
Themes in the Literature on the Antecedents of Adolescent Drug Use

Collette Walsh & James G. Barber*, Department of Behavioural Sciences,
James Cook University of North Queensland, Townsville 4881.

*Now at the Social Work Department, La Trobe University, Bundoora 3083

ABSTRACT

The literature on the antecedents of drug abuse is reviewed and a number of general themes are extracted. Based on these themes, directions for primary prevention programs are identified.

INTRODUCTION

Drug abuse is a growing problem in most of the developed and many of the developing countries of the world. Alcohol consumption is rising world-wide (Armyr, Elmer & Herz, 1982; World Health Organization, 1980), narcotic and opiate-related deaths are increasing among young (Commonwealth Department of Health, 1985), and in some countries teenage females in particular are being recruited to legal and illegal drug consumption in ever increasing numbers (Barber & Grichting, 1987). The social problems posed by these trends are obvious and social workers must expect more frequent requests to deal with the many consequences of drug abuse. However, consideration should also be given to the antecedents of abuse if social workers are to devise primary prevention programs that strike at the root cause(s) of the problem. The aetiology of drug abuse is a hotly debated and often vexing issue. Moreover, it is more unlikely that any one explanation can ever be found that is valid for all individuals. Nevertheless, an understanding of the mechanisms that have been proposed together with any evidence offered in support, provides a logical starting point when designing or choosing between primary prevention strategies.

The following represents a selective review of recent thinking on the antecedents of drug use and abuse. Articles were located with the aid of computer searches of the Psychological Abstracts and the Medline data base. Manual searches were also made of Social Work Research and Abstracts and of the Social Sciences Citation Index. Only articles published during the last ten years were reviewed, with an emphasis on those produced since 1980. The World Health Organisation has suggested a working definition of a "drug" as "any chemical entity or mixture of tentities, other than those required for the maintenance of normal health, the administration of which alters the biological function and possibly structure" (CEIDA, 1984). This is the definition we have adopted in our study, and we have therefore included the legally and socially accepted drugs such as tobacco and alcohol, as well as illegal drugs like marijuana, cocaine and heroin.

A plethora of physiological, social and psychological variables has been put forward at one time or another in explanation of why people abuse drugs. An indication of the lack of consensus in the area comes from Lettieri, Sayers and Pearson (1980) who have compiled 43 distinct contemporary theories of drug abuse. It is useful

to organise the various theories of drug use and related empirical observations in terms of their emphasis on individual, social or psychosocial factors.

INDIVIDUAL THEORIES

1. Genetic Predisposition

Few theorists would nowadays claim that drug abuse is determined by one's genetic endowment alone. However, there are a number of proponents for the contributory role of genetics. Most of the evidence supporting this argument comes from studies of alcoholism. It has been observed that there is a higher incidence of alcoholism among the relatives of alcoholics, identical twins, and the children of alcoholics who are raised by non-alcoholic adoptive parents (Mayer, 1983). On the basis of a review of studies of patients and prisoners diagnosed as alcoholic, drug addict, or antisocial personality, Grande, *et al.* (1984) postulate an association between the three pathologies. They further suggest that, because of the early age of onset and life-long tendencies of these syndromes, a biological-genetic explanation is attractive. Schuckit (1980) cites data from animal studies which support the importance of genetics, namely that it is possible to breed strains of animals which have a higher tendency towards drinking alcohol. He also notes the higher than average incidence of alcoholism among American Indians and suggests that, in addition to the particular social and cultural problems which make this group susceptible to alcohol abuse, they may also have an increased genetic predisposition towards alcoholism. Similar arguments have been proposed to explain the incidence of drunkenness among Australian Aborigines. However, Healy, Turrin and Hamilton (1985), in a study of Aboriginal drinking in Queensland suggest that Aborigines do not have increased susceptibility to becoming drunk but that those who are heavy drinkers simply consume more alcohol, and drink more often, than their heavy-drinking white counterparts. They reject genetic explanations of alcoholism, saying that cross-cultural evidence finds no support for an inherent biological predisposition for excessive alcohol consumption. Pattison (1980) considers that the only conclusive evidence concerning the role of biology in alcohol and drug abuse pertains to the consequences of such use. Biological determinants of drug abuse have not, he says, been scientifically established, and the genetic research data are inconsistent and contradictory.

2. Trait Theories

Many personality explanations of drug abuse view the individual as having problems in functioning in relation to others, and in coping with stress and anxiety. Thus, drug use is seen as an escape or retreat from one's problems

(Dembo, Schmeidler, Burgos & Taylor, 1985). A number of personality variables have been suggested as predisposing one towards drug abuse. Grande *et al.* (1984) reviewed 75 studies in a search for associations between drug abuse, alcoholism and antisocial personality. Personality factors common to all three were impulsivity, failure to inhibit behaviour which had previously resulted in negative consequences, disregard for authority, and absence of guilt for wrongdoing. Subjects in these studies also placed more value on immediate euphoria than on long-term consequences.

On the basis of research across several cultures, McClelland (1977) proposed a personalized power model of problem drinking, whereby a major factor in alcoholism is a need to feel stronger in relation to others. Gingras and Kahn (1985), however, although finding personalized power to be a variable which identifies alcoholics, found it to be a weak predictor of alcoholism itself. They also believe that personalized power would be a salient factor in only a subset of alcoholics.

The effect of external locus of control on drug-related behaviour has received considerable attention. Clarke, MacPherson and Holmes (1982) studied the relationship between locus of control and cigarette smoking among adolescents, and found that students with an external orientation began smoking earlier and smoked more than internals. The authors suggest that, for smokers, both the cause of the activity and its reward are under the control of the individual; smoking may therefore compensate for the external's sense of helplessness. This explanation and its supporting evidence is also consistent with McClelland's view that drug use helps the individual increase their sense of personal power or self-efficacy. In a study of the effect of locus of control on prevention program outcome, Olton (1985) found that, following the program, internally-oriented students scored lower on drug-related measures and higher on measures of self-esteem. Some externally oriented students actually increased their drug use following the program.

Jurich and Polson (1984) believe that drug users and drug abusers are motivated by different factors. In an analysis of the content of interviews with a small sample of users and abusers, they found that both groups used drugs to escape, to seek personal identity, and to rebel against authority. However, whilst users were significantly more likely to indulge in drug use for recreational purposes, abusers were motivated to relieve personal stress and disillusionment, and to improve their self-concept. Abusers also had a significantly greater external locus of control.

Low self-esteem has been cited as a predictor of drug use in other studies. In a search for the antecedents of cigarette smoking, Ahlgren,

Norem, Hochhauser and Garvin (1982) found the students most vulnerable to smoking onset had, apart from parental smoking models, particularly low self-esteem and a fear of failure. With continued smoking, fear of failure diminished and self-esteem improved. The authors gave two possible reasons for these findings: smoking establishes friendships with other smokers which may provide a buffer against perceived lack of caring by others; and smoking is one way of dealing with stress.

Kaplan's self-derogation theory (Kaplan, 1980; Kaplan, Martin & Robbins, 1984) postulates a relationship between self-esteem and deviant behavior. The deviant use of drugs is regarded as that which does not conform to the norms of the individual's reference group. The theory does not apply to, say, the use of marijuana where such use is accepted within one's own group, even though the behavior may be defined as deviant by other groups. The major motivating factor behind deviant behavior is said to be the need to reduce self-rejecting attitudes. Deviant drug use is seen as an alternative to these self-rejecting attitudes because it restores a sense of self-esteem previously damaged by self-devaluing experiences within one's reference group (Kaplan *et al.*, 1984). Kaplan has found empirical support for self-derogation theory, however his work has been criticized on methodological and other grounds (Kandel, 1980a). For instance, perceived lack of positive evaluation from one's peer group does not consistently predict deviance; on the contrary, it is identification with, rather than rejection by, a group engaged in deviant behaviors that is often associated with deviance.

Polich, Ellickson, Reuter and Kahan (1984) claim there is only weak or conflicting evidence in support of low self-esteem and external locus of control explanations for drug use. The personality trait with the strongest empirical support is a predisposition towards rebellion, independence and nonconformity. Brook, Whiteman and Gordon (1983) studies the interaction between personality, peers and family, and their effects on various stages of drug use. They found the three domains to be independent of each other, and identified some drug-prone personality traits. Drug users were significantly more tolerant of deviance and were themselves more deviant and rebellious than nonusers. They also had lower achievement and work orientations, and suffered more depression. Furthermore, differences on these measures tracked subjects' degree of drug involvement. For instance, tolerance of deviance increased as drug involvement progressed from nonuse to legal use, to marijuana use, to use of other illicit drugs. Drug-prone personality traits contributed to higher stages of drug use despite benign family and peer conditions. On the other hand, inadequate family relations were associated with higher stages of use, despite the absence of drug-prone personality traits, leading the authors to conclude independence between domains.

Another factor that has been associated with drug abuse is trait anxiety. In support of this view, Ahlgren, Norem, Hochhauser and Garvin (1982) suggest that smoking is a way of dealing with stress, and they cite research which suggests that as drug using youths progress through adolescence, they continue to respond to personal stress by advancing their patterns of drug use. Their own research found greater academic stress

among smoking students than among nonsmokers. Kandel (1980s) notes that the rate of both legal and illegal drug use peaks between the ages of 18 and 21, that is, at the time when youths are entering adulthood and are faced with making decisions regarding work and family roles. Rates of use decline as individuals become established in these roles. This finding could be taken as evidence that drugs are used to alleviate the stresses associated with the new responsibilities of adulthood. Kandel, in fact, considers that stress theory has as much empirical support as peer influence (Ahlgren *et al.*, 1982).

However, a longitudinal study by Ginsberg and Greenley (1978) implies that the relationship between stress and drug use may be more complex than Kandel suggests. Whilst in the initial survey they found use to be significantly higher among students reporting higher levels of psychological distress, this factor was not related to marijuana use at follow-up three years later. In fact, with other factors controlled, the authors found the greater the frequency of marijuana use reported at the first survey, the less the psychological distress reported at follow-up. They believe that cross-sectional studies which suggest marijuana use is prompted by stress may be confounded by the factors associated with involvement in a drug-using subculture, such as self-views and estrangement from parents. Longitudinal data, on the other hand, point to the positive effect on psychological distress to be gained from identification with the marijuana-using reference group.

Low achievement motivation and poor academic performance among school-children has also been cited as a predictor of drug use (Ahlgren, Norem, Hochhauser & Garvin, 1982; Kandel, 1980a; Polich, Ellickson, Reuter & Kahan, 1984). Mills and Noyes (1984) found prevalence and intensity of drug use to be related to academic goals and performance of high school students. Grades attained were a significant predictor of illicit (but not licit) drug use two years later. On the basis of their own and others' research the authors argue that poor grades may have a causal influence on drug use, rather than *vice versa*. They suggest, however, that the relationship between school performance and drug use is a complex one, with the direction of causality changing as students progress through school.

SOCIAL THEORIES

1. The Influence of Parents and Peers

Some of the most widely and consistently cited factors associated with drug use concern the influence of peers and of parents. Research does not support the popular conception that adolescents are enticed into drug use by so-called drug pushers. Rather, most people are introduced to drugs — both legal and illicit — by friends and relatives (Dorn, 1981; Polich, Ellickson, Reuter & Kahan, 1984).

Several studies have indicated that peers and parents exert differential influence on initiation into use of different drugs (Polich *et al.* 1984). Whilst drinking patterns seem to be learned from one's parents, marijuana use is associated with peer influence and is not related to any type of drug use by parents. Some studies have reported that adolescent users of hard drugs have greater orientation towards peers than towards parents (Brook, Lukoff & Whitman, 1983). The percept-

ion that one's friends use, and approve of, marijuana is highly related to one's own use of the drug (Johnson, 1980) and such use is more likely undertaken positively, as an aid to integration within a reference group, rather than as a negative, antisocial act (Ginsberg & Preenley, 1978). Smith (1984), in a review of marijuana use, suggests that peers' judgments about the use and effects of the drug are an important influence because of the trust adolescents place in the statements of their peers. In a longitudinal study designed to identify predictors of future drug use, Kaplan, Martin and Robbins (1984) found that drug use by subjects' friends at time 1 predicted subjects' drug use at time 2.

Stumphauer (1980) examined the immediate antecedents and consequences of alcohol consumption among heavy-drinking adolescents. The presence of friends who were already drinking was a significant antecedent, and the approval of friends following a bout of drinking was strong reinforcement. Apart from the important role of friends in influencing drug use through their own behavior and attitudes, they are also important in the initiation of use because they generally supply the drug itself (Johnson, 1980).

There is widespread agreement that membership in a social network of drug users is one of the strongest correlates of individual drug use. The question remains, however, as to whether the group influences the individual to take up drug use through a process of socialisation or whether individuals who are amenable to drug use select like-minded friends. The longitudinal studies of Kandel (1980a), Kaplan *et al.* (1984) and Ginsberg and Greenley (1978) suggest that selection of friends and socialisation by friends influence each other to about the same degree.

Parental use of drugs of any kind is highly correlated with drug use by children, although the substances taken by children are not necessarily the same ones chosen by their parents (Sheppard, 1984). Kandel (1980a) notes that the influence of parents appears to come from two other sources apart from their use of various drugs. Whilst parental rules against drug use are not effective deterrents, parents' attitudes towards drugs, such as permissiveness regarding use, or perceived dangers of use, influence subsequent use by their children. The other course of influence concerns various aspects of the parent-child relationship such as lack of closeness and lack of involvement by parents in children's activities.

Studies of tobacco smoking emphasise the role of both peers and parents in one's adoption of the behavior. The admiration which a child smoker receives from his peers for breaking adult rules, taking a risk, and exhibiting independent behaviour, or powerful incentives (Wake, McAlister & Nostbakken, 1982). Del Greco (1980) argues that the peer group is essential to the adolescent's lifestyle, and that adolescents who conform to smoking behaviour may be sacrificing individual values for the sake of group acceptance. Evidence for the influence of parents in tobacco use comes from figures gathered in the U.S. (Ahlgren, Norem & Hochhauser, 1982; Evans, Henderson, Hill & Raines 1979) and in New Zealand (De Hamel, 1981) which show a significantly greater likelihood of offspring smoking if both parents smoke. Whilst the exact mechanisms in operation between parental and

offspring smoking are unknown, McAlister, Perry and Maccoby (1979) suggest that they include identification with parental role models, greater perceived permissiveness regarding smoking, and increased opportunity to smoke.

2. Broader Environmental Influences

Certain aspects of the broader social climate and physical environment have also been associated with drug abuse. As Sheppard (1984) points out, in order for a drug to be used it must be accessible, and perceived to be accessible. Although drug availability is a crucial factor in the extent of its usage, the relationship between availability and use is not direct. Dembo *et al.* (1985) found that variables such as friends' drug use, image of drug users, and spare time activities intervened between perceived availability of drugs in the community and drug use.

Some environmental factors associated with the abuse of alcohol by members of lower socioeconomic groups, both Aboriginal and white, have been documented by Healy, Turpin and Hamilton (1985). The conditions of unemployment, poor housing and health are conducive to drinking to oblivion, which, as the authors point out, is a world-wide phenomenon among the poor and powerless. Certain occupations are also noted for having disproportionate numbers of alcohol-abusing employees (Mayer, 1983).

The media have been implicated in the adoption of smoking and drinking behaviour. Although tobacco companies defend advertising on the basis that they seek only to persuade current smokers to change their brand, children in an Australian study overwhelmingly rejected the notion that advertising does not attempt to recruit new smokers (Fisher & Magnus, 1981). Fifteen percent of girls, but no boys, were attracted to a brand advertised mainly in women's magazines. It is argued (McAlister, Perry (Maccoby, 1979; Ried, 1985) that advertising of a substance promotes an aura of respectability around it.

A further social influence on drug taking concerns the role of the school. Ahlgren, Norem and Hochhauser (1982) found significant differences between smokers and nonsmokers, not only in their attitudes towards school and learning mentioned previously, but also smokers perceived their teachers as being less warm, less friendly, less receptive and less fair disciplinarians. Schooling was a less satisfying and more frustrating experience for smokers. In a large sample of senior high school students, Skiffington and Brown (1981) found evidence that inadequate school environment was related to alcohol and marijuana use. Perceived school environment may also have an effect on the outcome of prevention programs. Olton (1985) notes from previous studies that where the school climate is judged poorly by students the efforts of teachers and counsellors is made more difficult.

PSYCHOSOCIAL THEORIES

Jessor and Jessor (1980) have formulated a theory which places drug abuse in the context of other problem behaviors such as precocious sexual activity and general deviance. The occurrence of a behavior is considered to be the result of the interaction of social and personality influences, such as degree of parental control and support,

achievement motivation, and religiosity. Problem-behavior theory has successfully predicted onset of adolescent use of alcohol and marijuana (Chassin *et al.*, 1981; Kandel, 1980a). The theory implies that similar antecedents preempt a wide range of problem behaviors (Polich, Ellickson, Reuter & Kahan, 1984).

Kandel (1980a; 1980b) argues that different antecedents are associated with the use of different substances. She proposes a developmental stage theory of drug use, by which adolescents follow a sequential pattern as follows:-

(i) non use → (ii) beer or wine → (iii) tobacco or hard liquor → (iv) marijuana → (v) other illicit drugs.

Kandel and her colleagues (Kandel, Kessler & Margulies, 1978), in a study of high school students, showed that different factors predict involvement in different stages of use. Prior behaviors, such as minor delinquency were the best predictors of hard liquor use. Initiation into marijuana and other illicit drug use were best accounted for by peer and parental influences respectively. Kandel does not imply that progression through the sequence is a necessary but not sufficient condition for progression to a higher stage. For instance marijuana is rarely used by people who have not used tobacco and/or hard liquor. What has not yet been determined, however, is the cause of the progress through the sequence by some individuals (Kaplan *et al.*, 1984). Kandel has gathered considerable empirical support for the sequential stage theory (1978; 1980a) and her findings have been supported by other researchers (Mills & Noyes, 1984).

SUMMARY AND IMPLICATIONS FOR PREVENTION

Although the foregoing review has identified areas of disagreement between authors concerning the *specific* antecedents of drug abuse, a number of recurrent psychological and social factors were also apparent and the following general propositions can be put forward:

1. At a psychological level, drug abuse has been linked to poor coping skills, particularly coping with stress and finding outlets for experiencing personal power or mastery over valued outcomes;
2. At a social level, the influence of parents and peers is indisputable. In the case of parents, the drug-related *attitudes* they express as well as the *behaviors* they model are the two most crucial variables. Moreover, liberalism on the part of parents towards legal substances like alcohol and tobacco can be generalized by children to illegal substances;
3. Drug abuse is more likely within cultures that actively promote legal drugs through the media and in which access to drugs is relatively easy;
4. The social climate of the school and particularly the friendliness and supportiveness of teachers exerts some influence in children's decisions to flout authority by experimenting with drugs;
5. Involvement with drugs normally progresses from legal to illegal substances.

It follows from these propositions that a

thorough-going prevention program requires intervention at a number of levels simultaneously. At the level of the individual child, prevention should include education in life skills and programs designed to enhance self-esteem and teach adolescents to cope with stress (cf. Altschuler, Carl & Jackson, 1981). In addition, individual children should be helped to identify and value tasks at which they are likely to succeed. Finally at the level of the individual child, the social pressures (including parents, peers and media) that encourage experimentation with drugs should be identified and coping strategies should be explored (cf. Polish, Ellickson, Reuter & Kahan, 1984). At the level of the family, parents should be made aware of the influence of their own drug-related attitudes and behavior on the drug-taking habits of their children. Although this statement may seem intuitively obvious to social workers, there is a surprising paucity of drug education programs appearing in the literature which include parent training components.

Finally, drug prevention requires that attention be given to the broader cultural norms surrounding drug use. In a trenchant review of social policy options for the World Health Organization, Farrell (1985) recently concluded that the only measures which have an undisputable record of preventing alcohol-related problems include:

- (a) increasing the relative price of alcoholic beverages;
- (b) restricting the availability (distribution points) of alcohol;
- (c) increasing the minimum age of drinking; and
- (d) increasing the probability of detection and punishment for drinking and driving.

While such policy options are unlikely to win universal approval because of the loss of social freedom they entail, they do at least underscore the importance of social policy in preventing drug abuse.

REFERENCES

- Ahlgren, A., Norem, A.A., Hochhauser, M. and Garvin, J. (1982) Antecedents of smoking among pre-adolescents. *Journal of Drug Education*, 12, 325-340.
- Altschuler, A., Carl, J. and Jackson, B.W., (1981) *State of the Art: Occasional Paper 1: Does Alcohol and Drug Abuse Education Work?* University of Massachusetts, Amherst: National Data Base Program Support Project.
- Armyr, G., Elmer, A. and Herz, V. (1982) *Alcohol in the World of the 80's. Habits, attitudes, preventative policies and voluntary efforts.* Stockholm: Sober Forlags AB.
- Barber, J.G. and Grichting, W.L. (1987) Establishing priorities in the National Campaign Against Drug Abuse. *Australian Journal of Social Issues*. In press.
- Brook, J.S., Lukoff, I.F. and Whitman, M. (1980) Initiating into adolescent marijuana use. *Journal of General Psychology*.
- Brook, J.S., Whitman, M. and Gordon, A.S. (1983) Stages of drug use in adolescence: Personality, peer and family correlates. *Developmental Psychology*, 19, 269-277.
- Centre for Education and Information on Drugs and Alcohol (1984) *An Australian Handbook on Drug Use*. Canberra: Australian Government Publishing Service.

- Chassin, L., Corty, E., Presson, C.C., Olshavsky, R.W., Bensenberg, M. and Sherman, S.J. (1981) Predicting adolescents' intentions to smoke cigarettes. *Journal of Health and Social Behavior*, 22, 445-455.
- Clarke, J.H., MacPherson, B.V. and Holmes, D.R. (1982) Cigarette smoking and external locus of control among young adolescents. *Journal of Health and Social Behavior*, 23, 253-259.
- Commonwealth Department of Health (1985) *Statistics on Drug Abuse in Australia*. Canberra: Australian Government Publishing Service.
- De Hamel, F.A. (1981) Smoking in Milton: Factors associated with smoking in an adult community. *Community Health Studies*, 5, 155-164.
- Del Greco, L. (1980) Assertiveness training for adolescents: A potentially useful tool in the prevention of cigarette smoking. *Health Education Journal*, 39, 80-83.
- Dembo, R. et al. (1979) A survey of students' awareness of and attitudes toward drug abuse prevention programs in New York State, Winter 1974/75. *International Journal of the Addictions*, 14, 311-328.
- Dembo, R., Allen, N., Farrow, D., Schmeidler, J. and Burgos, W. (1985) A causal analysis of early drug involvement in three inner-city neighbourhood settings. *International Journal of the Addictions*, 20, 1213-1237.
- Dorn, N. (1981) Social analyses of drugs in health education and the media. In G. Edwards and C. Basch (Eds.) *Drug Problems in Britain: A Review of Ten Years*. London: Academic Press.
- Evans, R.I., Henderson, A., Hill, P. and Raines, B. (1979) Smoking in children and adolescents: Psychological determinants and prevention strategies. *NIDA Research Monograph*, 26, 69-96.
- Farrell, S. (1985) *Review of National Policy Measures to Prevent Alcohol-Related Problems*. World Health Organization.
- Fisher, D.A. and Magnus, P. (1981) "Out of the mouths of babes . . ." The opinions of 10 and 11 year old children regarding the advertising of cigarettes. *Community Health Studies*, 5, 22-26.
- Gingras, T. and Kahn, M. (1985) A personalized power scale for the prediction of alcoholism. *International Journal of the Addictions*, 20, 563-575.
- Ginsberg, I.J. and Greenley, J.R. (1978) Competing theories of marijuana use: A longitudinal study. *Journal of Health and Social Behavior*, 19, 22-34.
- Grande, T.P., Wolf, A.W., Schubert, D.S.P., Patterson, M.B. and Brocco, K. (1984) Associations among alcoholism, drug abuse, and antisocial personality: A review of the literature. *Psychological Reports*, 55, 455-474.
- Healy, B., Turpin, T. and Hamilton, M. (1985) Aboriginal drinking: A case study in inequality and disadvantage. *Australian Journal of Social Issues*, 20, 191-208.
- Jessor, R. and Jessor, S. (1980) A socio-psychological framework for studying drug use. In D.L. Lettieri, M. Sayers & H.W. Pearson (Eds.) *NIDA Research Monograph*, 30, 102-109.
- Johnson, D.W. (1980) constructive peer relationships, social development, and cooperative learning experiences: Implications for the prevention of drug abuse. *Journal of Drug Education*, 10, 7-24.
- Jurich, A.P. and Polson, C.J. (1984) Reasons for drug use: Comparison of drug users and abusers. *Psychological Reports*, 55, 371-378.
- Kandel, D.B. (Ed.) (1978) *Longitudinal Research of Drug Use: Empirical Findings and Methodological Issues*. Wiley: New York.
- Kandel, D.B. (1980a) Drug and drinking behavior among youth. In A. Indeles, N.J. Smelser and R.H. Turner (Eds.) *Annual Review of Sociology*, 6, 235-285.
- Kandel, D.B. (1980b) Developmental stages in adolescent drug involvement. In D.L. Lettieri, M. Sayers and H.W. Pearson (Eds.) *NIDA Research Monograph*, 30, 120-127.
- Kandel, D.B., Kessler, R.C. and Marguiles, R.Z. (1978) Antecedents of adolescent initiation into stages of drug use: A developmental analysis. In D.B. Kandel (Ed.) *Longitudinal Research on Drug Use: Empirical Findings and Methodological Issues*. Wiley: New York.
- Kaplan, H.B. (1980) Self-esteem and self-derogation theory of drug abuse. In D. Lettieri, M. Sayers & H.W. Pearson (Eds.) *NIDA Research Monograph*, 30, 128-131.
- Kaplan, H.B., Martin, S.A. and Robbins, C. (1984) Pathways to adolescent drug use: Self-derogation, peer influence, weakening of social controls, and early substance use. *Journal of Health and Social Behavior*, 25, 270-289.
- Lettieri, D.L., Sayers, M. and Pearson, H.W. (1980) Theories on drug abuse: Selected contemporary perspectives. *NIDA Research Monograph*, 30.
- McAllister, A.L., Perry, C. and Maccoby, N. (1979) Adolescent smoking: Onset and prevention. *Pediatrics*, 63, 650-658.
- McClelland, D.C. (1977) The impact of power motivation training on alcoholics. *Journal of Studies on Alcohol*, 38, 142-144.
- Mayer, W. (1983) Alcohol abuse and alcoholism: The psychologist's role in prevention, research and treatment. *American Psychologist*, 38, 1116-1121.
- Mills, C.J. and Noyes, H.L. (1984) Patterns and correlates of initial and subsequent drug use among adolescents. *Journal of Consulting and Clinical Psychology*, 52, 231-243.
- Olton, A.L. (1985) The effect of locus of control and perceptions of school environment on outcome in three school drug abuse prevention programs. *Journal of Drug Education*, 15, 157-169.
- Pattison, E.M. (1980) A bio-psycho-social analysis of alcohol and drug abuse: Implications for social policy. In *Man, Drugs and Society*, Canberra: Australian Foundation on Alcoholism and Drug Dependence.
- Polich, J.M., Ellickson, P.L., Reuter, P. and Kahan, J.P. (1984) *Strategies for Controlling Adolescent Drug Use*. New York: Rand Corp.
- Reid, D. (1985) Prevention of smoking among school children: Recommendations for policy development. *Health Education Journal*, 44, 3-12.
- Schuckit, M.A. (1980) A theory of alcohol and drug abuse. In D.L. Lettieri, M. Sayers and H.W. Pearson (Eds.) *NIDA Research Monograph*, 30, 297-302.
- Sheppard, M.A. (1984) Drug abuse prevention education: What is realistic for schools? *Journal of Drug Education*, 14, 323-329.
- Shiffington, E.W. and Brown, P. (1981) Personal, home and school factors related to eleventh graders' drug attitudes. *International Journal of the Addictions*, 16, 879-892.
- Smith, T.E. (1984) Reviewing adolescent marijuana abuse. *Social Work*, Jan/Feb, 17-21.
- Stumphauzer, J.S. (1980) Learning to drink: Adolescents and alcohol. *Addictive Behaviors*, 5, 277-282.
- Wake, R., McAllister, A. and Nostbakken, D. (Eds.) (1982) *A Manual on Smoking and Children*. Geneva: International Union against Cancer.
- World Health Organisation Expert Committee (1980) Problems related to alcohol consumption: *Technical Report Series No. 650* Geneva: WHO.