

Chapter 4

Comorbidity and early intervention/prevention

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Introduction: Aims and definitions

The aim of this chapter is to consider the question — Do prevention and early intervention programs for the major internalising (anxiety and depression) and externalising (behavioural) disorders in young people hold promise for reducing the incidence of substance use disorders in the community? The question is important for several reasons. First, substance use disorders represent a substantial health problem in society with significant economic and human costs. Second, traditional prevention strategies that focus on psychoeducation regarding the dangers of using alcohol and drugs, or teaching youth skills for resisting pressure to use substances, have generally been unsuccessful. Third, there is considerable evidence suggesting comorbidity between internalising and externalising problems and substance use problems (see Chapter 3). Therefore, it would seem plausible that early intervention and prevention strategies for internalising and externalising problems could impact on the incidence of substance use disorders. Addressing comorbid conditions is a vital concern for health professionals as comorbidity often means that the course of the problems is more chronic and severe compared with single disorders, and it can create more substantial social and occupational decline for the diagnosed person.

The current body of literature on the prevention of substance use problems suggests that in order to advance understanding in this area, researchers must adopt a risk-focused approach. That is, we need to specify aetiological theories of substance use disorders based on risk factor research, and design and evaluate interventions that reduce or eliminate the identified risk factors (Gorman, 1996; Hawkins, Catalano, & Miller, 1992). The central tenet of this paper is that the presence of anxiety, depression, or behavioural problems or their risk factors in young people can represent risk factors for the development of later substance use problems. Thus, it is predicted that these disorders and associated risk factors can be targeted for prevention of substance use disorders. The current paper will address this issue by a) outlining risk factors for substance use problems, b) highlighting links between risk factors for substance use disorders and other mental disorders in young people, c) addressing comorbidity between substance use disorders and other mental disorders, d) discussing the implications of risk factor approaches for prevention of substance use disorders, and e) outlining current early intervention programs for anxiety, depression, and behavioural disorders that could potentially reduce the incidence of substance use disorders.

It is noted that adopting a risk-reduction approach to substance abuse prevention is likely to require the development and evaluation of multiple interventions, rather than one generic intervention that can be successful in reducing the incidence of substance use problems for all people all of the time (Catalano, Kosterman,

Hawkins, & Newcomb, 1996). Thus, while the current paper focuses on interventions that target anxiety, depression, and behavioural problems, it does not disregard the potential success of other types of prevention programs that address empirically supported risk factors.

Substance use disorders will be used here to refer to both alcohol and drug disorders unless the point under discussion refers to one or the other specifically. Internalising disorders will be used to refer to the cluster of disorders characterised by negative affectivity, including the depressive disorders of Major Depressive Episode and Dysthymia, and the anxiety disorders of Generalised Anxiety Disorder, Panic Disorder, Agoraphobia, Social and Simple Phobias, Obsessive Compulsive Disorder, and Post-traumatic Stress Disorder. The depressive and anxiety disorders show high rates of comorbidity within and between each other, leading many researchers and clinicians to consider them as a general class (e.g., negative affectivity, neuroticism, or internalising disorders). Externalising disorders will be used to refer to the cluster of disorders characterised by behavioural problems including Oppositional Defiant Disorder, Conduct Disorder, and Attention Deficit Hyperactivity Disorder. A range of other behavioural problems may also be included within the term externalising disorders. Generally these refer to historical variations in terminology or diagnosis, or themselves contain other variants on the above diagnoses. For example, externalising disorders would also include antisocial behaviour, delinquency, and aggressive behaviour.

Much of the research reviewed in this area has used samples with subclinical problems rather than diagnosed disorders. For example, many studies of externalising disorders have used broad samples of children referred for disruptive behaviour problems, or children selected from non-referred samples who were found to have disruptive behaviour problems on the basis of a screening measure. Given this and the inherent arbitrariness of the cut-off between problem and disorder, the term 'disorder' will be used loosely to refer to a broad range of identified problems (including explicitly diagnosed disorders) unless otherwise specified.

Risk factors for individual disorders

There is a wide range of factors that have been cited as risk factors for the development of substance use disorders. Table 1 presents a summary of the findings of risk factor research conducted with regard to such disorders. The contents of this table are drawn from a variety of sources (Botvin, 1999; Bukstein, 1995; Cicchetti & Rogosch, 1999; Glantz & Hartel, 1999; Hawkins et al., 1992; Hawkins, Kosterman, Maguin, Catalano, & Arthur, 1997; Kilpatrick et al., 2000; Weinberg & Glantz, 1999). As can be seen, identified risk factors can broadly be separated into two classes — contextual and individual-interpersonal. Contextual risk factors are those that operate within a social context and include such things as current laws and legislation, moral and societal norms, and economic well being. Individual-interpersonal risk factors encompass personal, interpersonal, and environmental characteristics. It is noted that a number of familial/contextual factors play a significant role in the development of substance use disorders, including parental drug problems, poor child management strategies, limited family support/closeness, and family conflict/discord.

Table 1: Risk factors in the development of substance use disorders.

Contextual/societal factors	
	Risk Factor
Laws and Norms:	Decreased purchase cost Decreased drinking age No restrictions on sale
Availability	Increased availability
Extreme Economic Deprivation	Poverty (Not social class)
Neighbourhood Disorganisation	High population density High residential mobility Physical deterioration Low levels of attachment to neighbourhood
Individual/interpersonal factors	
Physiological Factors	Genetic risk for addictive behaviour
Psychological Factors	Comorbidity with other Psychological disorders (PTSD, Bipolar Disorder, Depression, Anxiety Disorders, Conduct and Antisocial Problems) High sensation seeking, low harm avoidance
Family Drug Behaviour	Parental/sibling alcoholism Parental use of illicit drugs High drug salience in family Modeling by older brother Father's substance use and emotional stability Perceived parental permissiveness
Family Management Practice	Inconsistent child management practices Low parental education Low aspirations for child Parental non-directiveness/permissiveness Negative communication patterns Inconsistent, unclear behaviour limits Unrealistic parental expectations Perceptions of father as hostile Parental interactions and psychological instability
Family Environment	Marital discord High family conflict Low parent-child closeness Low maternal involvement Low family bonding Low family involvement and attachment
Academic	Intellectual ability Poor school performance Lack of commitment to school Failure in school Truancy
Peer	Low peer acceptance Early aggression Low inhibition Peer substance use
Onset of Drug Use	Early onset predicts level of use and range of substances

Tables 2 and 3 present a summary of the risk factors commonly cited for anxiety and depression problems in young people. The contents of these tables have been drawn from multiple sources (Bruch, 1989; Dadds, 1997; Essau & Dobson, 1999; Lonigan & Phillips, 2001; McCauley, Pavlidis, & Kendall, 2001; Rubin & Burgess, 2001). The most salient factors emerging in the literature as risk factors for anxiety problems are temperamental dispositions to be shy and fearful of novel people, objects, or situations (behaviour inhibition or reticence), the existence of parental anxiety or depressive problems, and exposure to traumatic environmental events. Secure attachment, an easy temperament, and social skills stand out as ongoing protective mechanisms. Those emerging most commonly for depressive problems include parental depression, poor child management strategies characterised by criticism and limited reinforcement of positive behaviours, conflict, and child emotion dysregulation. Family support and closeness, adaptive communication strategies among family members, and perceived social support represent protective factors.

Table 4 contains a summary of risk factors for externalising behaviour problems (Dadds, 1997). A range of risk factors from individual, family and social contexts interact to contribute to a range of possible outcomes. Low socio-economic status has been established as a marker for many possible risk factors including genetics, environmental toxicity, poor educational opportunities, poverty, social isolation, lack of employment, and modeling of violence (Dadds, 1997). Age of onset is also significant in that earlier age of onset is associated with poorer prognosis for boys (Loeber, 1990). Similarly, the extent to which problem behaviour is expressed across multiple settings (ie., home, school, and community) is also a predictor of severity and durability of conduct problems (Kazdin, 1993; Loeber, 1990).

In comparing these three tables, it can be seen that there is some overlap between the risk factors for substance use disorders and the risk factors for the common mental disorders of childhood. Most notable is that at a broad level, early familial and contextual factors appear to play a significant role in the development of all of these problems, particularly through the presence of parental psychopathology, problematic child management strategies, and difficulties in parent/child relationships. Given the presence of shared early environmental risk factors for these disorders, it could be predicted that when children are exposed to such conditions they are at risk of developing more than one of these problems at some point in their life. More specifically, the evidence for common early risk factors would indicate that internalising and externalising problems in children could represent part of the developmental trajectory of substance use disorders. There could be pathways to such disorders through behavioural problems and delinquency, potentially related but diverse pathways to substance use disorders through internalising problems (ie., anxiety and depression), as well as possible pathways involving interrelationships between the three problems (ie., substance use disorders, anxiety, depression and conduct disorders). It is to this issue of comorbidity among disorders that we now turn.

Comorbidity

Comorbidity is defined as the co-occurrence of one or more disorders in the same child or adolescent either at the same time or in some causal sequence (Kessler, 1995; Ollendick & King, 1994). In relation to internalising disorders, data from clinical samples points to a high overlap between these disorders and substance use

disorders, independent of whether the referred problem is a substance use (Regier et al., 1990) or an internalising disorder (Bibb & Chambless, 1986). However, the frequency and nature of this comorbidity can be highly variable in substance misuse groups, ranging from acute internalising disorders at referral that appear secondary to the substance use disorder and quickly remit in treatment, leaving the “pure” substance use problem to run its course, to longstanding internalising disorders that may underlie the substance use disorder. Contamination by referral issues thus makes clinical studies unsuitable for obtaining community estimates of the comorbidity between substance use and internalising disorders and researchers must turn to epidemiological studies. Two of the most up-to-date and comprehensive of these were the Epidemiological Catchment Area study and the National Comorbidity Survey in the United States (see Kessler, 1995). These surveys were consistent in showing that the lifetime comorbidity odds-ratio of having both an internalising and a substance use disorder ranged from approximately 2.5 to 3.5. Thus, one has approximately three times the chance of suffering a substance use disorder if one has an internalising disorder, and vice versa, compared to a disorder-free person. These odds-ratios are means collapsed across specific mood and anxiety disorders and substance use disorders. They would be considerably higher if calculated according to the presence of any type of internalising disorder, and may be higher for social phobia and panic/depression in particular.

Externalising disorders have also been demonstrated to be strongly and consistently associated with substance use disorders (Glantz, Weinberg, Miner, & Colliver, 1999). For instance, results from the US National Comorbidity Survey (Kessler et al., 1996) indicate that nearly 60% of those with a lifetime diagnosis of conduct disorder also had at least one lifetime diagnosis of an addictive disorder. The same study estimates that comorbidity between Antisocial Personality Disorder and substance use disorders is even higher (83.6%), while accounts of the rates of comorbidity between Attention Deficit Disorder (ADD) and substance use disorders is less clear, possibly due to the complex relationship between ADD and a range of conduct disorder cluster behaviours.

It is also possible that the pathways to substance use disorders through internalising problems and externalising problems are interweaving. Recent research has shown that anxiety and depression may feature in externalising problems in young people far more significantly than has traditionally been acknowledged. For example, measures of attention deficit problems are highly confounded by the presence of anxiety problems (Perrin & Last, 1992), and internalising problems can enhance externalising problems through adolescence (Loeber, Russo, Stouthamer-Loeber, & Lahey, 1994). Unfortunately, longitudinal studies that simultaneously consider early internalising and externalising disorders as predictors of later substance use disorders are not available, and should be a research priority.

Table 2: Developmental risk for anxiety disorders and associated intervention strategies.

Developmental Phase	Risk Factors	Potential Mechanisms of Prevention
<p>Infancy:</p> <p>Child: Shy temperament, behavioural inhibition</p> <p>Family: Neglect, or over-protection Parental psychopathology, especially anxiety</p> <p>Society: Environmental stress, e.g. loss, divorce</p>	<p>Early identification of high-risk children and anxious parents. Parental support & parent training to foster responsive parenting, secure attachment, and positive parental coping strategies.</p>	
<p>Childhood:</p> <p>Child: Reticence, behavioural inhibition, shyness Social isolation.</p> <p>Family: Parental psychopathology Over-protection of child in the face of challenges Selective attention to threat, and avoidant solutions. Parental over-control or criticism.</p> <p>Society: Social isolation, insularity.</p>	<p>Social problem-solving training encouraging proactive solutions. Increasing focus on cognitive strategies as child matures. Exposure programs to overcome fears. Enhancement of social skills and opportunities for peer interaction. Training parents to model effective cognitive and behavioural coping. Positive parental strategies to manage child avoidance. Responsive parenting. Family connections to school and community.</p>	
<p>Adolescence:</p> <p>Child: As above. Possibility of comorbid disorders, especially depression and substance use.</p> <p>Family: As above</p> <p>Society: Peer pressure Regarding comorbidity: Prevalence of substance use.</p>	<p>As above. Cognitive-behavioural training with increasing focus on adolescent and related issues (depression, substance use). Increasing focus on issues of autonomy for family. Parental training in balancing autonomy and independence with family support.</p>	

Table 3: Developmental Risk for Depressive Disorders and Associated Intervention Strategies.

Developmental Phase	Risk Factors	Potential Mechanisms of Prevention
Infancy:	<p>Child: Shy temperament, social inhibition; increased negative effect Insecure attachment — anxious, avoidant</p> <p>Family: Parent practices characterised by rejection, abuse, neglect; and, or overly intrusive parenting Low parental warmth and support/availability Parental psychopathology, especially depression Family conflict</p> <p>Society: Environmental stress e.g. loss, divorce</p>	<p>Early identification of high-risk children and depressed parents. Parental support & parent training to foster responsive parenting, secure attachment, and positive parental coping strategies.</p>
Childhood:	<p>Child: Shyness Insecure attachment</p> <p>Family: As above</p> <p>Society: Social isolation, poor social skills Environmental stress</p>	<p>Social problem-solving training encouraging proactive solutions. Increasing focus on cognitive strategies as child matures. Enhancement of social skills and opportunities for peer interaction. Parental support and strategies for managing/regulating own mood. Positive parental strategies to manage child behaviour, encourage responsive parenting, and foster positive parent/child relationships. Family connections to school and community.</p>
Adolescence:	<p>Child: As above, and also: Maladaptive cognitive style — negative view of self, others, and the future Deficits in active problem-solving Possibility of comorbid disorders, including anxiety and substance use Being female</p> <p>Family: As above</p> <p>Society: Social isolation Regarding comorbidity: Prevalence of substance use.</p>	<p>As above. Cognitive-behavioural training with increasing focus on adolescent and related issues (e.g. emotion regulation and substance use). Increasing focus on issues of autonomy for family. Parental training in balancing autonomy and independence with family support.</p>

Table 4: Developmental Risk Factors for Externalising Disorders and Associated Intervention Opportunities.

Developmental Phase	Risk Factors	Potential Interventions
Prenatal — Infancy:	<p>Child: Environmental toxicity Temperamental difficulties</p> <p>Family: Poverty, low SES, social isolation Family violence, conflict, separation Parental psychopathology Poor health, nutrition</p> <p>Social: Economic hardship, unemployment Family breakdown, isolation Cultures of violence</p>	<p>Environmental safety e.g. lead minimisation</p> <p>Early identification of children at risk through temperamental and behavioural problems, and families at high risk through socio-economic adversity and psychopathology.</p> <p>Provision of adequate health care/parental and infant support programs, home visiting programs.</p> <p>Promotion of social equality/support/community connectedness.</p> <p>Provision of family support, education and therapy services, pre-marital and pre-parenting education programs.</p> <p>Promotion of non-violent cultures and communities.</p>
Toddlerhood — Late Childhood:	<p>Child: Learning & language difficulties Impulsivity</p> <p>Family: Coercive family processes/violence Low care and nurturance Inadequate monitoring of child</p> <p>Social: Inadequate child care & parental support Lack of educational opportunities Negative parent-school relationship</p>	<p>Early remediation of learning and language difficulties.</p> <p>Provision of parent training and broader family interventions.</p> <p>Family and marital support programs.</p> <p>After-school care and monitoring of children.</p> <p>Peer social skills programs.</p> <p>Provision of positive school environments and educational opportunities.</p> <p>Promotion of quality parent-school relationships.</p>
Adolescence:	<p>Child: School — employment failure Cognitive bias to threat/hostility Peer rejection/deviant peer group Substance abuse/depression</p> <p>Family: Conflict/individuation problems Rejection/homelessness</p> <p>Social: Lack of education/employment Culture of violence</p>	<p>Cognitive-behavioural skills programs for teenagers.</p> <p>Academic and work transition skills programs.</p> <p>Crisis support for family/youth individuation problems, breakdown & homelessness.</p> <p>Family-adolescent therapy services.</p> <p>Substance abuse prevention programs.</p> <p>Cultures of community respect and connectedness.</p>

Given the presence of some shared risk factors between substance use, internalising and externalising disorders, and the prevalence of comorbidity amongst these disorders, a risk reduction approach to substance abuse prevention would predict that interventions that target the shared risk factors and/or comorbid conditions could help to reduce the incidence of substance use disorders. However, the design of specific preventive interventions would depend upon the nature of the causal links between other mental disorders and substance use disorders. Possible mechanisms of comorbidity are discussed next.

Causal models of comorbidity

Kessler and Price (1993) have proposed a model of four potential causal links between comorbid disorders, each of which has implications for the design of joint preventive efforts. Firstly, one type of disorder may lead directly to another. Thus, the abuse of certain drugs (cocaine, psychostimulants) can directly produce panic symptoms. For the purposes of this chapter, it is difficult to conceive of internalising or externalising disorders directly causing substance use disorders. Secondly, comorbidity can occur due to indirect effects of one disorder on another. Thus, social fears may lead directly to the abuse of drugs as a self-medication strategy. While evidence in this regard is limited to descriptive clinical studies, it is highly likely that this direct path is characteristic of a substantial proportion of those with substance use disorders. However, it should be noted that the reverse has been noted, whereby substance use disorders exacerbate anxiety and depression, at least in the short term. Thirdly, one disorder may be associated with contexts that potentiate the likelihood of another. Thus, disruptive behaviour problems and conduct disorder may lead to exposure to deviant peer groups that increase risk for substance use disorders. Depression may lead to an erosion of social networks that potentiates isolation and thus solitary drug taking. Fourth, comorbid conditions may share common causes. That is, problems may develop on a trajectory with each of the comorbid conditions representing different developmental stages of this trajectory. Recent research has demonstrated that generalised anxiety and depression share a genetic vulnerability (Kendler, 1996). As has been argued in this paper, it is possible, given the occurrence of shared risk factors, that anxiety, affective and conduct disorders represent earlier problems in the development of substance use disorders.

Clearly, Kessler and Price's (1993) model reflects a putative structure that is unlikely to be so distinctive in reality. Thus, two comorbid disorders may share some common causal variables, as well as having indirect effects on each other, and influencing contexts that serve to exacerbate or diminish the other disorder. Further, their model has very different implications at clinical versus population/epidemiological levels. Patterns of inter-causality will differ from person to person, and clinicians have long been in the habit of sorting out the causal sequences of anxiety, depression, and substance abuse as a treatment guide to working with the individual client. At the population level, and thus with regard to preventive interventions aimed at large populations, any one causal pathway will explain only part of the variance in comorbidity. However, this may be enough to justify its influence on the design of large-scale community interventions.

No studies specifically designed to look at developmental causal sequences linking substance use with internalising disorders could be located. Perhaps the closest study in the literature comes from Catalano et al,(1996) who showed that a 'social

development' model that emphasises social competence through late childhood and adolescence was the best predictor of substance use disorders in the late teen years. However, there exists enough indirect evidence to make some useful speculations. First, apart from transient anxiety or depression directly resulting from the abuse of specific substances, such disorders tend to precede substance use disorders developmentally. Secondly, it should be noted that in terms of comorbidity within internalising disorders, several studies have shown that anxiety problems typically precede and are risk factors for depressive disorders, although the reverse has not been found (Angst, Vollrath, Merikangas, & Ernst, 1990; Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Hagnell & Graesbeck, 1990). Thirdly, anxiety disorders and their early signs can be identified in childhood and many emerge as clear disorders in late childhood and early adolescence. Depression is relatively rare before middle adolescence and shares its initial onset period with substance use disorders, that is, in the teen years. Thus, it is likely that a pathway through anxiety disorders, depression, and then substance use disorders represents one pathway to substance use disorders that characterises many sufferers. Consequently, early intervention for internalising disorders, in particular the early signs of anxiety problems, may hold potential for reducing substance use problems in the community.

The causal pathway linking substance use disorders and externalising disorders has been more fully researched and documented in the literature. There exists a relatively clear developmental trajectory for substance use disorders that begins with early child behaviour problems, conduct problems, and attention deficit problems, high sensation seeking, and social adversity. For example, Reinherz, Giaconia, Carmola-Hauf, Wasserman and Paradis (2000) studied data from 360 respondents followed prospectively over a 17 year period to determine factors that would predict drug disorders in early adulthood. It was found that child behaviour problems such as hyperactivity, poor concentration, aggression, and hostility displayed at age six were predictive of substance disorders for both males and females at age 21. Other factors at age six predicting later substance problems included low socio-economic status, being born to young parents, and having a larger family size. In addition, a study by Windle (1990) found that antisocial behaviour in early adolescence predicted substance problems in late adolescence. Thus, based on the above evidence, it would be predicted that early intervention for childhood externalising problems could also hold potential for reducing the incidence of substance use disorders in the community.

In the following sections, implications of the comorbidity between substance use, internalising and externalising disorders for prevention efforts for substance use disorders will be considered. Traditional efforts to prevent substance use disorders will be briefly reviewed within a risk factor model. Prevention strategies based on the ideas presented in this paper regarding the interrelationships between substance use, internalising, and externalising disorders will then be addressed.

Traditional approaches to the prevention of substance use disorders

Until quite recently, principal attempts to prevent substance use disorders in the community have focused on two of the risk factors identified for such disorders (outlined previously) — societal norms/laws and social influence (association with people who use drugs) (Botvin, 2000; Hawkins et al., 1992). With regard to societal norms/laws, prevention programs have been designed to manipulate the supply and availability of substances, change the legal consequences of substance use, and

educate consumers about the adverse consequences of drug use (Hawkins et al., 1992). To address social influence issues, programs have been developed to teach young people social skills for resisting peer pressure to use substances (Hawkins et al., 1992). Unfortunately, prevention efforts targeted at these two risk factors have been shown to be ineffective (e.g., Bangert-Drowns, 1988). In fact, in some instances young people have been shown to increase their interest in substances following participation in these programs (e.g., Stuart, 1974).

The prevention programs based on psychoeducation and social skills training have been criticised for failing to change the developmental context experienced by children and youth (Hawkins et al., 1992). Given the literature already reviewed in this paper, it is clear that there are a variety of individual, familial, and interpersonal risk factors that can combine to produce a substance problem. A number of the early environmental risk factors that produce risk for substance use disorders are also risk factors for internalising and externalising disorders in young people, and these latter disorders themselves can be risk factors for the development of substance problems. It has been argued here that there are multiple pathways to substance use disorders that can begin with internalising and externalising disorders in children. Thus, it would seem reasonable to expect that effective prevention of substance use disorders could involve early intervention and prevention efforts for these comorbid conditions and associated risk factors, thus potentially interrupting the developmental trajectory for substance misuse. It is to this topic that we now turn.

Prevention of substance use disorders through comorbid pathways

As outlined above, a risk-reduction approach to prevention would predict that preventive interventions for both common mental disorders in young people hold promise for reducing the incidence of substance use disorders. Preventive interventions are categorised by either of two common systems. The traditional model examines prevention from the perspective of onset of disorder (Caplan, 1964). In this model, prevention can be implemented at three levels. The first level, primary prevention, intercedes prior to the onset of a disorder in order to reduce the likelihood of development of psychopathology. Secondary prevention is implemented once problems have been identified, but before these problems become severe. Finally, tertiary prevention involves treatment of current disorders with the aim of shortening the duration of the disorder and preventing relapse.

A second and subsequent model organises prevention initiatives based upon sample catchment boundaries (Mrazek & Haggerty, 1994). Within this model, a prevention program aimed at reaching a broad section of the community and applied to all individuals is considered a universal prevention program. An example would be a parent program to improve coping skills in parents and children. Alternatively, an indicated prevention specifically targets individuals who are at high risk for a disorder such as anxiety. A child who is behaviourally inhibited could be considered 'at risk' for anxiety. Thirdly, a selected prevention program targets people who are considered to be high-risk status based upon group membership, rather than individual characteristics. With respect to anxiety, this could include individuals who have been exposed to a natural disaster. With respect to conduct disorder, this could include children from low SES families. This review will discuss programs in terms of universal, indicated, and selected prevention, as at present this is the most widely used model.

There are advantages and disadvantages associated with the use of different types of intervention. An advantage of universal programs is that no selection procedures are needed and thus stigmatisation is unlikely to result. However, such programs are likely to be more expensive from both a financial and a human resource perspective. Importantly, and of ethical concern, without careful and thoughtful design, a universal program risks the possibility of doing harm to healthy people. Shochet and O’Gorman (1995) have argued that a guiding principle of any intervention must be to quarantine harm. Especially in initial trials when outcomes of prevention initiatives remain uncertain, it is imperative that, above all, people are not worse off as a result of participating in the program. For example, concern is often expressed about possible iatrogenic effects of suicide prevention programs when applied universally to young people.

Indicated or selected programs target those individuals most likely to be in need of assistance, thus optimising the use of financial and human resources. Additionally, indicated or selected programs increase the probability of identifying and intervening with individuals who otherwise may have gone unnoticed and progressed to a more severe level of dysfunction. Within some contexts, indicated and selected programs are termed ‘early intervention’, especially if some level of dysfunction already exists within the sample. However, the selection procedures associated with selected and indicated programs carry the risk of stigmatising or labeling individuals.

A number of criteria for developing prevention programs have been formulated by Simeonsson (1994), beginning with clear understanding of risk, protective factors, and characteristics of the targeted population. These factors inform the formulation of the prevention program. The design of choice is a randomised-controlled trial within a longitudinal study. Finally, adequate monitoring of the implementation and evaluation of the outcomes of the prevention program provides a guide for future development.

Windows of opportunity: outcome studies in the prevention of internalising disorders and externalising disorders

From a developmental perspective, there are likely to be optimum times and optimum methods for taking preventive action, an area that will eventually become clearer as further prevention studies are evaluated longitudinally. At this stage, although prevention has been receiving increasing press in the literature, the number of controlled, longitudinal studies is decidedly small. However, there are programs available that could be implemented and evaluated to test the hypothesised aetiological developmental trajectory of anxiety disorders, through depressive disorders, to substance use disorders, and the trajectory to substance use disorders through childhood externalising behaviour disorders. These programs are outlined below within a developmental framework, beginning with early childhood and moving to middle childhood and adolescence. Due to the suggested presence of anxiety disorders before depressive disorders in the case of internalising disorders, many of the programs presented for internalising disorders in young children focus on prevention of anxiety problems, before programs for the prevention of depression are introduced within a slightly older age group.

Early childhood, internalising disorders

In the realm of family and temperament risk factors, infancy and early childhood (children up to 4 to 5 years of age) are ideal points of prevention. One of the obstacles to determining the effectiveness of preventive efforts for children of this age is the lack of established assessment criteria suitable for use with such young children at the community level. Additionally, many of the cognitive-restructuring aspects of reducing anxiety are beyond the cognitive capacities of children in this age group, and adult modeling and shaping is the primary avenue of protection. Thus, for infants and preschoolers, the best treatment approach is working with parents (Bernstein, Borchardt, & Perwien, 1996). Knowledge of developmental needs, including differences in temperament, parental support, fostering secure attachment, and parental acquisition/modelling of coping strategies, are broad areas of prevention. These strategies provide opportunities for parents to learn patterns of interaction that support children's wellbeing, as well as skills to manage parental stress.

The most common forms of internalising disorders in this age group are anxiety problems such as Specific Phobias and Separation Anxiety Disorder. There is a body of literature showing that brief cognitive-behavioural treatments implemented through the parents are successful in reducing these problems (for a review see Dadds, Barrett, & Cobham, 1998), and in a general developmental sense, these thus offer potential as preventive interventions for substance use disorders. However, the evidence for the use of primary, secondary, indicated or selected interventions for internalising disorders in this age group is scarce.

LaFreniere and Capuano (1997) implemented a 6-month intensive home-based indicated prevention program for mothers and preschoolers. This project offered information on child development, including booklets on Development, Behaviour, Security, The Body, and Parental Needs. Additional sessions were provided to address core skills in parenting, as well as any additional personal or parental concerns presented. The aim of these sessions was to alleviate stress within the parent-child relationship. Finally, parents were assisted to build a social support network. At the conclusion of the program, anxious withdrawn preschoolers identified through teacher assessments showed significant gains in social competence, although reductions in anxious-withdrawn behaviour only approached significance. Parenting stress in the intervention group did not show a significant reduction relative to controls, although a subjective positive bias was noted in mothers who participated in the intervention.

A parent-teacher universal prevention program for children aged 4 to 5 years, aimed at reducing the incidence of internalising disorders later in childhood, was recently evaluated in Brisbane, Australia (Roth & Dadds, submitted). The project was a large-scale community program that attempted to identify children at risk in this young age group, and determine the short- and long-term effects of a prevention program through a controlled trial. Entitled, REACH for Resilience, the program aims to teach parents and teachers strategies and ways of thinking that can increase children's ability to cope with challenges, especially through adult modeling of these strategies and encouragement of children's efforts. Analysis of recruitment and retention patterns showed that, in the intervention group, the most stressed parents agreed to participate and attended the treatment sessions. In the comparison group,

the most stressed parents self-selected out. At post-treatment and follow-up, the groups were not different on any of the parent and child adjustment or diagnostic measures. Thus, while the results are encouraging in terms of reaching the most needy parents, this confounds results and makes conclusions about intervention effects dubious.

Summary: At this stage, the empirical evidence is inconclusive regarding optimal prevention of anxiety disorders in early childhood. Firstly, it would be drawing a very long bow to argue at this stage that such interventions could potentially reduce incidence of substance use disorders in later life. However, drawing from the literature on resilience (Cowen, Wyman, & Work, 1996; Cowen et al., 1997), the experience of a positive and continuing relationship with a caregiver seems to be a major factor influencing resilient versus non-resilient children (Werner, 1993). Secondly, children's temperament (easily soothed, low emotionality, sociable) tends to elicit positive responses from adults as well as children, thereby assisting with the development of social competence (Fox & Calkins, 1993). Thirdly, an internal locus of control (having a sense of influence over life's events) was more evident in resilient children, and can be supported by age appropriate problem solving strategies (Shure, 1997; Wyman, Cowen, Work, & Kerley, 1993). Fourthly, an optimistic outlook predicted socio-emotional adjustment and a stronger internal locus of control (Wyman et al., 1993). Thus, prevention initiatives in early childhood might focus on developing secure attachments; modeling of appropriate coping strategies such as optimism, problem solving, and seeking social support; and ultimately taking action. Longitudinal studies are necessary to a) develop efficacious and effective programs; b) discover the specific factors necessary and sufficient to prevent the onset of anxiety disorders and build resilience; and c) track the effectiveness of these strategies over time.

Early childhood, externalising disorders

The externalising disorders that most commonly appear within early childhood are generally characterised by disruptive behaviour in the home and preschool (Tremblay, Pagani-Kurtz, Masse, Vitaro, & et al., 1995). Research shows that disruptive behaviour in early childhood represents a salient risk factor for the continued expression of behavioural disorders (Dadds, 1997; Hawkins et al., 1992; Tremblay et al., 1995) and substance use disorders (Cicchetti & Rogosch, 1999; Hawkins et al., 1992). Research further suggests that brief behavioural treatments implemented with multiple points of focus, for instance via parenting skills in the home and via social skills training in schools, can prove more effective than programs which only target one of these domains (Kazdin, 1993, 1995). Similarly, it is recognised that programs seeking to change behaviour produced within a particular developmental context must address all of the components of that context. Thus, preventive interventions that include both parent- and child-focused components would be expected to be more optimally effective than programs that incorporate only one of these intervention targets (Coie & Jacobs, 1993; Dodge, 1993).

Considerable work has been done on the development and evaluation of tertiary treatments for externalising disorders. The most successful are parent training and family interventions, and for older children, individual or group social-cognitive work with the child. Research has supported the efficacy of behavioural family interventions in the short term and over follow-up periods of years after the

termination of treatment (Miller & Prinz, 1990). The last few decades have witnessed continuous refinement of the behavioural family intervention approach. Empirical evidence and clinical experience suggests that not all parents or families benefit to the same extent from treatment (Miller & Prinz, 1990), and difficulties are commonly encountered when there are concurrent family problems, parental psychopathology, and economic hardship. Several authors have made various proposals to improve the outcome of treatment by expanding the focus of treatment to the multiple systems that provide the context for family life (Henggeler, Melton, Brondino, Scherer, & Hanley, 1997; Miller & Prinz, 1990). Of particular interest to early intervention is the Triple P approach (Sanders, 1999). The Triple P framework offers various levels of intervention intensity, from simple provision of information through to a full multisystemic, individually tailored intervention. Of the different approaches encompassed by behavioural family intervention, parent training for the treatment of younger Oppositional Defiant Disorder children has the most accumulated evidence regarding its therapeutic effectiveness. There is less evidence to suggest that behavioural family intervention is effective in altering the course of the more severe end conduct problem children, especially beyond the years of early childhood.

One example of an effective multi-focused preventive intervention administered to a select sample comes from Tremblay et al., (1995). In this study, disruptive kindergarten boys were randomly allocated to a dual focused preventive intervention condition or to a control condition. All the participants were from inner city low socio-economic neighbourhoods. The components of the dual focused intervention program included home-based parent training in effective child rearing practice, and appropriate social skills training for child participants. The child participants were compared with controls at four time points — at the end of the program, prior to puberty, at puberty, and during adolescence. Based on these comparisons the program was judged successful for the following reasons — a) compared with children in the control group, a significantly larger number of boys who undertook the intervention remained in regular and age appropriate classrooms until the end of elementary school, and b) the boys who participated in the treatment program showed significantly less delinquent behaviour at the post-intervention assessments carried out each year while the children were between 10 and 15 years of age.

Middle childhood, internalising disorders

Middle childhood appears to be an especially advantageous time for anxiety prevention and early intervention. Developmentally, this is the time when most anxiety disorders emerge, and these have been shown to be predictive of adolescent depression (Cole et al., 1998). As children's cognitive abilities mature, cognitive restructuring techniques are able to be utilised in helping at-risk children change the meaning of aversive events and experiences. This is especially important because the impact of stressful events on children appears to be largely mediated by the children's evaluation of the event in relation to their wellbeing. Dadds et al., (1998) suggest that intervention with parents is especially important with younger age groups of children, whereas for older children cognitive work and exposure may be sufficient. A further advantage for this age group is that the children can complete self-report measures, providing additional reliable and valid assessment information. It should be noted, however, that collecting assessment information from multiple sources is still vital due to the tendency of anxious children to portray themselves in

socially desirable ways. Using teacher nominations in conjunction with children's self-reports seems most efficacious as each of these methods tap different types of anxiety problems, while at the same time being supported as valid assessment tools by structured interviews (Dadds et al., 1998).

Controlled clinical trials with children diagnosed with anxiety disorders have only been reported recently. The programs have included individual cognitive work to reduce threat appraisal, exposure, and enhancement of parental communication and child-rearing skills. The results are impressive with improvement maintained in 60% to 90% of cases overall in the controlled trials. Although these studies were treatment and not prevention studies, they are worth considering in some detail due to their important implications for the design and implementation of anxiety prevention and early intervention.

Two controlled treatment studies for children with a primary anxiety disorder diagnosis were conducted by Kendall and his colleagues (Kendall, 1994; Kendall, Flannery-Schroeder, Panichelli-Mindel, Southam-Gerow, & et al., 1997). These trials consisted of 16 to 20 cognitive-behaviour therapy (CBT) sessions for anxious children. The first eight weeks of the treatment involved psychoeducation regarding anxiety, and teaching children cognitive and behavioural strategies for managing and reducing their anxiety. The second 8 weeks involved practising the anxiety management skills learned previously during both imaginal and in vivo exposure to threat related situations.

In the first controlled trial (N=47), over 60% of the treatment group no longer met criteria for an anxiety disorder at post-treatment, and these gains were maintained at one-year follow-up. The second randomised clinical trial (N=94), which used the same CBT treatment as the first study, yielded very similar results. Over 50% of children diagnosed with a DSM-IV anxiety disorder pre-treatment no longer retained their diagnosis post-treatment, compared to only 6% (n=2) in the waitlisted group. For those children who did retain diagnoses at post-treatment, significant reductions were still seen in the severity of their problems. Effects were not modified by comorbidity, gender, or ethnicity. Participants completed assessment measures at eight weeks following the completion of the psychoeducation component of the treatment, allowing an examination of the effectiveness of the two different components of the treatment (psychoeducation and active exposure to anxiety provoking stimuli). Results suggested that the psychoeducation component alone was not sufficient to reduce children's anxiety disorders. However, when followed by eight sessions of active exposure, the two components together created significant reductions in diagnosable anxiety problems.

A similar treatment program (12 sessions) which involved parents as well as children was found to be superior to one which involved only children (Barrett, Dadds, & Rapee, 1996). Children (N=79) aged seven to 14 years who met criteria for separation anxiety, overanxious disorder, or social phobia were randomly assigned to one of three treatment groups — cognitive-behavioural therapy (CBT) (child only), CBT plus family/parent management, or a waitlist group. In the child plus parent treatment group, 84% of children no longer met criteria for an anxiety disorder at post-treatment, and this increased to 95% at 12 month follow-up. In the child-only treatment group, 57% of children were assessed as having no anxiety disorder at post-treatment, increasing to 70% at 12 month follow-up.

Barrett (1998) showed that similar success rates could be achieved by presenting the combined CBT-family treatment in a group format to anxious children and their parents, thereby significantly reducing costs of intervention. Barrett et al., (2001) showed durable treatment effects up to six years following treatment. Mendlowitz et al. (1999) also examined the effect of parental involvement in CBT group intervention on anxiety, depression, and coping strategies in school-age children. Similar to Barrett et al., (1996), all treatment groups showed positive change, and concurrent parental involvement enhanced the treatment effects. Cobham et al, (1998) used the same group intervention to assess the role of parental anxiety in treatment outcome, and the extent to which the second component of Barrett et al's family treatment (parent skills for managing their own anxiety) could alleviate putative poorer treatment outcomes associated with high parental anxiety. Results indicated that high parental anxiety was a risk factor for poorer treatment outcomes for anxious children, and that specifically targeting parental anxiety for intervention could overcome this risk factor in the context of a cognitive-behavioural program for the child.

Silverman et al., (1999) used a randomised clinical trial to evaluate the therapeutic efficacy of group CBT therapy versus a wait list control condition to treat anxiety disorders in children. Results indicated that group CBT, with concurrent parent sessions, was highly efficacious in producing and maintaining treatment gains. Children in group CBT showed substantial improvement on all the main outcome measures, and these gains were maintained at three, six, and 12 month follow-ups. Silverman et al. (1999) evaluated the relative efficacy of an exposure-based contingency management treatment condition and an exposure-based cognitive self-control treatment condition relative to an education support control condition for treating children with phobic disorders. 81 children and their parents completed a 10 week treatment program in which children and parents were seen in separate treatment sessions with the therapist, followed by a brief conjoint meeting. Children in both the contingency management and self-control conditions showed substantial improvement on all of the outcome measures. These gains were maintained at 3, 6, and 12 month follow-ups. Interestingly, children in the education support control condition also showed comparable improvements at post-treatment and at 3, 6, and 12 month follow-ups.

A selected prevention project targeted children (N=1786) aged seven to 14 in Brisbane, Australia (Dadds, Spence, Holland, Barrett, & Laurens, 1997). Those included in the project ranged from children who were exhibiting mild anxious features, but remained disorder free, to those who were in the less severe range of a DSM-IV anxiety disorder. An intensive screening process incorporated parent, child and teacher reports, telephone calls and face-to-face interviews. Children with a) disruptive behaviours (impulsive, aggressive, hyperactive, non-compliant), b) lack of English as a first language in the home, c) developmental delay or other problem, d) no anxiety problem according to teacher reports, and e) invalid child reports (ticked 'yes' to all items) were excluded from the sample. The final sample consisted of 128 children. Any child with severe symptoms or whose parents requested individual help for their child's anxiety were referred for individual treatment and were no longer included in follow-up assessments.

The intervention was based upon an adaptation of Kendall's Coping Cat Workbook, a 10 session program presented in group format for teaching children strategies to cope with anxiety. The sessions were conducted weekly for one hour at the child's school, in groups of five to 12 children. In addition, parents periodically attended three sessions covering: a) child management skills, b) modelling and encouraging the strategies children were learning through the Coping Koala Prevention Program, and c) how to use Kendall's FEAR plan to manage their own anxiety. The monitoring group received no intervention, but was contacted at planned intervals for follow-up assessments.

Interestingly, at post-intervention no significant differences were found between the monitoring and the intervention groups. Yet, at 6 months follow-up, the intervention group showed a significant reduction in the onset of disorder (16% onset), relative to the monitored group (54% onset). Most importantly, the success of their program in reducing the existing rate of anxiety disorder and preventing the onset of new anxiety disorders was successfully maintained at a two year follow-up (Dadds et al., 1999). These results are very promising. Given that over half of the at-risk children in the monitoring group progressed from mild anxious symptoms into a full-blown anxiety disorder, middle childhood and early adolescence appear to provide an important 'window of opportunity' for prevention initiatives.

When conducting an indicated prevention, such as described above, an important ethical caveat surrounds the potential to negatively label children who are deemed 'at-risk', and thus raise concern in parents as well as stigmatising children amongst their school peers. The Queensland project surmounted this dilemma by describing the intervention as 'a positive skill building experience', and the monitoring group provided 'an information gathering/learning exercise for researchers'. This ethical consideration should be addressed in any future programs that are designed and delivered to investigate the potential of early intervention for anxiety disorders in middle childhood to reduce later incidence of substance use disorders.

Finally, there is evidence that programs that build social skills in primary school children, without necessarily focusing on internalising disorders, can reduce the symptoms of these disorders. Such effects have been shown in the PATHS program, for example, using a range of well-designed studies with unselected, deaf, and behaviourally at-risk students (Greenberg, Zins, Elias, & Weissberg, in press).

Summary: The above review would suggest that successful prevention, early intervention and treatment in middle childhood has been achieved with regard to anxiety disorders and symptoms. Studies have been able to demonstrate long-term improvements for children up to two years post-intervention. The long-term success of these interventions has clear implications for a concomitant reduction in community costs and family distress. None of the above studies took measures of substance misuse at follow-up. However, it is reasonable to speculate that these interventions have some potential for reducing the incidence of depression and substance use disorders in the adolescent years.

Middle childhood, externalising disorders

The evidence with regard to the treatment and prevention of externalising disorders in middle childhood is also strong. There are a number of prevention programs that aim to reduce aggression and promote social skills in children via universal

curriculum-based programs in schools. These may have some impact on externalising disorders but are outside the scope of this review (see Greenberg, Domitrovich, & Bumbarger, 2000). Greenberg et al. (2000) located 10 early intervention programs that have shown success in reducing externalising disorders or their risk factors. Similar to tertiary models, the majority of these utilise child-cognitive skills training, parent training, or both. Only the most recent and well-evaluated will be reviewed here.

As an example of a child-focussed program, Lochman et al. (1993) evaluated a 26 session social skills training program focusing on peer-relations, problem solving, and anger management, with a sample ($n=52$) of 9 to 11-year-old aggressive-rejected children. Compared to controls, the program children were rated as significantly less aggressive by teachers and more socially accepted by peers at post-treatment and at one-year follow-up. By contrast, in Lochman's (1985) program, children who had received an anger coping program were, three years after the intervention, not different from controls in terms of parent-ratings of aggression and observations of disruptive-aggressive behaviour, or in terms of self-reported delinquency. In another child-focused intervention, Tierney et al. (Big Brother/Big Sister Program: 1995) randomly assigned 959 between 10 and 16 year old adolescents to a mentor or a wait list control condition. Those with a mentor reported that they engaged in significantly less fighting, were less likely to initiate the use of drugs and alcohol, and perceived their family relationships more positively. However, there were no significant differences between groups in terms of self-reported delinquency. While encouraging, these data are based solely on self-report.

One problem with the use of group interventions for indicated externalising disorder youth is that iatrogenic effects have been found in programs where antisocial youth were grouped together (Dishion, Andrews, Kavanagh, & Soberman, 1996). In contrast, studies have found that externalising disordered youth benefit from being in groups with non-problem children. For example, Hudley and Graham (1993; 1995) paired aggressive 10 to 12 year old boys with non-aggressive peers in a 12 lesson school-based intervention that focused on improving the accuracy of children's perceptions and interpretations of others' actions. Compared to controls, teacher ratings indicated that the program successfully reduced aggressive behaviour immediately following the intervention. There has been no follow-up data to date. A similar 22 session integration program by Prinz, Blechman and Dumas (1994) was evaluated up to six months following the intervention. Children in the program were rated by teachers as significantly less aggressive than controls at post-test and follow-up. Compared to controls, the intervention group also showed significant improvements in pro-social coping and teacher-rated social skills.

Overall, the evidence is not strong that child-focused early interventions are effective with externalising disorders. In general, their results are modest and not durable, the sample sizes are small, and due to the nature of the interventions, they are limited to older children and adolescents. The limited applicability of child-focused interventions for externalising disorders is not surprising given the literature reviewed earlier regarding the importance of early contextual factors in the development and maintenance of such disorders. More comprehensive programs that contain interventions to change problematic early parenting/and environmental issues; and others that include parenting interventions in combination with the child-focused interventions, are showing more impressive results. These are reviewed next.

Parent focused interventions generally have produced more clinically significant outcomes. As noted earlier, there have been numerous demonstrations of the effectiveness of social-learning based parent-training programs for families of children with externalising disorders. Numerous independent replications in community settings have produced significant results (Sanders, 1999). While most of these programs were designed as tertiary treatments and have been evaluated on clinical populations, a number of authors have argued that they are excellent early intervention strategies in that they effectively reduce externalising disorders early on in their developmental trajectory (e.g., Sanders, 1999). However, as we saw earlier, one limitation of a referral-based approach is that it leaves initiatives for intervention in the hands of parents, who may not seek help even in extreme situations.

Parent interventions have also been recently applied in both universal prevention and early intervention formats. Webster-Stratton (1998) has used a parent training model with young Head Start children. Because the entry procedure was based on screening of children rather than parent-referrals, the program can be regarded as a *selected* program. Parents of Head Start children were randomly assigned to receive the intervention or serve as a control by only receiving the usual services. The 9-week intervention consisted of parent training groups and a teacher-training program. Results at post-test and 12 to 18 months follow-up indicated significant improvements in parent behaviour, parental involvement in school, child conduct problems, and school-based behaviour.

A number of early intervention programs have been evaluated that adopt developmental models of externalising disorders and, as such, utilise multiple interventions across settings and time. This is consistent with a general view that a more comprehensive approach is necessary to alter the developmental trajectories of children who live in high-risk environments and show early signs of these disorders (Conduct Problems Prevention Research Group, 1992; Reid & Anderson, 1997).

One recent study entitled the LIFT (Linking the Interests of Families and Teachers) Intervention examined the efficacy of a universal preventive intervention in the reduction of conduct problems (Reid, Eddy, Fetrow, & Stoolmiller, 1999). LIFT was 10 weeks in duration, and targeted three distinct domains that had been identified by a developmental model of the trajectory of conduct problems. A sample of 671 first and fifth graders and their families was drawn from 12 elementary schools. The intervention condition consisted of a parent training component in the behavioural family intervention tradition, together with a playground behavioural program and a teacher parent communication program. It was hypothesised that the intervention would have significant effects on three specific areas, levels of child physical aggression in the playground, mother aversive behaviour that was displayed during interactions with their children, and teacher ratings of child peer positive behaviour over the year following the intervention. The results indicated that the intervention had significant results on child physical aggression in the playground, and on mother aversive behaviour in mother-child interactions. In addition, the results for the children's behaviour in the classroom were in the expected direction. All results were immediate and applied to both first and fifth grade participants.

Kazdin and Wassell (2000) evaluated a preventive intervention involving cognitive problem solving skills training (PSST) for the child and child/parent management training (PMT). PSST involved seeing children individually for 20 to 25 sessions to

teach adaptive problem-solving skills for use in interpersonal situations such as those with family, peers, siblings, and teachers. The PMT condition was in the tradition of behavioural family intervention. For children attending school, school-based issues were included in treatment through contact with school teachers, and incorporating home-based reinforcement interventions for the school issues. In general, the children (aged between two and 14 years), their parents, and their families all responded to treatment. Children's functioning, as well as parent and family functioning, improved over the course of the intervention. This improvement was demonstrated within a range of child behavioural symptoms, parental symptoms and levels of stress, and family functioning, relationships and support (Kazdin & Wassell, 2000). Generally, larger effects were demonstrated on children's outcome measures, and effects of less magnitude were demonstrated on parent and family outcome measures. While the authors note that the children in this study were all under referral for conduct problems, and that similar experimental results have not been demonstrated for populations exhibiting internalising disorders, support for the generalisability of therapy based on demonstration of risk factors is warranted. For instance, it is noteworthy that improvements in both parental functioning and stress, as well as family functioning, relationships and support, have been demonstrated as important for children with both internalising and externalising disorders (Cobham et al., 1998; Kazdin & Wassell, 2000). In addition, changes in family and parent functioning may be expected to contribute to beneficial outcomes as far as long-term treatment effects for children are concerned.

In the Montreal Prevention Experiment, Tremblay and colleagues (McCord, Tremblay, Vitaro, & Desmarais-Gervais, 1994; Tremblay, Masse, Pagani, & Vitaro, 1996; Tremblay et al., 1992; Vitaro & Tremblay, 1994) combined parent training and child skill training. Primary school boys rated high on aggressive and disruptive behaviour ($n = 166$) were randomly assigned to a two year intervention or placebo control condition. Children worked with normative peers to develop more pro-social and adaptive social behaviour, while parents worked with family consultants approximately twice a month for two years to learn positive discipline techniques and how to support their child's positive behaviour. Initial results did not reveal clear group differences. At the three year follow-up when the boys were age 12, the treatment group was significantly less likely than control boys to engage in fighting, be classified as having serious adjustment difficulties, and to engage in aggression or delinquent activity. These results came from a variety of self, teacher, peer, and parent report measures. Effects of the treatment on other forms of antisocial behaviour (e.g., self-reported stealing) and substance use continued into early adolescence. Other early intervention programs have found durable effects which did not emerge until follow-up assessments (see Dadds et al., 1997). It should also be noted that intervention effects were reported by multiple informants across multiple domains of adjustment (i.e., behavioural, social, school/academic).

The First Steps Program (Walker, Kavanagh et al., 1998; Walker, Stiller, Severson, Feil, & Golly, 1998) also intervenes with both parents and children, the latter having been identified at kindergarten for exhibiting elevated levels of antisocial behaviour. Families with an at-risk child receive a 6 week home intervention and children participate in a classroom-based, skill-building and reinforcement program that lasts two months. The program has been evaluated with 42 subjects in two cohorts using a randomized controlled design. Positive treatment effects were found for both adaptive

and academic behaviour at post-intervention and at follow-up into early primary school. A replication (Golly, Stiller, & Walker, 1998) with a new sample of 20 kindergarten students has produced similar results. Comparable positive results have also been found for a program that targets students aged six to 12 exhibiting aggressive and disruptive behaviour, their parents, and the classroom (Pepler, King, Craig, Byrd, & Bream, 1995; Pepler, King, & Byrd, 1991). In this program, the parent training is optional. It is important to note that in this study, significant differences between intervention and control children were only found on teacher ratings. Parents failed to see significant behaviour changes in the intervention children.

The CPPRG (Conduct Problems Prevention Research Group, 1992) implemented Fast Track, a school-wide program that integrates universal, selective, and indicated models of prevention into a comprehensive longitudinal model for the prevention of conduct disorders and associated adolescent problem behaviours. A randomised-controlled trial of 50 elementary schools in four U.S. urban and rural locations is still underway. The universal intervention includes teacher consultation in the use of a series of grade level versions of the PATHS Curriculum throughout the elementary years. The targeted intervention package includes a series of family (e.g., home visiting, parenting skills, case management), child (e.g., academic tutoring, social skills training), school, peer group, and community interventions. Targeted children were identified by multi-gate screening for externalising behaviour problems during kindergarten. The target group consisted of children from schools in neighbourhoods with high crime and poverty rates and who displayed the most extreme behaviour problems (top 10% of children as reported on externalising behaviour measures). At present, evaluations are available for the first three years (CPPRG, 1999a; 1999b). There have been significant reductions in special education referrals and aggression both at home and at school for the targeted children. The initial results provide evidence for improved social and academic development, including lower sociometric reports of peer aggression, and improved observers' ratings of the classroom atmosphere in the intervention sample. Evaluations will continue through middle school as Fast Track adopts an ecological-developmental model that assumes that, for high-risk groups, prevention of antisocial behaviour will be achieved by enhancing and linking protective factors within the child, family, school, and community.

Summary: It can be seen that recent community trials have been conducted that use randomised-controlled designs to evaluate multi-component programs based on comprehensive ecological and developmental models of externalising disorders. There are a number of characteristics that appear to be associated with successful EI for externalising problems in children. These include: 1) early identification and intervention beginning not later than preschool or early primary school years; 2) incorporation of family-based intervention as a core target for change; 3) adoption of a comprehensive model that emphasises a broad ecology (child, family, school, community); 4) adoption of a longitudinal/developmental approach to risk and protective factors and windows of opportunity for intervention; and 5) use of a comprehensive mix of selected (e.g., poor neighbourhoods), indicated (identification of aggressive children), and universal (e.g., classroom program) strategies.

Thus, successful prevention/early intervention and treatment in middle childhood has been achieved with regard to both internalising disorders and externalising disorders. Some of the studies cited have been able to demonstrate long-term

improvements for children up to two years post-intervention. The long-term success of these interventions has clear implications for a concomitant reduction in community costs and family distress. None of the above studies took measures of substance use disorders at follow-up. However, given their focus on early risk factors for psychopathology, it is reasonable to speculate that these interventions have some potential for reducing the incidence of depression and substance use disorders in the adolescent years.

Adolescence, internalising disorders

Convincing literature points to the effectiveness of brief psychological interventions for internalising disorders in adolescents. However, the community impact of these brief programs is less convincing because of the low referral rates for internalising disorders during adolescence. The majority of adolescents in need of treatment simply do not receive it (Tuma, 1989). Thus, broader identification, recruitment, early intervention and prevention strategies become particularly important. Prevention of anxiety disorders in adolescence has received limited attention, although it should be noted that the treatment and prevention studies by Kendall, Barrett, Dadds, and Silverman reviewed above all included children up to 14 or 16 years in their successful reductions in anxiety disorders. Stress Inoculation Training Programs, which use a similar intervention to the anxiety treatments, have been shown to reduce anxious symptomology in universal adolescent samples (Kiselica, Baker, Thomas, & Reedy, 1994), as well as children evaluated to be at risk due to family breakdown (Pedro-Carroll, Alpert-Gillis, & Cowen, 1992).

In later adolescence, the pressing nature of such life threatening issues as depression, suicide, drug and alcohol abuse, or safe sex practices come to the forefront. With respect to internalising problems, the prevention of depression has gained more prominence than anxiety prevention in research investigations. This trend is in keeping with the proposals put forward in this chapter concerning a possible developmental pathway to substance use disorders from anxiety disorders in younger children, through depression as children move into adolescence, to substance use disorders. Thus, in this section the primary focus is on reviewing relevant programs for the prevention of depression.

To date, one of the most successful programs for reduction of depressive symptoms in young people has been the Pennsylvania Depression Program for adolescents aged 10 to 13 years (Jaycox, Reivich, Gillham, & Seligman, 1994). The study included three separate programs focusing on teaching (a) cognitive skills, (b) social problem solving skills, and (c) a combination of cognitive and social problem solving skills. Training in assertiveness, negotiation, and coping skills were also included. After finding no significant difference between the three intervention modalities, the groups were combined, resulting in a treatment sample of 69 participants and a wait list control group of 74 participants. Significant improvements in depressive symptoms were obtained for the intervention group compared to controls at post-testing, 6 month follow-up, and 2 year follow-up (Gillham, Reivich, Jaycox, & Seligman, 1995). This innovative study indicates that psycho-educational prevention efforts to build resilience to depression seem promising during early adolescence. A limitation of the study was the possible biasing effect of a self-selected sample in conjunction with the low initial recruitment rate (between 13% and 19%) and high attrition rate (30%).

In a second innovative study using an adaptation of the tertiary treatment approach developed by Lewinson et al. (1990), Clarke et al., (1995) reported significant improvements in depression for an indicated intervention group compared to a wait list group for 14 to 15 year old adolescents. The program was more successful than the Jaycox et al. (1994) study at recruiting adolescents. However, it still only succeeded in engaging less than 50% of the adolescents identified as being at risk for depression. There was also a reasonably high attrition rate, particularly in the intervention group (21 out of 76). In another indicated trial, Hains and Ellmann (1994) reported positive results for their program which consisted of problem solving, cognitive restructuring, and anxiety management, reducing depression scores in volunteer adolescents who had been classified as having high arousal levels. These authors also experienced difficulty with possible self-selection bias.

Beardslee and colleagues (Beardslee, 1989; Beardslee, Hoke, Wheelock, Rothberg, & et al., 1992; Beardslee & MacMillan, 1993; Beardslee, Salt, Porterfield, Rothberg, & et al., 1993) evaluated a selective program for adolescents and parents, where one or both parents had a major affective disorder, often in combination with other serious psychiatric disorders. The authors used family therapy and psycho-educational approaches to help families develop a shared perspective on the depressive illness, and to change parents' behaviour in relation to their children. In a controlled trial of 20 families, parents who received family-based interventions reported significantly more improvements in behaviour and attitudes than parents who received information alone. Recruitment was conducted through Medical Health Fund advertising, so no information is available regarding recruitment rates and self-selection processes.

The above studies provide evidence for the usefulness of selective and indicated prevention programs. They also highlight the well-known difficulties associated with recruitment and retention of adolescents. To the adolescent, such programs could be seen to single them out from the peer group at an age when peer group acceptance is especially important. This problem might be substantially reduced if intervention programs for adolescent depression could be implemented routinely as part of the school curriculum, as either an alternative or complement to indicated programs.

The Resourceful Adolescent Program (RAP: Schochet, Holland, & Whitefield, 1997) was developed to meet this need. It consists of components for adolescents (RAP-A) and their families (RAP-F). The RAP-A is a fully manualised 10 week group treatment (eight to 10 participants) focused on preventing depression through building adolescent resiliency. Given its universal delivery, participation rates approach 100% for the adolescents, although recruitment of families has remained a problem. Early results from controlled trials indicate that it is associated with reductions in self-reported depression, especially for adolescents with pre-existing depression at pre-treatment (Schochet et al., in press).

Summary: Thus, the evidence from adolescent groups is consistent with that from younger groups, supporting the efficacy of psychological skills building programs to reduce the incidence of internalising disorders in young people. It should be noted that the content of the anxiety prevention and depression prevention programs tends to be very similar, and includes core foci on cognitive skills, emotion regulation, dealing with challenges, and social problem solving skills. Unfortunately, none of the above studies has specifically measured substance use disorders as an outcome

variable. Thus, the effect of these programs on reducing the prevalence of substance use disorders is at this stage unknown.

Adolescence, externalising disorders

The picture is somewhat different for externalising disorders, since adolescents who display various disorders consistent with externalising disorders represent a population at high risk for the development of substance use disorders, and therefore a population for whom intervention may well be beneficial. If such interventions are effective, reductions may not only be expected in recurrent prevalence of externalising disorders, but also in the incidence, prevalence and severity of substance use disorders (Bukstein, 1995). Of the preventive interventions for externalising disorders, particularly conduct problems, research indicates that behavioural family intervention has a high degree of efficacy both in the short term and after long-term follow-up (Prinz & Miller, 1994). Typically, behavioural family intervention will target parental interaction skills and parenting practice skills. In addition, a range of additional family risk factors will be addressed where warranted, for instance psychological state of parents (depression, anxiety, irritability), the presence of other identifiable marital problems, social support training, and the presence of substance use disorders.

Additional evidence for prevention of substance use disorders by intervening with internalising disorders and externalising disorders

The vast majority of substance misuse prevention studies for adolescents have focussed on externalising behaviours and social adversity risk factors. Several programs of research have now shown that reductions in externalising disorders can be effectively produced by the provision of skills building programs for the child, his or her family, and the school environment during the primary school years (see Greenberg et al., in press). Several of these studies have shown effective reductions in substance use disorders following targeting of externalising behaviour (e.g., The Anger Coping Program: Lochman, 1992; Big Brother/Sister: Tierney et al., 1995).

There are a number of studies in which the promotion of general resilience in primary school children has been shown to reduce substance use into adolescence. For example, Schinke and Tepavac (1995) showed that a universal school-based intervention that focuses on personal and social decision making and assertive skills, reduced actual and potential substance use in eight to 11 year olds. The Seattle Social Development Project is a universal program that combines parent and teacher training throughout the primary school years. Controlled trials have compared early versus late scheduling of the intervention in large samples. Secondary school intervention was not effective. However, the early intervention model (i.e., targeting social competence in the primary school years and continuing across developmental phases) has been shown to effectively reduce substance use disorders at 18 years of age (Hawkins, Catalano, Kosterman, Abbott, & Hill, in press). Similarly, a number of well-designed studies that have targeted improved parent-child relationships have shown positive long-term benefits in terms of reductions or delays in drug taking (e.g., Kosterman, Hawkins, Spoth, Haggerty, & Zhu, 1997).

Several programs that aim to build skills and general resilience have been presented as selective programs. For example, Short (1998) reports on a preventive intervention for 10 to 13 year old children from divorced homes based on the

rationale that coping skills mediate the effects of family stress on adolescent mental health and substance use. The intervention has been associated with improved coping and reductions in externalising, internalising, and substance use problems.

The overlap in skills focus between these programs and those aiming to reduce internalising disorders and externalising disorders is notable. That is, the focus on improving coping skills, problem solving skills and interpersonal relationships are common to most of the interventions. Also similar is their demonstrable positive outcomes, encouraging some optimism that the utilisation of school-based programs that increase resilience and reduce social and personal problems have the potential to reduce the development of substance use disorders.

Intervention and community health issues in the prevention of internalising disorders, externalising disorders and substance use disorders

Efficacy vs. effectiveness

The extent to which intervention technologies can actually make a difference in the community is influenced by a number of pragmatic public health issues. Most of the intervention studies reviewed were a combination of effectiveness with efficacy trials. That is, while they were conducted in ‘real world’ settings, they evaluated the intervention under optimal delivery conditions, e.g., within the context of a funded research program, using careful experimental designs and measures, and implemented by highly trained and motivated staff. The question remains as to the community effectiveness of such interventions when implemented in the not-so-optimal conditions of existing mental health and educational systems. Many interventions are evaluated up to the efficacy trial stage and the community effectiveness remains unknown. In the area of prevention, effectiveness trials are essential and thus more work is needed to evaluate these interventions when implemented in community settings by non-specialist, non-research motivated staff.

Low participation rates

Recruitment of participants is one of the major obstacles of preventive interventions, regardless of the type of prevention. Because participants have not self-referred for treatment and may not even feel they have any problems, especially in early childhood, the sense of urgency and motivation that drives clinical interventions is often absent. With childhood anxiety problems, parents and teachers often have not even noticed anxiety problems, or often assume that children will ‘grow out of it’. In the La Freniere and Capuano (1997) study of selected children, less than one-third of identified participants were successfully recruited. The Roth and Dadds (submitted) trial of a parenting intervention applied universally to preschool children has maintained contact with approximately half of those invited to participate. Indicated prevention projects in middle childhood show similar rates of recruitment. Although no adolescent studies were found specifically targeting adolescent anxiety problems, selected and indicated programs for depression in adolescents have typically achieved very low participation rates. The Shochet et al. (in press) school-based universal prevention of depression program received parental consent for 86% of potential students. However, when an additional parental component was added to the program, attendance by parents at three evening sessions was very low, with 36% attending one session and only 10% attending all three sessions.

With regard to substance use disorders, there may be more precise ways to use indicated and selected programs. The preventive and early intervention studies reviewed above either used universal interventions or targeted children already showing signs of the common mental disorders, or who are at risk of displaying problems due to the presence of risk factors such as family conflict or psychopathology. While there are many similarities in the risk factors for internalising, externalising and substance use disorders, there may be risk factors that are more relevant to identifying children particularly at risk for substance use disorders. Children of parents with existing substance use disorders is an obvious one. There is clear evidence that these children are at risk for substance use disorders themselves, as well as a range of other social and health problems (Chassin, Pitts, DeLucia, & Todd, 1999). The mechanisms of transmission appear to be a combination of specific biological risk for addiction as well as social adversity (O'Connor, Caspi, DeFries, & Plomin, 2000). Pragmatically, however, this is a difficult group to recruit effectively. While numerous programs have reported working with such children, the numbers are small and the ratio of participants to those offered participation is often not made clear. In contrast, for studies that have deliberately measured the success rates of recruiting children of parents with substance use disorders into intervention programs, the data is not encouraging (Gensheimer, Roosa, & Ayers, 1990; Michaels, Roosa, & Gensheimer, 1992). Understandably, identifying oneself as having a parent with a substance use problem is not appealing to young people, and few do. Thus, identification of young people at risk via direct family experience with substance use disorders may be a useful tertiary clinical strategy but is unlikely to offer much power as a larger community strategy. One solution to this is to offer such programs universally in schools with particular attention paid to the needs of children with substance abusing parents (e.g., Nastasi & DeZolt, 1994). Studies reviewed above indicate that recruiting young people via universal strategies and indicated and selected strategies for internalising disorders and externalising disorders have done well in reaching children potentially at risk for substance use disorders. As such, there is a good basis for arguing for increased attention to such programs.

Parent-child relationships where substance use disorders are involved

Caution must be used when findings on parent-child relationships are generalised to substance-using families. Positive relationships with peers and family are a common target in programs that aim to build resilience and reduce mental health problems in young people. As would be expected, these also form a central focus for many preventive programs for substance use disorders. However, it should be noted that the situation may be a little more complex with regard to substance use disorders than simply conceiving of positive interpersonal relationships as a protective factor. Modelling of substance use habits via close relationships is a key factor in the development of many forms of substance use and longitudinal studies show that adolescents are more likely to imitate substance use if they have a close relationship with the substance user (Andrews, Hops, & Duncan, 1997). Further, studies on families with opiate addiction show that positive family management practices have minimal protective influence on child development compared to that typically found in addiction free families (Gainey, Catalano, Haggerty, & Hoppe, 1997).

Service delivery

A final issue concerns the administrative systems that control the resource allocations and structures for mental health services. As we have seen, the most evidence to date that anxiety and depression problems can be prevented comes from school-based intervention trials. However, the responsibility for mental health promotion is typically within statutory health rather than education departments, and program designers may find their efforts frustrated by a lack of communication between the two groups. Inter-sectorial issues, concerned with the overlapping structure and functions of the various agencies that have responsibility for health and education of young people, are a major issue for the science and practice of prevention, particularly for substance use disorders where statutory responsibilities may span several agencies.

Conclusions

Substance use disorders are a substantial health and community problem. Traditional prevention strategies that focus on educating people about the dangers of substance use have been to date unsuccessful. In contrast, reductions in substance use disorders can be achieved by reducing risk factors and increasing general mental health and resiliency in young people. Such interventions typically focus on the pathway to substance use disorders through conduct problems and delinquency with their associated features of social adversity, school failure, and family conflict and breakdown. However, increasing evidence shows that there is a related but diverse pathway to substance misuse associated with internalising problems, that is, anxiety and depression. Given that strong evidence shows the incidence of both internalising and externalising problems can be reduced via developmentally informed tertiary and preventive interventions, these strategies have considerable potential for reducing the incidence of substance use disorders in the community. An attempt was made to present a developmental map of the risk and protective factors that influence the persistence versus transience of internalising disorders and externalising disorders in young people. These switch in and out at various developmental points of the lifespan, and thus, a series of windows of opportunity for intervention can be identified.

To demonstrate useful preventive effects for internalising disorders and externalising disorders on substance use disorders, two logical conditions were proposed. First, it must be shown that interventions can reduce internalising disorders and externalising disorders at a community level. In terms of developmental trajectories of anxiety disorders and the available data on intervention effectiveness, anxiety prevention and early intervention during middle to late childhood holds great promise. Family and school-based programs during early childhood have the potential to lay a foundation of social competence, and recent evidence supports the long-term benefits. Developmentally, the primary to early secondary school years, the age of onset of most anxiety disorders, appears to be an optimum time to provide both universal and indicated prevention and early intervention initiatives. Issues of recruitment become more difficult in the adolescent years but programs for depression have shown similar potential. With regard to externalising disorders, middle childhood appears to be a propitious time for prevention. Programs based on behavioural family intervention models that incorporate individual child as well as

contextual interventions (i.e., home, school, community) have shown considerable success in reducing externalising disorders.

The second condition is that reductions in the incidence of internalising disorders and externalising disorders must be shown to have an impact on substance use disorders. This has not been demonstrated as yet due to lack of longitudinal studies that test the interweaving pathways of internalising, externalising and substance use disorders, as well as intervention effects. However, two lines of indirect evidence suggest optimism is warranted. First, available data on developmental pathways of internalising disorders, externalising disorders and substance use disorders indicates that the first two groups of disorders precede substance use disorders in a substantial number of cases and may contribute to the occurrence of substance use disorders through a variety of indirect and shared causal links. Second, it has been shown that promotion of resilience in the primary school years, using similar strategies as are used to reduce internalising disorders, do in fact reduce internalising disorders and substance use disorders in the adolescent years.

Is it worth pursuing a focus on internalising disorders and externalising disorders as a way of reducing the incidence of substance use disorders? At this point the answer seems to be an encouraging but cautious 'yes'. A high priority for research should involve longitudinal studies of the inter-relations of internalising, externalising, and substance use disorders through childhood to early adulthood, with a subset of subjects offered intervention for internalising disorders and externalising disorders to assess their impact on substance use disorders.

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