socialization."

As specific sources of information and intended influence, public service announcements (PSA), mainly on television, and educational programs at school, appear to have rather limited importance. A fundamental reason for this might be a relatively low credibility that the target audience probably has for these two sources, according to some of the studies reviewed (Hanneman, 1972 and 1973; and Morrison, Kline and Miller, 1976). PSA's have their potential influence further reduced because of the time of the day when they are usually broadcast. Content analyses done by Hanneman, McEwen and Coyne, (1972); and Hanneman, McEwen, Isbell and Durham, (1972), indicate that most PSA's about drugs are presented

between 10 a.m. and 7 p.m., a time when most members of the intended youthful audience are not watching TV.

Furthermore, some studies show that anti-drug PSA's are ineffective and have even led to some boomerang effects by stimulating interest in drugs (Smart and Fejer, 1974; Ray and Ward, 1976; and Feingold and Knapp, 1977). Additionally, Smith et al. (1972) have found that proprietary drug advertising on television is ten times greater than anti-drug abuse PSA's, a ratio which is probably even larger in Mexico. This, of course, raises an empirical question about the real possibility that PSA's may have of affecting their audiences in the intended way. Furthermore, exemplary behaviors exhibited by TV heroes and other program characters about drugs, even though usually licit ones, may exert an additional influence in favor of substance use. Barcus (1976) and Kinder (1975b) also observe that commercial drug advertising on television promises attractive and specific benefits of the proprietary drugs advertised. This might represent still another factor that neutralizes the potential effects of PSA's, and, through some generalization process in the mind of young receivers, may even become one of the stimuli that favor the use of licit and illicit drugs.

Finally, drug education programs at school have also been found to have very limited effects as factors in the prevention of substance abuse behaviors. As Kinder (1975b, p. 1043) has stated: "It is, perhaps, significant to note that

drug education programs are mentioned as possible deterrents in only one study (and), in that study, less than 2% of the over 10,000 high school students sampled mentioned a recent drug education course as a reason for nonusage. However, almost 50% stated that these educational programs were either 'good' or 'excellent'."

Generally, as we can see, the results of the relatively few studies on sources of information and influence on attitudes and behavior toward drugs are quite consistent with the current state of knowledge about the effects of mass and interpersonal sources of communication in other substantive areas (see, for example, Weiss, 1969 and 1971; and Rogers and Shoemaker, (1971).

Theoretical Antecedents

Before formally presenting the theory in the next section, we shall here review previous studies that have been done based on Linear Force Aggregation Theory. Of particular relevance among them is Woelfel and Hernandez's (1973) application of the theory to the study of attitudes and behavior toward marijuana, which is one of the two substances defined as dependent measures in the dissertation. We will first analyze their study in some detail before more briefly reviewing the others.

Based on the original formulation of the theory presented by Woelfel and Haller (1970), Woelfel and Hernandez

(op. cit.) assume that "an individual's attitude or behavior rate may be construed as a vector, the magnitude of which may be assumed to be changed, however minutely, by every message relevant to the attitude, from whatever source" (pp. 1-2). According to these authors, the theory "assumes behavior to be controlled wholly and only by the information an individual has about his relationship to a potential behavior (self-conception) (and) controlling for physical circumstances which might prevent a behavior" (op. cit., p. 6). In their paper, Woelfel and Haller (op. cit., pp. 2-3) synthesize the theory in four basic assumptions:

1. That some behaviors may be appropriately expressed as a continuous rate.

2. That the rate of behavior is governed by the accumulated information the individual has relevant to that behavior controlling the physical circumstances of the behavior.

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

4. The resultant rate of behavior equals a linear aggregate of all information received from all sources relevant to the behavior in question, controlling for physical circumstances.

Accordingly, the principal theoretical predictors of attitudes and behavior about marijuana in Woelfel and Hernandez's study are the communication variables, divided

into interpersonal influences and mass media. Following Kelly's (1952) original classification of the functions of reference groups, the authors distinguish between two types of interpersonal sources of influence: definers and models. Definers are those significant others who exert influence by verbally communicating with a person. Models influence a person by what they do. Operationally, Woelfel and Hernandez defined "models" by the single question "How many of your friends smoke marijuana?," where the possible answers were (a) none, (b) few, (c) some, (d) many, and (e) all or nearly all. Under "definers" the authors classified only one source of interpersonal influence; namely, friends. Operationally, friends' influence was measured by three items: one consisting of a measurement of exposure to friends ("How frequently do you talk to your friends?"), a second item measuring coverage of marijuana ("How frequently do your conversations with friends involve marijuana use?"), and a third one measuring the bias of the coverage ("How would you characterize the opinions of the friends you talk with?"). The multiplication of the scale values of the three items yields a zero-centered index ranging from -32 (nearly continuous intense negative significant other influence) to + 32 (nearly continuous intense positive significant other influence).

Regarding the mass media, and according to the theory advanced by Woelfel and Hernandez, "the media are construed

as extensions of the process of interpersonal influence and relevant phenomenal reality, since media exposure persons to the words and acts of people otherwise outside the circle of their family, friends, and acquaintances, and to aspects of phenomenal reality otherwise outside their purview" (op. cit., p. 14). The media analyzed by these authors were newspapers, magazines, radio, television, movies, and records or tapes. Each medium was measured by a three item index identical to the one used for assessing friends' interpersonal influence.

In addition to the influence of significant others and the mass media, Woelfel and Hernandez include other theoretical variables which are assumed to be relevant to the formation of attitudes and behavior. These variables are (1) structural factors, (2) relevant phenomenal reality, and (3) other related attitudes. Structural factors refer to those variables which identify an individual's location in the larger social structure. The variables which Woelfel and Hernandez included were sex, age, region of the country where the respondent was raised, size of the city where he spent his childhood and socioeconomic status. Relevant phenomenal reality refers to specific aspects of concrete situations which one observes that influence him to smoke or avoid marijuana. Such aspects are, according to the authors' operationalization of the theoretical variable, (1) college where the respondent studies, (2) year in school, (3) type of residence where respondent lives, and (4) number of

friends who smoke marijuana (which is also defined by the authors as a model-type influence by significant others). In general, the authors do not clearly distinguish between relevant phenomenal reality variables and structural factors and, as a matter of fact, both are classified as "structural variables" in the tables where the results of the study are presented. Finally, other related attitudes were defined as judgments about attitudes other than those specifically mentioning marijuana and which are related to its use. The attitudes included in the study were (1) attitudes toward individual rights, (2) attitudes toward armed revolution, (3) political position, (4) attitude toward harmfulness or helpfulness of marijuana, (5) attitude toward hippie dress styles, and (6) religious affiliation.

When behavior about marijuana (operationalized as the self reported frequency of marijuana use) was the dependent variable in the study, Woelfel and Hernandez introducted one additional independent variable: attitude toward marijuana, operationalized as the respondent's self-conception as a marijuana user.* Following previous formulations of the theory, Woelfel and Hernandez argue that the other independent variables exercise strong causal influence over the

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*The specific question that the authors asked was "To what extent do you consider yourself a marijuana user?," followed by the response alternatives (a) not at all; (b) very little; (c) somewhat; (d) to a large extent; and (e) to a very large extent.

formation of attitudes, and that once formed, these attitudes exert independent causal influence over behavior. This may be a plausible line of reasoning, even though many authors, since the early work of LaPiere (1934), claim that there is no causal relationship between attitudes and behavior, and that attitudes and actions may even be inconsistent (see, for example, Berkowitz, 1975). The problem with the inclusion of attitude as a predictor of behavior in Woelfel and Hernandez's research appears to be rather methodological. Since behavior is measured as the self reported frequency of marijuana use and attitude is operationalized as the respondent's self-consception as a marijuana user, circularity can be assumed to exist between the two measures. Circularity, of course, tends to artificially increase the amount of explained variance in the dependent variable. Indeed, the authors report a correlation of .84 between attitude and behavior. In the multiple regression equation, the attitude measure yielded a beta weight of .75 (the second highest beta weight was .15).

Nevertheless, the research model appears to have good predictive power. The regression of rate of marijuana use on all the independent variables (a 39th order regression equation) reached a multiple correlation coefficient of .893. Removing the self-conception or attitude measure from the equation, the multiple correlation coefficient was still a fairly high .74 (although the amount of explained variance

decreased 31%, from 79.7% to 54.7%). The results of this analysis showed the effects of the communication variables to be almost completely mediated by the attitude variables (including the self-conception variable). When the self-conception variable was taken as the dependent measure, the effect of the communication variables improved substantially, although most of the effect came from the interpersonal variables. The mass media showed no significant effect, the magazines being the only medium that reached a significant beta. The multiple regression equation with the attitudinal variable (self-conception as a marijuana user) as the dependent measure yielded a multiple correlation coefficient of .74 (R^2 = .55).

The comparative analysis of the two multiple regression equations shows a markedly different structure of the beta weights of the independent variables when behavior is the dependent variable (with self-conception as one of the predictors) as compared to when the dependent variables is self-conception (the attitude variable). This would seem to indicate that in addition to the redundancy between the attitude and behavior measures, there is also a strong interaction between the attitude variable and all the other independent variables which alters their statistical relationship with the behavioral dependent variable. If, for comparative purposes, we arbitrarily choose those variables with a beta weight of .10 or better, we will see that, in

addition to the self-conception measure, six variables reach such weight when behavior (self-reported frequency of drug use) is the dependent measure: whether the respondent studies at campus number 3 or not (.14), whether he lives at home or not (-.10), whether he is Catholic or not (.13), and whether he was raised in the East of the U.S. or not (.15), the respondent's attitude toward religion (.11), and his index (the combination of exposure, coverage and bias) for the movies (.10). Not even one of these six variables reached a beta weight of .10 when self-conception became the dependent variable, and three of them even changed the sign of the b and beta coefficients. With self-conception as the dependent measure, seven variables reached a beta of .10 or better: whether the respondent is Jewish or not (.10), his friends' marijuana use (.29), his friends' political position (.12), his perceived harmfulness of marijuana (.29), his attitude toward dress (-.16), the magazine index (-.12), and his friends' index (.16). These seven beta weights average .177, while the former set of beta weights average .121. When behavior is the dependent variable, and according to the theoretical classification of the variables, three of the variables with beta weights of at least .10 are classified as "structural factors," two as "other related attitudes," zero as "significant others' influence," and one as "mass media influence." With attitude as the dependent measure, zero variables belong to the "structural factors" category, three

to "other related attitudes," three to "significant others' influence," and one to "mass media influence." These differences suggest that self-conception should not be included as a predictor of behavior (at least as operationalized by Woelfel and Hernandez), and also that, from a communication theory standpoint, the communication variables should be analyzed in terms of their relationship with dependent variables such as attitudes and behavior about drugs in isolation of other contributory variables because of their observed interaction with other variables, mainly attitudinal ones.

The remaining studies that have been published based on Linear Force Aggregation Theory apply basically the same research model that we have just reviewed in Woelfel and Hernandez's marijuana study. Of certain substantial relevance to the present study is Mettlin's application of the theory of cigarette smoking behavior among college students.

Mettlin (1973) included 25 independent variables as predictors of rate of smoking. Rate of smoking was operationalized by means of three items: "(1) how many cigarettes the respondent smoked the day before the questionnaire administration; (2) how many cigarettes the individual estimated he would smoke by the end of the day; and (3) the respondent's estimate of his average daily cigarette consumption. The dependent variable used in (the) investigation is the average of all three of these questions" (op. cit., p. 148). The average rate of smoking reported for the 97 respondents was

4.8 cigarettes per day.

The independent variables with statistically significant beta weights in the multiple regression analysis were (1) the focal individual's smoking attitude (beta = .19), which was measured as the individual's projected rate of behavior; (2) the frequency with which he experienced respiratory problems (.36); (3) his age (.24); (4) the frequency with which the respondent engages in athletic sports (-.12); (5) his models' smoking rate (.17) as determined by the models themselves; (6) his models' related attitude about health (.21); and (7) his definers' related expectation about health (-.17). The significant others' data were obtained directly from them by sending questionnaires directly to the individuals identified as significant others by the respondent by means of the Wisconsin Significant Other Battery (cf. Haller and Woelfel, 1969).

The 25 independent variables are grouped into six theoretical index variables. The theoretical indices, with their respective beta weights when the dependent behavior was regressed on them, were (1) the focal individual's smoking attitude, a one-item index, .19; (2) the focal individual's related attitudes, .14; (3) the significant other influence, .40; (4) the mass media influence, .07; (5) structural factors, .24; and (6) relevant phenomenal reality, .39. All indices, except the mass media index, had beta weights significant at the .05 level or better. The multiple correlation

coefficient was .81, which explains 66% of the total variance.

In terms of communication variables as predictors of smoking behavior, it is important to state that Mettlin's study shows the mass media to have no significant effect on the dependent behavior, while the interpersonal sources of influence assume great predictive importance.

Other studies have been done based on Linear Force Aggregation Theory and have supported the main contention of the theory which argues that attitudes, other cognitive states of individuals, and patterns of overt behavior can be explained as quantitative aggregates of all units of relevant information received by those individuals from various sources of information. One of the earliest studies was done in 1969 by Woelfel and Haller (1971) on a sample of 100 high school students and their significant others. They were able to explain 64% of the variance in educational aspirations and 59% in occupational aspirations when these two variables were regressed on the respondents' academic performance, their mental ability, their significant others' educational and occupational expectations and their father's occupational prestige level. Woelfel and Haller's study was replicated by Mettlin (1970), arriving at similar results. Reeves (1974) analyzed the perceived reality or fantasy of television content in a sample of elementary school children. He was able to account for almost half the total variance in the dependent variable by means of a weighted average of the

opinions of a subset of significant others that the children had identified. Roloff (1975) also arrived at similarly good results in his study of the relationship between the amount of change advocated in a message and the amount of attitude change obtained (see also Woelfel and Saltiel, 1974). Woelfel, Woelfel, Gillham and McPhail (1974) studied attitude toward French Canadian separatism, and two types of separatist behaviors: assisting a separatist candidate and attending separatist rallies among a sample (n = 412) of adult undergraduate students enrolled in two universities in Montreal. Kramer (1975) applied the theory to the explanation and prediction of attitude toward and use of the "competency-based approach" to instruction among a sample of 217 university professors, accounting for 68% of the variance in the attitude variable. Kramer also concluded that "there was substantial evidence that attitude toward the use of the competency-based approach is the principal predictor of subsequent behavior."

Theory

We have previously indicated that the main purpose of this dissertation is to submit to empirical test Linear Force Aggregation Theory (as it applies to the explanation of attitudes and behavior about alcoholic beverages and marijuana among high school students in Mexico City). A basic assumption underlying Linear Force Aggregation Theory is that

we generally cannot validly study the effects of communication sources, or their relationship with highly salient and relatively permanent attitudes and behaviors, when only one medium is analyzed, isolated from other media or sources of information and influence. Rather, the effects of communication on attitudes and behavior might better be understood as the combined effect of diverse information inputs from various sources over time.

This notion is consistent with the generally accepted position in the behavioral sciences today. Kerlinger and Pedhazur (1973, p. 154), for example, state that "the complex phenomena studied by behavioral scientists can rarely be explained adequately with one independent variable. In order to explain a substantial proportion of the variance of the dependent variable, it is almost always necessary to study the independent and combined effects of several independent variables."

More specifically, the theory derives some of its basic assumptions from Newtonian physics. It conceives the various sources of communication, with their respective messages or advocated positions, as separate forces coinciding upon the same point--the receiver,--each contributing differentially to the resultant force or vector, which we may identify with the attitude or behavior that the receiver subsequently exhibits. The resultant vector is not assumed to

be caused by any single incoming force,* but rather by the combination of all forces.

Linear Force Aggregation Theory, then, proposes that any given attitude or any given relative frequency of engaging in some behavior can be explained by the aggregation of the influence proceeding from all sources of information and influence external to the individual and relevant to that attitude or behavior. Furthermore, the theory assumes that no information relevant to an attitude or behavior, proceeding from any source, is ever totally discounted. Consequently, the resultant attitude or behavior that an individual will exhibit is a simple linear aggregate of all relevant information the individual has received.

Assuming that both the dependent attitude or behavior and the incoming information (e.g., number of messages) are expressed at least at an interval level of measurement, this basic postulate can symbolically be expressed as:

$$Y = \sum_{i=1}^{n} Xi \qquad (1)$$

where Y = the resultant attitude or behavior after receipt of all messages, and

Xi = each position advocated to the focal individual

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*Unless if it is absolutely the only incoming force and it encounters absolutely no resistance (zero cognitive, attitudinal or behavioral mass) in the receiver, which is very unlikely.

An alternative but equivalent representation of this basic postulate divides expression (1) by N; that is, by the total number of messages or positions advocated to the focal individual:

$$Y = \frac{\sum_{i=1}^{n} Xi}{N} \qquad (2)$$

Expression (2) equates the resultant attitude or behavior with the arithmetic mean of all attitudes or behaviors proposed to the focal individual from all sources.

If we conceive an attitude or a behavior (the relative frequency of engaging in some act) as in expression (2) above, then it follows that the theory, as expressed the well known property that the sum of the deviations from a mean always equal zero. Symbolically:

$$\sum_{i=1}^{n} (Xi - \bar{X}) = 0 \qquad (3)$$

Given expressions (2) and (3), we can conceptualize the resulting attitude or behavior as the point at which all incoming forces (i.e., messages or positions advocated to the focal individual) balance.

As Woelfel and Saltiel (1974, pp. 3-4) have stated it, "if each message x_i is construed as a "force" which "pulls" the attitude one way or another, (expression (3)) shows that

the mean constitutes that point at which such forces sum to zero or "balance." Simple though it is, this theory suggests a continuously-scaled least-squares balance point, which is a considerably more powerful mathematical model than the discrete graph-theoretic representations of many balance formulations (Newcomb, Heider, Osgood, Tannenbaum & Suci, et al.)."

As stated, the theory assumes that attitudes and behavior are some linear aggregate of some finite set of variables. As such, it naturally follows the general linear model which takes the form of the linear regression polynomial:

$$Y = a + b_1 x_1 + b_2 x_2 + \ldots + b_n x_n \quad (4)$$

where Y = the dependent attitude or behavior,

a = a constant which is the y intercept for the vector of the polynomial,

b_1 = coefficients or weights indicating the relative net effectiveness of each of the variables (messages) x_i in effecting changes in the attitude or behavior Y, and

x_i = the variables (usually information-flow variables) assumed to exert causal influence over attitude formation and change and over the behavior.

In addition to the widespread use of the general linear model in the behavioral sciences, Woelfel and Saltiel (op. cit., pp. 1-3) offer three substantial reasons in its favor as the basis for Linear Force Aggregation Theory:

> First, although expressly curvilinear models show theoretical promise, none has shown

> impressively better empirical results overall than simple linear models. . . . In general, empirical results show that statistically significant curvilinear effects are not frequently noted. . . . When found, curvilinear relationships between change advocated and change effected are found usually for messages sent by low or medium credibility sources. . . . Under special circumstances, however, clearcut curvilinear and even non-monotone relations of some substance ('boomerang effect') are noted. . . . In spite of their infrequent appearance, these negative effects remain troublesome, and most investigators would probably agree that fully satisfactory explanations have not yet been made.
>
> A second reason for closer scrutiny of the general linear model is the fact that linear aggregation models, even in their simplest form, are frequently very successful empirically, particularly in real life (non-experimental) settings. . . . Even though there may be situations in which the linear model fails, nonetheless its general utility in everyday life is clear from these findings.
>
> Still a third reason for examination of the linear model is the fact that it implies a theoretical model which is very parsimonious in its basic form, yet which can be expanded easily to encompass very complex empirical phenomena.

The theory further assumes that the dependent attitude or behavior is measured at an interval or ratio level of measurement, or that at least it approximates intervality. This position must necessarily follow from the conception of the attitudinal or behavioral dependent variable as a vector that results from the aggregation of all the forces that coincide upon the focal individual.

The preceding argument can be exemplified and synthesized in the following quote from Woelfel et al. (1972, pp. 1-2):

> The main contention of (the theory) is that a large part of the difficulty involved in the problem of multiple and disparate influence has been forced on theorists by discrete classifications of the behaviors with which they must deal. If an individual child, 1, is told by his mother, $\underline{S}_1$, that he should not smoke, yet his father, $\underline{S}_2$, does in fact smoke, the question seems to be one of which message--his mother's verbal or his father's exemplary message--he will accept.
>
> When cigarette smoking is expressed as a continuous variable, however--for example, as a rate over time--then the situation ceases to be a dilemma of discrete choice wherein the individual is presented with two contradictory expectations from which he must choose, but with two values of the continuous variable, rate of expected smoking; X_1 (mother) = 0, X_2 (father) = 20 (assuming the father smokes 20 cigarettes per day). Seen in this light, and specifically for those attitudes and behaviors which may be expressed as rates or pseudo rates, the question need not be phrased in terms of acceptance or rejection of influence presented by opposing sources. We thus hypothesize that an individual attitude, expressed as a proposed rate of engaging in a given behavior, equals the aggregate of all rates of that behavior proposed to that individual from all sources.

Woelfel et al.'s explanation can further be clarified if we consider the behavioral dependent measures of this dissertation; namely, frequency of use of alcohol and marijuana. An individual's behavior about those substances can be expressed better, in terms of measurement, than in the discrete choice of 'he uses' or 'he does not use' the intoxicant, which has probably been the most common method of measuring substance abuse behaviors (cf. the review of the

substantive literature above). For example, this type of behavior can be expressed operationally as 'frequency of use of the substance.'

Furthermore, if we try to identify the sources of information and influence that determine an individual's frequency of use of alcohol and marijuana, as opposed to another individual's specific rate of consumption of those substances, we will find that:

(1) The number of sources present to him, both mass and interpersonal, is very large.

(2) For each source, the number of messages transmitted regarding alcohol and marijuana --as well as other related substance abuse behaviors--can range from 'many' to 'none,' thus implying differential amounts of force or intensity.

(3) The perceived position or direction of each source--i.e., the position advocated to the focal individual--can go from 'very much in favor' to 'very much against' the use of either substance.

Given a diversity of sources of information and influence, each with a certain (and probably different) intensity and direction regarding the intended behavior, the question of which behavior about alcohol and marijuana will an individual finally exhibit cannot be phrased in terms of a discrete

choice. It is postulated that an individual's relative frequency of use of an intoxicant, as well as his attitude toward it, will equal the aggregate of all rates of proposed frequency of consumption from all sources of information and influence reaching him.

Indeed, the formation of attitudes and behavior about alcohol and marijuana--as well as a myriad of other subjects--can be considered as the development of relatively permanent and stable behavioral patterns. These are formed through a process of socialization that could hardly depend upon one single source of information and influence. Rather, such processes can be explained only from a set of multiple contributing sources of information and influence.

It must be noted at this point, however, that the preceding argument does <u>not</u> imply that one given source of communication cannot influence, by itself, a receiver's attitude or behavior. What is implied is that any one single source is not a sufficient condition of a receiver's attitude or behavior but only a contributing variable to the aggregate of forces that determine the resultant vector. Furthermore, each contributing variable operates in the presence of the other relevant variables; in this case, the other sources of communication. Consequently, in order to be able to determine the actual effect of an independent variable, X_1, on the dependent attitude or behavior, the interactive effect of X_1 with the other contributing

variables must be considered and the effect of the remaining variables must be controlled or canceled out. At least, the net effect of X_1 may be determined by comparative means such as by the inspection of the ratio between the regression coefficients of X_1 and the other predictor variables, instead of by its independent association with the criterion variable.

Regarding the sources of information and, particularly, influence, the theory distinguishes between influence exerted by those who verbally communicate with a person and those who serve as models for a person's attitudes and behavior. The former are called definers and the latter models. In this, the theory clearly follows Kelly's (1952) conceptualization of the two functions of reference groups. Quoting from Kelly's original statement (op. cit., pp. 412-413):

> The first (function) is that of setting and enforcing standards for the person. Such standards are usually labeled group norms, so we shall call this the normative function of reference groups. A group can assume this function of norm-setting and norm-enforcement whenever it is in a position to deliver rewards or punishments for conformity or nonconformity. A group functions as a normative reference group for a person to the extent that its evaluations of him are based upon the degree of his conformity to certain standards of behavior or attitude and to the extent that the delivery of rewards or punishments is conditional upon these evaluations. . . .
>
> The second of these functions is that of serving as or being a standard or comparison point against which the person can evaluate himself and others. We shall refer to this as the comparison function of reference groups. A group functions as a comparison reference group for an individual to the extent that the behavior,

> attitude, circumstances, or other characteristics of its members represent standards or comparison points which he uses in making judgments and evaluations.

In their initial application of Kelly's conceptualization of the functions of reference groups of Linear Force Aggregation, Woelfel and Haller (1971, p. 76) state that the theory "assumes that others are significant in direct proportion to the amount of information they convey to an ego about the categories he uses to define objects and self, either by word (definers) or examples (models), affective factors notwithstanding." Definers, then, are those who communicate information and exert influence through the mediation of some symbol system. Models exert influence through their exemplary behavior.

Both definers and models are identified as "significant others"; that is, "those persons who, by word or example, convey substantial information to an individual about the filter categories that an individual uses to define himself and/or the objects of his experience" (Woelfel and Haller, op. cit., p. 77). It is important to state that this definition does not separate the influence received by an individual from other individuals communicating with him interpersonally from the influence received from the mass media. Indeed, the media are explicitly construed as extensions of the process of interpersonal influence which expose persons to the words ("definers") and acts ("models") of people

otherwise outside the circle of their family, friends, and acquaintances (see Woelfel and Hernandez, 1973; Woelfel et al., 1974; Mettlin, 1973; and Woelfel, 1970). (Nevertheless, it is still necessary to distinguish between the influence proceeding from interpersonal and mass media sources, as well as the influence proceeding from definer-type and model-type sources, especially if we consider the results of previous tests of the theory and particularly the findings from communication research in general).

Linear Force Aggregation Theory makes the additional assumption that the perception of the receiver is important in determining how communication affects him (Woelfel and Hernandez, 1973; Woelfel et al., 1974; Serota, 1976. See also, for example, Weiss, 1969, pp. 114-116). Stated briefly, we can say that in terms of the effects of communication what matters is not so much the intention of the source or the "objective" content of the message. Rather, what counts is the perception that the receiver has the information input.* For example, if an adolescent perceives his friends or his television heroes as very much in favor of the consumption of alcoholic beverages, he will probably feel "pushed" in a direction favorable to the Consumption of

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*See also Klapper, 1960; Bauer, 1971; Hyman and Sheatsley, 1947; Roberts, 1971; Woelfel and Haller, 1970; and Berlo, 1960.

alcohol, even if his friends or television heroes are actually opposed to the drinking of alcohol.

The previous assumption is further extended by conceiving attitudes as conceptual relationships between a person and an object or set of objects,* (see also Green, 1951; and DeFleur and Westie, 1963). According to Kuhn's (1964) postulate that man's perception of objects is always mediated by some symbolic structure, the notion of a conceptual relationship implies that it is the relationship a person sees between his conception of himself and his conception of the objects in question. The process of forming a conception is seen as a process of categorization (cf. Bruner, 1958); that is, a concept is formed by placing its related object into a series of categories. These are termed "filter categories" by Woelfel and Haller (op. cit., p. 75) insofar as they exert a "filtering" effect of one's perception of the objects classed within them.

Following from these premises, Woelfel and Haller (ibid.) define "attitude" as "a person's conception of the relationship between the filter categories of which he sees himself to be a member and the filter categories of which he sees the object to be a member." Consequently, the process where by attitudes are formed and changed is the same

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*The concept of "object" is defined here as anything that can be designated or referred to, either in physical or psychological terms.

as the process by which filter categories are formed and changed, and classification is thus a cognitive act based on the information one has about objects and self. The theory therefore assumes information to be the basis of filter categories and hence attitudes as they have been defined here (cf. Woelfel and Haller, op. cit.). Equally, the theory "assumes behavior* to be controlled wholly and only by the information an individual has about his relationship to a potential behavior (self conception), controlling for physical circumstances which might prevent a behavior" (Woelfel and Hernandez, 1973, p. 6).

In summary, Linear Force Aggregation Theory proposes that any attitude or behavior that an individual, S_1, exhibits is a simple linear aggregate of all the information and influence S_1 perceives to have received from all sources of communication that have reached him with messages relevant to his attitude or behavior. The messages can come either from definers (what others say) or from models (what others do), and those messages can be transmitted either interpersonally or via the mass media. Each message is construed as an incoming force which pulls the attitude or behavior in some specific direction and with some measurable magnitude. The aggregation of all such forces produces the

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*Behavior is defined as the relative frequency of engaging in some act.

resultant vector which we equate with the subject's attitude or behavior, operationally represented as a rate or pseudo-rate (e.g., frequency of engaging in some behavior). Attitudes and behaviors are assumed to be wholly determined by the aggregated information that each focal individual perceives to have received relevant to those attitudes and behaviors.

In order for a source of communication to have an effect, three conditions must be met: (1) the receiver must be exposed to the source, at least to some minimum degree; (2) the receiver must perceive that the source does transmit messages about the object of the attitude or behavior, at least with some minimum frequency; and (3) the receiver must perceive what is the position advocated by the source (see also Woelfel and Hernandez, 1973; and Woelfel et al., 1974).

Hypotheses

The theory outlined above proposes that any given attitude or any given relative frequency of engaging in some behavior can be explained by the aggregation of the influence proceeding from all sources external to the individual. Consequently, Linear Force Aggregation Theory hypothesizes that as the value of the aggregate force that reaches an individual increases, its effect on the individual's attitude and behavior will also increase.

As we have stated, the force that reaches an individual may come either from the flow of information originating in each of multiple sources of communication (definer-type influences), or from the exemplary behaviors of significant others (model-type influences). The sources that originate the flow of messages can be either mass media or interpersonal. We have also argued that the actual effect of communication will be filtered by the perception of each individual receiver.

Consistent with this formulation, as well as with previous research based on Linear Force Aggregation Theory (Woelfel and Hernandez, 1973; Mettlin, 1973; Woelfel et al., 1974), the aggregate force that reaches each individual receiver has been operationalized (1) in what we call the aggregated message intake (AMI) of (a) the mass media and (b) interpersonal sources, and (2) the exemplary messages of some significant others' behavior, as perceived by the respondents to this study. We shall next conceptually define each term.

The aggregated message intake constitutes the aggregation across all relevant sources of communication of the perceived orientation towards the attitudinal and behavioral referent that each source of communication has. The perceived orientation of each source towards each referent*

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*As we have previously indicated, this study is concerned with two attitudinal and behavioral referents: alcoholic beverages and marijuana.

constitutes in itself an index which, as we shall explicate more elaborately in the next chapter, results from the multiplication of the scale values of three constitutive items: frequency of exposure to each medium (range of scale values: 0 - 5); amount of coverage of the substance by each medium (range: 0 - 3); and bias of the coverage (range: -2 to +2). The multiplication of the scale values yields an index ranging from -30 to +30. In this index, the size of the value indicates the magnitude of the influence exercised by the medium. The sign indicates the direction of the influence. A positive sign implies an influence favorable to the use of the substance, while a negative sign represents an influence opposed to its use. We thus have an index for each source of communication. The aggregation of the individual indices for the five mass media (television, radio, popular songs, newspapers and magazines) yields the respective mass media AMI. Likewise, the five interpersonal indices (parents, siblings, other relatives, friends at school and friends outside of school) yield the interpersonal AMI.

The concept of <u>exemplary messages</u> is straightforwardly defined as the influence exercised on the focal individual by the modeling behavior that his significant others exhibit toward the relevant attitudinal and behavior referents.

The basic theoretical formulation immediately suggests a set of research hypotheses for each one of the three groups of sources of information and influence; namely, mass media, interpersonal sources, and exemplary behaviors. We shall first present the research hypotheses pertaining to the mass media:

H_{1a}: The respondents' aggregated message intake for the mass media will positively correlate with their attitude toward alcohol, expressed as their degree of approval of occasional use of alcohol by 'people of their own age.'

H_{1b}: The respondents' aggregated message intake for the mass media will positively correlate with their attitude toward marijuana, expressed as their degree of approval of occasional use of marijuana by 'people of their own age.'

And for behavior:

H_{2a}: The respondents' aggregated message intake for the mass media will positively correlate with their behavior about alcohol, expressed as their frequency of use of it.

H_{2b}: The respondents' aggregated message intake for the mass media will positively correlate with their behavior about marijuana, expressed as their frequency of use of it.

The same hypotheses that were formulated for the mass media apply also for interpersonal sources of communication. We shall first state the hypotheses pertaining to attitudes (expressed as the degree of approval of occasional use of the substance):

H_{3a}: The respondents' aggregated message intake for interpersonal source of communication will positively correlate with their attitude toward alcohol.

H_{3b}: The respondents' aggregated message intake for interpersonal sources of communication will positively correlate with their attitude toward marijuana.

And for the behavioral dependent measure (frequency of use of the substance):

H_{4a}: The respondents' aggregated message intake for interpersonal sources of communication will positively correlate with their behavior about alcohol.

H_{4b}: The respondents' aggregated message intake for interpersonal sources of communication will positively correlate with their behavior about marijuana.

The set of hypotheses stated thus far pertain to the predicted relationship between the sources of mass and interpersonal communication, or definer-type variables, and the dependent measures. As we have previously indicated, the theory also predicts a significant, positive relationship between attitude and behavior, and the model-type influences expressed the exemplary behavior of a set of significant others.

On the basis of the substantive literature on drug abuse behaviors among adolescent populations (reviewed above), and an exploratory study that was done prior to the research on which this dissertation is based (cf. Chapter II), three sources of exemplary messages about alcoholic

beverages and marijuana can be identified: (1) father, (2) mother, and (3) friends. According to Linear Force Aggregation Theory, we can predict that the aggregate value of these three component sources of information and influence will be significantly and positively associated with the values of the dependent variables. (The values of the three sources of exemplary messages will be aggregated in standardized form since their range of scale values differ.)

The following hypotheses can thus be advanced about the relationship between exemplary messages and attitudes and behavior about alcohol:

H_5: The exemplary messages transmitted by the degree of use of alcohol (aggregate value) of three significant others: father, mother, and friends, will positively correlate with the respondents' attitude toward alcohol.

H_6: The exemplary messages transmitted by the degree of use of alcohol (aggregate value) of three significant others: father, mother, and friends, will positively correlate with the respondents' behavior about alcohol.

The sources of exemplary messages about marijuana will have to be reduced to only one: friends. Data gathered at CEMEF (Mexican Center of Studies on Drug Dependence) suggest that there is practically no detectable use of marijuana among the segment of the population that comprises the parents of the adolescent population that would be

sampled for the present study.* This generalization was substantiated by the results of the exploratory investigation we did prior to this study (see Chapter II). This investigation confirmed that parents either do not smoke marijuana or their children--the respondents to the exploratory study--failed to perceive (or refused to report) any use.

The exclusion of parents as predictors of attitudes and use of marijuana through their exemplary behavior is thus justified on methodological grounds. (Their inclusion would imply adding two constants--perceived use of marijuana by (1) father and (2) mother,--each with a value of zero, to the value represented by the perceived frequency of marijuana use by friends).

We thus can hypothesize the following relationships:

H_7: The exemplary messages transmitted by the degree of use of marijuana by friends will positively correlate with the respondents' attitude toward marijuana.

H_8: The exemplary messages transmitted by the degree of use of marijuana by friends will positively correlate with the respondents' behavior about marijuana.

Evidently, and according to Linear Force Aggregation Theory, since the force exercised upon the respondents' attitude and behavior about alcohol is greater than the one

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*Olga Salinas, coordinator of Social Science Research at CEMEF; personal communication.

for marijuana because a greater number of sources of influence is present, we will expect the amount of explained variance to be significantly greater for the former dependent measure than for the latter one. This prediction will be tested during the analyses of the data.

The hypotheses stated thus far will allow us to establish the direct effect of each group of predictors on the dependent measures. Linear Force Aggregation Theory, however, is equally interested in the total aggregate value of all sources of information and influence that reach an individual with a message relevant to a given attitude or behavior. Indeed, the theory construes attitudes and behaviors as the resultant vector of the linear aggregate of all forces that coincide upon an individual with a relevant message. Thus, the main theoretical hypothesis proposed by the theory states that as the value of the total aggregate force that reaches an individual is greater, its effect on the individual's attitude and behavior will also be greater. This hypothesis we shall also submit to empirical test.

In relation to the dependent measures that are being analyzed in the present study, this theoretical hypothesis can be expressed in the following research hypotheses:

(a) for attitude toward alcohol:

H_{9a}: The respondents' total aggregate value of all sources of information and

influence* will positively correlate with their attitude toward alcohol,

(b) for attitude toward marijuana:

H_{9b}: The respondents' total aggregate value of all sources of information and influence will positively correlate with their attitude toward marijuana,

(c) for behavior about alcohol:

H_{10a}: The respondents' total aggregate value of all sources of information and influence will positively correlate with their behavior about alcohol, and

(d) for behavior about marijuana:

H_{10b}: The respondents' total aggregate value of all sources of information and influence will positively correlate with their behavior about marijuana.

It is important to recognize here that Hypotheses H_{9a} to H_{10b} above are not totally independent from the hypotheses that were previously formulated (H_{1a} to H_{8}). Therefore, Hypotheses H_{9a} to H_{10b} will have to be further tested by checking whether they do explain a significantly greater percentage of the total variance in the dependent

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*The sources are (1) the five mass media that constitute the component variables for the aggregated message intake for the mass media (television, radio, popular songs, newspapers and magazines), (2) the five interpersonal sources that constitute the corresponding AMI (parents, siblings, other relatives, friends at school and friends outside of school), and (3) the three sources of exemplary messages: father, mother and friends.

variables than the partly corresponding hypotheses among H_{1a} to H_8. For example, Hypothesis H_{9a} will have to explain a significantly greater percentage of the variance in attitude towards alcohol than either H_{1a}, H_{3a} or H_5, as would be predicted from Linear Force Aggregation Theory.

Regarding the contribution of each one of the thirteen communication variables to the total explained variance in the dependent attitudes and behaviors, we certainly cannot expect each source to contribute equally. Kandel (1973), for example, found that among sources of exemplary messages, peer group influence was significantly greater than parental influence regarding marijuana use. Woelfel and Hernandez (1973) and Woelfel et al. (1974) also found significant differences among mass media and among interpersonal sources of communication. Differential levels of effects among the various communication variables will consequently also be explored in this study. (In the standardized multiple regression equation these comparisons can readily be made by dividing the respective beta weights of the various pairs of variables.)

In addition to analyzing the comparative effect of the various individual sources of communication, we will also compare the three groups of sources among themselves (mass media, interpersonal, and exemplary behavior). Thus, we will be able to establish which type of sources of communication exert an aggregate force of greater intensity on

the respondents' attitudes and behavior. There seems to be ample data in communication research (see, for example, Rogers and Shoemaker, 1971) to warrant the tentative generalization that while the mass media tend to be more effective in affecting the receivers' knowledge about an issue, interpersonal sources are more important in affecting attitudes and behavior. Additionally, Woelfel and Hernandez (1973) also found that most of the effect of communication variables on students' marijuana usage came from interpersonal variables, as opposed to the mass media variables. An equivalent result was reported by Mettlin (1973) regarding smoking behavior. Similarly, the review of the substantive literature presented above also gives some support to this claim.

Therefore, we can hypothesize that:

H_{11a}: Interpersonal sources of communication will be more strongly associated than mass media sources with the respondents' attitude toward alcohol,

and

H_{11b}: Interpersonal sources of communication will be more strongly associated than mass media sources with the respondents' attitude toward marijuana.

And equally for behavior about those substances:

H_{12a}: Interpersonal sources of communication will be more strongly associated than mass media sources with the respondents' behavior about alcohol,

and

H_{12b}: Interpersonal sources of communication will be more strongly associated than mass media sources with the respondents' behavior about marijuana.

Similarly, regarding the comparative effect of the mass media and exemplary messages transmitted by some significant others, we may hypothesize that:

H_{13a}: Exemplary messages by significant others will be more strongly associated than mass media sources with the respondents' attitude toward alcohol.

H_{13b}: Exemplary messages by significant others will be more strongly associated than mass media sources with the respondents' attitude toward marijuana.

H_{14a}: Exemplary messages by significant others will be more strongly associated than mass media sources with the respondents' behavior about alcohol.

H_{14b}: Exemplary messages by significant others will be more strongly associated than mass media sources with the respondents' behavior about marijuana.

There is very scant data from previous empirical studies, as well as an inadequate theoretical foundation, to justify a set of hypotheses predicting a significantly stronger association between exemplary messages and the dependent variables than between the latter and interpersonal sources of information and influence. What little data is available though tends to support such a prediction, which also seems to be supported on intuitive grounds. Certainly, we would expect model-type influence from significant others

(what people do) to exert greater influence on the dependent variables than definer-type messages (what people say). On these bases, we also propose the following working hypotheses:

H_{15a}: Exemplary messages by significant others will be more strongly associated than interpersonal sources of communication with the respondents' attitude toward alcohol.

H_{15b}: Exemplary messages by significant others will be more strongly associated than interpersonal sources of communication with the respondents' attitude toward marijuana.

H_{16a}: Exemplary messages by significant others will be more strongly associated than interpersonal sources of communication with the respondents' behavior about alcohol.

H_{16b}: Exemplary messages by significant others will be more strongly associated than interpersonal sources of communication with the respondents' behavior about marijuana.

Finally, we also propose to do cross-cultural comparisons of the results of this dissertation with related results of other studies done in the United States, and one in Canada, making use of Linear Force Aggregation Theory. In particular, we will compare the results of this study with Woelfel and Hernandez's (1973) analysis of marijuana use.

In this regard, we must consider that communication theory and research has been developed, to a very large extent, mostly in only one cultural setting in the world: the United States, and may therefore be rather limited as

a universal explanatory scheme. "A science strives to formulate universal propositions. Once a proposition has been tentatively formulated, the task of research is to replicate it, attempt to state limiting conditions and intervening variables, and analyze 'exceptional' cases. In this process, inter-societal comparative analysis is but a necessary extension of intra-societal comparative analysis" (Marsh, 1967, p. 11). The need for cross-cultural comparisons of theory-based research should be obvious.

CHAPTER II

METHODS

The presentation of this chapter is divided into the following sections: 1. independent variables; 2. dependent variables; 3. description of the sample; 4. methods for data gathering; and 5. data analysis and hypothesis testing.

Independent Variables

Selection of the Variables

The independent variables are the relevant sources of communication, external to an individual, that reach him and may affect his attitude and behavior about intoxicants. As the theory states, such an effect of communication sources can be exercised in two ways: (1) by the messages transmitted over the mass media and by some significant others, and (2) by the exemplary messages represented in the behavior of significant others (i.e., their relative frequency of alcohol and marijuana usage, as perceived by the individual).*

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*Even though we can conceptually postulate that the mass media also transmit model-type (exemplary) behaviors, respondents to an exploratory study we conducted prior to the actual survey, and which we explain below, did not appear to be able to differentiate between definer-type and

Accordingly, the independent variables are grouped in three categories:

1. The mass media (definers).
2. Interpersonal sources of communication (definers).
3. The exemplary messages of some significant others.

These three categories in turn include a total of thirteen sources of communication and influence, as independent variables.

The mass media comprise five sources:

a. television
b. radio
c. popular songs
d. newspapers, and
e. magazines.

The interpersonal sources include:

a. parents
b. siblings
c. other relatives
d. friends at school, and
e. friends outside of school.

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model-type messages in the mass media; rather, they seem to conceive mass media messages as all belonging in one broad category. The classification of mass media messages into different categories is something the researcher does, not the general adolescent public; or at least not in a way that could reliably be measured with the kind of measurement instruments we utilized in our survey.

Finally, the significant others that are sources of exemplary messages include:

a. father

b. mother, and

c. friends.

Originally, the total number of communication sources was larger. There were seven mass media: television, radio, popular songs, cinema, newspapers, magazines, and books. there were also six interpersonal sources: parents, siblings, relatives, friends, teachers, and priests. (Educational programs at school were not included since we knew that these are practically non-existent in Mexico). In addition, each one of these thirteen media was also considered as a source of exemplary messages. These variables were tested in an exploratory and pilot study that we conducted on a sample of 220 high school students four months before the actual survey (see below).

The results of the exploratory study indicated that the level of exposure to drug related content in cinema and books among the mass media, and to teachers and priests among the interpersonal channels, was extremely low. The degree of influence exercised by these sources was about zero; therefore they were eliminated from the final instrument. Television, radio, newspapers, magazines, parents, siblings, and friends all appeared to be very influential: both the mean level of exposure and the perceived frequency of mention

of alcohol and other drugs for each variable were quite high. The mean values for these two variables for popular songs (on radio and in records and tapes) were slightly lower but also quite substantial.* The same thing also applied to relatives. (It should be noted here that relatives, other than parents and siblings, are particularly important in Mexico, where there is a notion of "extended family," with less geographical mobility than in countries like the United States, and in which grandparents, aunts and uncles, and cousins are present to an individual more constantly than what would be common in other cultures.) Finally, the responses and comments in the exploratory study indicated the convenience of dividing "friends" into two variables: friends at school and friends outside of school.

As we indicated above, we considered that the sources of exemplary influence should be the same ones identified as "information flow" variables. However, the results of the exploratory study showed that it was preferable to reduce such exemplary sources to only three: father, mother, and friends, since the remaining sources of communication in the information flow variables list were not identified as significant sources of exemplary messages or were not

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*Moreover, other research has shown that popular music is an important and heavily used medium by adolescents--e.g., Clarke, 1973, and Robinson et al., 1976 in the United States, and Donneaud, 1975 in Mexico--with an important drug related content.

differentiated as sources of information on the one hand and sources of exemplary messages on the other (cf. the first footnote in this chapter) by the respondents to that study. It must also be noted that it was found preferable to divide "parents" into "father" and "mother" since data were obtained for both which showed markedly different levels and patterns of substance used by them. This decision is further strengthened by the fact that in the exploratory study the students were found to have a very strong orientation toward their parents.

Exploratory Study and Pre-test

As we have already indicated, an exploratory study was previously done on the basis of which the final selection of variables was made and the measurement instrument was designed. This study was based on a purposive sample of 220 high school students of both sexes, in the various grades, and from schools chosen from different socioeconomic areas in Mexico City. Collectively, they were thought to be indicative of the various population characteristics that would be found in the study. Care was taken to choose schools not included in the final sample.

The exploratory study consisted of (a) a questionnaire administered to all students in the purposive sample (see Appendix A for the original Spanish version of the questionnaire) and (b) personal interviews with some of those students. The questionnaire comprised both structured questions

(including questions worded in alternative ways in different versions of the questionnaire when doubts existed as to the better formulation), and open questions which were later content analyzed and converted into structured questions in the final instrument. The personal interviews were done by this author and by psychologists from the funding institution (the Mexican Center for Studies on Drug Dependence, CEMEF) with experience in this kind of studies. These interviews were designed to probe more deeply into the kinds of questions asked in the questionnaire, to obtain complementary information, and also to obtain original information that could not be asked in the questionnaire.

The quantitative data were processed at the National University of Mexico and analyzed with the assistance of some members of the Center for Research on Applied Mathematics and Systems. These results, as well as the qualitative data, were analyzed and interpreted by this author and trained researchers at CEMEF. On the basis of these analyses and interpretations, the final questionnaire was designed.

The instrument thus obtained was pre-tested on a small and different sample of high school students and some corrections and adjustments were made before final administration of the questionnaire.

Operationalization of the Independent Variables*

Considering the description of Linear Force Aggregation Theory that was presented in Chapter I, and considering also previous operationalizations of the theory by Woelfel and others (see Woelfel and Hernandez, 1973; and Woelfel et al., 1974), the operationalization of all the information flow variables has to take into account the three component variables that have been mentioned before: frequency of use of each medium, perceived frequency of mention of the substance, and perceived position of the source about the substance (or bias of the coverage). Those three variables need to be integrated into an index value which constitutes the force that reaches an individual and influences his attitude and behavior (along with other causal variables). This value shall give us the two components of force that have been explained above: intensity and direction. For every individual we need to obtain one such index value for each one of the "information flow" variables, which will thus constitute the specific Message Intake for the individual.

Operationally (see also Woelfel and Hernandez, 1973; and Woelfel et al., 1974), frequency of use of a medium is measured by six alternative answers (from "never" to "more than three hours a day") to a question such as "How frequently

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*See Appendix B for the original Spanish version of the questionnaire.

do you watch television?". Scale values range from zero to five.

Perceived frequency of mention of the substance by the source is measured by a 4-point scale, ranging from "never" to "many times." The question that was asked (e.g., for television) is "When you watch television, how many times is something about alcoholic beverages mentioned?". (A similar question was also asked for marijuana.) Scale values range from zero to three.

Perceived position of the source about alcohol and marijuana is operationalized by a zero-centered 5-point scale, ranging from "very much against" (scale value = -2) to "very much in favor" (scale value = +2). A very liberal translation of the question into English would be "In general, how do you think (e.g. television) in Mexico thinks about and portrays (alcoholic beverages) (marijuana)?".

The product of the scale values of the three variables give us the index that we have called Message Intake (MI) above. Symbolically, for any given medium of communication:

$$MI_s = (f_i \cdot fM_i \cdot P_i)$$

where f_i stands for frequency of use of medium i; fM_i represents perceived frequency of mention of substance by medium i, and P_i stands for perceived position of i toward the substance. The subscript s in MI stands for "substance" of which, as we know, we have two: alcoholic beverages and marijuana.

Since the maximum scale values are 5 for frequency of use of the medium, 3 for perceived frequency of mention, and ±2 for perceived position, then the MI index can range from -30 to +30 for each one of the ten sources of communication or "information flow" variables.

The index obtained by means of the operation outlined above (MI) will give us an indication of (1) the strength or intensity of MI, by how far it deviates from zero, and (2) its direction, expressed by its sign, where a positive sign indicates a position favorable to the substance, and a negative sign one against it. Because of the multiplication, if the scale value of any of the three component variables equals zero, the entire index equals zero. This makes sense because, for example, if a person never watches television (scale value = 0), the perceived frequency of mention should also be zero, there could be no direct perception of the position of the source and, consequently, there could be no (perceived direct) effect. Likewise, a high user of a medium who perceives that it frequently mentions a substance but with a position neither in favor nor against it, would have a scale value of zero since the advocated position would be neutral. As previously stated, the operationalization just described applies identically to each of the five mass media and each of the five interpersonal sources of communication that we have already identified.

According to Linear Force Aggregation Theory, the relevant force from which an individual's attitude or behavior can be predicted is not determined by the isolated Message Intake of any given source of communication, but rather by the aggregation of the influence proceeding from all sources that reach him. This aggregate was referred to in the hypotheses stated in Chapter I as the Aggregated Message Intake (AMI).

The aggregated Message Intake for the five mass media (MM) can readily be obtained by the summation of the product of the scale values for each mass medium. Symbolically, and following the notation identified above:

$$AMI_{MM} = \sum_{m=1}^{5} (f_m \cdot fM_m \cdot P_m) \qquad (5)$$

The operationalization of the AMI index for the five interpersonal sources (IP) is accomplished in exactly the same way as the one described for mass media sources. Symbolically:

$$AMI_{IP} = \sum_{p=1}^{5} (f_p \cdot fM_p \cdot P_p) \qquad (6)$$

We can also obtain an aggregate index of all sources of information and influence simply by adding together the individual MIs of all the component indices.

Certainly, equations (5) and (6) above can--and in the empirical test of the hypotheses they will be--re-formulated as linear regression equations (see equation (4) in Chapter I),

which, as is well known, represent linearly additive models. Thus, for example, the Aggregated Message Intake for the mass media can be represented, in terms of its hypothesized effects on the dependent variables, in the following equation:

$$Y = \alpha + \beta_{tv}x_{tv} + \beta_{r}x_{r} + \beta_{s}x_{x} + \beta_{n}x_{n} + \beta_{m}x_{m} \qquad (7)$$

where Y = the dependent attitude or behavior about alcohol or marijuana,

α = the constant in the multiple regression equation,

β = beta, or the standardized partial regression coefficient,

x = the Message Intake for each individual corresponding to the mass medium represented in the subscript, and

the subscripts which respectively represent, form left to right, television, radio, popular songs, newspapers, and magazines.

Obviously an identical multiple regression equation represents the Aggregated Message Intake for the <u>interpersonal sources</u> (IP) of communication.

In addition to the two sets of information flow variables: mass media and interpersonal sources of communication, we have also theoretically defined a third group of predictor variables: the <u>exemplary messages of three significant others</u>; namely, father, mother and friends. The operationalization of the exemplary messages about <u>alcoholic beverages</u> was achieved thusly: (a) for "father," the question presented to each respondent was "How frequently does your father drink

alcoholic beverages?". The alternative answers were "never, rarely, every now and then, frequently, and every day," with scale values ranging from 0 to 4. (b) The operationalization for "mother" was identical to the one for "father," with appropriate question wording. (c) The question asked for friends (in a different section of the questionnaire) was "Now please tell us how many of your friends and peers do you think use each one of the following substances, even if it is only occasionally." Next, each of several substances was listed, including alcoholic beverages. The alternative answers provided for each drug were "none of them, a few, most of them, and all of them," with scale values ranging from zero to three. The question asked to friends differed from the one asked to father and mother because for friends we also asked about the perception of use of other drugs. This was decided on the basis of the results to the exploratory study which indicated that the respondents perceived a wider variety of substance use by them than by father and mother. Knowledge about the use of other drugs by the respondents and their friends was mostly of interest to the funding institution.

Measurement of exemplary messages about <u>marijuana</u> was obtained for <u>friends</u> only, with exactly the same question as the one used for alcohol. A similar question was not asked for father and mother since practically the totality of the respondents to the exploratory study declared no marijuana

use at all by father and mother.

Because of the difference in index values, the exemplary message of significant others cannot be directly summed with mass media and interpersonal indices. However, standardized partial regression equations will enable us to relate the entire set of predictor variables with the dependent measures, overcoming the difficulty posed by the different index values of the last three variables in relation to the other ten variables. (Certainly, if we wanted to aggregate all the indices we could overcome the problem of the differences by means of z transformations.)

Descriptive Statistics for the Independent Variables

Table 2 presents the basic descriptive statistics for each constitutive variable of the ten Message Intake indices. Equivalent data for each constructed index are presented in Table 3. Generally, Table 2 shows that the level of exposure to each source of communication is fairly substantial, thus satisfying the pre-condition of exposure for an effect of communication to take place. The means for the perceived frequency of mention of both substances by the ten sources are relatively low, although sufficiently removed from zero to indicate that even though alcohol and marijuana appear not to be subjects of great salience for our respondents, they do constitute content elements of some importance in their relationship with the various mass and interpersonal media. Furthermore, the variance about the means is rather large,

Table 2. Range, mean and standard deviation for all the information flow variables in this study, as originally measured*

	Range	Mean	Standard Deviation
TELEVISION			
Exposure to television	0-5	2.90	1.32
Mention of alcohol	0-3	1.85	0.95
Position about alcohol	-2,+2	0.04	1.38
Mention of marijuana	0-3	1.09	0.89
Position about marijuana	-2,+2	-1.15	1.01
RADIO			
Exposure to radio	0-5	3.25	1.36
Mention of alcohol	0-3	1.52	0.96
Position about alcohol	-2,+2	-0.23	1.27
Mention of marijuana	0-3	0.91	0.88
Position about marijuana	-2,+2	-1.04	1.02
POPULAR SONGS			
Exposure to popular songs	0-5	2.57	1.44
Mention of alcohol	0-3	1.13	1.00
Position about alcohol	-2,+2	-0.15	1.25
Mention of marijuana	0-3	0.56	0.79
Position about marijuana	-2,+2	-0.66	1.07
NEWSPAPERS			
Exposure to newspapers	0-5	2.07	1.04
Mention of alcohol	0-3	1.81	0.91
Position about alcohol	-2,+2	-0.59	1.26
Mention of marijuana	0-3	1.78	0.99
Position about marijuana	-2,+2	-1.20	1.02
MAGAZINES			
Exposure to magazines	0-5	1.81	1.07
Mention of alcohol	0-3	1.29	0.95
Position about alcohol	-2,+2	-0.65	1.14
Mention of marijuana	0-3	1.37	0.98
Position about marijuana	-2,+2	-1.09	1.01
PARENTS			
Exposure to parents	0-5	2.90	1.44
Mention of alcohol	0-3	1.06	0.91
Position about alcohol	-2,+2	-1.22	0.95
Mention of marijuana	0-3	1.07	0.93
Position about marijuana	-2,+2	-1.67	0.75

*n = 1,928 minus missing cases, which range between 10 and 68 per variable.

Table 2 (cont'd.)

	Range	Mean	Standard Deviation
SIBLINGS			
Exposure to siblings	0-5	3.04	1.47
Mention of alcohol	0-3	0.83	0.86
Position about alcohol	-2,+2	-1.13	0.98
Mention of marijuana	0-3	0.89	0.92
Position about marijuana	-2,+2	-1.46	0.88
OTHER RELATIVES			
Exposure to relatives	0-5	1.64	1.16
Mention of alcohol	0-3	0.84	0.79
Position about alcohol	-2,+2	-0.98	0.98
Mention of marijuana	0-3	0.76	0.79
Position about marijuana	-2,+2	-1.44	0.89
FRIENDS AT SCHOOL			
Exposure to friends at school	0-5	3.46	1.43
Mention of alcohol	0-3	1.15	0.94
Position about alcohol	-2,+2	-0.63	1.11
Mention of marijuana	0-3	1.29	0.95
Position about marijuana	-2,+2	-0.97	1.09
FRIENDS OUTSIDE OF SCHOOL			
Exposure to friends outside of school	0-5	2.06	1.33
Mention of alcohol	0-3	0.95	0.89
Position about alcohol	-2,+2	-0.64	1.10
Mention of marijuana	0-3	1.01	0.89
Position about marijuana	-2,+2	-0.98	1.09

Table 2A. Range, mean and standard deviation for the exemplary message variables

	Range	Mean	Standard Deviation
ALCOHOL			
Friends	0-3	1.01	0.80
Father	0-3	1.25	0.88
Mother	0-3	0.44	0.66
MARIJUANA			
Friends	0-3	0.52	0.62

which points to an adequate distribution of responses along the values of the variables for analytical purposes. The means of the perceived position of the sources about the consumption of alcohol and marijuana reflect a somewhat unfavorable attitude, although a fairly large variability of responses is also observed.

The Message Intake indices--the product of exposure to the medium by perceived frequency of mention of the substance by perceived position about it--for all sources of communication present means that indicate the absence of extreme values. An extreme MI mean value might represent a force of overriding magnitude that by itself could determine the resultant vector or dependent attitude and behavior. The MI index values can range between ± 30. As the data in Table 3 show, the observed means range between -5.93 and +1.03 with substantial standard deviations due to a large variability of responses. All but three of the values represent forces (mean vector values for the population we are studying) slightly opposed to the use of the substances. Only television, radio and popular songs have a mean MI index a bit in favor of alcoholic beverages. Consistently, the force exercised against the use of marijuana is stronger than for alcohol. Interpersonal sources tend to be less favorable about substance use than the mass media. Among the former, family members have MI index values more opposed to substance use than friends, while the print media are

Table 3. Mean* and standard deviation for the Aggregated Message Intake indices**

	ALCOHOL		MARIJUANA	
	Mean	S.D.	Mean	S.D.
Television	1.03	9.40	-3.85	6.18
Radio	0.10	9.33	-3.25	6.80
Popular songs	0.43	5.74	-0.52	4.02
Newspapers	-2.07	7.06	-4.84	6.50
Magazines	-1.22	4.90	-2.88	5.14
Parents	-4.09	6.62	-5.93	7.11
Siblings	-2.80	5.59	-4.48	6.84
Relatives	-1.71	3.83	-2.29	4.00
Friends at school	-1.36	7.11	-4.04	8.30
Friends outside of school	-0.66	4.71	-1.90	5.36

*Range = -30 to +30.

**n = 1,928 minus missing cases, which range between 28 and 84 per index.

more opposed to it than electronic media.

Tables 4 and 5 present (a) the inter-item correlations of the component MI variables for alcoholic beverages and marijuana, respectively, and (b) the item-to-total correlation coefficients. Most inter-item correlations are quite small, even though generally they are significant at the .05 level (given an n of 1,928, a coefficient of .045 is significant at that level). The item-to-total correlations present different patterns depending on the substance and whether we look at the mass media or the interpersonal sources. Most of the variance in the mass media MI indices for alcoholic beverages is explained by the single component variable "perceived position of the source about the substance" (or bias of the coverage). The same is true for friends. The item-to-total correlations of the three component variables of the indices corresponding to parents, siblings, and other relatives, however, are of approximately the same magnitude, with "frequency of mention" showing the larger coefficients. The corresponding correlations for the five mass media and the two friends' indices for marijuana indicate that the perceived position is the variable with the highest item-to-total coefficients; however, the other two variables, particularly perceived frequency of mention, also show substantial coefficients. Finally, parents, siblings, and other relatives present a different pattern, where frequency of mention of marijuana obtains the

Table 4. Zero order correlation coefficients among the component items of the Message Intake indices for alcoholic beverages

	Use by Mention	Use by Position	Mention by Position	Message Intake index by Use	Mention	Position
1. Mass Media						
Television	01	-09	31	00	24	83
Radio	08	00	34	00	22	80
Popular songs	-05	-12	38	-00	24	67
Newspapers	21	05	10	-15	-12	79
Magazines	16	01	21	-15	-08	67
2. Interpersonal Sources						
Parents	17	-06	-01	-37	-55	52
Siblings	14	-08	13	-30	-47	46
Other relatives	22	-09	00	-44	-49	44
Friends at school	18	04	32	-08	02	69
Friends outside of school	32	11	30	-06	-01	59

most substantial correlations, followed by exposure and perceived position.

In conclusion, Tables 4 and 5 indicate that perceived position of the source is the item that correlates most strongly with the MI indices for the mass media and friends, while perceived frequency of mention and frequency of use of the medium generally show weaker item-to-total correlations. The pattern is somewhat reversed for parents, siblings, and

Table 5. Zero order correlation coefficients among the component items of the Message Intake indices of marijuana

	Use by Mention	Use by Position	Mention by Position	Message Intake index by Use	Mention	Position
1. Mass Media						
Television	14	09	-02	00	-45	59
Radio	12	00	01	-23	-39	59
Popular songs	11	-01	22	-09	-08	50
Newspapers	13	-02	-08	-36	-43	67
Magazines	11	-02	-02	-30	-38	61
2. Interpersonal Sources						
Parents	16	-09	-13	-49	-74	37
Siblings	18	-08	-04	-38	-66	42
Other relatives	20	-08	-11	-49	-63	35
Friends at school	19	-04	18	-25	-29	65
Friends outside of school	31	03	17	-21	-18	58

other relatives where frequency of mention is the item that explains a greater proportion of the variance in the index, followed by frequency of use and perceived position. Therefore, an examination of the item-to-total correlations would seem to warrant the construction and utilization of the Message Intake indices.* In this regard, it would certainly

*Additionally, it must also be reminded that the construction of these indices as previously explained replicates similar operationalizations of the theory by Woelfel and others.

be desirable to have a measure of the reliability of those indices. Unfortunately, the multiplicative nature of the indices prevents us from calculating any of the standard measures of reliability (see, for example, Anastasi, 1976; and Thorndike and Hagen, 1961). However, if instead of multiplying the three component variables of the Message Intake indices we summed them, we could then obtain an indirect measure of their reliability. This we did and the results are presented in Table 6.

The indirect reliability measures are alpha coefficients (or Cronbach's alpha). The alpha coefficients are derived from the Kuder-Richardson reliability test (which measures the inter-item consistency of a scale) for multiple-scored items where each alternative answer receives a different numerical score. The formula for coefficient alpha is as follows (see Anastasi, 1976, p. 118):

$$r_{11} = \frac{n}{n - 1} \cdot \frac{s^2_t - \Sigma\ s^2_i}{s^2_t}$$

where n is the number items in the test, s^2_t is the total variance of the scale, and s^2_i is the individual variance of each item. The results of this formula indicate that as the value of the coefficient which reflects the inter-item consistency increases, the homogeneity of the scale also increases. Accordingly, the coefficients in Table 6 show that most of the MI indices are quite reliable (homogeneous or

Table 6. Reliability coefficients--alpha coefficients--for the Message Intake indices*

	ALCOHOL	MARIJUANA
Television	.917	.718
Radio	.922	.779
Popular songs	.536	.269
Newspapers	.820	.798
Magazines	.535	.607
Parents	.753	.843
Siblings	.613	.784
Relatives	.351	.433
Friends at school	.765	.873
Friends outside of school	.442	.576

*See text for a note regarding the limitations of these coefficients.

internally consistent), some exceptions notwithstanding, at least as it can indirectly be inferred by summing the component variables, which, as we have already stated, are multiplied in the calculation of the MI indices.

Finally, Tables 7 to 10 present the intercorrelations among the mass media and the interpersonal Message Intake indices, both for alcoholic beverages and marijuana. Table 11 presents the corresponding intercorrelations for the degree of use of alcohol (exemplary messages) by father, mother and friends. All coefficients are significant beyond the .001 level, although none is large enough to present

Table 7. Intercorrelations among the mass media Message Intake (M.I.) indices for alcoholic beverages

M. I.	MESSAGE INTAKE INDICES				
	Television	Radio	Songs	Newspapers	Magazines
Television	-	49	25	27	17
Radio		-	39	31	24
Songs			-	23	18
Newspapers				-	40
Magazines					

Table 8. Intercorrelations among the interpersonal Message Intake (M.I.) indices for alcoholic beverages

M. I.	MESSAGE INTAKE INDICES				
	Parents	Siblings	Relatives	Friends at School	Friends outside of School
Parents	-	42	36	15	12
Siblings		-	30	17	20
Relatives			-	17	14
Friends at school				-	34
Friends outside of school					-

Table 9. Intercorrelations among the mass media Message Intake (M.I.) indices for marijuana

M. I.	MESSAGE INTAKE INDICES				
	TV	Radio	Songs	Newspapers	Magazines
TV	-	45	19	21	14
Radio		-	26	21	17
Songs			-	11	10
Newspaper				-	39
Magazines					-

Table 10. Intercorrelations among the interpersonal Message Intake (M.I.) indices for marijuana

M. I.	MESSAGE INTAKE INDICES				
	Parents	Siblings	Relatives	Friends at School	Friends outside of School
Parents	-	52	37	25	28
Siblings		-	40	27	28
Relatives			-	26	28
Friends at school				-	40
Friends outside of school					-

Table 11. Zero order correlation coefficients of the degree of use of alcoholic beverages by significant others (exemplary messages)

	Alcohol use by		
	Father	Mother	Friends
Father	-	32	19
Mother		-	24
Friends			-

conceptual problems due to redundancy between or among different media or statistical problems of multicollinearity and other analytical limitations.

Dependent Variables

The dependent measures for this study are (a) attitude and behavior toward alcoholic beverages, and (b) attitude and behavior toward marijuana. Following the previous related studies by Woelfel and coauthors that have been reviewed above, both attitude and behavior are construed very straightforwardly as, respectively, the respondents' position, expressed as the degree of approval of occasional use of each substance by people of their own age, and the respondents' manifest frequency of use of each drug.

The specific operationalizations were as follows.* For attitude, each respondent was presented with this

*Appendix B presents the questionnaire in Spanish.

question:

> "Different people feel in a different way about the use of drugs by other persons. Next, please tell us how do you feel about the occasional use of each of the following drugs by people of your own age."

Next to each substance, the respondents had to answer a Likert-type scale ranging from "totally approve," through "neutral or don't know," to "totally disapprove." The distribution of the 1,928 answers to this question for each substance with their respective scale values, was:

	ALCOHOL (%)	MARIJUANA (%)
Totally disapprove (0)	31.9	61.6
More or less disapprove (1)	23.7	13.5
Neutral or don't know (2)	15.5	17.2
More or less approve (3)	20.5	5.7
Totally approve (4)	8.3	2.1
Mean	1.50	0.73
s.d.	1.34	1.06

Behavior was measured as the relative frequency of use of the intoxicant, with the possible alternative answers being "never" (scale value of zero), "I have tried it 2 or 3 times only," "I use it a few times a month," "I use it a few times a week," and "I use it every day" (scale value of 4). The distribution of responses for each of the two intoxicants was:

	ALCOHOL (%)	MARIJUANA (%)
Never (0)	42.7	89.1
Tried 2 or 3 times (1)	41.3	8.4
A few times a month (2)	13.2	1.0
A few times a week (3)	2.3	0.8
Every day (4)	0.5	0.7
Mean	0.77	0.16
s.d.	0.80	0.54

It must be recognized here that these skewed distributions, particularly the ones for attitude and behavior about marijuana, may affect further correlation and regression analyses.

Considering these measurements, a positive correlation between the Aggregated Message Intake index and attitude toward each substance implies that the values for the two variables will be in the same direction. In other words, a negative AMI index will correspond to an attitude unfavorable to the use of the intoxicant (negative sign), while a positive AMI index will correspond to a favorable attitude.

The relationship between AMI and behavior has a similar meaning, although a negative sign for behavior cannot occur--either there is some variable amount of use of the substance or there is not. Consequently, a positive correlation between AMI and behavior implies that the higher the AMI index value for a given respondent, the greater his frequency of use alcohol or marijuana. A negative correlation between these two variables means that as the index value for AMI increases, the frequency of use of a substance decreases,

tending towards a zero amount of use. In terms of forces being exercised upon a focal individual, a positive correlation implies that the (favorable) orientation the individual perceives his sources of communication to have toward alcohol or marijuana "pushes" him to the use of the substance; the force being greater as the magnitude of the multiple correlation coefficient increases. Conversely, a negative correlation indicates a resultant force that "pushes" the individual toward not using the intoxicant.

Finally, it must also be noted here that a review of the substance literature on drug attitudes and use indicates that our operationalization of the dependent variables, in addition to necessarily replicating previous and related tests of the theory, is quite similar to that of many other substance abuse studies, particularly as far as the self-report on frequency of substance use is concerned. Published studies with similar measurements of drug attitudes and, particularly, behavior include Fejer and Smart (1973), Single et al. (1974), Galli (1974), Adler and Lotecka (1973), Greenwald and Luetgert (1971), DeFleur and Garrett (1970), Church et al.(1974), Vincent (1972), Kandel (1974), and many of the studies reviewed by Blumberg (1975) and Kinder (1975a and 1975b). Based on such measurements, Whitehead and Smart (1972) confirmed the validity of adolescents' self-reported prevalence of use of thirteen different drugs, including a fictitious one and, particularly, alcohol and

marijuana. They also checked the test-retest reliability of those measures, reaching coefficients that ranged between .65 and .95. Single and Kandel (1974, reported in Kandel, 1974) also found "high reliability and validity for self-reported adolescent illegal drug use." Although generally, however, face validity is assumed for such measurements as ours.

In our own study we obtained an indication of the validity of our data by the expert judgment of the officials of the Mexican Center for Studies on Drug Dependence who failed to detect any significant difference between our rates of reported drug use and theirs.

Perhaps more importantly, we can infer the validity of our data by checking whether they do in fact correlate with other measures with which they are supposed to. In this regard, and on the basis of previous studies on patterns and correlates of drug use (cf. literature review above), we should expect our respondents to exhibit significantly different characteristics depending on their frequency of substance use. Specifically, we would expect them to differ in (a) socioeconomic and demographic characteristics and (b) in their frequency of exposure to various mass and interpersonal media of communication. As the data in Table 12 show, we can indeed discriminate among our respondents depending on their frequency of use of both alcoholic beverages and, even more clearly, marijuana.

An additional indication would be the finding of a high intercorrelation between the use of alcoholic beverages and marijuana and the use of other drugs, since previous studies have found a clear pattern of multiple drug use among substance users (see, particularly, Single, Kandel and Faust, 1974). As part of the same study upon which this dissertation is based, we also collected data on the frequency of use of four other substances: inhalants, amphetamines, barbiturates and hallucinogens. Therefore, we are able to correlate the frequency of use among various intoxicants. The results, which are presented in Table 13, are indeed supportive of the predicted multiple drug use pattern among substance users and, consequently, they are also indicative of validity.

The values in Tables 12 and 13 are gamma coefficients, which we decided to use instead of Pearson correlations because many of the variables could be more accurately described as ordinal level scales. The gamma coefficients are measures of association between ordinally scaled variables, equivalent to, and with a similar interpretation as, zero-order or Pearson correlations.

Description of the Sample

The data base for this study was provided by a probabilistic sample of 1,928 high school students from Mexico City, chosen proportionately from the 7th, 9th and

Table 12. Relationship (#) between the respondents' frequency of use of alcohol and marijuana and (a) selected characteristics and (b) exposure to mass and interpersonal media.

	ALCOHOL	MARIJUANA
Age	.53***	.42***
Year in school	.60***	.39***
Type of school (1)	.45***	-.01
Grade average	-.02	-.15**
Educational aspiration	.27***	.15**
Number of siblings	-.02	-.12**
Sex (2)	-.20***	-.42***
Religiosity	-.21***	-.34***
Father occupation	.20***	.17**
Mother occupation (3)	-.06*	-.33***
Do parents live together? (4)	-.06*	-.28***
Perceived availability of drug	.44***	.51***
Exposure to television	-.07*	-.11**
Exposure to radio	.05	.06*
Exposure to popular songs	-.12**	-.06*
Exposure to newspapers	.04	.07*
Exposure to magazines	.03	.05*
Exposure to parents	-.08*	-.19**
Exposure to siblings	-.00	-.16**
Exposure to relatives	-.12**	-.19**
Exposure to friends at school	.16**	.09*
Exposure to friends outside of school	.22***	.32***

#The relationships are expressed as gamma coefficients.

*p < .05

**p < .001

***p < .001

(1) 1 = private; 0 = public

(2) 1 = female; 0 = male

(3) Coded as a dummy variable: 1 = housewife; 0 = works outside the home

(4) 1 = yes; 0 = no

Table 13. Gamma coefficients expressing the relationship between the frequency of use of alcohol and marijuana and the use of four other drugs*

	ALCOHOL	MARIJUANA
Alcohol	-	.69
Marijuana	.69	-
Inhalants	.54	.27
Amphetamines	.68	.72
Barbiturates	.61	.63
Hallucinogens	.61	.91

*All coefficients are significant at $p < .001$.

12th grades.* They came from a total of 55 different schools distributed thusly: 19 schools where 7th graders were chosen (n = 664); 19 schools with 9th graders (n = 663); and 17 schools with 12 graders (n = 601). Their mean age is 16.06 years** (s.d. = 2.7). Eighty-five percent attend

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*Formal education in Mexico is divided into three consecutive periods. The first one, "primaria," covers grades 1-6; the second one, "secundaria," includes grades 7-9; the final one, "preparatoria," includes grades 10-12. "Primaria" constitutes the basic and mandatory level of education for all children. The latter two together represent the intermediate level (college is the higher level), not yet legally mandatory for all children, and usually considered as a rough equivalent of the American high school.

**The mean age is older from what we would normally expect, at least on the basis of what would be common in the United States. For example, if all 7th graders had an expected age of 12.5 years; all 9th graders 14.5 years; and all 12th graders 17.5 years, then the expected mean age would be 14.7 years. The older average we found is, however, very normal for a Mexican high school population where, particularly in public schools, it is quite common to find students who are a few years older than what would be considered "normal" for any given grade.

public schools, 9% private religious schools and 6% private lay schools. Regarding their sex, 66% are males and 34% females. The mothers of 14% of the respondents work in various occupations; the remaining 86% are housewives. Finally, their fathers' occupation can be classified as 22% high occupational status, 50% medium, and 28% low status. These distributions do not significantly differ from known population parameters (of adolescents studying high school in Mexico City).

The sampling method called for selection of schools with probabilities proportional to the size of each school (see, for example, Kish, 1965). We chose a quota of 35 students for each grade and type of school. (All schools finally chosen had more than 35 students enrolled in the selected grades. The most common class size in Mexico City high school classrooms is between 50 and 60 students.) We had also decided on a sample size of about 2,000 students. This was about the largest number that we could obtain given our resources and time limitations. The main reason for preferring a large sample was that we knew in advance that only a small percentage of respondents could be expected to be users of drugs such as marijuana and we wanted to optimize the final number of drug users in the sample.

Given these two parameters (sample and quota sizes), we decided to select 19 schools from each one of the three grades. (This would mean 57 schools with 35 students each, which equals 1,995). At the last minute, two 12th grade

schools who had first accepted to cooperate refused to do so, thereby loosing 70 students. For various reasons, however, 73 additional questionnaires were collected, for a total of 1,998.

In order to select the schools, they were listed and their respective student enrollment was entered and cumulatively summed. A random starting point was chosen and thereafter the schools that corresponded to fixed interval points were selected. This process was repeated three times, one for each one of the three different grades. For any given school, if there was more than one classroom of the corresponding grade, one was randomly chosen. Likewise, the 35 students that comprised the quota were also randomly chosen within the classroom.

Methods for Data Gathering

The data were collected by twelve previously trained and experienced psychologists from the Social Science Division of the Mexican Center for Studies on Drug Dependence (CEMEF, the institution that funded the study), during the months of February and March, 1974. They worked under the direction of this author and were supervised by the director and general coordinator of the division.*

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*Olga Salinas and Guillermina Natera, respectively, to whom the author is indebted.

The interviewers took the questionnaires to the assigned schools after permission had been granted by the principal. The students were given the questionnaires to fill out in their own classrooms without any teacher or school official being present; only the interviewer who introduced himself or herself and gave a standard introduction and general explanation about the study and the procedure to be followed. During the introduction the respondents were particularly assured about their anominity. As a matter of fact, the interviewer brought with him or her a sealed box with only a groove on top of it where the respondents would slide their questionnaires once they were completed. (The convenience of using those sealed boxes to increase the students' confidence was detected during the personal interviews with the respondents to the exploratory study and confirmed during the pilot study. It seems to have been quite helpful.) In addition, the top page of the questionnaire had the following text:

> Do not write your name on this questionnaire.
> This questionnaire is strictly confidential. Your cooperation is of great importance because it will help us understand what young people like you think about various sources of communication and about various substances. This is part of a scientific study.
>
> Please answer the questionnaire in full by circling the alternative answer to each question that most closely resembles your opinion.
>
> This is not an exam; there are no right or wrong answers. We are only interested in what you think.
>
> We sincerely thank you for your most valuable contribution to this study.

After the questionnaires were in, they were coded by college students especially hired for this job. The coders were first trained and were closely supervised while they worked in the CEMEF offices. Incomplete questionnaires (except those with only a few missing answers) and questionnaires that presented obvious problems of reliability (which were very few) were discarded during the coding process. In total, 70 questionnaires out of 1,998 that were collected were discarded; a completion rate of 96.5%. Thus, the final valid sample of 1,928 was obtained. Keypunching and data preparation were done at the Institute for Applied Mathematics and Systems of the National University of Mexico.*

Data Analysis and Hypothesis Testing

There are sixteen main hypotheses to be tested, as presented in the last section of Chapter I. Hypotheses 1 to 6, 9 and 10 predict a significant correlation between either a set of mass or interpersonal media of communication and the attitude and behavior that students have toward alcohol and marijuana. In other words, we are interested in determining the strength of the association between a set of predictor variables and a dependent variable, and the net and comparative weight and direction (either positive or

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*The author is particularly grateful to Dr. Federico O'Reilly for all the generous and most competent assistance he provided, particularly during data analysis.

negative) of each variable in the predictor set. Therefore, multiple regression analysis appears to be the most appropriate analytical tool (cf. Kerlinger and Pedhazur, 1973). (This has more precisely been argued before, during the presentation of the theory in Chapter I and in the section dealing with the operationalization of the independent variables in this chapter.) Hypotheses 7 and 8 are identical in nature to the previously mentioned ones except that only one independent variable is involved in the prediction; consequently, Pearson product moment correlations will be used to test the hypotheses.

Hypotheses 11 to 16 involve each a comparison between two different sets of independent variables (e.g.: "interpersonal media will be more strongly associated with the respondents' behavior about a substance than the mass media"). These hypotheses will be tested by means of overall multiple regression analyses and F-tests for the significance of differences.

At this stage it may also be important to indicate that the type of multiple regression analysis that was thought to be most appropriate to test our particular hypotheses was stepwise multiple regression. Therefore, the various statistics reported in the results chapter (particularly the F-values and the beta weights) were taken from the last step of the analysis where a statistically significant variable was added to the equation, instead of the step

where a given variable originally entered the equation. This is necessary because, even though we do have an interest in the net and comparative predictive weight of each medium of communication, our hypotheses predict a relationship between a set of independent variables and a given dependent variable. Consequently, we have to take into consideration the variance shared by each independent variable with the other independent variables present in the multiple regression equation (see Kerlinger and Pedhazur, 1973; and Cohen and Cohen, 1975).

Finally, and before proceeding to the presentation of the results of the empirical test of the hypotheses, we will present in Tables 14 and 15 the zero-order correlation coefficients among all the independent and dependent variables used to test the main hypotheses pertaining to attitudes and behavior about, respectively, alcohol and marijuana. This will give us an indication of the degree of relationship that exists between each pair of variables.

The data were processed and all the analyses were conducted in the CDC 6500 computer system of Michigan State University by means of the programs of the Statistical Package for Social Sciences (Nie et al., 1975).

Table 14. Zero-order correlation coefficients among the independent and dependent variables used to test the main hypotheses pertaining to attitude and behavior about alcohol.* (Decimal points omitted.)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	AMI TV	-														
(2)	AMI Radio	49	-													
(3)	AMI Pop songs	23	37	-												
(4)	AMI Newspapers	27	30	23	-											
(5)	AMI Magazines	17	23	17	40	-										
(6)	AMI Parents	-02	01	-01	08	12	-									
(7)	AMI Siblings	02	01	00	07	11	41	-								
(8)	AMI Relatives	06	07	09	10	17	34	28	-							
(9)	AMI Friends at school	10	10	16	15	17	14	15	15	-						
(10)	AMI Friends outside of school	07	08	14	19	22	13	21	16	34	-					
(11)	Use by friends	21	18	20	18	10	-03	-02	02	13	11	-				
(12)	Use by father	10	09	06	06	07	02	-02	-04	09	-00	24	-			
(13)	Use by mother	08	10	09	06	05	-03	-04	-04	06	-02	13	17	-		
(14)	ATTITUDE BY SELF	17	18	22	11	17	-01	-03	05	17	11	40	26	18	-	
(15)	USE BY SELF	20	17	19	09	08	-02	-02	02	19	10	50	27	16	46	-

*n = 1,386, after listwise deletion of missing cases.
Given sample size, r = .045, p = .05; r = .07, p = .01; r = .09, p = .001.

Table 15. Zero-order correlation coefficients among the independent and dependent variables used to test the main hypotheses pertaining to attitudes and behavior about marijuana.* (Decimal points omitted)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)	AMI TV	-												
(2)	AMI Radio	43	-											
(3)	AMI Pop songs	19	26	-										
(4)	AMI Newspapers	20	20	11	-									
(5)	AMI Magazines	14	17	11	40	-								
(6)	AMI Parents	13	10	-01	17	18	-							
(7)	AMI Siblings	08	10	11	17	22	51	-						
(8)	AMI Relatives	12	12	06	18	20	38	42	-					
(9)	AMI Friends at school	07	04	07	17	22	27	28	26	-				
(10)	AMI Friends outside of school	07	09	05	20	21	28	28	30	43	-			
(11)	Use by friends	01	09	11	00	-05	-07	-03	-07	11	12	-		
(12)	ATTITUDE BY SELF	05	07	02	03	03	-02	08	-03	15	13	25	-	
(13)	USE BY SELF	09	07	03	01	03	01	05	10	16	19	35	35	-

*n = 1,386, after listwise deletion of missing cases.
Given sample size, r = .045, p = .05;
r = .07, p = .01
r = .09, p = .001

CHAPTER III

RESULTS

This chapter presents the results of the empirical tests of the hypotheses formulated in the last section of Chapter I. The 28 hypotheses will be grouped in the following five blocks: (1) effects of the mass media; (2) effects of interpersonal sources; (3) effects of significant others' exemplary messages; (4) effects of all of communication combined; and (5) differential effects of interpersonal and mass media sources and exemplary messages.

Effects of the Mass Media

The predicted effects of the mass media are stated in Hypotheses H_{1a}, H_{1b}, H_{2a} and H_{2b}; the first two dealing with attitude toward, respectively, alcohol and marijuana, and the latter two being similarly concerned with behavior. We shall first present the results corresponding to hypotheses H_{1a} and H_{1b}, which were formulated thusly:

> H_{1a}: The respondents' Aggregated Message Intake (AMI) for the mass media will positively correlate with their attitude toward alcohol.

H_{1b}: The respondents' AMI for the mass media will positively correlate with their attitude toward marijuana.

From a statistical point of view, and according to the results presented in Table 16, both hypotheses are supported by the data. The linear combination of the set of five mass media predictors reaches a multiple correlation of .271 ($p < .001$) with attitude toward alcohol and .069 ($p < .05$) with attitude toward marijuana, which explain, respectively, 7.3% and .05% of the variance in the dependent variables.*

The multiple correlation reached by the five mass media and attitude toward alcohol is due to the significant regression coefficients of three variables: popular songs ($\beta = .172$), magazines ($\beta = .113$), and television ($\beta = .108$). These beta coefficients tell us how much change, in standard units, will experience the respondents' attitude about alcohol for each standard unit of change in the independent variable after partialling out the effect of the remaining variables. Therefore, even though the three betas reached a high level of statistical significance ($p < .001$), they

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*The reader should be reminded that this chapter is concerned with the presentation of the quantitative results and, therefore, with the statistical significance of the analyses. We are aware that the amount of variance explained in these, as well as in many other analyses, is very small; however, this is an issue that will be dealt with in Chapter IV.

Table 16. Relationship between the respondents' AMI for the mass media and their attitude toward alcohol (Hypothesis H_{1a}) and marijuana (Hypothesis H_{1b})

Independent variables	ALCOHOL b	S.E. of b	beta	F	MARIJUANA b	S.E. of b	beta	F
Television	.015	.0039	.108	16.1***				n.s.
Radio				n.s.	.011	.0042	.069	6.6*
Popular songs	.039	.0061	.172	41.1***				n.s.
Newspapers				n.s.				n.s.
Magazines	.031	.0072	.113	18.3***				n.s.
	Multiple R_2 = .271 R^2 = .073 $F_{3;1382}$ = 36.6***				Multiple R_2 = .069 R^2 = .005 $F_{1;1384}$ = 6.6*			

*p < .05
**p < .01
***p < .001

exert a relatively small amount of influence on attitude toward alcohol. (This, of course, is consistent with the limited value of R^2).*

The degree of relationship reached between the five mass media and attitude toward marijuana (Hypothesis H_{1b}) is much smaller than was the case for alcohol ($R^2 = .005$). Only one of the media, radio ($\beta = .069$; $p < .05$), contributes to R^2. (Radio is one of the two media that failed to reach a significant regression coefficient in the previous analysis.)

The other two hypotheses pertaining to the effects of the mass media refer to behavior as the dependent variables and were worded in the following manner:

H_{2a}: The respondents' AMI for the mass media will positively correlate with their behavior about alcohol.

H_{2b}: The respondents' AMI for the mass media will positively correlate with their behavior about marijuana.

The statistical analysis of the data supports both hypotheses (see Table 17). The relationship between the

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*One additional comment that can be made regarding the interpretation of the beta coefficients is that, since they are expressed in standard scores, they are directly comparable. More specifically, the ratio between any pair of beta weights indicates how much stronger is the net effect of one variable than that of another. For example, in the present case popular songs are 1.52 times stronger in affecting the dependent variable than magazines (.172/.113).

Table 17. Relationship between the respondents' AMI for the mass media and their behavior about alcohol (Hypothesis H_{2a}) and marijuana (Hypothesis H_{2b})

Independent variables	ALCOHOL b	ALCOHOL S.E. of b	ALCOHOL beta	ALCOHOL F	MARIJUANA b	MARIJUANA S.E. of b	MARIJUANA beta	MARIJUANA F
Television	.014	.0022	.165	37.9***	.007	.0023	.087	10.5**
Radio				n.s.				n.s.
Popular songs	.021	.0036	.156	34.0***				n.s.
Newspapers				n.s.				n.s.
Magazines				n.s.				n.s.
	Multiple R_2 = .251 R^2 = .063 $F_{2;1383}$ = 46.6***				Multiple R_2 = .087 R^2 = .008 $F_{1;1384}$ = 10.5**			

*p < .05
**p < .01
***p < .001

mass media and behavior about alcohol reaches an R of .251 (R^2 = .063; p < .001); while with behavior about marijuana, R = .087 (R^2 = .008; p < .01).

The degree of relationship between the mass media variables and behavior is remarkably similar to the one found between the mass media and attitude. The multiple correlation coefficients compare thusly:*

	ALCOHOL	MARIJUANA
ATTITUDE	.271	.069
BEHAVIOR	.251	.087

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*A note should be made regarding the stability of the multiple correlation coefficients reported thus far, which applies equally to the remaining regression analyses. Following Kerlinger and Pedhazur (1973; esp. pp. 282-283), we can say that there are at least three factors which may affect R and R^2, biasing these coefficients upwards. The first one is the certain amount of capitalization on chance that is always present in the calculation of R due to the treatment of the zero-order correlation coefficients between pairs of variables as if they were error-free. The second one is the size of the ratio between the number of independent variables and the size of the sample; the larger the ratio, the greater the overestimation of R. The third factor is the greater capitalization on chance due to the application of selection procedures to the independent variables, such as in our case where a stepwise solution was utilized. These three problems tend to be readily overcome simply by working with large sample sizes. This practice is specifically advised by Kerlinger and Pedhazur who recommend the utilization of samples of at least 500 elements. This suggested minimum was amply satisfied in the present study since in testing our hypotheses we have worked with an n of at least 1,386, after listwise deletion of missing cases.

In addition to letting a large sample size increase the stability of the results, it is also possible to calculate the amount of overestimation of R^2; that is, the amount of shrinkage that it should have, by applying the following formula (cf. Kerlinger and Pedhazur, 1973; p. 283):

$$\tilde{R}^2 = 1 - (1 - R^2) \frac{N - 1}{N - k - 1}$$

Where $\tilde{R}^2$ = the estimated squared multiple correlation, or

These coefficients indicate that, at least for our sample, the mass media are related with about the same strength with both attitude and behavior toward each substance.

Two of the five media reached a significant regression coefficient with behavior toward alcohol (Hypothesis H_{2a}): television (β = .165) and popular songs (β = .156).

The multiple correlation of .087 reached between the AMI for the mass media and behavior about marijuana (Hypothesis H_{2b}) is due to the contribution of only one variable, television (β = .087).

In conclusion, the results pertaining to the mass media hypotheses indicate that (1) all the relationships are statistically significant, even though the amount of variance explained is very small, (2) the media relate much better with attitude and behavior toward alcohol than toward marijuana, and (3) in general, and among specific media, the message intake of popular songs and television

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shrunken R^2; R^2 = the obtained squared multiple correlation; N = sample size, and k = number of independent variables.

Applying this formula to Hypotheses H_{1a} to H_{2b} we have obtained the following comparative results (which are also applicable to the remaining analyses):

	H_{1a}	H_{1b}	H_{2a}	H_{2b}
R^2:	.073	.005	.063	.008
$\tilde{R}^2$	.0710	.0043	.0616	.0073

Clearly, our large sample size and the very low ratio between our N and the number of independent variables has resulted in very stable results for the present study.

appear to be the better predictors.

Effects of Interpersonal Sources

A similar and related set of hypotheses to the ones used for the mass media were formulated to test the relationship between interpersonal sources of communication and the respondents' attitude and frequency of use of alcoholic beverages and marijuana. The four hypotheses were worded as follows:

H_{3a}: The respondents' AMI for interpersonal sources of communication will positively correlate with their attitude toward alcohol.

H_{3b}: The respondents' AMI for interpersonal sources of communication will positively correlate with their attitude toward marijuana.

H_{4a}: The respondents' AMI for interpersonal sources of communication will positively correlate with their behavior about alcohol.

H_{4b}: The respondents' AMI for interpersonal sources of communication will positively correlate with their behavior about marijuana.

Statistically, all four hypotheses are supported by the data as can be seen in Tables 18 and 19. It is interesting to observe that the four coefficients of multiple correlation are of about the same magnitude, ranging only between .196 and .215.

The relationship between the AMI for the five interpersonal sources of communication and attitude toward alcohol

Table 18. Relationship between the respondents' AMI for interpersonal sources and their attitude toward alcohol (Hypothesis H_{3a}) and marijuana (Hypothesis H_{3b})

Independent variables	ALCOHOL b	S.E. of b	beta	F	MARIJUANA b	S.E. of b	beta	F
Parents				n.s.	-.019	.0048	-.127	16.0***
Siblings	-.018	.0067	-.074	7.5**	.011	.0051	.069	4.5*
Relatives				n.s.	.018	.0080	.068	5.0*
Friends at school	.031	.0054	.159	31.8***	.014	.0040	.109	13.2***
Friends outside of school	.022	.0084	.074	6.7**	.015	.0059	.077	6.5*
	Multiple R = .196 R^2 = .038 $F_{3;1382}$ = 18.3***				Multiple R = .201 R^2 = .040 $F_{5;1380}$ = 11.6***			

* $p < .05$
** $p < .01$
*** $p < .001$

Table 19. Relationship between the respondents' AMI for interpersonal sources and their behavior about alcohol (Hypothesis H_{4a}) and marijuana (Hypothesis H_{4b})

Independent variables	ALCOHOL b	ALCOHOL S.E. of b	ALCOHOL beta	ALCOHOL F	MARIJUANA b	MARIJUANA S.E. of b	MARIJUANA beta	MARIJUANA F
Parents				n.s.	-.004	.0020	-.059	4.6*
Siblings	-.007	.0038	-.056	4.3*				n.s.
Relatives				n.s.				n.s.
Friends at school	.022	.0030	.199	55.7***	.006	.0019	.100	11.5**
Friends outside of school				n.s.	.016	.0028	.164	30.6***
	Multiple R = .197 R^2 = .039 $F_{2;1383}$ = 28.1				Multiple R = .215 R^2 = .046 $F_{3;1382}$ = 22.3***			

*p < .05
**p < .01
***p < .001

(Hypothesis H_{3a}) reaches an R of .196 ($p < .001$). Most of the variance explained is accounted for by friends at school (.030 of the total R^2 of .038), with a beta of .159 ($p < .001$). Siblings and friends outside of school also reach significant regression weights, splitting about equally between the two the remainder of the variance explained in the dependent variable. The other two interpersonal sources (parents and relatives) failed to reach a statistically significant coefficient. Of the three significant variables, siblings is the only one with a negative regression weight, which explains an influence unfavorable to alcohol exerted on the respondents by their brothers and sisters.

The second hypothesis of this set (H_{3b}), relating the five interpersonal sources with attitude toward marijuana, is also supported by the data: $R = .201$; $R^2 = .04$; $p < .001$. In this analysis, all the independent variables reach statistically significant regression weights. As compared with the previous analysis, siblings change from a negative to a positive beta. The only interpersonal source negatively influencing the respondents' attitude toward marijuana is parents ($\beta = -.127$; $p < .001$), which is also the variable with the largest regression weight (significantly greater than the largest of the remaining regression coefficients, friends at school; $t = -5.28$; $p < .001$). It must be noted, however, that the first variable to enter the equation by the stepwise procedure was friends at school (with an initial

β = .146, eventually reduced to a final β = .109 due to the variance shared with the other variables); this is also the variable that makes the largest contribution to R^2 (.021 out of a total of .04). Parents were the third variable to enter the equation with an initial β = -.076. After parents, relatives and siblings, in that order, were added to the equation, interacting with parents in such a way as to increase their beta to the final value of -.127.

Hypothesis H_{4a} relates the same group of sources with behavior about alcoholic beverages. The multiple correlation of .197 is significant at $p < .001$. As compared with Hypothesis H_{3a}, friends at school continue to account for most of the explained variance (3.67% of 3.90%); its absolute beta weight (.199) being larger than that of siblings (-.056), the only other significant variable in the equation, which was entered with a negative coefficient.

The last hypothesis in the set of interpersonal sources (H_{4b}) equally has a statistically significant R ($R = .215$; $R^2 = .046$; $p < .001$). Friends outside of school exhibit here the largest beta (.164), followed by friends at school (.100), both positive. Parents constitute the last significant predictor (β = -.059); in this case, and compared to Hypothesis H_{3b}, with a smaller beta and without presenting any interaction with other variables.

These analyses allow us to conclude that (1) all the hypotheses pertaining to interpersonal sources of

communication are supported by the data even though the amount of variance explained in the four dependent variables ranges only between 3.8% and 4.6%; (2) as opposed to the relationship found for the mass media, that correlated most strongly with attitude and behavior toward alcohol, interpersonal sources reach the largest multiple correlations with attitude and behavior toward marijuana, although the Rs do not differ substantially among themselves; (3) parents exert a statistically significant influence unfavorable to attitude and behavior about marijuana only, they do not correlate significantly with alcohol; siblings correlate negatively with attitude and behavior about alcohol, and positively with attitude about marijuana; however, in the latter relationship they contribute to an increase of the negative regression weight of the respondents' parents. All other significant coefficients are positive. Finally, and in general, (4) friends at school appear to be the better correlate , followed by friends outside of school, and siblings.

Effects of Significant Others' Exemplary Messages

The two preceding sets of hypotheses related the aggregated message intake proceeding from the respondents' definers with their attitude and behavior about the two selected substances. We shall now look at the influence exerted by the model-type behaviors of the respondents' significant others. As we have previously explained, three sources of exemplary messages about alcoholic beverages

could be identified: father, mother, and friends; but these were reduced to only one: friends, with marijuana as the criterion measure. In the latter case, and as we have already explained, data gathered at the Mexican Center for Studies on Drug Dependence and the results of the exploratory study we did prior to this research indicate that the parents of the adolescent population sampled for this study either do not consume marijuana or their children fail to perceive any use. Accordingly, we will first test the hypotheses pertaining to attitudes and behavior about alcohol. These hypotheses were worded as follows:

H_5: The exemplary message scores transmitted by the degree of use of alcohol of three significant others: father, mother, and friends, will positively correlate with the respondents' attitude toward alcohol.

H_6: The exemplary message scores transmitted by the degree of use of alcohol of three significant others: father, mother, and friends, will positively correlate with the respondents' behavior about alcohol.

The results of the test of these two hypotheses are presented in Table 20. Clearly, both are supported by the data and at much higher levels of significance than the ones reached by any of the eight previous hypotheses.

The exemplary messages of father, mother and friends reach a multiple correlation with the respondents' attitude toward alcohol (H_5) of .444 ($p < .0001$). Friends are the source that makes the largest contribution to R^2 (.157 out of a total of .197); mothers add. 029 more, and fathers the remaining .011. Comparing their respective betas, we can

Table 20. Relationship between the significant others' exemplary messages and the respondents' attitude (Hypothesis H_5) and behavior (Hypothesis H_6) about alcohol

Independent variables	ATTITUDE b	S.E. of b	beta	F	b	S.E. of b	beta	F
Alcohol use by ...								
Friends	.581	.0420	.345	191.***	.449	.0233	.455	372.0***
Father	.148	.0338	.108	191.***	.180	.0285	.150	39.9***
Mother	.326	.0516	.159	40.0***	.061	.0187	.076	10.7**
	Multiple R_2 = .444 R^2 = .197 $F_{3;1382}$ = 112.9***				Multiple R_2 = .530 R^2 = .281 $F_{3;1382}$ = 179.7***			

*p < .05
**p < .01
***p < .001

see that friends exert an influence more than twice as large as mothers (.345/.159) and more than three times as large as fathers, while the mothers' beta is 47% larger than the fathers'.

The relationship between the same set of exemplary messages and behavior about alcohol (H_6) yields an even higher multiple correlation: $R = .530$; $R^2 = .281$; $p < .001$. Friends are again the source that accounts for most of the total explained variance in the dependent variable (.250 of .281). Compared to the previous relationship, friends are even more influential on the dependent variable than father and mother. In the present instance, the friends' beta is three times as large as the fathers' and six times larger than the mothers'. Also, friends correlate better with the respondents' behavior than with their attitude, the respective beta being about one third larger. The ranking of the regression weights of the respondents' parents for behavior reverses the corresponding one found for attitude; the fathers' beta is now about twice as large as the mothers'.

The other two hypotheses in this set refer to the relationship between the perceived use of marijuana by friends and the adolescents' attitude and behavior about this substance. The first hypothesis was stated thusly:

> H_7: The exemplary message scores transmitted by the degree of use of marijuana by friends will positively correlate with the respondents' <u>attitude</u> toward <u>marijuana</u>.

The data support this hypothesis. The simple linear regression of friends' use of marijuana on attitude yields a beta = .341 (b = .289; standard error of b = .02; $F_{1;\ 1547}$ = 203.9; $p < .001$). This observed beta coefficient is of the same magnitude as the one found between friends and attitude toward alcohol ($\beta = .345$) with the effects of mother and father partialled out.

The related hypothesis pertaining to behavior predicts that

> H_8: The exemplary message scores transmitted by the degree of use of marijuana by friends will positively correlate with the respondents' <u>behavior</u> about <u>marijuana</u>.

H_8 is also supported by the data: beta = .237; b = .406; standard error of b = .042; $F_{1;\ 1547}$ = 91.8; $p < .001$. This beta is of almost half the magnitude of the corresponding one between friends and behavior about alcohol. This relationship also differs significantly from the one found in H_7 ($t = 3.88$; d.f. = 1546; $p < .001$, for the significance of difference between two zero-order correlations).

The test of the four hypotheses corresponding to the effects of significant others' exemplary messages allows us to arrive at these conclusions: (1) all the hypothesized relationships are supported by the data; (2) perceived substance use by friends is a very good predictor of related attitudes and behavior by the adolescents we surveyed; (3) friends correlate significantly better with the dependent

attitudes and behavior than father or mother; and (4) exemplary messages correlate significantly better with the dependent variables than the definer-type messages proceeding from either the mass media or interpersonal sources of communication, although the specific differences will be analyzed more fully in subsequent hypotheses.

The preceding twelve hypotheses H_{1a} to H_8 constitute partial tests of the theory where the sources of communication are divided into three differentiated sets (mass media, interpersonal sources--these two representing the definer-type messages,--and exemplary messages--or model-type influences--). In summary, we can say that all the predicted relationships have been sustained by our data, even though generally the amount of variance explained in the dependent variables is rather small. The squared multiple correlation coefficients (R^2) found in the twelve analyses compare as follows:

	ALCOHOL		MARIJUANA	
	ATTITUDE (%)	BEHAVIOR (%)	ATTITUDE (%)	BEHAVIOR (%)
MASS MEDIA	7.3	6.3	0.5	0.8
INTERPERSONAL SOURCES	3.8	3.9	4.0	4.6
EXEMPLARY MESSAGES	19.7	28.1	5.6*	11.6*

*From friends only

Effects of All Sources of Communication Combined

In this section we shall analyze the relationships between all the thirteen sources of communication and influence combined (five mass media, five interpersonal, and three exemplary messages) and the four dependent variables. Therefore, these analyses represent a more direct test of Linear Force Aggregation Theory since all the sources of communication that were confirmed as plausible correlates in the exploratory study have been aggregated in one general analysis. However, the hypotheses pertaining to the present set cannot be directly tested by means of multiple regression analysis alone, as the previous hypotheses were. This is due to a methodological problem we already observed in the hypotheses section in Chapter I. As we stated then, the present hypotheses are not totally independent from the previous twelve; indeed, each one of the preceding sets of variables are included in some of the four multiple regressions that will be used to test the effects of all sources of communication combined. Therefore, in addition to the direct test of the present hypotheses via multiple regression, a second test will have to be done in order to determine if the obtained multiple correlation is significantly larger than that of each one of the three sets of variables included in the general equation. If it is not, the null hypothesis cannot be rejected because the aggregation of all the variables would not add anything to the amount of variance

already explained by a given subset. Accordingly, for the test of each one of the four hypotheses in this set, we will first present the results of the respective multiple regression analysis and then the result of the test for the significance of differences between multiple correlations.

We shall test for the significance of the difference between two multiple correlation coefficient by converting the observed difference to a z-value (an ordinate of the normal curve having probability α). This is obtained through the following formula:

$$Z = \frac{R^2 - R^{*2}}{\sqrt{\frac{16}{27}\left(\frac{(n - p)^2}{(n^2 - 1)(n + 3)} + \frac{(n^* - p)^2}{(n^{*2} - 1)(n^* + 3)}\right)}}$$

where R^2 = the squared multiple correlation coefficients; $\underline{n}$ = sample size; p = number of independent variables, for all sources of communication combined. The asterisk refers the same symbols to a second multiple regression analysis (one of the communication sources subsets) against which the previous one is compared. The null hypothesis of no difference between the two Rs^2 will be rejected if the obtained z-value is equal to or greater than a predetermined alpha level for a one-tailed test.*

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*This test yields results analogous to, but more conservative than, those obtained by another test derived by the present author based on the z-test for the difference of

This test was developed by David Seibold (1975; pp. 172-174)--based on a procedure suggested by Professor James H. Stapleton of the Department of Statistics and Probability at Michigan State University to him and also to this author--since such a test is apparently not available in the statistics literature. It should be noted, as Seibold indicates, that this is a conservative test in the sense that, in cases where the two sample sizes are large, if the null hypothesis is true, the probability of exceeding 1.645 (the critical value of z for alpha = .05, in the one-tailed case) is less than .05.

The first hypothesis to be tested regarding the relationship between all sources of communication combined and the dependent variables was worded as follows:

> H_{9a}: The respondents' total aggregate value of all sources of information and influence will positively correlate with their attitude toward alcohol.

The results of the multiple regression analysis (see Table 21) allow us to conclude that there is a statistically significant relationship between the linear combination of

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proportions (see Blalock, pp. 228 ff.), and which is expressed as

$$Z = \frac{R_1^2 - R_2^2}{\sqrt{\frac{R_1^2 (1 - R_1^2)}{N_1} + \frac{R_2^2 (1 - R_2^2)}{N_2}}} \quad \frac{16}{27}$$

all sources of communication combined and attitude toward alcohol ($R = .459$; $R^2 = .211$; $p < .0001$). As can be seen in Table 23, this multiple correlation is significantly larger than the one reached by the linear combinations of the mass media ($R = .271$; $Z = 4.805$; $p < .001$) and the interpersonal sources ($R = .196$; $Z = 6.032$; $p < .001$); but it does not significantly differ from the coefficient of .444 reached by the exemplary messages of some significant others ($Z = 0.474$; $p = .63$ = n.s.). Therefore, the null hypothesis cannot be rejected. In other words, even though the multiple regression analysis by which Hypothesis H_{9a} was tested reached a highly significant multiple correlation, this obtained R does not differ significantly from--it fails to improve significantly upon--the R yielded by one of the three component subsets alone; namely, the linear combination of the model-type, exemplary behaviors of three significant others: father, mother, and, very especially, friends. Indeed, an inspection of the seven statistically significant regression weights reveals that "use by friends" reaches the largest beta (.300) by far. The second largest is "use by mother" (.121), which is in turn significantly larger than the next regression coefficient, popular songs ($t = 4.41$; $p < .001$). Furthermore, the linear combination of the seven statistically significant regression weights explains 21.1% of the variance in attitude toward alcohol, of which 17.81% (84.36% of the total explained variance) is due to the

Table 21. Relationship between the respondents' total aggregate value of all sources of information and influence and their attitude toward alcohol (Hypothesis H_{9a}) and marijuana (Hypothesis H_{9b})

Independent variables	ALCOHOL b	S.E. of b	beta	F	MARIJUANA b	S.E. of b	beta	F
Television				n.s.				n.s.
Radio	.007	.0036	.048	3.5*				n.s.
Popular songs	.021	.0058	.094	13.6***				n.s.
Newspapers				n.s.				n.s.
Magazines	.020	.0066	.072	9.0**				n.s.
Parents				n.s.	-.014	.0045	-.096	10.4**
Siblings				n.s.	.009	.0047	.060	4.0*
Relatives				n.s.	.021	.0074	.079	8.2**
Friends at school	.015	.0046	.078	10.7**	.010	.0035	.081	8.7**
Friends outside of school				n.s.	.011	.0054	.058	4.4*
Use by friends	.502	.0410	.300	149.4***	.373	.0426	.218	76.9***
Use by father (#)	.107	.0372	.071	8.3**				-
Use by mother (#)	.247	.0509	.121	23.6***				
	Multiple R = .459				Multiple R = .290			
	R^2 = .211				R^2 = .084			
	$F_{7;1491}$ = 57.0***				$F_{6;1542}$ = 23.6***			

*p < .05
**p < .01
***p < .001
#Measured for alcohol only

Table 22. Relationship between the respondents' total aggregate value of all sources of information and influence and their behavior about alcohol (Hypothesis H_{10a}) and marijuana (Hypothesis H_{10b})

Independent variable	ALCOHOL b	S.E. of b	beta	F	MARIJUANA b	S.E. of b	beta	F
Television	.007	.0019	.085	13.5***	.006	.0021	.069	8.1**
Radio				n.s.				n.s.
Popular songs	.012	.0031	.087	14.3***				n.s.
newspapers	-.007	.0026	-.062	7.3**	-.004	.0021	-.046	3.2*
Magazines				n.s.				n.s.
Parents				n.s.				n.s.
Siblings				n.s.				n.s.
Relatives				n.s.				n.s.
Friends at school	.011	.0025	.094	17.7***				n.s.
Friends outside of school				n.s.	.015	.0023	.153	39.0***
Use by friends	.419	.0228	.425	336.2***	.273	.0201	.322	184.6***
Use by father (#)				n.s.				-
Use by mother (#)	.177	.0269	.147	43.3***				-
	Multiple R = .548 R^2 = .300 $F_{6;1492}$ = 106.8***				Multiple R = .383 R^2 = .147 $F_{5;1543}$ = 53.1***			

*p < .05
**p < .01
***p < .001
#Measured for alcohol only

contribution of the three sources of exemplary behaviors.

The following hypothesis to be tested predicts that

H_{9b}: The respondents' total aggregated value of all sources of information and influence will positively correlate with their attitude toward marijuana.

Although the multiple regression is statistically significant ($R = .290$; $R^2 = .084$; $p < .001$--see Table 21--), the results of the analyses presented in Table 23 clearly do not support the hypothesis, and therefore the null cannot be rejected. The R obtained in this analysis not only does not differ significantly from the R obtained by the interpersonal sources alone ($Z = 1.53$; n.s.), but it is even smaller than the correlation* observed between exemplary messages and the criterion variable. This latter fact alone means that it is not even necessary to do a statistical test in order to disprove the research hypotheses.

The next two hypotheses deal with behavior as the criterion measure. The first one states that

H_{10a}: The respondents' total aggregate value of all sources of information and influence will positively correlate with their behavior about alcohol.

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*It should be reminded that the only source of exemplary messages about marijuana is friends. Therefore, the correlation is a zero-order r (and $r = \beta = R$ in this case).

The corresponding regression presents the largest multiple correlation thus far ($R = .548$; $R^2 = .300$; $p < .001$; see Table 22). Nevertheless, it is not significantly different from the multiple correlation obtained by the exemplary messages alone, as Table 23 shows ($Z = 0.629$; $p = .53$ = n.s.). Therefore, Hypothesis H_{10a} is not supported by the data since the aggregation of all the sources of communication fails to significantly improve the amount of variance explained in behavior about alcohol by the exemplary messages alone. In fact, 91% of the total variance explained by the regression (.273 out of .300) is due to the contribution of the exemplary behaviors of friends and, to a lesser extent, mothers.

The last hypothesized relationship in the present set was worded thusly:

> H_{10b}: The respondents' total aggregate value of all sources of information and influence will positively correlate with their behavior about marijuana.

This is the only hypothesis of the four in this set that is supported by the data. As can be seen in Table 22, the regression analysis results in a statistically significant R ($R = .383$; $R^2 = .147$; $p < .0001$). More importantly, the obtained R is significantly larger than the ones reached by any of the three subsets of variables (see Table 23). In any case, the only source of exemplary behaviors present in this analysis, use of marijuana by friends, is also the main

Table 23. Difference between the multiple correlation coefficient of all sources combined and the R obtained by each subset of sources for each dependent variable

	R for all sources combined	R	Z-value for difference between Rs	P (one-tail)
ATTITUDE TOWARD ALCOHOL	.459			
Mass media		.271	4.805	.0001
Interpersonal sources		.196	6.032	.0001
Exemplary messages		.444	0.474	n.s.
ATTITUDE TOWARD MARIJUANA	.290			
Mass media		.069	2.778	.01
Interpersonal sources		.201	1.530	n.s.
Exemplary messages		.341	-1.127	n.s.
BEHAVIOR ABOUT ALCOHOL	.548			
Mass media		.251	8.309	.0001
Interpersonal sources		.197	9.156	.0001
Exemplary messages		.530	0.629	n.s.
BEHAVIOR ABOUT MARIJUANA	.383			
Mass media		.087	4.871	.0001
Interpersonal sources		.215	3.518	.001
Exemplary messages		.237	3.169	.01

correlate of the dependent measure, contributing 80% of the total amount of explained variance (.116 of .147).

The conclusions that can be derived from the present set of analyses are: (1) the aggregation of all sources of communication correlates significantly and positively with the four dependent variables, their Rs^2 ranging between .084 and .300; however, (2) except for behavior about marijuana as the dependent variable, none of the other three multiple correlation coefficients differs significantly from the Rs reached by some subsets of media, particularly exemplary messages. Therefore, (3) Hypotheses H_{9a}, H_{9b}, and H_{10a} are not supported; only H_{10b} is. (4) The exemplary behaviors of some significant others, especially friends, emerge as the main communication correlates of attitude and behavior toward alcohol and marijuana.

Thus, we have presented the results derived from the empirical test of the main hypotheses of this study. The other hypotheses that were formulated in Chapter I (H_{11a} to H_{16b}) refer to the predicted differential effects of the three sets of communication sources among themselves. Indirectly, those differential effects can be inferred from the results of the preceding analyses. Indeed, we have already seen that the exemplary behaviors of some significant others are the most important correlate of the four dependent variables, and we have also detected differences between interpersonal sources and the mass media which vary depending

on the criterion measure. Nevertheless, these differences have to be made explicit by directly testing them. This is the purpose of the final set of hypotheses.

Differential Effects of Interpersonal and Mass Media Sources and Exemplary Messages

All these hypotheses take the form "Communication Source X will be more strongly associated with (each one of the four dependent variables) than Source Y." This type of predicted difference can readily be tested by comparing the aggregated squared multiple correlations across subsets of communication sources. The data for these comparisons are taken from the overall multiple regression analyses with all thirteen sources of communication regressed on each dependent variable and are presented in Table 24.* The statistical significance of the differential contribution of each subset of sources can be tested by the F ratio for proportions of variance which is commonly used in multiple regression analysis to determine the significance of a variable or a set of variables added to or deleted from an equation. (See Kerlinger and Pedhazur, 1973, equation 3.15: p. 71, and

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*Instead of utilizing the results of an overall regression analysis, we could also do a multiple regression of only the variables comprising the two sets being compared regressed on the dependent variable. The results, however, and as we checked, would be the same with the exception that the proceedure that we chose is somewhat more conservative and allows for the comparison of two subsets of variables in the presence of the third subset.

Table 24. Differential contribution to R^2 by each medium of communication for all sources combined

	ALCOHOL				MARIJUANA			
	ATTITUDE		BEHAVIOR		ATTITUDE		BEHAVIOR	
	Contribution to R^2	Aggregated Contribution to R^2	Contribution to R^2	Aggregated Contribution to R^2	Contribution to R^2	Aggregated Contribution to R^2	Contribution to R^2	Aggregated Contribution to R^2
EXEMPLARY MESSAGES		.178		.274		.056		.116
Friends	.150*		.248*		.056*		.116*	
Father (#)	.004*		.001					
Mother (#)	.024*		.025*					
INTERPERSONAL SOURCES		.008		.011		.027		.025
Parents	.000		.000		.003*		.000	
Siblings	.002		.000		.002*		.000	
Relatives	.000		.000		.006*		.000	
Friends at school	.006*		.011*		.013*		.001	
Friends outside of school	.000		.000		.003*		.024*	
MASS MEDIA		.030		.016		.003		.007
Television	.001		.005*		.001		.004*	
Radio	.002*		.000		.001		.000	
Popular songs	.018*		.008*		.001		.001	
Newspapers	.001		.003*		.000		.001	
Magazines	.008*		.000		.000		.001	
TOTAL R^2	.216		.301		.086		.148	

*Statistically significant at least at p = .05. (N= 1499).

#Not measured for marijuana.

discussed in various parts of their book.)*

Since the analyses are very straightforward and the results very clear, we will rather present the results of the empirical tests of Hypothes H_{11a} to H_{16b} by integrated blocks of hypotheses and without further elaboration. The data for all the hypotheses are presented in Tables 24 and 25.

The first block of hypothesized differential relationships predicts that the interpersonal sources of communication will be more strongly associated with the four criterion measures than the mass media. The data support only the two hypotheses pertaining to marijuana as the criterion substance. For attitude toward marijuana as the dependent variable (H_{11b}), and as can be seen in Table 24, the aggregated contribution to the total squared multiple correlation by the five interpersonal sources equals .027, compared to .003 for the mass media. This difference translates into an F = 7.3 which is significant beyond the .0001 level (see Table 25). An analogous result is obtained for behavior about marijuana (H_{12b}): interpersonal sources

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*The formula is:

$$F = \frac{(R^2 y .12 \ldots k1 - R^2 y. \ 12 \ldots k2) \ / \ (k1 - k2)}{(1 - R^2 y .12 \ldots k1) \ / \ (N - k1 - 1)}$$

Since we have three subsets of variables, R^2 y .12$_2$... kl is redefined in the present case by subtracting the R^2 value of the subset not included in a given comparison.

Table 25. Significance of R^2 differences between sets of communication sources

	ALCOHOL				MARIJUANA			
	ATTITUDE		BEHAVIOR		ATTITUDE		BEHAVIOR	
	F value for R^2 difference	P	F value for R^2 difference	P	F value for R^2 difference	P	F value for R^2 difference	P
EXEMPLARY MESSAGES* vs. INTERPERSONAL SOURCES	108.2	.0001	189.7	.0001	30.2	.0001	66.8	.0001
EXEMPLARY MESSAGES* vs. MASS MEDIA	110.5	.0001	194.5	.0001	29.4	.0001	65.5	.0001
INTERPERSONAL SOURCES** vs. MASS MEDIA	9.3	.0001	4.9	.001	7.3	.0001	7.7	.0001

*All F values in this row have 3 and 1487 degrees of freedom.

**All F values in this row have 5 and 1485 degrees of freedom.

contribute .025 to R^2 versus .007 for the mass media, resulting in an F value of 7.7 ($p < .0001$). However, with attitude (H_{11a}) and behavior (H_{12a}) toward alcohol, a reversed pattern is observed and the mass media account for a significantly larger percentage of explained variance than the interpersonal sources (see Tables 24 and 25). In this regard we can conclude that the comparative relationship of mass and interpersonal media with substance abuse behaviors depends on the specific substance, without presenting a generalized pattern.

The general hypothesis of the second block (H_{13a} to H_{14b}) states that the exemplary messages transmitted by the model-type behavior of some significant others will be more strongly associated with attitude and behavior toward the two substances than the definer-type messages transmitted by the mass media. Table 24 shows that, in all cases, the difference in the respective contribution to the total R^2 by the two sets of media is substantial. Table 25 confirms that the four differences are statistically highly significant. Consequently, the four hypotheses are supported.

Finally, the third block compares the interpersonal sources with the exemplary messages. The general hypothesis predicts that the exemplary messages will be more strongly associated with the dependent measures than the interpersonal sources (H_{15a} to H_{16b}). Clearly, the results presented in Tables 24 and 25 support all four hypotheses.

Even in spite of these results, an important observation should be made here regarding the test of the preceding hypotheses and the data in Tables 24 and 25. Some of the statistically significant results are rather inconsequential from a social perspective and any contribution to knowledge that could be derived would also be insignificant. For example, the difference in R^2 between the mass media and interpersonal sources for behavior about alcohol as the dependent variable, .016 and .011 respectively, is statistically significant ($F = 3.9$; d.f. = 5 and 1485; $p < .001$). This difference, however, which can be detected only at the third decimal place, should be considered as inconsequential from a more substantial point of view. We must recognize that this small difference reaches statistical significance because of the large sample size. Obviously, if our sample were of an infinite size, any observed difference, no matter how small, would be statistically significant. Mathematically, our large sample begins to approach infinity, at least for the present test. If our sample had comprised 400 elements, for example, the above difference between the mass media and interpersonal sources would have yielded an $F = 1.28$, which is not significant.

In conclusion, we can state that (1) the model-type, exemplary messages transmitted by significant others are significantly more strongly associated with attitude and behavior about alcohol and marijuana than the definer-type

messages transmitted by either the mass media or interpersonal sources of communication. Furthermore, the differences are very substantial. In other words, the adolescent population we surveyed is much more affected by what they believe others are doing than by what they believe that others say. (2) The comparative effect of mass and interpersonal media depends on each specific substance. The mass media are more strongly associated with attitude and behavior toward alcoholic beverages, while interpersonal sources relate more strongly with attitude and behavior toward marijuana. In any case, (3) the aggregated contribution of both mass and interpersonal media to R^2 is only marginal, even though statistically significant; while the respective contribution of exemplary messages is more substantial. Finally, (4) some of the observed differences are statistically confirmed as significant because of the large sample size. Substantial differences are extremely small. From a social perspective, and in spite of the statistical test, we are inclined to conclude that there are no important differences between the mass media and the interpersonal sources of communication for all cases, and between exemplary messages and interpersonal sources for attitude toward marijuana.

CHAPTER IV

SUMMARY AND DISCUSSION

This chapter is organized around six sections which deal, respectively, with (1) a succinct summary and empirical conclusions of the study; (2) a critical assessment of some aspects of the operationalization of the theory; (3) a comparison of our results with those of a previous and related test of the theory; (4) a discussion of (a) the theory, on the basis of the results of our study, and (b) the methodology, and (5) policy implications of the study.

Summary and Empirical Conclusions

The goal of this dissertation has been to subject to empirical test Linear Force Aggregation Theory solely as a communication theory. Specifically, and within that theoretical framework, we have analyzed the relationship between a set of relevant sources of communication and attitudes and behavior of young Mexicans toward two intoxicants: alcoholic beverages and marijuana, thus allowing for an internal replication of the study with the same respondents in two different areas of substance use.

The theoretical antecedents of this study were described in Chapter I (pp. 34-45), where the theory was also presented (pp. 45-59). At this stage, it may be more convenient to summarize the theory simply by listing its main postulates. These can be expressed as follows.

1. The central postulate of Linear Force Aggregation Theory is that attitudes and behavior are a simple linear aggregate of all relevant information that an individual has received from a finite set of sources of communication. From this notion it logically and necessarily follows that attitudes and behavior are the result of the accumulated information from all sources of communication that an individual has received. Thus, attitudes and behavior are assumed to be determined by a process of communication since they are conceived as being wholly controlled by the flow of information.

2. Each relevant message an individual receives from a source of communication constitutes a driving force that "pushes" its related attitude and behavior with a certain intensity and in a given direction. However, since other sources of communication are also present--each originating messages of varying magnitude and direction and thus contributing differentially to the resultant attitude and behavior,--it is the aggregation of all messages proceeding from all sources that will determine the resultant vector which is the attitude and behavior that the focal individual

will finally exhibit. This vector is the point at which all incoming forces balance.

3. The previous notion rules out the conception of communication effects as those that result from the action of a single source, and much less from a single message, unless if it is absolutely the only incoming force that reaches an individual and encounters absolutely no resistance, which is rather unlikely. (In this, the theory diverges from a great deal of studies about the effects of communication which have analyzed the consequences--e.g., aggression--brought about by a single medium or message--e.g., television or a violent program on TV,--without at the same time taking into consideration the concurrent effects of other sources of information and influence.)

4. Mere exposure to communication sources or messages is not assumed to be enough to determine the resultant attitudinal and behavioral effects. Rather, the intensity and direction of effect of any given source is assumed to depend on three related factors. First, it depends on the frequency of exposure to the source (which explains how salient the source is for an individual). Secondly, it depends on how frequently the attitudinal and behavioral object is mentioned in the interactions between the source and the individual (which is related to the reciprocal relevance of the object). Thirdly, it depends on the position taken by the source about the object, or the bias of the coverage.

5. Also implied in the previous point, and a basic element of the theory, is the assumption that the perception of the receiver (e.g., his perception of the importance of the source, the amount of coverage, or the bias of the coverage) is a crucial element in determining how communication affects him. (In this, the theory does not differ from much established thought in the social sciences which argues likewise. Authors like Berlo (1960, 1972, 1977) and Weick (1969) argue that reality is a construct, it is not discovered or reacted to, but rather it is enacted or created. A similar conception underlies the work of many communication theorists, like Watzlawick, Beavin and Jackson (1967.) In relation to social science research, authors like Shepherd (1964) agree with Kurt Lewin that a researcher should direct his attention to what an individual subjectively perceives, not what he perceives as the "objective reality.")

6. Finally, the theory also considers that the messages that reach an individual can proceed from two types of sources; namely, definers, or those who verbally communicate with him and who, therefore, affect his behavior by what they say, and models, or those whose exemplary behavior serves as a model for the individual, thus affecting him by what they do. Definers are further divided into interpersonal and mass media sources. Both definers and models will affect an individual depending on the extent to which they constitute "true" significant others for that individual;

that is, depending on the extent to which, by word or example, they convey substantial information and influence to him about the filter categories that he uses to define himself and/or the objects of his experience.

In previous tests of the theory (e.g., Woelfel and Hernandez, 1973), it has also been postulated that attitudes are the direct causal antecedents of behavior. Even though this theoretical claim does deserve greater empirical attention, it does not seem that the type of survey methodology that has typically been used in Linear Force Aggregation Theory studies, including the present one, is an appropriate method to study such a postulated relationship. Neither can previous operationalizations of attitude and behavior be considered as a methodologically satisfactory approach. Typically, behavior has been defined as the frequency of engaging in some act and attitude has been defined as an individual's self-conception of himself as some one who engages in that act, which clearly constitutes a circular definition. Indeed, such a definition of attitude and behavior toward marijuana in Woelfel and Hernandez's (1973) study translated into a zero-order correlation of .84, which exemplifies an instance of circularity. Circularity between an independent and a dependent variable not only substantially--and artificially--increases the amount of variance explained in the dependent variable, but it also presents the additional problem of mediating the relationship

between other independent variables and the dependent one in such a way that the structure of significant correlates is changed, as we saw (pp. 31-34) that happened in Woelfel and Hernandez's study. These considerations have led us to dismiss the notion of a causal relationship between attitude and behavior as a valid postulate for the present test of the theory; instead, we have treated these two dimensions as separate dependent variables.

In order to test the theory, the first step was to identify the relevant sources of information and influence. This was done through an exploratory study which produced thirteen such sources. These included five mass media definers: television, radio, popular songs, newspapers, and magazines; five interpersonal definers: parents, siblings, relatives, friends at school, and friends outside of school; and three models: friends, father, and mother. The exploratory study also indicated that the levels of alcohol and marijuana use were sufficiently high to warrant their selection as dependent measures. This was also corroborated by data previously collected by the funding institution, the Mexican Center for Studies on Drug Dependence. The three exemplary message variables were measured straightforwardly. The value for each one of the ten definer-type variables was obtained from the multiplicative integration of the frequency of exposure to each source by the amount of coverage of each substance by the bias of the coverage, all

according to the perception of the respondents to the survey. The index thus obtained has been referred to as the Message Intake from each source.

The respondents were 1,928 high school students enrolled in 7th, 9th and 12th grades in private and public schools in Mexico City. They were chosen by probability sampling methods. The interviewing was done by means of self-administered questionnaires in the students' own classrooms without their teachers or other school officials being present; only the interviewers were present. The interviewers were all professional psychologists who apparently succeeded in guaranteeing respondents their anonimity (which would appear to be quite important in surveys tapping illegal or otherwise threatening behaviors such as the use of drugs).

The empirical test of the theory was organized around five blocks of hypotheses which we shall next present in the same sequential order that was used in the results chapter, along with a brief summary of the respective results, before proceeding to a discussion of this study.

a. The Effects of the Mass Media. It was generally hypothesized that the aggregated message intake from the mass media will positively correlate with the respondents' attitude and behavior toward alcohol and marijuana (Hypotheses H_{1a}, H_{1b}, H_{2a}, and H_{2b}). Statistically, all four hypotheses were supported by the data although the amount

of variance explained was rather small, particularly for attitude and behavior about marijuana (0.5% and 0.8% respectively. See Tables 16 and 17). It was found that the media relate significantly better with attitude and behavior about alcohol than about marijuana. Among the five specific media, the message intake of popular songs and television were the better correlates. All significant regression weights were positive, indicating that the mass media exert an influence favorable to alcohol and marijuana, although of a very small magnitude.

b. Effects of Interpersonal Sources. The general hypothesis predicts that the aggregated message intake from interpersonal sources will positively correlate with the respondents' attitude and behavior toward alcohol and marijuana (Hypotheses H_{3a}, H_{3b}, H_{4a} and H_{4b}). Similarly to the previous case, all four hypotheses were statistically supported but with small multiple correlation coefficients. The four squared multiple correlations range only between .038 and .046 (see Tables 18 and 19). The larger correlations were observed with attitude and behavior toward marijuana, which is the reverse of what was found for the mass media. In general, friends at school appear to be the better correlates, followed by friends outside of school, and siblings. Regarding the direction of the influence, parents exert an influence opposed to drugs; siblings also have a negative influence except in the presence of a

statistically significant negative relationship by parents, in which case their relationship turns positive. Friends at school and outside of school, and relatives have an influence favorable to the two intoxicants in all the cases where they reach a statistically significant regression coefficient.

c. Effects of Exemplary Messages. The general hypothesis pertaining to the effect of model-type behaviors (cf. Hypotheses H_5, H_6, H_7, and H_8) predicts that the exemplary messages transmitted by the degree of substance use by three significant others: father, mother, and friends, will positively correlate with the respondents' attitude and behavior about alcohol and marijuana. All four hypotheses were supported by the data as predicted and at much higher levels of variance accounted for than interpersonal and mass media sources. The exemplary messages of friends clearly emerged as the strongest predictor of the respondents' attitude and behavior toward either substance. Comparing father and mother, the former correlates better with behavior about alcohol while the latter is more strongly associated with attitude toward alcohol (see Table 20).

d. Effects of All Sources of Communication Combined. The general hypothesis (referring to the specific working hypotheses H_{9a}, H_{9b}, H_{10a}, and H_{10b}) states that the respondents' total aggregate value of all sources of information

and influence will positively correlate with their attitude and behavior toward alcohol and marijuana. This predicted general relationship, as the reader will recall, is not independent from the more specific relationships represented by the three preceding sets of communication sources. Therefore, in addition to the direct test of the relationship between all the thirteen sources and each dependent variable by means of multiple regression analyses, a second test was necessary. It consisted in a comparison of the coefficient of determination due to the aggregation of all sources of communication with the respective coefficient of each subset of sources comprising the aggregate. If the coefficient of determination of the aggregate is not significantly greater than that of any of the three component subsets, then the null hypothesis cannot be rejected. In this case, it would be the subset, and not the total aggregate, what would most parsimoniously explain the variance in the criterion measure.

The data supported only one of the four specific hypotheses. The aggregation of all the thirteen sources explained a greater percentage of the variance in behavior about marijuana than any of the component subsets. In the other three instances, however, the total aggregate failed to differ significantly from the exemplary messages alone. (See Tables 21, 22, and 23). We can thus conclude that even though all the regression analyses pertaining to the

relationship between the total aggregate and each dependent variable are significant and with rather substantial multiple correlation coefficients, these coefficients are generally due only to the contribution of the exemplary message variables.

e. Differential Effects of Interpersonal Definers, Mass Media Definers, and Exemplary Messages. The final set of hypotheses (H_{11a} to H_{16b}) concerned the differential effects among the various subsets of communication sources. (The results are presented in Tables 24 and 25.) The first block of hypothesized differential relationships predicts that interpersonal sources of communication will be more strongly associated with attitudes and behavior toward alcohol and marijuana than the mass media. Only two of the hypotheses were supported. Interpersonal sources were found to relate more strongly with attitude and behavior about marijuana, but not about alcohol. The other two blocks of hypothesized differences predict that exemplary messages will be more strongly associated with attitudes and behavior toward alcohol and marijuana than either (a) the mass media definers or (b) interpersonal definers. All the hypothesized differences were clearly and consistently supported by the data. This also corroborates the finding from some of the preceding analyses that the exemplary messages of some significant others, particularly friends, are the main correlate of the attitudes and

behaviors that we studied.

A summary of our empirical findings is presented in Table 26. What we indicate there is whether each source of communication produced or failed to produce a regression coefficient significant at or beyond the .05 level in an overall multiple regression analysis.

In conclusion, the present test of Linear Force Aggregation Theory allows us to make the following statements:

1. When the aggregated message intake from both the mass media and the interpersonal definers is analyzed separately in relation to the dependent attitudes and behavior, statistically significant but substantially weak correlations are detected. If we visually conceive an individual as an object in a multidimensional space and each mass and interpersonal medium as an arrow converging on the individual, with its tip pointing the direction of the influence and its length and thickness symbolizing the magnitude of its independent effect, we will then see a collection of narrow and short arrows, together producing a vector (i.e., the resultant attitude or behavior) of rather modest proportions.

2. On the other hand, the exemplary behaviors of some significant others, particularly friends, produce more substantial effects. However even those effects are not of such a magnitude as to wholly determine the dependent

Table 26. Summary of findings: partial regression coefficients which are significant beyond the .05 level*

Independent variables	ALCOHOL		MARIJUANA	
	Attitude	Behavior	Attitude	Behavior
EXEMPLARY MESSAGES				
Use by friends	x	x	x	x
Use by father**	x			
Use by mother**	x	x		
INTERPERSONAL DEFINERS				
Parents			x	
Siblings			x	
Relatives			x	
Friends at school	x	x	x	
Friends outside of school			x	x
MASS MEDIA DEFINERS				
Television			x	x
Radio	x			
Popular songs	x		x	
Newspapers			x	x
Magazines	x			
R:	.459	.548	.290	.383
R^2:	.211	.300	.084	.147

*On the basis of the overall regression analysis with all thirteen variables regressed on the dependent variables.

**Not measured for marijuana.

attitudes or behaviors. For example, the combined effect of exemplary behaviors by friends, father, and mother reach the largest coefficient of determination with behavior about alcohol, and it is of only .281.

3. The aggregation of all sources of information and influence shows that practically all the variance explained in the dependent variables is accounted for by exemplary messages. The contribution to the total R^2 by the mass and interpersonal definers is only marginal. It is particularly noteworthy that in three of the four analyses the aggregation of all the message intake indices (including the five mass media, the five interpersonal, and the three sources of model-type behaviors) fails to produce a multiple correlation significantly greater than the one reached by the subset of exemplary messages alone. Stated differently, our study shows that, at least for the adolescents we studied, the relationship between communication sources--conceived along the lines set forth by Linear Force Aggregation Theory--and attitudes and behavior about two different substance abuse areas is only moderate. Furthermore, this relationship is mostly due to model-type messages rather than definer-type, verbally transmitted information via mass or interpersonal media; i.e., <u>the population we studied seems to be more influenced by what they believe their significant others do, than by what they believe that the others say</u>. Most of the effect, however,

appears to be due to factors not measured in this study and presumably not to communication influences since an effort was made to identify and incorporate into the study all relevant sources of communication about drugs.

4. The preceding conclusion is particularly salient also for the main contention of Linear Force Aggregation Theory which postulates that attitudes and behavior are a simple linear aggregate of all relevant information that an individual has received from a finite set of sources of communication. Given this theoretical claim on the one hand, and on the other hand the moderate to weak relationships that we have found, we can conclude that this particular study confers only a limited support to the theory.

5. The rather limited theoretical support accorded by this particular test of the theory contrasts with previous tests that reached substantially higher coefficients of multiple correlation (cf. the review of the theoretical antecedents in Chapter I). This may be due to many different causes; however, two plausible explanations seem worth mentioning (even if they are not better than mere guesses). The first one, as we have already argued, might be the elimination of the main source of circularity that was present in previous tests of the theory. The second one might be due to cross-cultural differences since the present research was conducted in Mexico, a country which differs in many respects for to be from the locale of previous applications of

the theory; namely, the United States and Canada. (A more detailed comparison between our results and those of Woelfel and Hernandez (1973) where marijuana constitutes the dependent variable is the subject of a latter section of this chapter.)

6. The comparison of the patterns of relationship that we found between the mass and the interpersonal aggregated message intake indices with the dependent measures, however reduced, permits us to conclude that there is no generalized pattern of association between those media and attitudes and behavior toward drugs. The internal replication that we did shows that the comparative importance of mass and interpersonal definers varies with each specific drug. (The mass media related better with alcohol while interpersonal sources showed higher correlations for marijuana.)

Other conclusions will be presented in subsequent sections, particularly as we next assess two specific aspects of the operationalization of the theory.

Critical Assessment of Some Aspects of the Operationalization of the Theory

There are two aspects of this and previous tests of the theory which we believe deserve an evaluation. The first one concerns the orientation of the respondents to their communication sources which until now has not included affective factors such as trustworthiness. The second one

refers to the measurement of the message intake index. Each will be first defined, then presented and discussed, and finally a conclusion will be reached.

a. The Effect of the Degree of Trust Felt for Each Source. Linear Force Aggregation Theory assumes that attitudes and behavior are the result of the accumulated information an individual has received from all relevant sources of communication. Even though a subjective criterion such as the perception of each individual is considered to play a central role in determining how communication affects him, no other subjective or affective measures have been incorporated in the various operationalizations of the theory. The implicit assumption behind this and other tests of the theory has been that the simple reception of information will by itself produce effects without any additional influence from the receiver's affective orientation toward his source having to be necessarily considered. However, communication research in general tells us that this type of orientation can be of great importance in determining the effects of communication. Examples of these orientations would include identification with the source (e.g., Weiss, 1969, pp. 98ff; Kelman, 1961), attractiveness (McGuire, 1969), and, particularly, trustworthiness or credibility (McGuire, 1969. See also Westley and Severin, 1964; and Greenberg, 1966).

Therefore, we have decided to replicate some of our principal analyses with the inclusion of the variable degree of trust for each medium of communication. Trust or credibility* is one of the most well established constructs in communication theory and research pertaining to the relationship between a source and a receiver, which is what led to its selection for the present test. We recognize, of course, that other constructs could also be chosen instead of, or in addition to, trust; however, our limitations force us to include only one. What we want to determine is whether the relationships that we have found between the predictor and the criterion variables are indeed due only to the flow of information--as the theory predicts and as it has been operationalized until now,--or whether at least some of the relationship is explained by the more subjective and generalized affective orientation of each subject to his sources of information and influence, as expressed by the degree of trust felt.

"Trust" was measured in a different section of the questionnaire. Respondents were asked:

> "Now please tell us, in general how much trust do you have in the following people and in the following sources of information."

Next, each source was sequentially presented with four

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*The word we used in Spanish was confianza, which can be translated as either trust, credibility, or confidence.

alternative answers being provided; namely, "none, little, somewhat, and much," with scale values ranging from zero to three. Even though an assessment of the degree of trust felt in general for each source was the purpose of this question, it is recognized that the general content of the questionnaire--alcohol and drugs--was very likely in the respondents' minds when answering these questions, thereby probably influencing their responses.

In order to test for the possible effects of the variable "trust," we incorporated it in the Message Intake index. Following the established procedure (cf. Chapter II) we multiplied the scale values of the variable "trust" for each source of communication by the other three component variables of the index: frequency of exposure to the source, perceived frequency of mention of the substance, and perceived position of the source about the substance. The indices thus obtained (one for each source) were then regressed on each of the four dependent variables. In this manner, we can now compare the results of the multiple regression analyses with inclusion of the variable "trust" with the results previously obtained in the test of our hypotheses.

The data are presented in Table 27. An inspection of the results clearly indicates that the inclusion of the variable "trust" has not improved the relationship between the mass and interpersonal media predictors and the four criterion variables. Quite the contrary: the four

Table 27. Comparison of partial and multiple regression coefficients for all variables, with and without inclusion of the variable "trust," regressed on the four dependent variables

	ALCOHOL				MARIJUANA			
	ATTITUDE		BEHAVIOR		ATTITUDE		BEHAVIOR	
Independent variables	beta with trust	beta without trust	beta with trust	beta without trust	beta with trust	beta without trust	beta with trust	beta without trust
Television	.07*	.10*	.11*	.15*	.02	.02	.03	.06*
Radio	.05	.04	.07*	.04	.03	.05	.05	.04
Popular songs	.06*	.14*	.05*	.12*	.01	-.00	.08*	.00
Newspapers	-.01	-.01	.01	-.01	-.02	-.01	-.07*	-.05*
Magazines	.09*	.09*	-.01	.01	-.03	-.02	.01	.02
Parents	-.00	-.02	.00	-.01	-.10*	-.12*	-.03	-.06*
Siblings	-.07*	-.06*	-.02	-.03	.06*	.06*	.02	.01
Relatives	.03	.01	-.02	-.02	.08*	.07*	.02	-.01
Friends at school	.11*	.12*	.12*	.14*	.08*	.09*	.04	.05
Friends outside of school	.03	.02	.01	.03	.08*	.09*	.14*	.20*
Multiple R :	.229*	.303*	.221*	.301*	.184*	.200*	.206*	.233*
R^2:	.052	.092	.049	.091	.034	.040	.042	.054
Z-VALUE FOR DIFFERENCE BETWEEN TWO R^2_s	-1.43		-1.50		-.21		-.43	

*Significant at least at p = .05.

coefficients of multiple correlation are lower when "trust" is included in the index; the differences, however, are not statistically significant although they do approach significance for attitude and behavior toward alcohol (a z-value of 1.645 is needed for p = .05, one-tailed test). Comparing the two sets of regression analyses, we can further see that neither the magnitude of the regression weights nor the structure of significant correlates appreciably differs.

Hence, we can conclude that the affective orientation of our respondents to their sources of communication, as expressed by our specific operationalization of trust, does not have an influence on the relationship between mass and interpersonal sources of communication and attitudes and behavior toward the two selected substances. This is also an indication that the relationships found and reported in Chapter III are indeed due to the flow of information (as perceived by the receiver), which is what the theory claims, and not to affective factors. A similar conclusion was also reached by Saltiel and Woelfel (1975) with different types of data and analytical methods. However, we must recognize here that the lack of effect of the trust variable might also be due to our specific operationalization of this construct. Our measurement of trust refers to the medium of communication in general and it is not specifically related to substance use or to some other precise content. Admittedly, trust might not depend on the medium or source of

communication in general but rather on specific messages or content categories it transmits. If that were the case, different results could have been reached.

b. Comparison of the Message Intake Index with Mere Exposure. As we have repeatedly stated, the Message Intake index, which indicates the intensity and direction of the effect of a source of communication, is created through the multiplicative combination of (a) frequency of exposure to the source, (b) frequency of mention of substance X, or coverage, and (c) position of the source, or bias of the coverage. This contrasts with the more common practice in communication effects studies of measuring only frequency of exposure to the presumed source or sources of effects. Naturally, in order to be of practical and theoretical value, the index should relate significantly better with the attitudinal and behavioral measures than the exposure variables alone. The purpose of this section is precisely to test this.*

The test can readily be made by regressing the exposure variables on the four dependent measures and then

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*This is the reason why we only compare the results obtained by the index with those of the exposure variable alone. We recognize that a similar comparison could also be made with the other two components of the index; namely, coverage and bias of the coverage, and perhaps similar results would also be arrived at. However, we believe that these other two possible comparisons would be of much less conceptual interest in the present context.

comparing the results with those obtained by the Message Intake indices.

The results of the test are presented in Table 28. The data in this table allow us to arrive at several important conclusions. In the first place, we can see that the four pairs of multiple correlation coefficients do not differ significantly; in fact, they are practically identical and the corresponding z-values to test for the significance of the difference between two coefficients of determination are extremely close to zero. This finding means that if we are interested in the theory only to assess the strength of association between a set of communication predictors and attitudes and behavior, a consideration of economy or pragmatics would dictate the selection of the exposure variables alone. The addition of the other two measures, coverage and bias of the coverage, fails to improve the strength of the relationship. (Even though it should be noted that the comparative strength of association between these two indices and the dependent variables is not the only criterion by which they can be compared. Other criteria, which we explain below, did reflect some differences.)

Regarding the regression weights, and as one should expect, no changes at all can be appreciated between the pairs of regression weights for the three sources of exemplary messages. However, a very different picture emerges

Table 28. Comparison of partial and multiple regression coefficients between the message intake indices and exposure variables alone regressed on the four dependent variables

Independent variables	Message intake indices	Exposure variables alone	Message intake indices	Exposure variables alone	Message intake indices	Exposure variables alone	Message intake indices	Exposure variables alone
Television	.03	-.05*	.08*	-.03	.03	-.10*	.07*	-.04
Radio	.04	.08*	.01	.03	.03	.02	.01	.02
Popular songs	.09*	-.07	.08*	-.06*	-.03	.00	-.03	-.03
Newspapers	-.04	.02	-.07*	.03	-.01	.05*	-.05*	.02
Magazines	.08*	-.04	.01	.02	-.01	-.01	.04	.05*
Parents	-.01	-.02	-.01	-.07*	-.10*	-.01	-.02	-.07*
Siblings	-.04	.02	-.01	.03	.07*	-.03	.02	-.06*
Relatives	.02	-.10*	.01	-.07*	.08*	-.09*	-.01	-.02
Friends at school	.08*	.10*	.10*	.07*	.08*	-.01	.02	-.02
Friends outside of school	.02	.09*	-.00	.11*	.06*	.12*	.14*	.11*
Use by friends	.30*	.29*	.42*	.42*	.22*	.21*	.32*	.34*
Use by father (#)	.07*	.07*	.03	.02	-	-	-	-
Use by mother (#)	.12*	.15*	.14*	.15*	-	-	-	-
Multiple R :	.464*	.464*	.549*	.554*	.294*	.296*	.386*	.396*
R^2:	.215	.215	.302	.307	.086	.087	.149	.157
Z-VALUE FOR DIFFERENCE BETWEEN TWO R^2s	0		-.14		-.03		-.23	

*Significant at least at p = .05.

#Not measured for marijuana.

when we analyze the mass media and interpersonal correlates. In this latter case, important differences can be observed between the Message Intake indices and the exposure variables taken alone. First, we can see many differences in the respective magnitudes of the regression coefficients. Secondly, the structure of statistically significant betas changes. For example, in attitude toward marijuana the regression analysis with the Message Intake indices shows that all the interpersonal indices are significant and none of the mass media; however, when the exposure measures are regressed alone, two of the mass media and only two interpersonal sources are significant. Thirdly, some of the variables change their sign and therefore the interpretation of the nature of their relationship with the dependent variables. For example, the mere exposure to television relates negatively with the four dependent variables, indicating that as the frequency of exposure to television increases, the approval and the frequency of use of alcohol and marijuana tends to decrease, keeping all other factors constant. However, when exposure is combined with the other two variables to create the Message Intake index, the sign of television changes to positive for all criterion variables. This gives some evidence that the respondents' perception of the coverage that a source accords a given substance and its bias is a very important element in helping us understand how that source relates with the respondents's

attitude and behavior.

In conclusion, we can say that even though the creation of the Message Intake indices does not improve the strength of the aggregated relationship between the interpersonal and mass media variables with attitudes and behavior, it does affect in an important way the nature, structure, and magnitude of the relationship of individual correlates. However, on the basis of this study alone, we cannot determine which one of the two measures is better. This could be the subject of a future study aimed at specifically comparing the effect of exposure alone to a communication source with the effect of the intervening influence of the receivers' perception.

Comparison of Our Results with Those of a Previous and Related Test of the Theory

In Chapter I we presented a review of studies based on Linear Force Aggregation Theory. Of particular interest among them is Woelfel and Hernandez's (1973) application of the theory to attitude and behavior about marijuana, one of our two dependent substances (see pp. 35-46). In this section, we will compare the results obtained by Woelfel and Hernandez and by our study. We should stress that the comparison is more indicative than conclusive since there are some differences between the two studies that should be kept in mind. In the first place, the national setting of the two studies differs. This, of course, will give us

some clues as to possible cross-cultural differences and to the possible comparative effects of the respective cultures on the phenomenon being studied. However, the comparison should not be regarded as a direct test of cross-cultural differences since no direct and controlled replication was involved. Secondly, the variables included in the two studies differ somewhat, even though by grouping them into categories (see below) the comparison is facilitated. Thirdly, our respective attitude measures are not equal; Woelfel measured attitude as the individual's self-conception as a marijuana user, while our measure was the respondents' degree of approval of occasional use of marijuana by people of their own age. Finally, the respondents also differ in age and educational level; our respondents are high school students with ages ranging mostly between 12 and 19 years,* while Woelfel and Hernandez's respondents are college students.

Naturally, these differences have to be kept in mind while comparing our results with Woelfel's since,

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*This age range was chosen because this is the period when most people develop and establish fairly stable attitudes and behaviors toward phenomena such as alcohol and drugs. (Furthermore, the few possible changes that may occur in college would be qualitatively very unimportant with our sample since the number of Mexican students who enter college is still very reduced.) Consequently, the effects of external sources of information and influence such as the media of communication would principally occur during this period, which should then be more appropriate to study.

precisely because of them, our study can be considered only a partial replication of Woelfel and Hernandez's earlier research.

It is also important to state that the comparison will have to involve a larger number of variables than the ones we presented in the test of our hypotheses, otherwise the comparison would not be feasible. This is due to how Woelfel and his associates have worked with the theory until now. In addition to the communication variables, they have also included other predictors such as structural factors and elements of the relevant phenomenal reality. Since many of these other variables were also measured in our questionnaire, we will include them in a new regression analysis for the present purpose.

The comparison between the two sets of variables will be made by grouping them into categories that Woelfel and his coauthors have defined. These are (1) Significant Others Influence, divided into Mass Media Definers, Interpersonal Definers, and Models; (2) Other Related Attitudes; i.e., attitudes or the pool of relevant information previously accumulated by the individual and which can be assumed to be related with the object of the attitude or behavior being investigated; (3) Relevant Phenomenal Reality; i.e., the specific aspects of concrete situations that may be directly related to a given behavior, thereby affecting it; and (4) Structural variables that define the

location of the individual in the social structure.

In addition to these groups of variables, and for behavior (frequency of use of marijuana) as the dependent variable, Woelfel and Hernandez also included the respondents' self-conception as a marijuana user as a predictor variable. As we have already argued, this creates a problem of circularity which renders the reliable interpretation of the data difficult. Therefore, we will concentrate our comparison mostly in the attitude variable.

The comparative data are presented in Table 29. The coefficients are standardized partial regression coefficients (betas); Woelfel's based on n = 341 and Rota's on n = 1,143. (This corresponds to a ratio between sample size and number of independent variables of 1:9 for Woelfel and 1:38 for Rota, which should make the latter's coefficients more stable).

Looking first at the multiple correlations, we can see that Woelfel and Hernandez reached a coefficient of .74 (R^2 = .55), compared to ours of .371 (R^2 = .138), although the former is based on a sample only about one third the size of the latter and also with a much higher ratio of independent variables to sample size, which should by itself produce a higher multiple correlation, everything else being equal. In any case, it is clear that the amount of variance we explain in attitude toward marijuana among Mexican adolescents is much smaller than Woelfel's. Also large differences

Table 29. Comparison of partial and multiple regression coefficients between the Rota and Woelfel studies with attitude and behavior toward marijuana as the dependent variable(s)*

Independent** variables	ATTITUDE		BEHAVIOR	
	Woelfel	Rota	Woelfel	Rota
MASS MEDIA DEFINERS				
Television	.00	.03	-.08	.05
Radio	.01	.02	.01	-.01
Popular songs	.07	-.05	-.02	-.05
Newspapers	.03	-.02	.05	-.04
Magazines	-.12	.02	-.02	.03
Movies	.00	-	.10	-
INTERPERSONAL DEFINERS				
Parents	-	-.09	-	-.06
Siblings	-	.09	-	.06
Relatives	-	.07	-	.03
Friends	.16	-	.08	-
Friends at school	-	.07	-	.04
Friends outside of school	-	.08	-	.15
MODELS				
Friends' marijuana use	.29	.11	-.03	.27
Friends' alcohol use	-	.08	-	.02
Mother use of alcohol	-	.03	-	.09
Father use of alcohol	-	.05	-	.03
Mother use of medicines	-	.07	-	-.03
Father use of medicines	-	.01	-	.03
Friends' political position	.12	-	.04	-
Friends' attitude toward dress	-.04	-	-.04	-
Friends' attitude toward individual rights	.03	-	.00	-

Table 29 (cont'd.)

Independent** variables	ATTITUDE		BEHAVIOR	
	Woelfel	Rota	Woelfel	Rota
OTHER RELATED ATTITUDES				
Religiosity	-	-.07	-	-.11
Catholic	-.03	-	.13	-
Protestant	-.03	-	.05	-
Jew	.10	-	.06	-
Atheist/Agnostic	-.05	-	.08	-
Educational aspiration	-	.00	-	-.01
Attitude toward religion	-.05	-	.11	-
Philosophy of life	.09	-	-.05	-
Political position	.02	-	-.07	-
Perceived harmfulness of marijuana	.29	-	-.01	-
Attitude toward dress	-.16	-	.09	-
RELEVANT PHENOMENAL REALITY				
Availability of marijuana	-	-.06	-	-.09
Campus 1	.05	-	.08	-
Campus 2	.03	-	.04	-
Campus 3	.09	-	.14	-
Type of school	-	.00	-	.00
Year in school	.02	.04	.02	-.05
Residence: parents' home	.01	-	-.10	-
Residence: private apartment	.00	-	-.09	-
Residence: faternity	-.01	-	-.03	-
Residence: dormitory	-.08	-	-.02	-
Residence: commune	-.07	-	-.07	-
Parents live together?	-	-.03	-	-.04

Table 29 (cont'd.)

Independent** variables	ATTITUDE Woelfel	ATTITUDE Rota	BEHAVIOR Woelfel	BEHAVIOR Rota
STRUCTURAL VARIABLES				
Sex	-.02	-.06	-.00	-.07
Age	-.05	.03	-.01	.08
Place of birth	-	.00	-	-.03
Student raised in East	.07	-	.15	-
Student raised in South	-.07	-	-.00	-
Student raised in Midwest	.05	-	-.04	-
Student raised in West	.09	-	.01	-
City size	.03	-	-.02	-
Number of siblings	-	.04	-	-.01
Place among siblings	-	.00	-	.02
Father occupation	-.06	-.01	.04	-.02
Mother occupation	-.05	.01	-.00	-.05
Grade point average	-	-.06	-	-.01
ATTITUDE				
Self-conception as a marijuana user(***)	-	-	.75	-
Multiple R :	.740	.371	.893	.467
R^2:	.550	.138	.800	.218

*N for Woelfel study = 341; N for Rota study = 1143; in both cases, after deleting missing data.

**A dash indicates that the corresponding independent variable was not measured in the respective study.

***Circularity with behavior as the dependent variable; refer to text.

are observed with behavior as the criterion measure.

Regarding the independent variables, the comparison should be made by looking at the relative importance of each variable and not at the magnitude of the coefficients since differences such as in sample size do not make the coefficients directly comparable. One practical way to accomplish this would be to contrast the variables with the largest--e.g., the ten largest--regression weights in the two studies (provided that they are statistically significant, which is the present case). This approach provides the following two parallel lists for attitude toward marijuana (where circularity is not present in the Woelfel study) which are hierarchically arranged:

Woelfel	Rota
Friends' use of marijuana	Friends' use of marijuana
Perceived harmfulness of marijuana	Parents' MI index
Attitude toward dress	Siblings' MI index
Friends' MI index	Friends outside school MI index
Friends' political position	Friends' use of alcohol
Magazine MI index	Relatives' MI index
Jew	Friends at school MI index
Philosophy of life	Mother use of medicines
Campus No. 3	Religiosity
Student raised in West	

These two lists present very different pictures. In the Rota list, all but one of the nine largest betas belong to communication variables, compared with only four in the Woelfel list. (In the Rota list three variables tied for

tenth place: perceived availability of marijuana, part of the relevant phenomenal reality, and two structural variables: sex and grade point average). The Woelfel list is structured thusly: four Other Related Attitude variables (perceived harmfulness of marijuana, attitude toward dress, whether the subject is Jewish, and philosophy of life); two Exemplary Messages (friends' use of marijuana, and the perceived political position of friends); one Interpersonal Definer (friends); one Mass media Definer (magazines); one variable of the Relevant Phenomenal Reality (whether the respondent resides at Campus 3); and one Structural variable (whether the respondent was raised in the West of the U.S.). By contrast, the Rota list includes three sources of Exemplary Messages (use of marijuana and alcohol by friends, and use of medicines by mother); five Interpersonal Definers (the message intake indices of parents, siblings, friends at school and outside of school, and relatives); and one Other Related Attitude (religiosity), in addition to the three variables tied in tenth place.

Stated differently, not only is the structure of the main significant correlates different in the two studies, but it is also noticeable that the theory produces more communication correlates in the Mexican adolescent sample than in the American college sample. It is also apparent that, even though no sweeping conclusions about the generalizability of a theory can be made on the basis of only two empirical

tests, the lack of consistency between the two studies may be an indication that the theory, in its present form, does not constitute a satisfactory scheme for a cross-cultural (universal) explanation of communication and other behavioral phenomena. These conclusions are further reinforced if we analyze the structure of significant correlates of behavior about marijuana in the two studies, since a similar pattern as the one observed for attitude emerges, although the problem of circularity in the Woelfel study limits the interpretation of his data.

However, and as we have already stated, the differences between the two studies may be due, at least in part, to the fact that our study constitutes only a partial replication of Woelfel's. As indicated above, the two studies are different in (a) national setting, (b) some of the independent variables included, (c) the measurement of attitude, and, particularly, (d) the age and grade level of the respondents.

Discussion

This section will be divided into two parts: (a) discussion of the theory by virtue of our results, and (b) discussion of the methodology.

a. Theory. A very simple way to synthesize the results of this study would be to state that the expectations we had when we began were greater than the results we have obtained. Even though almost all our hypotheses have been

statistically supported, the substantial or social significance of those results has been more limited than we would have liked. Coefficients of determination that never exceeded .30 are substantially rather limited, particularly for a theory that implicitly makes a much more optimistic claim and which in earlier applications had allowed for the explanation of usually more than 50% of the variance in the dependent variables (even in cases where circularity was not present either because attitude was the dependent variable or, if behavior was the criterion variable, no circular predictors, such as the individual's self-conception as someone who engages in that behavior, were included in the statistical analyses).

In this regard, it might be pertinent to remind that the central postulate of Linear Force Aggregation Theory states that attitudes and behavior are a simple linear aggregate of all relevant information an individual has received from a finite set of sources of communication. Attitudes and behavior are thus assumed to be the outcome of the accumulated information received through a process of communication. If that were indeed the case, one would logically expect very large correlation coefficients, and ours ranged from a high of .548 (R^2 = .30) to a low of only .069 (R^2 = .005; statistically significant at the .05 level but substantially inconsequential). These results are below our initial expectations.

Considering these findings, an important theoretical implication of the present study is that, at least for the Mexican sample, attitudes and behavior are not mainly the result of the linear aggregation of the information received from communication sources, as the principal postulate of the theory claims. It is quite clear that these sources do exhibit significant associations with attitude and behavior about drugs, but not with such a strength as to become the principal predictors of the attitudes and behaviors in question. On the basis of our data, it would seem appropriate to suggest a modification of the main postulate of the theory, so that it state that the simple linear aggregation of all relevant information an individual has received from his sources of communication is an important correlate of attitude and behavior, but not a dominant cause by any means. Stated differently, we can say that communication influences are an important contributing factor in shaping attitudes and behaviors, at least about drugs, but not the only, nor a dominant, cause of the resultant effects.

At the beginning of this dissertation we indicated that an important advantage of the theory and its attendant method, as compared to most other studies on the effects of communciation, is that it calls for multivariate approaches to the study of human phenomena. We certainly do not propose to adopt a different perspective now. But it clearly seems that the notion of a multivariate approach should not

refer to the specific operational variables but to general constructs. Thus, communication would constitute one of the general constructs, operationally comprising a number of specific mass and interpersonal media, and other general constructs would similarly have to be identified and entered into both the empirical and the theoretical models. Just as we affirmed with regard to specific variables, the "true" effects of communication on attitudes and behavior would better be ascertained by comparing it with, and/or statistically controlling the effects of, other causal constructs.

Naturally, the preceding argument raises an issue which cannot be dealt with in the present study: What are the causes of human behavior? Which ever they may be, they surely are more than just communication influences, unless we define communication so broadly as to render the construct meaningless. In any case, even if that question cannot be answered, at least some other presumed causes of behavior have been posited which should perhaps be included in future tests of Linear Force Aggregation Theory. For example, Rosenblith, Allinsmith and Williams (1972) offer several causal categories of human behavior, including biological bases, learning, interpersonal experiences, the individual's setting and specific stimuli, group membership, age or developmental stage, sex, cognitive determinants, motivational determinants, the educational setting, and teachers and teaching. Haller and Woelfel (1971) themselves have

identified self-reflexive activity as an important independent predictor of attitudes and behavior. Many authors have been concerned with personality factors. In fact, the number of presumed causes of behavior that can be identified in the literature is too large to be amenable to its integration into a single, parsimonious model. But at least some of the more promising constructs should be incorporated in future applications of the theory.

Regarding the present test of the theory solely as a communication theory, and with the preceding observations notwithstanding, it is clear that the exemplary messages of significant others have proven to be the main correlate of attitude toward, and frequency of use of, intoxicants. Among them, friends are perceived to be more influential than parents. The obvious implication is that we, or at least the Mexican adolescents we surveyed, are significantly more affected by what we perceive that others do (i.e., their exemplary behaviors) than by what we believe that others say, either interpersonally or via mass media channels. However, the specific nature and process of significant others' effects through exemplary messages is not clear from the present research and should be the subject of future studies. We do not know, for example, whether the effect is due only to modeling behaviors or whether processes such as group pressure, need to conform, and affiliation needs are present. Also we do not know whether or not some limited degree of

circularity influenced our measure of significant others' exemplary behaviors, since the corresponding measures were not obtained directly from them but from our respondents' perception of their significant others' frequency of substance use, in addition to also giving their own, self-reported frequency of substance use.

Interpersonal and mass media definers; i.e., information verbally transmitted, are much less influential according to our data. This finding is also at some variance with a central prediction of the theory that as the amount of accumulated information increases, the effect on the dependent attitudes and behavior will also be greater. In our study, the measures of frequency of exposure to each source and amount of coverage about each substance by each source provide a clear indication of the comparative accumulated amount of information that our respondents may have received; the descriptive statistics show, in this respect, that both the mean frequency of exposure to the various media and the mean frequency with which substances are mentioned by those media are substantial. Generally, most of those sources have a positive sign when the perceived bias of the coverage is also considered; that is, they exert an influence favorable to the use of the two substances. We can say that once all the media are aggregated, the resultant vector represents an attitudinal and behavioral force favorable to substance use, even though not of an overriding intensity or mass. Even in

spite of a majority of messages, including the more influential exemplary ones, that are in favor of alcohol and marijuana, the resultant attitudes and behaviors of our subjects are not strongly influenced. On the one hand, we have seen that the multiple correlation coefficients are rather low. On the other hand, the descriptive statistics show (see p. 94) that neither is the attitude toward either substance too favorable, especially for marijuana whose use is disapproved by 75% of the respondents, nor is the frequency of use of either substance very noticeable. These results suggest that the use of drugs and attitudes favorable toward them are principally due to factors other than the accumulated information an individual has received. If we accept this conclusion (and our data clearly support it), we will then have to accept, particularly for the mass media, that our test of the theory yields results that do not differ so radically from established theories of communication effects as Woelfel and his associates have affirmed that it does. That would be the case even for the "null-effects" theory of Klapper (1960). According to Klapper, the mass media should be considered only one of many determinants in the formation and change of attitudes and behaviors, and their influence would be furthermore subordinated to other non-mediated communication determinants. Basically, this is what our data have shown. Thus, we would have further evidence to call for an attenuation of the claims made by the

central postulates of the theory.

Furthermore, and also regarding the reduced effect of accumulated information, we should observe that if the accumulation of information over time had a strong effect, then "age" should also be strongly correlated with the dependent variables, particularly for adolescents whose age range covers most of the period when fairly permanent orientations toward drugs are established and during which the accumulation of information would crystallize into attitudes and behaviors. However, this is not the case. Table 28 shows that age does not reach a significant regression coefficient with attitude toward marijuana; it does with behavior, but the size of the beta (.08) is not very large. With the Woelfel and Hernandez college respondents, age failed to reach significant regression weights for both attitude and behavior, and, furthermore, the two coefficients have a negative sign.

Differential effects between mass and interpersonal media, as well as within the media that comprise a given set, have also been observed. One factor that determined the variable patterns of association between the various media and the criterion variables is the nature of the dependent variables themselves. Our results indicate, first, that the structure of significant communication influences is different for attitudes and behavior. Secondly, they also differ depending on the specific object of those attitudes

and behavior. This also implies that there is no generalized pattern of communication influences.

b. Methodology. The methodological design of this study was made in accordance with earlier tests of the theory (see particularly Woelfel and Hernandez, 1973; Woelfel et al., 1974; and Mettlin, 1973), which this study replicates in part. Some comments would now seem to be in order.

Most studies of Linear Force Aggregation Theory, including the present one, have taken data only at one point in time. It is true that the message intake index, which includes data on frequency of exposure to a source and amount of coverage, should correlate highly with the actual amount of information received from a given source over time, and as such it constitutes a reliable indicator which is quite economical to measure. However, it would seem very desirable to design a future test of the theory with repeated, over time measurements, covering the span ranging from before the development of an attitude can be assumed to have begun until such attitude and the related behavioral patterns have crystallized. The limitation would of course be that for most attitudes and behaviors this time span would be prohibitingly long.

Related to the preceding point, and for those studies that could not afford over time measurements, it would seem to be very desirable to increase the age range, particularly

at the low end. Most of our youngest respondents were 12 years old, with a few 11 year olds. At these ages, some knowledge about alcohol and drugs, and possibly very extensive knowledge (whether "objectively" accurate or inaccurate should be of little relevance), has already been formed. Attitudes can also be assumed to have been developed, even if their mass is logically still reduced. Therefore, the study should ideally include children as young as possible. The age problem for attitudes and behaviors which begin to develop during childhood should possibly apply to a greater extent for adult samples analyzed in relation to objects like marijuana (Woelfel and Hernandez, 1973), cigarette smoking (Mettlin, 1973), and French Canadian separatism (Woelfel et al., 1974).

Also related to the previous problem is the assumption of the theory that the perception of the receiver plays an active role in determining how communication affects his or her attitudes and behavior. On the basis of the principle of selectivity it would certainly be possible to posit a reverse direction of the arrows that in our theoretical model went from the independent to the dependent variables. It could be argued that those individuals who already have an attitude or behavior favorable to substance use will seek those media and messages that correspond to their orientation and to their expectations. This issue should be dealt with in future studies. Methodologically, it would be possible

to do this by means of panel studies or studies utilizing successive samples. The important element to control in those studies would be the time factor.

It has also been postulated, in earlier formulations of the theory, that attitudes are the main causal determinant of the related behavior (the attitudes being in turn determined by a finite set of communication influences and other causal factors). This proposition, however, still remains to be satisfactorily tested; at least in a way that avoids the circular definitions we have repeatedly criticized. In this regard, it should be recognized here that our own test of the theory would have been more complete if, for comparative purposes, we had also included Woelfel et al's measurement of attitude as the individuals' self-conception as alcohol and marijuana users.

Regarding the multiplicative procedure by which the Aggregated Message Intake indices were created, it should be noted that, because of the multiplication, the component variable with the largest standard deviation will tend to contribute most to the total explained variance in the index. In our own case, we preferred to multiply the observed scale values of the component variables mainly in order to make our indices directly comparable with those of Woelfel and his associates. However, future tests of the theory should consider standardizing the component variables before multiplying their respective values.

Another methodological observation should be made regarding the measurement of the dependent variables. Following Woelfel et al., we measured attitude and behavior very straightforwardly by means of a single-item question. Even though this operationalization produced satisfactory results, it would seem to be more desirable to extend those single items into scales, increasing the range and variability of values. This should increase the quality and reliability of measurements.

Data about the influence of the various communication sources were obtained by means of self-reports by the survey respondents. As we have argued, this provides a satisfactory approach since this is probably the only way whereby we can incorporate the all-important effects of the respondents' perceptual and selective filters. Nevertheless, it would also appear desirable to include data directly taken from all the sources of communication in future studies. These data would be obtained through content analysis of the mass media and from personal interviews of interpersonal sources after they had been identified by the survey respondents. (Data have been directly obtained from significant others by Haller and Woelfel, 1971, and Mettlin, 1973).

Finally, and regarding the exemplary messages, two observations should be made. In the first place, we should recognize that at least some of the strong effect of exemplary behaviors that we have found may actually be due to

the access to drugs that the drug-using exemplars provide for others, and not--or not exclusively--to the presumed effect of the exemplary messages they transmit by their behavior about drugs. Secondly, it would seem desirable to increase the number and nature of sources of exemplary messages in future studies. Just as we asked our respondents for their perception of the frequency of substance use by father, mother, and friends, we could also ask in future studies for their perception of similar behaviors by other likely sources of influence. Examples of such sources might include rock singers, sports figures, actors, other public figures which adolescents or other populations may identify with, television and other media characters, and, in general, specific types of content categories transmitted by the mass media. In this regard, social learning theory (Bandura, 1971) would appear to naturally suggest itself as a logical angle of theoretical approach to the definition and development of the problem.

Policy Implications of the Study

Given the moderate to weak coefficients of determination we have generally reached and other characteristics of the present study, the implications of the research are more theoretical than policy-oriented. Nevertheless, some policy recommendations can be made.

In the first place, this study suggests that drug education and other drug-related campaigns via the mass media may not be as effective as one might desire. Our data show that definer-type messages transmitted by the mass media exert a socially relatively insignificant effect on drug attitudes and behavior, especially when compared with exemplary messages transmitted by significant others.* (This conclusion is furthermore consistent with the results of other studies specifically designed to measure and evaluate the effects of mass media mediated drug education campaigns and public service announcements.) When the mass media are used, and also according to our data, it would seem preferable to not only transmit definer-type, verbal information, but also to attempt some approaches to exemplary messages. Testimonials by figures whom the target audience will identify with would probably be a good alternative. A better alternative might be to present exemplary drug-related behaviors, unobtrusively, and without the manifest intention of affecting the receivers' attitudes and behaviors, through regular media content.

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*This statement refers to the specific, overt, definer-type messages such as those represented by public service announcements. On the basis of our data we cannot generalize this result to other types of messages, like those included in entertainment programs. We believe that it should be considered to conduct future experiments designed to assess the effect on substance attitude and use by "hidden messages" like cigarette-smoking and alcohol-drinking in pleasurable settings by television heroes which adolescents identify with.

Among external factors related to communication influences, exemplary behaviors by significant others are particularly important. Explanations of drug using behaviors, drug education and other drug programs would have to take into account the influence of the examples set by friends, parents, and possibly other significant others. These examples can also be set by the consumption of legal drugs, such as alcohol and medicines. Additionally, these examples can be strong enough to neutralize the effects of definer-type messages. Thus, if these exemplary messages are not taken into account in the design, implementation and evaluation of drug education programs, the probability of failure is increased. Also, given the impact of exemplary messages, it would seem that drug education and related messages should not only be directed to the intended focal individuals, but to their significant others as well, with appropriate message re-definition and strategies.

Regarding the concern for drugs as a social problem and the possible causes of that problem, it would seem that rather than blaming the mass media (which have very little effect) or the bad examples and influences of friends and peers (who are more influential but not too strong a force), it would be preferable to look for individual characteristics of each person, such as personality factors, anxiety, alienation, lack of gratifying affective relationships, frustration, and other dysfunctional ego-centered characteristics which,

in absence of adequate coping mechanisms, may originate a need to escape. It is quite possible that better predictors of substance abuse behaviors might be found if factors such as these were analyzed.

If these personality and other related factors were indeed confirmed as the dominant predictors of attitudes and use of intoxicants, then a different strategy for dealing with these behaviors could perhaps be considered. Rather than devoting much time and effort to media campaigns and public service announcements, officers responsible for drug prevention and education programs could then give some (preliminary) consideration, subject, of course, to appropriate empirical confirmation, to the development of a program that would periodically (a) check the personality make-up, unfulfilled needs, etc., of children and adolescents, and identify those that might present characteristics more commonly associated with drug abuse, and (b) seek to provide functional solutions to their problems.

APPENDIX A

Original Spanish Version of The Questionnaire Used in The Exploratory Study

APPENDIX A

ORIGINAL SPANISH VERSION OF THE QUESTIONNAIRE USED IN THE EXPLORATORY STUDY

In this appendix we present the questionnaire we used in the exploratory study in its original Spanish version. A few questions have been deleted because they are of no interest for this dissertation.

This questionnaire is based in part on the results of personal, free-response interviews we conducted with a number of adolescents. Additional personal interviews were done after the administration of this instrument with some of its respondents.

Some of the questions that follow were worded in an alternative way in another questionnaire, when doubts existed as to the better wording. Both instruments were administered simultaneously.

No escribas tu nombre en este cuestionario. Estamos altamente interesados en tus sinceras y honestas respuestas a preguntas delicadas y personales.

Queremos garantizarte que tus respuestas serán totalmente anónimas y secretas. No existe forma alguna en que vaya a ser posible conectarte a tí o a tu nombre con este cuestionario ó con tus respuestas. Por ello, insistimos, no escibas tu nombre.

Tus respuestas a este cuestionario son de una importancia muy grande. Muchas preguntas son sobre drogas. Cómo tú sabes, actualmente se habla mucho sobre las drogas pero se sabe muy poco. Esto es parte de un estudio científico de mucha importancia sobre drogas y sobre los medios de comunicación entre los jóvenes de la Ciudad de México. Por lo mismo tus respuestas sinceras son necesarias. Insistimos esto es un estudio científico y no está conectado de manera alguna con autoridades.

Por favor, procura contestar todo el cuestionario, encerrando dentro de un círculo la alternativa a cada pregunta que mejor exprese tu opinión. Esto no es un examen; no hay respuestas correctas ni falsas. Lo único que cuenta es lo que tú piensas. Procura contestar lo más rápidamente posible.

Te agradecemos muchísimo tu colaboración a esta investigación científica. Verdaderamente es importante.

SECCION I

Primeramente, te haremos unas preguntas sobre la forma en que utilizas diversos medios de comunicación. Aquí, como en todo el cuestionario, encierra claramente dentro de un círculo el número de la respuesta que mejor exprese tú opinión.

1.- Empecemos por la televisión. ¿Con qué frecuencia ves televisión?
   1. menos de un día por semana
   2. uno ó dos días por semana
   3. tres ó cuatro días por semana
   4. cinco ó seis días por semana
   5. a diario

2.- En un día normal ¿como cuántas horas de televisión ves?
   1. cero
   2. menos de media hora
   3. de media hora a una hora
   4. de una a dos horas
   5. de dos a tres horas
   6. de tres a cuatro horas
   7. de cuatro a cinco horas
   8. más de cinco horas

3.- En un día normal, ¿Cuántos programas de televisión ves?
   Número_____

4.- Normalmente, ¿a qué horas del día ves televisión?
   1. por la mañana
   2. por la tarde
   3. por la noche
   4. por la tarde y por la noche
   5. sólo sábados y domingos
   6. solo ocasionalmente
   7. nunca o casi nunca

5.- ¿Cuáles son tus programas favoritos de televisión?

_____

_____

_____

6.- Normalmente, ¿qué tanta atención le prestas a los comerciales de la televisión?
1. ninguna atención
2. poca atención
3. regular atención
4. mucha atención

7.- Pasemos ahora al radio, ¿con qué frecuencia oyes el radio?
1. menos de un día por semana
2. uno ó dos días por semana
3. tres ó cuatro días por semana
4. cinco o seis días por semana
5. a diario

8.- En un día normal, ¿cómo cuántas horas de radio oyes?
1. cero
2. menos de media hora
3. de media hora a una hora
4. de una a dos horas
5. de dos a tres horas
6. de tres a cuatro horas
7. de cuatro a cinco horas
8. más de cinco horas

9.- Normalmente, ¿a qué horas del día oyes el radio?
1. por la mañana
2. por la tarde
3. por la noche
4. a diversas horas del día
5. casi todo el día
6. sólo ocasionalmente
7. nunca ó casi nunca

10.- ¿Cuáles son tus programas favoritos de radio?

_____

_____

_____

11. ¿Cuáles son tus estaciones de radio favoritas?

_____

_____

12.- Normalmente, ¿qué tanta atención le prestas a los anuncios o comerciales de radio?
1. ninguna atención
2. poca atención
3. regular atención
4. mucha atención

13.- En cuánto a la música en particular, ¿Cuál es tu tipo de música favorita?

_____

_____

¿Con qué frecuencia oyes los siguientes tipos de música?

14.- CLASICA 1. nunca
2. poco
3. frecuentemente
4. casi siempre

15.- INSTRUMENTAL
1. nunca
2. poco
3. frecuentemente
4. casi siempre

16.- MODERNA, ROCK
1. nunca
2. poco
3. frecuentemente
4. casi siempre

17.- MEXICANA, RANCHERA
1. nunca
2. poco
3. frecuentemente
4. casi siempre

18.- ROMANTICA
1. nunca
2. poco
3. frecuentemente
4. casi siempre

19.- Pasemos ahora a los periódicos. ¿Con qué frecuencia lees periódicos?
1. menos de un día por semana
2. uno ó dos días por semana
3. tres ó cuatro días por semana
4. cinco ó seis días por semana
5. a diario

20.- En un día normal, ¿cuánto tiempo dedicas a leer algún periódico?
1. cero horas
2. menos de un cuarto de hora
3. de un cuarto de hora a media hora
4. de media hora a una hora
5. más de una hora

21.- ¿Qué tipo de contenido es el que más te interesa del periódico que lees?

_____

_____

22.- ¿Cuál es el periódico que más frecuentemente lees?

_____

23.- Normalmente, ¿qué tanto lees del periódico?
1. sólo lo hojeo
2. leo poco
3. leo unas pocas secciones que me interesan
4. leo la mayor parte

24.- Normalmente, ¿qué tanta atención le prestas a los anuncios en el periódico?
1. ninguna atención
2. poca atención
3. regular atención
4. mucha atención

25.- Por último, en cuanto a revistas, ¿cuántas revistas acostumbras leer al mes?
Número_____

26.- ¿Cuáles son las revistas que más frecuentemente lees?

_____

_____

27.- ¿Qué tipo de contenido es el que más te interesa de las revistas que lees?

_____

_____

28.- Normalmente, ¿Qué tanto lees de las revistas?
1. sólo las hojeo
2. leo poco
3. leo unas pocas secciones que me interesan
4. leo la mayor parte

29.- Normalmente, ¿qué tanta atención le prestas a los anuncios en las revistas?
1. ninguna atención
2. poca atención
3. regular atención
4. mucha atención

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SECCION IV

Las preguntas de esta Sección del cuestionario se refieren a la forma cómo tú adquieres información sobre diversas drogas (cómo marihuana, alcohol, alucinógenos, anfetaminas, barbitúricos e inhalantes). Por favor, encierra en un círculo el número de la respuesta que mejor exprese qué tan importante es cada una de las siguientes personas o medios como fuente de información y conocimiento sobre diversas drogas y sus efectos:

61.- AMIGOS DE LA ESCUELA

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

62.- AMIGOS FUERA DE LA ESCUELA

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

63.- REVISTAS

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

64.- PERIODICOS

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

65.- TELEVISION

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

66.- CANCIONES

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

67.- RADIO

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

68.- HERMANOS

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

69.- PADRES

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

70.- OTROS FAMILIARES

4. muy importante
3. regularmente importante
2. poco importante
1. nada importante

Veamos ahora cuál es tu fuente de información favorita para cada una de las siguientes drogas. Para cada una de las drogas, pon en un círculo aquella fuente de información a la que acudirías primero si necesitaras tener información sobre la droga (marca sólo una para cada droga).

71.- MARIHUANA

1. amigos de la escuela
2. amigos fuera de la escuela
3. padres
4. hermanos
5. otros familiares
6. canciones
7. radio
8. televisión
9. periódicos
10. revistas

72.- ALCOHOL (como vino, cerveza, licor)

1. amigos de la escuela
2. amigos fuera de la escuela
3. padres
4. hermanos
5. otros familiares
6. canciones
7. radio
8. televisión
9. periódicos
10. revistas

73.- ALUCINOGENOS (como LSD)

1. amigos de la escuela
2. amigos fuera de la escuela
3. padres
4. hermanos
5. otros familiares
6. canciones
7. radio
8. televisión
9. periódicos
10. revistas

74.- BARBITURICOS (como pastas, pastillas)

1. amigos de la escuela
2. amigos fuera de la escuela
3. padres
4. hermanos
5. otros familiares
6. canciones
7. radio
8. televisión
9. periódicos
10. revistas

75.- ANFETAMINAS (como chochos y pastas)

1. amigos de la escuela
2. amigos fuera de la escuela
3. padres
4. hermanos
5. otros familiares
6. canciones
7. radio
8. televisión
9. periódicos
10. revistas

76.- INHALANTES (como glu y resistol 500)

1. amigos de la escuela
2. amigos fuera de la escuela
3. padres
4. hermanos
5. otros familiares
6. canciones
7. radio
8. televisión
9. periódicos
10. revistas

Como sabemos, información y conducta con respecto a drogas constituyen cosas muy personales y muy delicadas. Diversas fuentes de información sobre drogas merecen diversos grados de confianza para cada uno de nosotros. Dinos, por favor, qué tanta confianza tienes sobre cada una de las siguientes personas ó lugares, como fuentes de información sobre drogas

77.- PADRES

4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

78.- HERMANOS

4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

79.- OTROS FAMILIARES

4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

80.- TELEVISION

4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

81.- RADIO

4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

82.- CANCIONES

4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

83.- REVISTAS
4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

84.- PERIODICOS
4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

85.- AMIGOS DE LA ESCUELA
4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

86.- AMIGOS FUERA DE LA ESCUELA
4. mucha confianza
3. regular confianza
2. poca confianza
1. ninguna confianza

En parte debido a la confianza que le tengamos a una fuente de información sobre drogas y en parte debido a otras razones, a veces podemos sentir una gran necesidad de <u>verificar</u> la información que recibimos sobre alguna droga.

87.- Suponte que recibiste información sobre alguna droga y que es de importancia para tí, pero sientes la necesidad de verificar la información. ¿A cuál de las siguientes fuentes irías primero para verificar la información o para obtener información adicional? (Marca con un círculo sólo una fuente).

1. amigos de la escuela
2. amigos fuera de la escuela
3. padres
4. hermanos
5. otros familiares
6. periódicos
7. revistas
8. canciones
9. radio
10. televisión

88.- Por último en esta Sección, dinos por favor si tuvieras un problema con alguna droga, ¿A quién acudirías primero en busca de ayuda?

1. un maestro u otro personal de la escuela
2. un amigo de la escuela
3. un amigo fuera de la escuela
4. un hermano ó hermana
5. mis papás
6. otro familiar
7. médico ó enfermera
8. hospital ó clínica
9. algún centro de información ó tratamiento de drogas
10. alguno otra persona ó centro, y en este caso, ¿a quién?

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SECCION VI

Para todos nosotros existen diversas personas, personajes de los medios de comunicación, etc., que nos sirven de modelo. Es decir que en mayor o menor grado imitamos e influyen en nuestras opiniones, en nuestras actitudes, y en nuestra conducta. En esta parte del cuestionario queremos preguntarte hasta qué grado tú crees que las siguientes personas o medios sirven de modelo para tí o te influyen en tus opiniones, actitudes o conducta, en general.

98.- PERSONAJES DE LA TELEVISION

4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

99.- PERSONAJES DEL RADIO

4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

100.- PERSONAJES DE LAS CANCIONES Y CANTANTES
4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

101.- TUS PADRES
4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

102.- TUS HERMANOS O HERMANAS
4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

103.- OTROS FAMILIARES
4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

104.- EL CONTENIDO DE LOS PERIODICOS QUE LEES
4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

105.- EL CONTENIDO DE LAS REVISTAS QUE LEES
4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

106.- TUS AMIGOS DE LA ESCUELA
4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

107.- TUS AMIGOS FUERA DE LA ESCUELA

4. influyen mucho
3. influyen regular
2. influyen poco
1. no influyen nada

SECCION VII

En esta sección hay una serie relativamente larga de preguntas. A través de ellas necesitamos saber la frecuencia con que usas diversos medios de información, y tu frecuencia de comunicación con diversas personas, así como el tipo de información sobre drogas que tú percibes en estos medios y en esas personas. Por favor marca claramente la respuesta que exprese mejor tú opinión para cada pregunta. En estas preguntas hemos separado el acohol de otras substancias tóxicas, que aquí llamaremos "drogas". Dentro de "drogas" incluimos a la marihuana (mota, café, hierba, pasto, la verde), los inhalantes(mencho, flexo, resistol 500, glu, flan), las anfetaminas (pastas, pastillas, diablillos, chochos), los barbitúricos (pastas, pastillas, chochos), y los alucinógenos (LSD, hongos, peyote, mezcalina ó algas).

108.- ¿Con qué frecuencia lees periódicos?

1. nunca
2. raramente
3. unas pocas horas al mes
4. unas pocas horas a la semana
5. como una hora al día
6. unas pocas horas al día
7. casi todo el tiempo

109.- ¿Con qué frecuencia ves referencias en los periódicos qué lees sobre bebidas alcohólicas?

1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

110.- En general, ¿Cómo calificarías las referencias sobre bebidas alcohólicas que ves en los periódicos que lees?
2. definitivamente a favor del consumo del alcohol
1. más o menos a favor del consumo del alcohol
0. ni a favor ni en contra del consumo del alcohol
-1. más o menos en contra del consumo del alcohol
-2. definitivamente en contra del consumo del alcohol
(0. no lees periódicos o nunca ves referencias al alcohol en ellos).

111.- Con qué frecuencia ves referencias sobre drogas en los periódicos que lees?
1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

112.- En general, ¿cómo calificarías las referencias sobre las drogas que ves en los periódicos que lees?
2. definitivamente a favor del consumo de drogas
1. más o menos a favor del consumo de drogas
0. ni a favor ni en contra del consumo de drogas
-1. más o menos en contra del consumo de drogas
-2. definitivamente en contra del consumo de drogas
(0. no lees periódicos o nunca ves referencias sobre drogas en ellos).

113.- ¿Con qué frecuencia lees revistas?
1. nunca
2. raramente
3. unas pocas horas al mes
4. unas pocas horas a la semana
5. como una hora al día
6. unas pocas horas al día
7. casi todo el tiempo

114.- ¿Con qué frecuencia ves referencias sobre bebidas alcohólicas en las revistas que lees?
1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

115.- En general, ¿Cómo calificarías las referencias sobre bebidas alcohólicas que ves en las revistas que lees?
2. definitivamente a favor del consumo de alcohol
1. más o menos a favor del consumo de alcohol
0. ni a favor ni en contra del consumo de alcohol
-1. más o menos en contra del consumo de alcohol
-2. definitivamente en contra del consumo de alcohol
(0. no lees revistas o nunca ves referencias del alcohol en ellas).

116.- ¿Con qué frecuencia ves referencias sobre drogas en las revistas que lees?
1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

117.- En general, ¿cómo calificarías las referencias sobre las drogas que ves en las revistas que lees?
2. definitivamente a favor del consumo de drogas
1. más o menos a favor del consumo de drogas
0. ni a favor ni en contra del consumo de drogas
-1. más o menos en contra del consumo de drogas
-2. definitivamente en contra del consumo de drogas
(0. no lees revistas o nunca ves referencias sobre drogas en ellas).

118.- ¿Con qué frecuencia platicas con tus amigos de la escuela?
1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

119.- ¿Con qué frecuencia platicas sobre bebidas alcohólicas con tus amigos de la escuela?
1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

120.- En general, ¿cómo calificarías la posición de tus amigos de la escuela con respecto al consumo de bebidas alcohólicas?

2. definitivamente a favor del consumo de alcohol
1. más o menos a favor del consumo de alcohol
0. ni a favor ni en contra del consumo de alcohol
-1. más o menos en contra del consumo de alcohol
-2. definitivamente en contra del consumo de alcohol

121.- ¿Con qué frecuencia platicas sobre drogas con tus amigos de la escuela?

1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

122.- En general, ¿cómo calificarías la posición de tus amigos de la escuela con respecto al consumo de drogas?

2. definitivamente a favor del consumo de drogas
1. más o menos a favor del consumo de drogas
0. ni a favor ni en contra del consumo de drogas
-1. más o menos en contra del consumo de drogas
-2. definitivamente en contra del consumo de drogas

123.- ¿Con qué frecuencia platicas con tus amigos de fuera de la escuela? (o sea, amigos tuyos que no van a la escuela contigo)

1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

124.- ¿Con qué frecuencia platicas sobre bebidas alcohólicas con tus amigos de fuera de la escuela?

1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

125.- En general, ¿Cómo calificarías la posición de tus amigos de fuera de la escuela con respecto al consumo de bebidas alcohólicas?

2. definitivamente a favor del consumo de alcohol
1. más o menos a favor del consumo de alcohol
0. ni a favor ni en contra del consumo de alcohol
-1. más o menos en contra del consumo de alcohol
-2. definitivamente en contra del consumo de alcohol

126.- ¿Con qué frecuencia platicas sobre drogas con tus amigos de fuera de la escuela?

1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

127.- En general, ¿cómo calificarías la posición de tus amigos de fuera de la escuela con respecto al consumo de drogas?

2. definitivamente a favor del consumo de drogas
1. más o menos a favor del consumo de drogas
0. ni a favor ni en contra del consumo de drogas
-1. más o menos en contra del consumo de drogas
-2. definitivamente en contra del consumo de drogas

128.- ¿Con qué frecuencia oyes el radio?

1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

129.- ¿Con qué frecuencia oyes referencias sobre bebidas alcohólicas en el radio?

1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

130.- En general, ¿Cómo calificarías las referencias sobre bebidas alcohólicas que oyes en el radio?
   2. definitivamente en favor del consumo de alcohol
   1. más o menos en favor del consumo de alcohol
   0. ni a favor ni en contra del consumo de alcohol
  -1. más o menos en contra del consumo de alcohol
  -2. definitivamente en contra del consumo de alcohol

131.- ¿Con qué frecuencia oyes referencias sobre drogas en el radio?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

132.- En general, ¿cómo calificarías las referencias sobre drogas que oyes en el radio?
   2. definitivamente en favor del consumo de drogas
   1. más o menos en favor del consumo de drogas
   0. ni a favor ni en contra del consumo de drogas
  -1. más o menos en contra del consumo de drogas
  -2. definitivamente en contra del consumo de drogas

133.- ¿Con qué frecuencia ves televisión?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

134.- ¿Con qué frecuencia ves referencias sobre bebidas alcohólicas en la televisión?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

135.- En general ¿como calificarías las referencias sobre bebidas alcohólicas que ves en la televisión?
   2. definitivamente a favor del consumo de alcohol
   1. más o menos a favor del consumo del alcohol
   0. ni a favor ni en contra del consumo de alcohol
  -1. más o menos en contra del consumo de alcohol
  -2. definitivamente en contra del consumo del alcohol

136.- ¿Con qué frecuencia ves referencias sobre drogas en la televisión?
1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

137.- En general ¿cómo calificarías las referencias sobre drogas que ves en la televisión?
2. definitivamente en favor del consumo de drogas
1. más o menos en favor del consumo de drogas
0. ni a favor ni en contra del consumo de drogas
-1. más o menos en contra del consumo de drogas
-2. definitivamente en contra del consumo de dorgas

138.- ¿Con qué frecuencia oyes canciones populares?
1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

139.- ¿Con qué frecuencia oyes referencias sobre bebidas alcohólicas en las canciones populares?
1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

140.- En general ¿cómo calificarías las referencias sobre las bebidas alcohólicas que oyes en las canciones populares?
2. definitivamente en favor del consumo de alcohol
1. más o menos en favor del consumo de alcohol
0. ni en favor ni en contra del consumo de alcohol
-1. más o menos en contra del consumo de alcohol
-2. definitivamente en contra del consumo de alcohol

141.- ¿Con qué frecuencia oyes referencias sobre drogas en las canciones populares?
1. nunca
2. con poca frecuencia
3. de vez en cuando
4. con bastante frecuencia
5. muy frecuentemente

142.- En general ¿cómo calificarías las referencias sobre drogas que oyes en las canciones populares?
   2. definitivamente en favor del consumo de drogas
   1. más o menos en favor del consumo de drogas
   0. ni en favor ni en contra del consumo de drogas
  -1. más o menos en contra del consumo de drogas
  -2. definitivamente en contra del consumo de drogas

143.- ¿Con qué frecuencia platicas con tus papás?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

144.- ¿Con qué frecuencia platicas con tus papás sobre bebidas alcohólicas?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

145.- En general ¿cómo calificarías la posición de tus papás con respecto al consumo de bebidas alcohólicas?
   2. definitivamente en favor del consumo de alcohol
   1. más o menos en favor del consumo de alcohol
   0. ni en favor ni en contra del consumo de alcohol
  -1. más o menos en contra del consumo de alcohol
  -2. definitivamente en contra del consumo de alcohol

146.- ¿Con qué frecuencia platicas sobre drogas con tus papás?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

147.- En general, ¿cómo calificarías la posición de tus papás con respecto al consumo de drogas?
   2. definitivamente en favor del consumo de drogas
   1. más o menos en favor del consumo de drogas
   0. ni en favor ni en contra del consumo de drogas
  -1. más o menos en contra del consumo de drogas
  -2. definitivamente en contra del consumo de drogas

148.- ¿Con qué frecuencia platicas con tus hermanos o hermanas?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

149.- ¿Con qué frecuencia platicas sobre bebidas alcohólicas con tus hermanos o hermanas?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

150.- En general, ¿cómo calificarías la posición de tus hermanos o hermanas con respecto al consumo de bebidas alcohólicas?
   2. definitivamente en favor del consumo de alcohol
   1. más o menos en favor del consumo de alcohol
   0. ni en favor ni en contra del consumo de alcohol
  -1. más o menos en contra del consumo de alcohol
  -2. definitivamente en contra del consumo de alcohol

151.- ¿Con qué frecuencia platicas sobre drogas con tus hermanos o hermanas?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

152.- En general, ¿cómo calificarías la posición de tus hermanos o hermanas con respecto a drogas?
   2. definitivamente en favor del consumo de drogas
   1. más o menos en favor del consumo de drogas
   0. ni en favor ni en contra del consumo de drogas
  -1. más o menos en contra del consumo de drogas
  -2. definitivamente en contra del consumo de drogas

153.- ¿Con qué frecuencia platicas con "otros familiares"? (cómo tíos, primos y otros parientes que no vivan en tu casa).
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

154.- ¿Con qué frecuencia platicas sobre bebidas alcohólicas con "otros familiares"?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

155.- En general, ¿cómo calificarías la posición de tus "otros familiares" con respecto al consumo de bebidas alcohólicas?
   2. definitivamente en favor del consumo de alcohol
   1. más o menos en favor del consumo de alcohol
   0. ni en favor ni en contra del consumo de alcohol
  -1. más o menos en contra del consumo de alcohol
  -2. definitivamente en contra del consumo de alcohol

156.- ¿Con qué frecuencia platicas sobre drogas con "otros familiares"?
   1. nunca
   2. con poca frecuencia
   3. de vez en cuando
   4. con bastante frecuencia
   5. muy frecuentemente

157.- En general, ¿cómo calificarías la posición de tus "otros familiares" con respecto al consumo de drogas?
2. definitivamente en favor del consumo de drogas
1. más o menos en favor del consumo de drogas
0. ni en favor ni en contra del consumo de drogas
-1. más o menos en contra del consumo de drogas
-2. definitivamente en contra del consumo de drogas

SECCION VIII

Las preguntas de esta Sección hacen referencia específica a tu conducta y actitud con respecto a diversas drogas. Tu total sinceridad en las respuestas es de vital importancia. Queremos recordarte que tus respuestas son estrictamente anónimas y confidenciales y que no existe forma alguna en que te podamos conectar a tí con estas respuestas.

Tanto sí has usado jamás cualquiera de las drogas siguientes o no, quisiéramos saber que tan fácil sería para tí conseguir cada una de esas drogas. Veamos cuanto tiempo te tomaría conseguirla, sí empezaras a buscarla cuando sales de la escuela por la tarde:

158.- MARIHUANA
1. menos de una hora
2. de una a tres horas
3. de tres a seis horas
4. de seis a doce horas
5. de doce a 24 horas
6. entre uno y siete días
7. más de una semana
8. imposible

159.- INHALANTES
1. menos de una hora
2. de una a tres horas
3. de tres a seis horas
4. de seis a doce horas
5. de doce a 24 horas
6. entre uno y siete días
7. más de una semana
8. imposible

160.- BARBITURICOS

1. menos de una hora
2. de una atres horas
3. de tres a seis horas
4. de seis a doce horas
5. de doce a 24 horas
6. entre uno y siete días
7. más de una semana
8. imposible

161.- ANFETAMINAS

1. menos de una hora
2. de una a tres horas
3. de tres a seis horas
4. de seis a doce horas
5. de doce a 24 horas
6. entre uno y siete días
7. más de una semana
8. imposible

162.- ALUCINOGENOS

1. menos de una hora
2. de una a tres horas
3. de tres a seis horas
4. de seis a doce horas
5. de doce a 24 horas
6. entre uno y siete días
7. más de una semana
8. imposible

Ahora dinos por favor a qué tipo de persona o a qué tipo de lugar irías para conseguir cada una de las siguientes drogas (no nos des nombres de personas o lugares específicos):

163.- MARIHUANA _____

_____

164.- INHALANTES _____

_____

165.- BARBITURICOS _____

_____

166.- ANFETAMINAS _____

_____

167.- ALUCINOGENOS _____

_____

Si consumes alguna de las siguientes drogas, nos podrías decir en qué tipo de lugar la consumes (de nuevo, no nos des nombres ni lugares específicos):

168.- MARIHUANA _____

_____

169.- INHALANTES _____

_____

170.- BARBITURICOS _____

_____

171.- ANFETAMINAS _____

_____

172.- ALUCINOGENOS _____

_____

Sí consumes alguna substancia como marihuana, inhalantes barbitúricos, anfetaminas o alucinógenos, dinos por favor (para cada substancia) en qué tipo de lugar y a qué tipo de persona se la compras (sin mencionar nombres ni lugares específicos):

173.- LUGAR _____

_____

174.- PERSONA _____

_____

A continuación, quisiéramos saber con qué frecuencia consumes cada una de las siguientes drogas:

175.- MARIHUANA
1. nunca
2. sólo la he probado una o dos veces
3. la he probado muy pocas veces
4. menos de una vez al mes, en promedio
5. una o dos veces al mes
6. una o dos veces por semana
7. más de dos veces por semana
8. a diario

176.- INHALANTES
1. nunca
2. sólo la he probado una o dos veces
3. la he probado muy pocas veces
4. menos de una vez al mes, en promedio
5. una o dos veces al mes
6. una o dos veces por semana
7. más de dos veces por semana
8. a diario

177.- ALCOHOL
1. nunca
2. sólo lo he probado una o dos veces
3. lo he probado muy pocas veces
4. menos de una vez al mes, en promedio
5. una o dos veces al mes
6. una o dos veces por semana
7. más de dos veces por semana
8. a diario

178.- BARBITURICOS
1. nunca
2. sólo lo he probado una o dos veces
3. lo he probado muy pocas veces
4. menos de una vez al mes, en promedio
5. una o dos veces al mes
6. una o dos veces por semana
7. más de dos veces por semana
8. a diario

179.- ANFETAMINAS
1. nunca
2. sólo lo he probado una o dos veces
3. la he probado muy pocas veces
4. menos de una vez al mes, en promedio
5. una o dos veces al mes
6. una o dos veces por semana
7. más de dos veces por semana
8. a diario

180.- ALUCINOGENOS
1. nunca
2. sólo lo he probado una o dos veces
3. lo he probado muy pocas veces
4. menos de una vez al mes, en promedio
5. una o dos veces al mes
6. una o dos veces por semana
7. más de dos veces por semana
8. a diario

¿Cuántos de tus amigos, crees tú, consumen cada una de las siguientes substancias, aunque sea ocasionalmente? (marca un cuadro con una cruz para cada substancia).

	5. Todos	4. La mayoría	3. Algunos	2. Pocos	1. Ninguno	
181.- Marihuana						
182.- Alcohol						
183.- Inhalantes						
184.- Barbitúricos						
185.- Anfetaminas						
186.- Alucinógenos						

187.- En una semana normal, ¿como cuánto dinero gastas en alcohol?

$_____

188.- Y en substancias como marihuana, inhalantes, barbitúricos, anfetaminas y alucinógenos, ¿como cuánto dinero gastas en una semana normal?

$_____

Sí consumes o has consumido alguna de las substancias que acabamos de mencionar, dinos por favor, en el espacio a continuación, quién te inició, cuando fué la primera vez, en que tipo de lugar y por qué.

189.- ¿Quién te inició (tipo de persona, no citar nombres) con qué substancia?

_____

_____

190.- ¿Cuándo fue la primera vez? (para cada substancia)

_____

_____

_____

191.- ¿En qué tipo de lugar u ocasión? (para cada substancia)

_____

_____

_____

192.- ¿Por qué? Si no has probado ninguna substancia dinos también por qué?.

_____

_____

_____

En lo personal, ¿has iniciado tú a alguna persona al uso de alguna de las anteriores substancias?

_____ sí _____ no

193.- ¿Por qué?_____

_____

_____

194.- ¿A qué tipo de personas? (cita la substancia)

_____

_____

_____

195.- ¿En qué tipo de lugar u ocasión? (cita la substancia)

_____

_____

Diversas personas sienten u opinan de manera diferente acerca del consumo de las siguientes substancias por otras personas. A continuación indícanos como sientes tú sobre el consumo ocasional o habitual de cada una de las siguientes substancias por personas de tu edad. Marca con una cruz la alternativa que mejor exprese tu opinión.

	5. Apruebo totalmente	4. Apruebo	3. Neutral o No sé	2. Desapruebo	1. Desapruebo Totalmente
196.- Fumar marihuana ocasionalmente o probarla					
197.- Fumar marihuana habitualmente					
198.- Tomar bebidas alcohólicas ocasionalmente o probarlas					
199.- Tomar bebidas alcohólicas habitualmente					
200.- Usar inhalantes ocasionalmente o probarlos					
201.- Usar inhalantes habitualmente					
202.- Usar barbitúricos ocasionalmente o probarlos					
203.- Tomar barbitúricos habitualmente					
204.- Tomar anfetaminas ocasionalmente o probarlas					
205.- Tomar anfetaminas habitualmente					
206.- Ingerir alucinógenos ocasionalmente o probarlos					
207.- Ingerir alucinógenos habitualmente					

SECCION IX

Por último quisiéramos que nos contestaras unas pocas pero muy importantes preguntas:

208.- ¿Qué año escolar estás cursando?

_____

209.- ¿Cuál es tu promedio? aproximadamente.

5. de 9 a 10
4. de 8 a 9
3. de 7 a 8
2. de 6 a 7
1. menos de 6

210.- ¿Tienes planeado estudiar alguna carrera en la universidad?
4. definitivamente sí
3. probablemente sí
2. probablemente no
1. definitivamente no
0. no se

211.- ¿Cuál es tu edad?
1. menos de once años
2. 11 años
3. 12 años
4. 13 años
5. 14 años
6. 15 años
7. 16 años
8. 17 años
9. 18 años ó más

213.- ¿Cuántos hermoanos tienes?

_____

214.- ¿Cuál es tu posición entre tus hermanos?
1. hijo único
2. el mayor
3. en medio, familia grande
4. en medio, familia chica
5. el menor

214.- En cuanto a religión, ¿cómo te consideras?
1. católico practicante habitualmente
2. católico practicante ocasionalmente
3. católico no practicante
4. indiferente; sin religión particular
5. protestante
6. judío
7. ateo, agnóstico
8. otra religión

215.- ¿Cuál es tu origen?
1. Distrito Federal
2. ciudad grande de provincia
3. ciudad chica de provincia
4. población pequeña o zona rural
5. extranjero

216.- ¿En que colonia vives?

_____

217.- ¿Cuál es la ocupación de tu papá? Es decir, ¿a qué se dedica tu papá cuando trabaja? (procura ser un poco detallado).

_____

_____

_____

218.- ¿A qué se dedica tu mamá?

_____

_____

_____

219.- ¿Viven juntos tus papás?
1. sí
2. no, por defunción
3. no, por separación o divorcio

220.- En general, ¿cómo te consideras?
1. muy conservador
2. conservador
3. ni conservador ni liberal
4. liberal
5. muy liberal

221.- Desde un punto de vista político, ¿cómo te consideras?

_____

_____

_____

222.- ¿Cuál es tu sexo?
1. hombre
2. mujer

APPENDIX B

Final Version of The Questionnaire in the Original Spanish Presentation

APPENDIX B

In this appendix we present the origianl Spanish version of the questionnaire.

The missing questions were excluded because they are not utilized in this dissertation. They are questions of interest to this author or to the funding institution.

For easy reference, we indicate next to each question or block of questions the page(s) number(s) where it appears defined in the text.

APENDIX B

FINAL VERSION OF THE QUESTIONNAIRE IN THE ORIGINAL SPANISH PRESENTATION

No escribas tu nombre en este cuestionario. Este cuestionario es estrictamente confidencial. Tu colaboración es de mucha importancia porque nos ayudará a comprender lo que la gente joven como tú piensa sobre diversas fuentes de comunicación y sobre diversas substancias. Esto es parte de un estudio científico.

Por favor, contesta todo el cuestionario encerrando dentro de un círculo la respuesta a cada pregunta que mejor exprese tu opinión.

Esto no es un examen; no hay respuestas buenas ni malas, lo que nos importa es lo que tú piensas y opinas.

Sinceramente te agradecemos tu valiosa colaboración a este estudio.

(see page 103)

SECCION I (see p.52; pp. 71-73; pp. 78-79).

Encierra con un círculo el número de la respuesta que más se parezca a tu personal opinión.

1.- ¿Con qué frecuencia ves televisión?
0. nunca
1. unas pocas horas al mes
2. unas pocas horas a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas al día

2.- Cuando ves televisión, ¿cuántas veces se menciona algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

3.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas que tiene la televisión en México?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebdidas alcohólicas
2. ni a favor ni en contra, a nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

4.- Cuando ves televisión, ¿cuántas veces se menciona algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

5. En general, ¿cuál crees que es la forma de pensar y actuar sobre la mariguana que tiene la televisión en México?
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra, o nunca se menciona
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

6.- ¿Con qué frecuencia oyes radio?
0. nunca
1. unas pocas horas al mes
2. unas pocas horas a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas al día

7.- Cuando oyes radio ¿cuántas veces se menciona algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

8.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas que tiene la radio en México?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebidas alcohólicas
2. ni a favor ni en contra, o nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

9.- Cuando oyes radio, ¿cuántas veces se menciona algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

10.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre la mariguana que tiene la radio?
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra, o nunca se menciona
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

11.- ¿Con qué frecuencia escuchas canciones populares?
0. nunca
1. unas pocas horas al mes
2. unas pocas horas a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas al día

12.- Cuando escuchas canciones populares, ¿cuántas veces se menciona algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

13.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas que tienen las canciones populares?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebidas alcohólicas
2. ni a favor ni en contra, o nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

14.- Cuando escuchas canciones populares ¿cuántas veces se menciona algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

15.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre la mariguana que tienen las canciones populares?
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra de la mariguana
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

16.- ¿Con qué frecuencia platicas con tus papás?
0. nunca
1. unas pocas horas al mes
2. unas pocas horas a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas al día

17.- Cuando platicas con tus padres ¿cuántas veces hablan algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

18.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas de tus padres?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebidas alcohólicas
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

19.- Cuando platicas con tus padres, ¿cuántas veces se habla algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

20.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre la mariguana que tienen tus padres
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra de la mariguana
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

21.- ¿Con qué frecuencia platicas con tus hermanos?
0. nunca
1. unas pocas horas al mes
2. unas pocas horas a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas al día

22.- Cuando platicas con tus hermanos, ¿cuántas veces hablan algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

23.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas de tus hermanos?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebidas alcohólicas
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

24.- Cuando platicas con tus hermanos, ¿cuántas veces se habla algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

25.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre la mariguana que tienen tus hermanos?
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

26.- ¿Con qué frecuencia platicas con otros familiares?
0. nunca
1. unas pocas horas al mes
2. hasta una hora a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas al día

27.- Cuando platicas con otros familiares ¿cuántas veces hablan algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

28.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas de tus otros familiares?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebidas alcohólicas
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

29.- Cuando platicas con tus otros familiares ¿cuántas veces se habla algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

30.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre la mariguana que tienen tus otros familiares?
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

31.- ¿Con qué frecuencia platicas con tus amigos de la escuela?
0. nunca
1. unas pocas horas al mes
2. unas pocas horas a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas al día

32.- Cuando platicas con tus amigos de la escuela ¿cuántas veces hablan algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

33.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas de tus amigos de la escuela?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebidas alcohólicas
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

34.- Cuando platicas con tus amigos de la escuela ¿cuántas veces se habla algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

35.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre la mariguana que tienen tus amigos de la escuela?
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra de la mariguana
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

36.- ¿Con qué frecuencia platicas con tus amigos de fuera de la escuela?
0. nunca
1. unas pocas horas al mes
2. unas pocas horas a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas al día

37.- Cuando platicas con tus amigos fuera de la escuela ¿cuántas veces hablan algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

38.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas de tus amgios de fuera de la escuela?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebidas alcohólicas
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

39.- Cuando platicas con tus amigos de fuera de la escuela, ¿cuántas veces se habla algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

40.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre la mariguana que tienen tus amigos de fuera de la escuela?
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

41. ¿Con qué frecuencia lees periódicos?
0. nunca
1. unas pocas horas al mes
2. unas pocas horas a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas al día

42.- Cuando lees periódicos ¿cuántas veces se menciona algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

43.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas que tienen los periódicos?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebidas alcohólicas
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

44.- Cuando lees periódicos, ¿cuántas veces se menciona algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

45.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre la mariguana que tienen los periódicos?
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

46.- ¿Con qué frecuencia lees revistas?
0. nunca
1. unas pocas horas al mes
2. unas pocas horas a la semana
3. hasta una hora al día
4. de una a tres horas al día
5. más de tres horas

47.- Cuando lees revistas,¿cuántas veces se menciona algo sobre bebidas alcohólicas?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

48.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre las bebidas alcohólicas que tienen las revistas?
0. muy en contra de las bebidas alcohólicas
1. un poco en contra de las bebidas alcohólicas
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de las bebidas alcohólicas
4. muy a favor de las bebidas alcohólicas

49.- Cuando lees revistas, ¿cuántas veces se menciona algo sobre mariguana?
0. nunca
1. muy pocas veces
2. algunas veces
3. muchas veces

50.- En general, ¿cuál crees que sea la forma de pensar y actuar sobre la mariguana en las revistas?
0. muy en contra de la mariguana
1. un poco en contra de la mariguana
2. ni a favor ni en contra o nunca se menciona
3. un poco a favor de la mariguana
4. muy a favor de la mariguana

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SECCION III

¿Cuanto tiempo crees que te tomaría conseguir cualquiera de las drogas que se mencionan a continuación si empezaras a buscarlas al salir de la escuela? (pp. 168 - 170).

76.- Mariguana
0. menos de una hora
1. de una a tres horas
2. entre tres horas y un día
3. más de un día
4. imposible

77.- Bebidas alcohólicas (cervezas, licores, vinos, etc.)
0. menos de una hora
1. de una a tres horas
2. entre tres horas y un día
3. más de un día
4. imposible

.
.
.
.
.

Ahora por favor, dinos cuantos de tus amigos y compañeros crees tú que consumen cada una de las siguientes drogas, aunque sea sólo de vez en cuando.

82.- Mariguana
0. ninguno
1. muy pocos
2. la mayoría
3. todos

p. 76

83.- Bebidas alcohólicas
0. ninguno
1. muy pocos
2. la mayoría
3. todos

p. 76

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.
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.
.

En caso que hayas probado o usado alguna de las drogas ya mencionadas, quisiéramos saber con qué frecuencia has usado cada una de ellas:

(see pp. 94; 99).

88.- Mariguana
0. nunca
1. sólo la he probado muy pocas veces
2. la uso unas pocas veces al mes
3. la uso unas pocas veces por semana
4. la uso diariamente

89.- Bebidas alcohólicas
0. nunca
1. sólo las he probado muy pocas veces
2. unas pocas veces al mes
3. unas pocas veces por semana
4. a diario

90.- Inhalantes
0. nunca
1. sólo los he probado muy pocas veces
2. unas pocas veces al mes
3. unas pocas veces por semana
4. a diario

91.- Anfetaminas
0. nunca
1. sólo las he probado muy pocas veces
2. unas pocas veces al mes
3. unas pocas veces por semana
4. a diario

92,- Barbitúricos
0. nunca
1. sólo los he probado muy pocas veces
2. unas pocas veces al mes
3. unas pocas veces por semana
4. a diario

93.- Alucinógenos
0. nunca
1. sólo los he probado muy pocas veces
2. unas pocas veces al mes
3. unas pocas veces a la semana
4. a diario

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.

Diversas personas sienten u opinan de manera diferente sobre el uso de drogas por otras personas. A continuación indíca nos por favor como sientes tú sobre el uso ocasional de cada una de las siguientes drogas por personas de tu edad.

(see pp. 93-94)

97.- Fumar mariguana ocasionalmente o probarla
0. desapruebo totalmente
1. más o menos desapruebo
2. neutral o no sé
3. más o menos apruebo
4. apruebo totalmente

99.- Tomar bebidas alcohólicas ocasionalmente o probarlas
0. desapruebo totalmente
1. más o menos desapruebo
2. neutral o no sé
3. más o menos apruebo
4. apruebo totalmente

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SECCION IV

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Dinos por favor, qué tanta confianza tienes en las siguientes personas, así como en las diferentes formas (fuentes) de información en general.

(pp. 158-159)

111.-Amigos de la escuela
0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

112.- Amigos de fuera de la escuela
0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

113.- Televisión
0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

114.- Radio
0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

115.- Canciones populares
0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

116.- Padres
0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

117.- Hermanos
0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

118.- Demás familiares
0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

119.- Periódicos

0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

120.- Revistas

0. ninguna confianza
1. poca confianza
2. regular confianza
3. mucha confianza

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SECCION V

En esta sección quisiéramos que contestaras unas cuantas preguntas personales. Por favor encierra en un círculo el número de la respuesta correcta.

(pp. 167-170)

124.- ¿En qué año vas?

_____

125.- ¿Cuál es tu promedio aproximadamente?

0. menos de 6
1. de 6 a 7
2. de 7 a 8
3. de 8 a 9
4. de 9 a 10

126. ¿Tienes planeado estudiar alguna carrera universitaria, politécnica o cualquier otra superior?

0. definitivamente no
1. probablemente no
2. probablemente sí
3. definitivamente sí

127.- ¿Cuál es tu edad? p. 100

_____ años

128.- ¿Cuántos hermanos y hermanas tienes?

número_____

129.- ¿Qué lugar ocupas entre tus hermanos y hermanas?
0. hijo único
1. el mayor
2. de los de en medio
3. el menor

130.- En cuanto a la religión, ¿cómo te consideras?
0. católico practicante habitualmente
1. católico practicante ocasionalmente
2. católico no practicante
3. indiferente, sin religión particular
4. protestante
5. judío
6. ateo, agnóstico
7. otra religión

131.- ¿Dónde naciste?
0. Distrito Federal
1. ciudad grande provincia
2. ciudad chica de provincia
3. población pequeña o zona rural
4. extranjero

132.- ¿En qué trabaja tu papá? describe brevemente qué es lo que hace. p. 100

_____

_____

_____

_____

_____

133.- ¿A qué se dedica tu mamá?; describe brevemente su ocupación. p. 100

_____

_____

_____

_____

_____

134.- ¿Viven juntos tus papás?
0. sí
1. no, por fallecimiento
2. no, por separación o divorcio

135.- ¿A qué tipo de escuela vas? p. 100
0. del gobierno
1. privada religiosa
2. privada no religiosa

136.- ¿Cuál es tu sexo? p. 100
0. masculino
1. femenino

137.- ¿Con qué frecuencia toma tu papá bebidas alcohólicas?
0. nunca toma
1. raramente toma
2. toma de vez en cuando
3. toma frecuentemente p. 76
4. toma diariamente

138.- ¿Con qué frecuencia toma tu mamá bebidas alcohólicas?
0. nunca toma
1. raramente toma
2. toma de vez en cuando
3. toma frecuentemente p. 76
4. toma diariamente

139.- ¿Con qué frecuencia toma tu papá medicinas de cualquier tipo?
0. nunca toma
1. raramente toma
2. toma de vez en cuando
3. toma frecuentemente
4. toma todos los días

140.- ¿Para qué son?_____

141.- ¿Con qué frecuencia toma tu mamá medicinas de cualquier tipo?
0. nunca toma
1. raramente toma
2. toma de vez en cuando
3. toma frecuentemente
4. toma todos los días

142.- ¿Para qué son?_____

MUCHAS GRACIAS POR TU COLABORACION

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