COMPREHENSIVE REVIEW

Causes and correlates of adolescent drug abuse and implications for treatment

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Abstract

On the basis of the literature, the following risk factors for drug abuse by adolescents were identified: biological predisposition to drug abuse; personality traits that reflect a lack of social bonding; a history of low quality and consistency of family management, family communication, family relationships and parental role-modelling; a history of being abused or neglected; low socio-economic status; emotional or psychiatric problems; significant stressors and/or inadequate coping skills and social supports; inadequate social skills; history of associating with drug-using peers, rejection by prosocial peers due to poor social skills; a history of low commitment to education, failure at school; a history of anti-social behaviour and delinquency and early initiation to drug use. Models for conceptualizing the aetiology of drug abuse are discussed, namely Jessor’s problem behaviour syndrome and Rhodes & Jason’s Social Stress Model. It is clear that the path to drug abuse is complex, so simple solutions to the problem are unlikely to be effective. [Spooner C. Causes and correlates of adolescent drug abuse and implications for treatment. Drug Alcohol Rev 1999;18:453–475]

Key words: youth/adolescents, treatment, risk factors, predictors.

Introduction

Effective health interventions seek to reduce risk factors and/or promote protective factors for health-compromising behaviours [1,2]. Accordingly, drug-prevention and drug-treatment programmes are generally based upon known risk and protective factors for drug misuse. There have been a large number of studies of the risk factors for drug use and misuse [3,4], but there is still much contradiction among studies [5]. This paper reports the main conclusions for which there seem to be some support and presents implications for treatment. Before doing so, some issues about risk factors are discussed.

Causes of use?

The aetiology of drug abuse is complicated for a number of reasons. First, distinction needs to be made between variables that:
are associated with drug abuse (precede, follow, or co-exist with drug use), but are not causally related, for example, because both are ‘caused’ by some other factors (correlates); contribute to drug abuse (risk factors); mediate or moderate risk factors (protective factors); are caused by drug abuse (consequences); and are contributors to drug use, as well as consequences of drug use.

Secondly, risk factors are not always risk factors: different risk factors are salient at different times in the development of adolescents. For example, poor academic achievement in Grades 1 and 2 have not been found to be predictive of adolescent drug misuse, but poor performance has been found to be predictive when evident in later grades [6]. Thirdly, there is no single pathway to the development of problematic drug use [7–10]. The number of risk factors has been found to be more predictive of subsequent drug use and misuse than any individual risk factor [11,12].

In summary, a variable that is associated with drug abuse could be a risk factor, a protective factor, a correlate and/or a consequence; and that relationship can change over time. Furthermore, it is the net effect of the combination of risk factors and protective factors, rather than any individual risk factor, that predicts drug abuse. Simple answers to the question ‘what causes drug abuse?’ do not exist.

Aetiology of use versus abuse

The aetiology of drug use is not the same as the aetiology of drug abuse, and might even vary for the abuse of particular drugs. This notion has been supported by Stein and colleagues’ analyses of their longitudinal study of drug use by American students that indicated that drug use and problematic drug use were differentially determined [13]. Gorsuch noted that researchers no longer:

...assume that initial drug use and drug addiction have the same causes. Admittedly, some theories do take a single-stage, ‘take it once and hooked for life’ approach. However, we found the evidence strong that many who do have an initial experience with a particular drug do not become continual users, and that many who become continual users do not become addicts. Hence, the causes for each stage may be different, and a set of stages is necessary [14, p. 20].

It has been argued, for example, that the use of drugs occurs as a result of social influences, whereas problematic drug use results from psychological processes such as self-medication from emotional distress [15]. The following literature review is concerned with risk factors for drug abuse, rather than for initiation of drug use.

Order of presentation

The order of presentation of factors that contribute to drug abuse does not reflect the importance of those factors, but it does reflect an attempt to discuss those factors that are pertinent earlier in adolescents’ lives (such as genetic factors) before factors that tend to be more pertinent later in their lives (such as being labelled as an ‘addict’). This system of presentation has been used as a means of portraying the cumulative effects of risk factors from birth to adolescence. It also reflects the notion that risk factors (for example, personality) can contribute to the development of subsequent risk factors for drug abuse (such as anti-social behaviour). That is, the risk factors do not exist in isolation.

Genetic factors

Research since the mid-1960s on drug use has supported the view that genetics play a modest, but significant, role in the development of drug-use problems in some individuals [16–18]. For example, Cadoret reported the results of research that had indicated that genetic factors are influential in the transition from drug use to drug misuse [19]. Most such work has been in the area of alcoholism, largely because of the high prevalence of alcoholism compared to illicit drug misuse. After reviewing the literature on behavioural genetic research in relation to alcoholism, McGue concluded that (a) genetic factors exert a moderate influence on male and female risk for alcoholism; (b) the genetic diathesis that underlies male alcohol abuse is not specific to problems with alcohol, but also includes other manifestations of behavioural under-control; (c) environmental factors that are shared by family members can exert a significant influence on both male and female risk for alcoholism; (d) rearing by an alcoholic parent does not appear to be a critical factor to the development of alcoholism; and (e) the specific genes involved in the pathophysiology of alcoholism, although not as yet identified, are likely to represent a wide range of underlying mechanisms [20].
Bigelow and colleagues discussed the treatment implications of biological vulnerability to drug abuse and concluded that the state of knowledge is currently insufficient to assist treatment-matching [21]. Perhaps, these authors stated, biological vulnerability has more implications for prevention than for treatment. In summary, genetic predisposition appears to be a contributing risk factor to problematic alcohol use and probably other drug misuse; however, other factors can exacerbate or moderate the influence of genetics.

Gender

In general populations, males tend to (a) start drinking alcohol at an earlier age than females, and (b) be more likely than females to drink alcohol, to drink heavily and to experience alcohol-related problems [22,23]. For example, a household survey of 1000 adolescents in Sydney found that males were twice as likely as females to be heavy drinkers and four times as likely to report cannabis use [24]. Further, males are more likely to use illicit drugs, to engage in polydrug use, to use illicit drugs at an earlier age and to use drugs to deal with problems than females [25]. The gender effect is probably the result of both genetic and environmental factors. The main treatment implication is the need to address gender-specific influences on alcohol and other drug use, particularly with males [25,26].

Attitudes and personality traits

Control theory posits that deviance arises when adolescents lack sufficient ties with conventional social groups such as the family, schools and churches [27]. Specifically, alienation from the prevailing values of society has been associated with drug use [28,29]. Personality traits that reflect a lack of social bonding and that have been found to be predictive of early or frequent drug use include rebelliousness [30,32]; non-conformity to traditional values [13,32]; low sense of social responsibility [33]; high tolerance of deviance [29,31]; resistance to traditional authority [34]; a strong need for independence [32]; normlessness [35]; ‘contracultural’ values (a complete disengagement from mainstream culture as indicated by numerous indicators such as low school commitment, unconventional dress, non-conformist values, and peer drug-using culture) [36]; and alienation and health-compromising behaviours [37].

Conversely, conventionality or ties to society (being co-operative, eager to please, physically cautious, neat, and reserved) among 3-year-olds has been associated with non-problematic drug use in later life [38]. Calabrese has written extensively on how a sense of alienation contributes to a range of physical and emotional health problems [39] and behavioural problems such as drug abuse and delinquency [40,41]. Calabrese has depicted alienation as follows: ‘In general, alienation describes the relationship of individuals to their environment, and specifically, it describes that relationship in terms of isolation, meaninglessness, normlessness and powerlessness’ [39, p. 14]. Calabrese has noted that these feelings need to be countered before any positive behavioural changes can be initiated or maintained. Calabrese argued that alienation is caused by societal forces that alienate adolescents and that adolescents respond by forming supportive subcultures which reject the norms of society, establish their own models to worship and centre on self-gratification. Adolescents, suggested Calabrese, need a more ‘human’ environment which facilitates assimilation into responsible societal activities, provides them with a sense of meaning and real enfranchisement into the decision-making process. Research conducted by Calabrese & Schumer has indicated that involvement of adolescents in community service activities can reduce their sense of alienation [42]. Support for the need for attention to this area comes from a study of treatment outcome for adolescents, which found that identification with middle-class values predicted positive outcomes [43].

These personality traits have been found to be associated not only with drug abuse, but with a broader spectrum of health-problem behaviours. For example, Donovan, Jessor & Costa have found that conventionality is related to all health behaviours [44]. That is, there is a problem-behaviour syndrome at one end of the spectrum and a set of health behaviours at the other end, and conventionality helps determine where an individual is placed on that spectrum. Specifically, they found that (a) psycho-social conventionality correlated with more involvement in health-related behaviour (for example, physical activity, attention to a healthy diet) and (b) less involvement in problem behaviours (such as cannabis use, problem drinking or delinquency) was also associated with greater involvement in health behaviours. Donovan and colleagues noted that ‘at-risk’ adolescents might be particularly resistant to efforts to encourage them to ‘be healthy’ if being healthy is seen as conventional:
... the findings showing that unconventionality is linked to less involvement in health-maintaining behavior suggest that those youth who are most unconventional, that is, the so-called high-risk youth, may be in double jeopardy. Not only does their unconventionality place them at greater risk for engaging in health-compromising problem behavior, but it also may lead them to eschew health-maintaining behavior to the extent that the latter is seen as conventional. Insofar as conventionality is linked to the concept of health, those youth who could benefit most from efforts at health promotion may be the very ones most resistant (p. 60).

Another personality trait linked with drug abuse is sensation-seeking [45]. However, as sensation-seeking is normative in adolescence and can be a positive source of motivation, it does not appear to be reasonable to recommend that programmes try to stifle sensation-seeking. Perhaps the most reasonable option is to help to channel this energy into activities that are equally attractive, but less risky or harmful than drug abuse.

In summary, evidence suggests that alienation from society can contribute to problematic drug use and it is likely to be a significant barrier to adolescents wanting to address that drug use, or any other problem behaviours. Programmes that facilitate societal bonding can assist adolescent clients’ motivation to engage in prosocial and health-enhancing behaviours.

**Family factors**

The family has been described as ‘the single most influential childhood factor in buffering the child and in shaping later adaptation’ [46, p. 22]. The influences of the family on adolescent drug abuse are fundamentally important, but complex [47,48]. Factors about the quality and consistency of family management, family communication, family relationships and parental role-modelling have been consistently identified as predictive of drug misuse [46,49]. Specific family factors include:

- ineffective parental family management techniques; for example, lack of discipline or inconsistent discipline [50];
- negative communication patterns (blaming, criticism) [49];
- poor family relationships, as indicated by negative family relationships [51,52], low bonding to family [53], a lack of sharing of affection and communication with children or parental interest in the children's activities [54] and child abuse [55];
- parental role-modelling:
  - parental criminality or anti-social behaviour [49];
  - parental drug use [56,57];
  - perceived adult drug use [58,59];
  - positive attitudes towards drugs by parents [30,54]; and
  - parental modelling of drug use as a coping strategy [60].

Parental modelling factors appear to have less influence than the above factors relating to the quality of the parent–child relationship and parental family management techniques [61].

These risk factors can work in combination and have direct and indirect effects upon an adolescent's drug use. For example, Sheridan's study of the histories of incarcerated adult drug abusers indicated significant direct and indirect relationships among parental drug abuse, family dynamics and exposure to both child and adult maltreatment:

Although parental drug abuse was found to be directly related to child maltreatment, results suggest it may also be indirectly associated through its relationship with family-of-origin competence. Specifically, the negative impact of parental drug abuse may best be understood as having adverse consequences on family dynamics; which in turn, increases the likelihood of exposure to child abuse and neglect [62, p. 526].

Further, these variables were found to be significantly associated with the respondents’ own drug abuse. These results were seen to indicate that these patterns continue into successive generations. Consistent with these results is the finding that drug dependence is present in at least half of the families who come to the attention of child welfare authorities for child abuse and neglect [63].

Being in a single-parent household has often been purported as a major risk factor for drug abuse [64]. However, when statistical adjustments for social and contextual factors such as family relations and socioeconomic status have been made, family structure has been found to have little or no direct effect on drug abuse [65–68].
As is the case with most risk factors discussed here, their reverse can be protective from drug misuse. For example, family attachment can serve as a deterrent to drug use [53]; caring and connectedness with the family in the lives of adolescents is highly protective against acting-out behaviours, including polydrug use [67], and high levels of family support have been found to reduce the effect of risk factors (tolerance for deviance and behavioural undercontrol) and increase the effect of protective factors (behavioural coping and academic competence) [69].

Parental influences have been found to be strongest and most direct early in the life of children, when experimentation with drug use is an issue. However, when the child becomes an adolescent, the family’s role is indirect by influencing the choice of peers [70]. Furthermore, once adolescents become involved in moderate drug use, parental attempts at control tend to be ineffective in preventing more serious drug use [71].

How does the family influence drug use? As mentioned above, family influences are complex and vary with the age of the child. For example, from the perspective of attachment theory, Brennan has argued that family relationships are important to the development of social competence in adolescence and that social competence is crucial for resilience against psychopathology [72].

It is well recognized that the family needs to be considered in adolescent treatment [73–75]. If family issues are a contributing factor to the adolescent’s drug problem, adolescents who return to the same home environment are likely to relapse. Conversely, the family can be a protective factor and can support the treatment programme and the adolescent in achieving treatment goals. The attitudes and behaviours of the family and/or of the adolescent could need to change for the family to be a protective, rather than a risk factor. Research has demonstrated that family involvement in treatment has a positive impact on treatment outcome [76]. Family involvement can be difficult to achieve, and is even less likely if it is not actively recruited. Approaches employing active engagement of the family have been trialled with positive effect [77,78], although they might need some modification with different cultural groups [79].

In cases where family involvement is not possible, it is still important to deal with family issues with adolescent clients [80]. In some cases separation from, rather than involvement with, the family could be indicated. As Howard has stated:

Family issues should not be ignored as many young people can return home if both they and the family learn better adaptive and coping skills. Others need to separate adequately and be able to leave the family behind rather than explode out of it, carrying the residue of such conflicts with them [81, p. 110].

Finally, the parents are not the only significant family members. Siblings, uncles, aunts, cousins, grandparents or significant others might have a role in the aetiology and/or continuation of an adolescent’s drug abuse [82].

In summary, the family experience is an important factor in the aetiology and treatment of drug abuse and addressing family issues and family involvement are important components of treatment.

**Traumatic life events**

Children who have experienced traumatic life events (for example, sexual, emotional or physical abuse; neglect; or refugee camps) are at a high risk of detrimental outcomes such as illicit drug use and delinquent/criminal behaviour, and self-destructive and suicidal behaviour [83–87]. The causal mechanism is not clear. Dembo and colleagues have proposed a model, based upon a developmental damage view of the effects of child physical and sexual maltreatment [55]. Such children are seen to suffer from an abnormally poor self-image that negatively affects subsequent socialization and to feel that the world is a generally unsafe place. Drugs are used to deal directly with the emotional pain of the abuse or with the subsequent self-derection (children who have suffered physical abuse often feel that they deserved the punishment).

Janikowski & Glover have argued that people recovering from a drug abuse or dependence disorder who do not receive therapy for their experiences of childhood abuse are highly likely to relapse because the shame, guilt and anger, that might have been being alleviated by the drug use, will continue to exist [88].

Stewart reviewed and discussed the issue of adolescent survivors of trauma within drug-treatment programmes [89]. For example, such adolescents have tended to drop out of treatment due to (a) fear of re-experiencing the original trauma, (b) trouble in trusting adults, as adults have generally been the perpetrators of traumatic experiences, (c) feeling
hopeless about the world and their own place in it, and (d) feeling as though they have no control as they are victims. Stewart discussed the treatment needs of traumatized adolescents, including ‘coping and stress-reduction strategies ... combined with cognitive and insight-oriented therapy’ (p. 418) within an environment that provides structure and a sense of safety. Van der Kolk & Saporta argued that some issues can be too painful to discuss without medication, so that referral to a psychiatrist could be indicated in some cases [90].

The pace and timing of dealing with traumas can significantly influence outcomes. Jarvis and colleagues reported that female sexual abuse survivors consistently emphasized the need to control the pace of their own disclosure [91,92]. Furthermore, Howard has cautioned against tackling issues such as childhood sexual assault that cannot be adequately addressed by the programme [81]. In particular, Howard suggested that a 2-week detoxification programme is too short to deal with such emergent issues and referred to reports [93] that have recommended that ‘family of origin’ issues be dealt with later in recovery. While it is neither possible, nor appropriate, to stop disclosure of traumatic events, the task is to help the client hold onto the issue for the time being, until the problem can be dealt with properly.

In sum, traumatic life experiences such as child abuse or experience as a refugee are risk factors for drug abuse, and some adolescent clients could be experiencing post-traumatic stress disorder. Their behaviour could suggest that they are either not co-operating with or responding to treatment. Screening for significant stressors can assist in the identification of individuals who have experienced traumatic life events and allow referral to specialist services. Disclosures of significant stressors should not be ignored, nor should they be dealt with by untrained staff as this could, inadvertently, exacerbate the problem.

Ethnicity

Studies of ethnicity and drug use are fraught with problems. For example, ethnicity can be defined in numerous ways such as language spoken at home, religion, country of birth, country of parents’ birth and national heritage. Secondly, national borders change with time and nations can include a variety of cultures. Thirdly, with the large number of ethnic groups in multi-cultural countries it is difficult to obtain reliable data for each group. Fourthly, the influence of a new local culture on any particular individual from any ethnic group can vary, according to factors such as length of residence in the new country and commitment of the individual and his/her family to adopting the culture of the new country.

More research into drug use by ethnic groups has been conducted in America [22,94–101], than in Australia [102], although there has been some significant research into drug use by indigenous Australians [103–105]. Overall, ethnicity tends not to be a useful indicator of problematic drug use among adolescents in Australia. If anything, firmer family controls have been found to reduce the prevalence of drug use among some Australian ethnic communities. On the other hand, indigenous Australian adolescents do appear to be more likely to have drug-use problems than non-indigenous Australian adolescents. While a higher percentage of indigenous Australians abstain from drug use than non-indigenous Australians, those who do drink are more likely to drink excessively [103]. Furthermore, volatile drug abuse (particularly petrol-sniffing) among indigenous Australian adolescents has been a major issue of concern in many indigenous Australian communities [106].

In summary, while drug-treatment services need to ensure cultural appropriateness of their services for the client group [107], ethnicity is not generally a useful indicator of risk for adolescent drug abuse.

Socio-economic status

Attributing drug abuse to environmental influences such as socio-economic status (SES) has an intuitive appeal [81,108]. However, there appears to be some discrepancy in the literature about a relationship between SES and drug abuse [22]. Hawkins and colleagues concluded on the basis of their review of the aetiology of drug abuse that there is no such relationship [4], whereas Dryfoos’s review suggested that SES (for example, living in a deprived neighbourhood) is an important risk factor for problem behaviours, including drug abuse [65]. Perhaps, as discussed by Johnstone, this discrepancy can be explained by the fact that SES has an indirect effect on drug abuse:

Taken together, the recent literature seems to suggest that class effects on adolescent drinking may be principally indirect or conditional on other characteristics of sociodemographic status or drinking outcome. Zucker (1979) noted that
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parents' socioeconomic status structures peer associations, family dynamics, and other significant influences on adolescent drinking. Biddle et al. (1980) reported that middle class adolescents tend to adhere to peer group norms about drinking, while working class youth place greater emphasis on parents' norms. Relatively high personal income among adolescents has also been reported to promote increased alcohol use (Maddahian et al. 1986; Bachman et al. 1988) [22, p. 180].

Support for this notion comes from Fergusson and colleagues' multivariate analyses of data from their longitudinal study of 953 children from birth to age 16 [23]. Family social position (FSP) was indicated by a composite measure of parental education levels, family occupational status, parental age, ethnicity and family structure. Their analyses identified that FSP was not directly associated with alcohol use at age 16, but that it was significantly associated with alcohol consumption at age 14 and with peer affiliations at age 15, both of which were significantly associated with alcohol use at age 16. The authors concluded that FSP influenced early drinking behaviour and peer affiliations that, in turn, determined later alcohol use at age 16.

Smart, Adlaf & Walsh hypothesized that previous failures to find a link between SES and drug abuse were due to adolescents often not knowing the SES characteristics of their families [109]. These researchers used the adolescent's postcode as an indicator of SES, as most adolescents know their postcode and the SES characteristics of each postcode area were able to be ascertained. Specific identifiers of low SES areas were low-cost sub-standard housing, social problems, racial problems and delinquency. The authors found the highest drug use and problems existed in the areas with the lowest SES characteristics and concluded that SES does contribute to drug abuse.

In summary, it appears that SES does influence drug-use behaviours among adolescents, at least indirectly.

Macro-environmental factors

Macro-environmental factors that influence drug misuse include advertising, legislation and law enforcement (deterrence strategies), taxation and the availability of drugs. There has been considerable debate about the issue of legal controls for specific drugs such as alcohol [110,111], cannabis [112,113] and other drugs [114,115] and alcohol advertising and labelling [116]. A detailed review of the literature on these control strategies is beyond the scope of this paper. Suffice it to say these have an impact upon drug use, directly upon individuals, as well as indirectly, via their impact on social values.

Another aspect of the macro-environment is 'society'. Richard Eckersley has written extensively on the predicament of adolescents in Australia [117,118]. Eckersley's review of the literature has painted a depressing picture of social and psychological problems among adolescents, caused by rapid changes in society:

... increases in family conflict and breakdown, increasing poverty, high youth unemployment, soaring youth homelessness and growing education pressures. Underlying these developments are social, economic and technological changes that may, in themselves, be imposing a growing psychological stress on children and young adults — a stress that finds bleak expression in the fear and pessimism with which many of them regard the future... growing numbers of young people feel there is no escape; they feel powerless and hopeless ... Those who fail, or feel they never had a chance, are giving up, and resorting to crime, drug-induced oblivion, and suicide (p. 1).

Hence, current society appears to be creating a tendency for adolescents to detach from society. Services cannot change society overnight, but it could be important to try to instill a sense of hope in adolescent clients who have given up, either on their own ability to succeed in society or on the need to try.

Locus of control

Locus of control has been purported to be associated with drug abuse and dependence. However, the evidence has been weak [119] or inconsistent, indicating that it could work differently for different people, different drugs and in different contexts [120].

Mental health

Numerous studies have investigated the influence of psychological distress and psychiatric disorders on adolescent drug use [121]. Despite numerous claims
and indications that psychological distress, including low self-esteem and depression, contribute to the initiation and maintenance of drug use, these variables have tended not to be reliable or strong predictors of drug use [122, 123].

While Hawkins and colleagues have found no evidence for higher rates of psychopathology among drug users compared with non-users, except where the users are very young [4], psychopathology has tended to be disproportionately prevalent among adolescents with drug-use problems [124–126]. Various relationships have been proposed between drug abuse and psychiatric disorders [127]. For example, drug use could induce psychiatric pathology in vulnerable individuals or drug use could begin as a form of self-medication, particularly among schizophrenics [128, 129]. Friedman and colleagues have reported that each exacerbates the other in an additive manner [130].

In summary, research does not clearly identify mental health problems as a significant risk factor for drug abuse. However, there is a tendency for adolescents who have problems relating to drug abuse or drug dependence to have higher rates of emotional or psychiatric problems than other adolescents. Consequently, drug-treatment services for adolescents need to be able to identify and deal with mental health problems among their clients.

Knowledge

Drug use and misuse have been attributed to a lack of knowledge of the risks associated with use. Supporting evidence for such an assumption comes from Kandel's prospective study of drug use by adolescents, that found that adolescents were more likely to start using spirits, cannabis or other illicit drugs if they believed that casual use of the specific drugs is not harmful [131]. Consequently, early efforts to change or prevent drug-using behaviour relied upon the assumption that increased knowledge about the consequences of drug use would be an effective deterrent (rational response) and/or fear arousal messages would scare individuals from using drugs (emotional response) [3]. Knowledge-based interventions have typically had either no effect on drug use [132] or increased drug use [133, 134]. It is likely that the failure of most education programmes has been a result of a reliance upon the assumption that simply increasing knowledge will cause changes in behaviour. However, as argued in this paper, the multiple factors that contribute to drug-use behaviours need to be addressed. Attention to a single risk factor is unlikely to be effective.

In sum, while an understanding of the specific harms associated with specific behaviours is not sufficient to eliminate risky or harmful behaviours [135–137], it is an essential element of the decision-making process. The provision of accurate and non-judgemental information on the health and legal consequences of specific drug-use behaviours to adolescent clients of drug-treatment programmes is recommended [138].

Stress and coping/support mechanism

According to strain theory, various forms of deviance, including drug abuse, are mechanisms that help people cope with the stresses of life [139]. While there is some evidence to suggest that stress levels can be positively associated with drug abuse among adolescents [140], the results of a study on the predictive ability of the strain theory produced inconclusive results [141]. Perhaps it is not simply the existence of stressors that contribute to drug abuse, but the person's ability to cope with those stressors. This notion is supported by research that has indicated that the intensity of stress experienced by a person is not only a function of the stressful event or condition, it is mediated by a person's coping skills and social supports [139].

Coping skills

Coping skills include a variety of cognitive and behavioural strategies that can be used to deal with a problem [142]. Cognitive strategies include self-assurance, comparing oneself to others who are doing worse than oneself, reinterpreting the problem in a more positive manner and exercising self-control by thinking about the negative consequences of an undesirable behaviour. Behavioural coping strategies include problem-solving activities, withdrawal, assertiveness, seeking support and relaxation.

Social support

Hurrelmann has commented that health is only possible when a person can establish constructive
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social relationships [143]. Brennan has discussed how relationships buffer adolescents against social stresses such as those associated with socio-economic disadvantage, family problems and the physiological stress associated with puberty [72]. To be effective mediators of stress, relationships with social support need to include trust and intimacy [139].

Coping skills and social support are linked in that the development of interpersonal/social skills can assist in the development of supportive social supports.

Relapse-prevention skills

Shiffman & Wills have distinguished between coping with stressful life events in general (stress-coping) and coping with relapse risk situations (temptation-coping) [144]. Marlatt & Gordon have recommended that specific coping skills are required to deal with temptation-coping: that is, relapse-prevention skills [145]. Relapse-prevention skills training incorporates identifying high-risk situations for a lapse, and generating ideas for avoiding or for dealing with those situations. Specific skills used in relapse-prevention include the coping skills identified above, as well as specific skills in coping with urges/cravings.

Rhodes & Jason have argued that the extent to which adolescents can have access to and use effective supports and coping skills influences their likelihood of using drugs as a means of coping with stress [146]. Accordingly, increasing adolescents’ access to and use of social supports and coping skills can assist them to cope with stress without drugs [147]. This is supported by numerous research studies [148]. For example, a longitudinal study indicated that pre-school children who were less resilient, less socially competent and more rebellious were more likely to be drug abusers at age 14 than the other children [149]. Richter and colleagues found that the number of non-drug-using supports and satisfaction with social support were positively associated with maintenance of positive treatment outcomes among adolescent drug abusers [150].

It is also worth noting that the previous experiences of some adolescents in drug-treatment programmes could make those clients unwilling to embrace supportive relationships. This can be due to a number of concurrent factors, such as low self-esteem (feeling that they have nothing to offer a relationship), distrust of others or a lack of awareness of the benefits of supportive relationships [151]. Keogh has argued that programmes need to instil a sense of belief in the value of relationships:

...as we grow, if our experiences are ‘good enough’ we develop emotional capacities and related skills that enable us to meet the challenges of life ... Part of this process, involves the development of a belief in constructive, reparative, and loving capacities which have had the opportunity to develop in relationships with significant others ... This need for relationship, and the feeling that one has something good, generative and restorative in oneself to bring to a relationship, are crucial to our understanding of what will ultimately influence change. This is especially true of those with narcissistic and psychopathic personalities, where it is strongly denied because it threatens ... Ultimately then, we need to adopt a multisystemic means to help clients achieve a reparative, responsible, constructive and loving outcome [151, pp. 149–58].

In summary, cognitive and behavioural coping skills and access to quality supports have been found to be protective from adolescent drug abuse. Teaching coping skills (general coping skills as well as relapse-prevention skills) and facilitating access to quality supports can assist adolescents to manage their drug use. Additionally, some support to deal with adolescents’ emotional barriers to social relationships could be needed.

Peer factors

Association with peers who use drugs is one of the strongest predictors of adolescent drug use [23,53,152–156], particularly when that drug use is cannabis or polydrug use [157]. These findings are consistent with differential association theory [141,158] and social learning theory [159,160]. Specific predictors include drug use by peers, drug-related attitudes of peers, perceived use of drugs by others, perceived support for drug use by peers and peer preference.

The influence of peers is not simple. First, drug-abusing peers do not tend to suddenly appear in a child’s life and ‘pressure’ that child to abuse drugs [161]. It is more usually the case that children who are prone to problem behaviour tend to affiliate with like-minded peers and that affiliation with these peers tends to encourage and reinforce problem
behaviours, including drug abuse [162,163]. Snyder & Huntley discussed how the relationships of children with coercive interaction styles (for example, children who tend to whine or throw tantrums) deteriorate with parents, then teachers and peers so that they do not learn social and cognitive skills and end up associating with anti-social peers with compatible attitudes and behaviours [164]. Hence, affiliation with problem adolescents tends to be preceded by rejection by prosocial peers due to poor social skills [47].

There is evidence for a lack of social skills among drug abusers [165,166]. For example, a study of social skills and drinking behaviour among adolescents in Queensland found that:

11% of drinkers and 50% of problem drinkers were in the incompetent range of social skills performance while no non-drinkers scored in this range. None of the problem drinkers scored in the highly competent range of performance whereas 22% of drinkers and 40% of non-drinkers did [167, p. 207].

These findings suggest the need for social-skills training for adolescents in drug-treatment programmes, and for encouragement of adolescent clients to make new friends with peers whose lifestyles do not focus on drug use and other problem behaviours.

The timing of such interventions is important. Peers have different effects at different stages of drug use. Following a review of the literature and some original research, Dielman and colleagues concluded that peer drug-use behaviour is the primary predictor of adolescent alcohol use; peer norms, however, are more important in the prediction of adolescent alcohol misuse [168].

Additionally, the influence of peers tends to increase as the influence of family decreases. Research indicates that involvement with antisocial peers can occur before the age of 10 and is highly predictive of later involvement with deviant peers [169]. Nevertheless, strong bonds with family and school can attenuate peer influences [170]. For example, parental norms and behaviour could influence adolescents' attitudes and consequent attraction to a particular peer group [168]. Hoffmann warns, however, that the influences of parents and peers are complex, so simplistic cause–effect relationships can be misleading [157].

In summary, peers have a substantial impact on drug-use behaviours and this impact is influenced by other factors, particularly those factors that relate to the choice of peer groups such as family influences and social skills. Social skills-training and facilitating social interactions with non-drug-abusing adolescents can assist adolescent drug abusers to make new friends with prosocial peers.

School factors

Low commitment to education has been associated with drug misuse and delinquent behaviour [27,49,171]. Drug users are more likely than non-drug users to be absent from school [51,152], skip classes [31,51] and perform poorly [31,172], drop out of school early, dislike school, perceive course-work as irrelevant, spend less time on homework [31] and be suspended from school [152].

The timing of academic problems appears to be important for its predictive value. Spivack found that academic failure in Grade 1 did not predict later delinquency, but academic failure in Grade 5 did predict delinquency [173]. Spivack also found that anti-social and maladaptive coping behaviours in Grade 1 contributed to, and were exacerbated by, the academic failure in Grade 5.

Academic problems might be a contributor to, or a consequence of, drug abuse. The implication for adolescent clients is that a poor academic record could be a barrier to training and employment that might then compromise reintegration into society. Services should either assess and address educational and vocational issues or refer adolescent clients to services that can do this.

Anti-social behaviour and delinquency

Anti-social behaviour, delinquency and conduct disorder in early childhood have been consistently associated with drug misuse (rather than occasional or experimental use) [174,175]. 'Anti-social behaviour' is behaviour that is unsociable or contrary to the interests of society. Unsociable behaviour is not necessarily delinquent behaviour. 'Delinquency' refers to offences or misdeeds. As stated by Dryfoos, delinquency:

...covers a wide range of behaviours from socially unacceptable acts performed in early childhood that parents describe as ‘naughty’ and psychologists call ‘acting out’ to violent and destructive illegal behaviors [65, p. 29].

'Conduct disorder' is a diagnosis applicable when three or more designated delinquent behaviours co-occur in a 6-month-period before age 15 and the child
is considered unmanageable or out of control. The designated behaviours include truancy, stealing, cheating, running away, lighting fires, cruelty to animals or people, ‘unusually early’ sexual intercourse, drug abuse, breaking and entering, and excessive fighting [176]. Thus, there is overlap between anti-social behaviour, delinquency and conduct disorder but the terms are not interchangeable.

Significant associations have been found for:

- male aggressiveness in the first grade of school, especially when coupled with shyness, and the frequency of drug use 10 years later [6];
- aggression and acting-out with alcohol abuse and heavy cannabis use [71];
- aggression and coercion as means of obtaining rewards and drug abuse [50,177];
- violence and poor mental health, drug use, dropping out of school and delinquency [178];
- childhood rebelliousness and daily cannabis use [31];
- delinquency and subsequent drug use [29,179], daily cannabis use [31], regular drug use [152] and drug problems in adulthood [180]; and
- the number of symptoms of conduct disorder and the number of drug-dependence diagnoses [181].

While anti-social behaviour generally precedes drug abuse there is substantial evidence for viewing delinquency and drug abuse as parts of a problem-behaviour syndrome [65,182]. However, Dryfoos cautions that ‘while most delinquent adolescents may be drug abusers, not all drug abusers are delinquents’ (p. 246).

What causes anti-social behaviour? A review plus original research by Patterson and colleagues have emphasized the notion of a stage model, based upon social learning theory, where each stage strongly predicts moving to the next stage [50]. Stage one is initiated by a genetic predisposition to use aversive behaviours to shape and manipulate the social environment, to avoid responsibility and to maximize immediate gratification. The child with an anti-social trait, if exposed to ineffective parenting, is unlikely to develop positive personal and social skills and is likely to experience parental rejection, low self-esteem and depression. Environmental stress such as social disadvantage and parental anti-social behaviour can exacerbate the effects of poor parenting skills. In stage two the child is likely to do poorly academically, be rejected by peers and to develop anti-social attitudes. In stage three the child socializes with other anti-social children who support, or at least accept, anti-social behaviour, and is more likely to engage in drug abuse and delinquency. Throughout adolescence and into adulthood, the anti-social person is prone to problems with drug abuse, interpersonal relationships, employment and mental health. Shaw & Bell’s review of developmental theories of parental contributors to anti-social behaviour supports and extends Patterson and colleagues’ model [183].

There is some inconsistency in views about the life-course of anti-social behaviour. Hawkins and colleagues have noted that, while nearly all serious anti-social problems (including drug misuse) are preceded by childhood anti-social behaviour, less than half the children who exhibit childhood anti-social behaviour develop more serious problems in later life [49]. Most other reviews, on the other hand, have described anti-social behaviour as relatively stable over time [50,184]. Therefore, without a specific intervention, ‘it is unlikely that they will simply grow out of it’ [184, p. 187].

In summary, early anti-social behaviour and delinquency have been associated with later, problematic drug use. These behaviours tend to co-occur during adolescence as part of a problem-behaviour syndrome, suggesting that they have common antecedents, rather than that the anti-social behaviour/delinquency ‘causes’ drug abuse [65]. The stages model of anti-social behaviour presented above suggests the importance of teaching adolescents intra-personal skills (for example, mood management and impulse control) and social skills, as well as teaching parents effective parenting skills (for example, parental monitoring in combination with appropriate contingencies for deviant and prosocial behaviours).

Age of first use

Early initiation into drug use has been identified with problematic drug use [22,31,185,186] and alcohol abuse at age 16 [23], as well as with anti-social behaviour [187]. The reason for the effect of age of first use on problem use is not clear and various explanations have been proposed [22]. For example, Kumpfer and colleagues ascribe early onset of an emotional or behavioural disorder as a sign of higher genetic loading for that disorder [188]. Yamaguchi has demonstrated that postponement of the age of onset of alcohol use shortens the period of high risk for initiating cannabis use [185]. That is, as demonstrated by Kandel and colleagues, drug users tend to follow a
pattern of use, beginning with legal drugs followed by illegal drug use and adolescents who have not begun using illegal drugs by the late teens or early twenties are unlikely to ever do so [189]. Age of first use has more implications for prevention (for example, delaying the onset of use) than for treatment interventions.

**Adolescence**

Adolescence is a high-risk period for drug abuse for numerous reasons [190]. For example, growing up is stressful: there is stress associated with puberty, the development of a new identity and separation from parents, to name a few. It is not surprising, then, that one in four adolescents undergo serious psychological jeopardy in that era of life [191]. Adolescence is a time of experimentation and socialization. However, adolescents are just developing the decision-making skills that require formal operational thought such as envisioning different options and weighing up the alternatives; the ability to make decisions about risky behaviours has not yet developed. Given that some adolescent drug abusers do grow up, they could mature out of their drug abuse. However, not all of them will mature successfully and simply waiting to see who grows out of it is shirking our societal responsibility to those who are having difficulty in their maturation process.

**Labelling**

In a detailed and complex study of the factors that predicted an escalation of drug use under various circumstances, Kaplan & Johnson found that the strongest predictor of increased drug use was the effects of specific labelling: drug use increased as a result of getting into trouble because of initial drug use [15]. Kaplan and colleagues explained that negative social sanctions (labelling) lead to an escalation of drug use via three paths [192]: (a) by perceiving the label of 'drug user' as a positive thing, drug users can have a more positive self-evaluation and greater self-acceptance; (b) having been alienated by society because of being a drug user, the drug user loses motivation to conform to that society; and (c) having been alienated by society because of being a drug user, the drug user has less opportunity to socialize with non-drug users; this leads to increased involvement with drug-using groups, hence greater opportunity and encouragement to use drugs. Being labelled as a 'junky' or an 'addict' is a powerful phenomenon that can give adolescents the identity that they have been searching for, as per their developmental task. By serving the purpose of supplying a ready-made identity and social group, such labels can be a barrier to change. For these reasons it is preferable that services neither initiate nor perpetuate labelling adolescents as 'addicts'. Even the name of a service can be important. For example, it might be preferable to call a specialist service for adolescent drug abusers a 'personal development programme' rather than a 'drug-treatment programme'.

**Drug variables**

Whether or not drugs are used at all, how much and how often they are used, and the nature and extent of problems relating to use are also dependent upon the drug itself. Drugs differ in their potential for abuse as a result of their individual pharmacological properties, as well as the various social and psychological values and expectations of the drugs [193]. Treatment strategies need to be planned with consideration for the particular drugs used by the adolescent client as issues, such as reasons for use and craving, are likely to vary according to the pattern of drug use.

**Prelude to a summary: the problem-behaviour syndrome**

Drug abuse is one of the risk behaviours identified by Jessor and colleagues as part of a problem-behaviour syndrome [182,194]; that is, a pattern of risk behaviours that compromises the psycho-social aspects of successful adolescent development, including drug abuse, withdrawal from school involvement, unprotected sexual intercourse and delinquency. Other studies and literature reviews have supported the concept of a problem-behaviour syndrome [65]. The constellation of problem behaviours might be not simply the result of their having common causes. Jessor has discussed how the social ecology of adolescent life could provide socially organized opportunities to learn risk behaviours simultaneously and normative expectations to engage in more than one risk behaviour [182].

Failure to see drug abuse as part of a larger pattern of behaviour can be a barrier to effective interventions, particularly as each risk behaviour could be contributing to another risk behaviour. For example, the review above has identified how delinquency and drug abuse
can exacerbate each other in a spiralling fashion. The good news, however, is that, given their shared aetiologies, the interventions that can change an adolescent's risk status for one problem behaviour are likely to be effective in changing the other risk behaviours. On the other hand, we need to be careful to not over-generalize: adolescents who engage in one problem behaviour do not always engage in other problem behaviours; each adolescent client needs to be considered as an individual [80].

Summary and theoretical integration for planning

Adolescents do not simply abuse drugs because they are sick or morally weak [195]. A range of individual, family, social, environmental and other risk factors have been identified for drug abuse. Clearly, each of these risk factors are related and there is not a simple causal chain. Various models and theories have been proposed to predict drug use and misuse on the basis of risk factors [196–198]. No models are able to accurately predict or comprehensively describe drug abuse by adolescents. Suffice it to say that (a) drug use is determined by numerous, inter-related risk factors, as well as protective factors [146,193]; (b) the individual, the environment and the drugs themselves need to be considered when considering the aetiology of drug use [199,200]; and (c) drug abuse is often part of a problem-behaviour syndrome that includes delinquency, drug abuse, adolescent pregnancy and school failure [65,194,201].

Consequently, interventions that try to deal with single-risk factors or risk behaviours are highly unlikely to be effective. Also, with the emphasis on risk factors, many researchers and planners fail to consider protective factors. That is, for each risk factor, its reverse could be protective. For example, positive peer influences could act as a restraint on drug misuse [202]; and commitment to conventional social groups, such as the family, religion and school, can act as a restraining force against participation in deviant activities [186]. When considering a treatment plan for an individual, case planners need to consider what factors have supported non-problematic use, as well as those factors that have contributed to problematic use.

It is important to note the limitations of reviews of the aetiology of drug abuse. First, there is still much that is not known or not clear. The history of drug abuse research and interventions has been one of much supposition, inconsistency and error [5,203]. Even models that have received considerable support over the years do not account for all the variance. We are not yet able to predict accurately who will become a drug abuser; we can only be alert to the risk factors currently identified.

Secondly, the above review has relied upon quantitative research to test for associations between suspected risk factors and behaviours. However, qualitative research methods, such as ethnography, have played a valuable role in describing and explaining drug abuse and providing recommendations for practice. For example, Moore's ethnographic research with skinheads [204] and psychostimulant users [205] has led to useful recommendations and insights into sub-groups, particularly situational influences on drinking and drug use, that would be difficult to obtain by other methods [206]. Given these limitations, assessments of the factors that contribute to problem behaviours for each individual client or client group need to be able to identify factors that are not listed in literature reviews such as this one. That is, risk factors and protective factors need to be explored with an open mind and many questions need to be asked to ascertain the pertinent factors for the client or group at hand.

Whether developing a case-plan for a single client or planning an intervention for a group, all the factors that contribute to the problem, all the stakeholders and significant others, and all the resources at hand to assist with dealing with the problem need to be considered. There are various texts to assist with the development of plans. For example, one strategy for planning interventions for drug-abusing adolescents has been developed by the Programme on Drug Abuse from the World Health Organization [207]. This strategy uses the ‘Modified Social Stress Model’ (based upon Rhodes & Jason's social stress model [146]) to help workers to consider all the risk factors and protective factors when planning an intervention (Fig. 1).

Stress includes major life events such as child sexual assault, long-term problems such as poverty or lack of recreational opportunities, everyday problems such as dealing with a violent environment, major life changes such as moving house and adolescent developmental changes.

Normalization of a drug is affected by law enforcement, availability, price, advertising, media presentation, culture and peer norms.

Experience of drug use is affected by variables associated with the user (for example, the user's
expectations of effect); the drug (for example, type of drug or how pure it is); and the setting (for example, the mood of the occasion).

*Attachments* can be positive or negative and can be with other adolescents, the family, workers and so on.

*Skills* include competencies that help people succeed in life (for example, leadership) and coping strategies such as skills in assertiveness, problem solving and relaxation.

*Resources* are anything that can help towards physical and emotional needs being met and can be internal (for example, intelligence) or external (for example, family, adolescent workers).

Each of these factors have been addressed in the above review. The essence of the model is that, when planning interventions, we are trying to reduce the risk factors and build up the protective factors. The social stress model is one way of putting together the risk factors and protective factors in a way that assists planning interventions.

### Self-reported reasons for use

If a researcher was asked why adolescents use and misuse drugs they could cite the aetiological risk factors discussed above, most of which denote something wrong with individuals and/or their environment as being causes of drug-use behaviours. However, if adolescent drug users are asked why they use drugs, a quite different perspective on the reasons for adolescent drug use and misuse is given.

Reilly & Homel asked a sample of 1071 adolescents aged 15–18 in Sydney who had used an illicit drug (other than, or as well as, cannabis) why they used psychoactive drugs [208]. About half the respondents said they used psychoactive drugs because they enjoyed the high (31%) or for social fun (16%). A minority of the sample said that they used drugs to cope with negative feelings (7%), to alleviate boredom (11%) or as a result of peer pressure (8%). Analyses identified a relationship existed between the type of drugs the respondents used and their reasons for use. Respondents who had used amphetamines, cocaine, hallucinogens and/or designer drugs in the previous month tended to use drugs for social or psychological enjoyment. Respondents who had used tranquillisers, barbiturates, opioids and/or inhalants tended to use drugs to cope with negative feelings, boredom or peer pressure.

This study highlighted that adolescent illicit drug users have functional (often hedonistic) reasons for illicit drug use and that the reasons for use vary according to the type of drug used. However, this study did not ask respondents to distinguish (a) why drugs were first used and why they continued to be used and (b) the reasons for use of each specific illicit drug that they used.

A subsequent study by Spooner (previously Reilly) and colleagues addressed these issues by asking respondents, for each illicit drug used, why they first used it and why they continued to use it [209]. This study surveyed 581 youths aged 16–21 in Sydney who had used an illicit drug (other than, or as well as, cannabis). The main reason for initial use of all drug types was to try something new, or for the experience. This reason was given for up to 72% of the time for all drug types, except sedatives (38%). Other reasons for trying other drugs rarely accounted for more than 10% of the responses. Those that did were the desire to use something stronger (heroin, 10%), boredom (sedatives, 10%) and peer group pressure (cannabis, 13%).

As to why respondents continued to use specific illicit drugs, about half the users of all drugs, except inhalants and sedatives, reportedly used those drugs because they ‘liked them’. On average, 29% of the users of each drug reported that they used that drug to get high. This response was least common among sedative users (18%) and heroin users (22%).
Other reported reasons for use were more drug-specific than those described above. One-third of heroin users said that they used heroin because they were 'addicted'. This reason was rarely given for the use of any other drug. Sedatives (20%) and cannabis (10%) were also used to relax or sleep, while amphetamines were used to keep awake (11%). No other single reason accounted for more than 10% of the responses. In summary, Spooner and colleagues' research has indicated that most young illicit drug users use drugs for fun, a minority use to cope or because of a dependency. Those who report the latter reasons are more likely to be using heroin and/or sedatives than those who use drugs for fun.

In summary, each of the above studies found that the major reasons given for illicit drug use have been to party and to have fun. This is consistent with studies that have associated sensation-seeking with drug use [210]. However, the major reasons given for the use of illicit drugs by users of sedatives, opioids, inhalants and, to some extent, cannabis have tended to be boredom and to deal with worries. Similar findings have been found elsewhere [45,211,212]. The use of different drugs for different reasons reflects the differential effects of each drug [199,213].

In contrast to the above studies, the most frequently given reason for drug use given by clients of a residential drug-treatment service for adolescents was 'to forget'. This response was given by about 30% of clients, whether their main drug of abuse was alcohol, heroin, cannabis or amphetamines. Drug use for 'fun' was reported by less than 10% of the sample, and by only 1% of heroin users. It appears that reasons for use among adolescent drug abusers differ from the reasons for drug use given by other adolescents. This difference is consistent with an association between reasons for use and drug-problem severity, as identified by McKay & Buka [80].

These self-reported reasons highlight an issue that is often overlooked by researchers, planners and service providers: that drugs are used for a reason and that there are usually benefits to the user for drug use. Moore & Saunders have written about the benefits of drug use in the context of prevention programme planning; however, their discussion also has relevance for treatment programmes [214]. They have argued that drug users are not pathological, that drug use is functional (even though it might be dangerous), has immediate benefits and is part of the social construction of meaning for many individuals. Similarly, Brown noted that:

Those young people whose illicit drug use reaches the attention of the welfare or correctional system, often have experienced disrupted family backgrounds and are finding life intensely disagreeable in the present. Their use of illicit and other drugs as a source of relief holds compelling and — in the light of the adversities which many are obliged to face — quite understandable attractions for them [215, p.69].

In summary, the reasons for use vary among adolescents and across time within adolescents. For example, drug use might begin as a result of curiosity or peer pressure, then continue for social/recreational purposes. For some, use might then continue or increase when it is used to help cope with life, or specific problems. Reasons for use can even vary day by day, or depend upon the situation. For example, some use could be social/recreational at one time, then to help deal with problems at another time. Different drugs and settings might be involved with these different purposes. Furthermore, studies of reasons for use tend to obtain different patterns of responses, depending upon the composition of the sample. Studies of adolescents who are predominantly not having problems with their drug use (such as the studies by Reilly/Spooner) identified that most adolescents reported that they use drugs because it is fun. However, as the samples contain more problematic drug users (such as the sample from Dunsmore House), the reasons for use tend to shift away from 'fun' towards 'to forget'. Similarly, reported reasons for use can also vary between cultures [216].

In conclusion, the reasons for drug use are an important factor for service provision as these can vary as a result of many factors such as the point of time in a drug-use career, the specific situation and culture. Some drug use might be functional and not problematic. However, where drug use is interfering with adolescents dealing with their problems or their life in general, programmes should assist those adolescents to explore alternative means of dealing with problems, socializing and having fun.

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