

RESILIENT CHILDREN OF PARENTS AFFECTED BY A DEPENDENCY

**ORIGINALLY PUBLISHED IN MAY 2004 BY THE
COMITÉ PERMANENT DE LUTTE À LA TOXICOMANIE
AS PART II OF**

**<< *LES ENFANTS DE PARENTS AFFECTÉS
D'UNE DÉPENDANCE :***

***Bilan des connaissances et
leçons pour l'intervention>>***

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This document was translated, as originally published, from French into English.

Introduction

This paper entitled “Resilient Children of Parents Affected by a Dependency” was first published, as the second section of the report on << *Les enfants de parents affectés d’une dépendance : bilan des connaissances et leçons pour l’intervention* >>, by the *Comité permanent de lutte à la toxicomanie* (CPLT) of Quebec. It was prepared by three experts in the field, Frank Vitaro, Ph.D, of the Université de Montréal, Jean-Marc Assaad, Ph.D, of McGill University and René Carbonneau, Ph.D, of the Université de Montréal.

Because of the lack of clear understanding surrounding the notion of resilience and the lack of awareness vis-à-vis the current knowledge, including promotion and intervention programs and research activities, the Office of Research and Surveillance of the Drug Strategy and Controlled Substances Programme, Health Canada, believes it is important to share this information with all Canadians. As such, Health Canada entered into an agreement with the CPLT to translate this paper for publishing in both official languages. The Office of Research and Surveillance would like to thank the authors and the CPLT for providing the opportunity to publish this work in both official languages and, at the same time, commend them for their excellent work.

Until recently, many studies on children of a parent or parents with an addiction were heavily weighted on the difficulties and problems these children face as they develop into adults. Current intervention and prevention approaches most often focus on risks factors and problematic behaviours. In this paper, however, the authors present and review studies (from 1981 to 2003) that focus on positive factors and behaviours, and, as a result, paint a more hopeful future for these children.

In reviewing the studies featured in “Resilient Children of Parents Affected by a Dependency”, the authors highlight the characteristics and experiences that seem to support successful adaptation into society despite difficult personal and socio-economic circumstances often related to parent alcoholism, drug dependence or pathological gambling. The studies include children from a variety of socio-economic backgrounds and experiences as well as age-groups. The authors analyse the studies on resilience in children within the context of moderating, compensatory and risk factors and discuss their strengths and weaknesses in their design and in their findings. The authors also compare similarities and differences between the studies thereby showing which studies and findings corroborate or contradict each other.

Additionally, the authors discuss intervention programs and strategies that are already in place, as well as provide recommendations for future research and policy development.

Resilience: a specific concept with its own methodological implications

Before discussing the studies which deal specifically with resilience in children of parents affected by addiction, we will examine some elements of the concept of resilience from three separate perspectives.

HISTORICAL PERSPECTIVE

The term “resilience” is borrowed from the physical sciences, where it refers to the ability of a substance to regain its initial state after being subjected to stress. When transposed into the field of human development, resilience refers to a process of adaptation whereby individuals learn to overcome destabilizing effects resulting from traumatic experiences of greater or lesser severity (Masten, 2001). The concept of resilience arises primarily out of the great variability in personal and social adaptation processes observed in situations which pose a seemingly equal degree of risk.

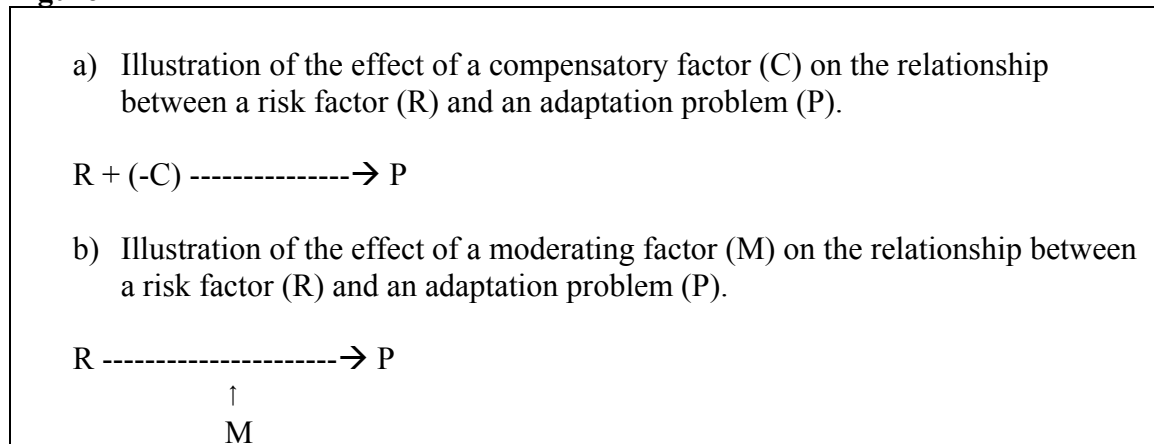
The majority of studies dealing with children of alcohol- or drug-dependent parents have focused on adaptation problems and mechanisms of intergenerational transmission. In the 1970s, however, some researchers began to examine successful adaptation in groups of individuals who had been exposed to a variety of risk factors, which generated interest in what was then referred to as “invulnerability” (Anthony, 1974; Garmezy, 1974; Rutter, 1979; Werner and Smith, 1982). Since no one is completely invulnerable to stress or immune to experiencing difficulties in life and in view of the fact that the studied phenomenon encompassed both subjects who overcame harmful effects of stress and others who had suffered no harmful effects, Garmezy (1991) determined that it was more appropriate to speak of “resilience”.

CONCEPTUAL PERSPECTIVES

Even if children of alcohol- and drug-dependent parents are more likely to experience a variety of adjustment problems, a significant proportion of them, sometimes even the majority – depending on the definitions used and the age of the child in question – seem to develop normally. Such children, said to be resilient, correspond to false positive cases in epidemiological studies. These cases argue against the predictive links which are frequently established between problems of parental addiction and concomitant or subsequent problems of their children. Deemed detrimental to predictive studies, these subjects are ignored by those attempting to identify the risk factors associated with maladaptive outcomes. Some researchers, however, have grasped the importance of these children who are said to be resilient, recognizing that such children have much to teach us about possible protective mechanisms as a form of prevention.

Some would argue that resilience in these children result from personal attributes which mitigate the harmful effects of parental addiction on children’s adaptive processes, an idea which is consistent with the notion of moderating effects. The term “protective factors”, however, is preferred to describe environmental characteristics which also exert a moderating influence (Sher, 1993). Resilience and protective factors correspond as well to moderating factors in that they mitigate the cause-effect relationship between a risk factor – parental addiction in this instance – and certain harmful effects (such as adjustment problems in children) (Baron and Kenny, 1986). It should be noted that a moderating factor can also exacerbate this causal relationship, although it would then be more accurate to describe it as a vulnerability factor. Likewise, a resilience factor or protective factor could conceivably completely block the harmful effect of a risk factor; serving as a kind of buffer. Protective factors or resilience factors are frequently confused with compensatory factors, which exert a dominant effect opposite to that of

Figure 1



risk factors. Figure 1 illustrates the roles played, respectively by moderating factors and compensatory factors with respect to the relationship between risk factors and harmful outcomes.

Based on the preceding figure, a compensatory factor¹, such as a personal attribute or social experience, can exert a dominant influence which is contrary to that of a risk factor. Through addition (or, as in the present case, through subtraction), such a compensatory factor mitigates the risk factor, thereby attenuating the foreseeable adaptation problem “P”. A compensatory factor contributes to an increased well-being in

¹ It should be noted that a compensatory factor can stem from a risk factor. For example, cerebral damage sustained at a young age in an accident can be “compensated” for by the formation of new neuronal connections which would not normally be present. These compensatory elements, like resilience elements, should exist solely, or especially, in at-risk or in vulnerable individuals who adapt despite their challenging situations. However, most authors use the expression “compensatory factors” to refer to beneficial factors which are available to all individuals and which, in at-risk or in vulnerable individuals, serve to counterbalance or neutralize (through addition or subtraction) risk or vulnerability factors; leading to successful adaptation despite the presence of these risk or vulnerability factors.

individuals exposed to risk factors, as well as in those individuals who are not exposed to any risk. For their part, moderating factors are more closely tied to multiplication and manifest themselves through a (statistically) significant interaction between a given risk factor and a moderating factor (for example R x M). “M” need not exert an effect which is uniquely its own: it needs only to modulate (through multiplication) the link between risk factor “R” and the potential problem. Consequently, it would be inaccurate to speak of resilience factors or protective factors in the absence of risk factors, since there would be nothing to moderate. The following analogy may be useful in clarifying the difference between a compensatory factor and a protective or resilience factor.

Let us imagine that a canoeist facing a head wind is attempting to cross a large body of water. If he has strong muscles, he will be able to “compensate” for the effect of the wind and travel across the water. It should be noted that the canoeist’s muscles may be all the more developed for having faced such wind on many prior occasions, but his strength may also be the result of his genetic inheritance. Moreover, strong muscles will enable any canoeist to travel more quickly regardless of climatic conditions. Therefore, they represent a compensatory factor in the sense that they exert a dominant effect which is contrary to the unfavourable factor at hand, namely the wind. This dominant effect has a beneficial overall impact in that it enables anyone who benefits from it to advance more quickly under any circumstance. Obviously, muscular canoeists facing a strong head wind will not travel as fast as those not exposed to wind, but they will nonetheless succeed in crossing the body of water. If their muscles are exceptionally well-developed, they may even keep pace with those not exposed to the wind. Let us imagine for a moment that a mountain is blocking the wind; canoeists moving opposite to the wind will obviously travel more quickly on windy days due to the mountain’s protective effect. This protective effect, however, only serves canoeists who travel against the wind. Unlike well-developed muscles, the mountain will in no way favour canoeists traveling with the wind at their back or in the absence of wind. Therefore, it can be said that the mountain exerts protective effect (in the form of an obstacle to the wind) by moderating or partially attenuating the effect of head wind or by entirely canceling it out, thus creating an advantage for – and solely for – the canoeists who are traveling against the wind.

In short, resilience represents a dynamic process which is inherent to development and manifests itself as successful adaptation at the individual level, despite harmful circumstances or life events normally considered to be risk factors from the standpoint of adaptation (Egeland *et al.*, 1993; Luthar *et al.*, 2000; Masten, 2001). Resilience does not depend solely on specific personal attributes, it is also dependent upon the interaction between such attributes and various life experiences and circumstances (Luthar, 1999; Rutter, 1987). This definition gives rise to a number of conceptual and methodological implications.

First, it requires the identification of the entire range of problems associated with the risk factors at issue in the present context of alcoholism, drug addiction or compulsive gambling in parents. If one were to focus too narrowly on the manifestation of equivalent problems: (alcoholism, drug addiction or compulsive gambling affecting

children), one would run the risk of ascribing resilience to children who do not possess this trait since, in fact, some may present problems in other areas, such as depression or learning disabilities. The risks for children of alcohol- or drug-dependent parents extend well-beyond the risk of developing substance abuse problems of their own, just as the potential risks for children of compulsive gamblers go beyond the risk of becoming addicted to gambling.

Second, the cited definition requires that resilient children be compared with other children who are not in an equivalent risk category. Therefore, it is essential to begin by evaluating the level of addiction of all parents targeted by the study. It is equally important to ascertain the presence or absence of problems commonly associated with addiction in parents (for example, an anti-social personality or socio-familial dysfunction). In other words, when comparing resilient and non-resilient children of alcohol- or drug-dependent parents, it is crucial that other risk factors, to which the parents or the socio-familial context are exposed, remain constant. Otherwise, the apparent resilience of some children of alcohol- or drug-dependent parents may in fact result from the absence of certain risk factors associated with parental alcoholism or drug-addiction, rather than the presence of personal or socio-familial characteristics which play a protective role or promote resilience. It is also important to ensure that resilient and non-resilient children present the same characteristics of vulnerability in the areas of genetics, neuroendocrinology, psychophysiology, neuropsychology, not to mention temperament and personality, since all of these factors can influence adaptation skills from one generation to the next. Otherwise, apparent resilience may, in fact, result from the absence of personal vulnerability rather than from specific characteristics which can moderate the relationship between the vulnerability which typically results from parental addiction and problems experienced by the next generation that are commonly associated with such addiction. In other words, in the absence of vulnerability, protective or resilience factors, and even compensatory factors, become superfluous, since it is unlikely that the problems normally associated with parental addiction will arise.

Finally, in determining the extent to which individuals exposed to a given risk factor are authentically resilient, it is necessary to compare them to similar individuals who have not been exposed to the risk factor in question, nor to any other risk factor. This suggests that it is not possible to accurately determine the presence of resilience, nor that of protective or resilience factors, without comparing the subjects being examined to peers who have not been exposed to the risk factor but who otherwise provide a match in terms of the standard socio-demographic variables. Ideally, one should also compare children of parents with alcohol, drug addiction or compulsive gambling problems with children exposed to parental risk factors other than alcoholism, drug-addiction or compulsive gambling, in order to determine the extent to which resilience factors are specific.

METHODOLOGICAL ASPECTS

The preceding considerations provide an incentive for a close examination of other methodological aspects which are specific to the study of resilience.

Since the introduction of the concept of resilience, a variety of methodological approaches have been employed. Some of these present clear limitations which cast doubt on their internal validity, such as retrospective data collection methods (raising the possibility of oversight or difficulty in reconstituting events), and the inability to control for third variables due to the small number of participants. Retrospective case studies fall into this category, being analogous to anecdotal evidence rather than scientific research. Other approaches – such as cross-sectional studies – are of little use in determining the precedence of resilience factors in relation to the personal, social and academic adaptation of participants. Due to their concomitant nature, the data collected do not provide a means of determining whether characteristics of resilience precede or follow adaptation in resilient children. Consequently, without entirely discounting studies of resilience which adopt a cross-sectional methodology, it must be said that the findings and conclusions of such studies are equivocal at best. Prospective longitudinal studies are far more preferable since, unlike cross-sectional or retrospective studies, they make it possible to determine the direction of the relationship between presumed resilience factors and successful adaptation in children of addicted parents.

There are two types of longitudinal studies: “follow-up” studies and “follow-back” studies. A follow-up study tracks children of parents with an alcohol- or drug-dependency or who are compulsive gamblers and records the experiences and attributes associated with their subsequent adaptation, according to a prospective line. The follow-back method consists of identifying apparently well-adjusted children of parents with an alcohol- or drug-dependency or who are compulsive gamblers and comparing these children with maladjusted children of parents with similar problems, as well as with children of non-dependent parents, according to a series of personal attributes and life experiences which are collected prospectively. These are in fact two variants on the same research approach. The difference between the “follow-up” and “follow-back” methods emerges at the analysis stage. It is important to note that with longitudinal studies one cannot establish a causal relationship between resilience variables and successful adaptation in children. Prevention and intervention studies conducted within an experimental framework in which participants are randomly distributed into an experimental and a control condition might clarify this aspect, but studies of this type are rare. Finally, some authors have studied twins to clarify the contribution of genetic and environmental factors in resilience (Rutter *et al.*, 1997). As far as we know, however, there are no completed studies of twins born of addicted parents, although one such study is currently underway by Pérusse, Brendgen, Robaey and Vitaro, (2003).

In addition to the selection of a cross-sectional, longitudinal or experimental research design, two empirical approaches have been used to date, to identify the characteristics and life experiences of resilient children. The first approach, which is person-centred, consists of comparing well-adjusted children of addicted parents with children in the same circumstance who present adjustment problems. Such comparisons may be limited to concomitant variables of a personal, familial or social nature, or they may encompass variables and mechanisms (processes) which are compared longitudinally. Another option is to establish a control or normative group composed of children not exposed to the same risks but matched according to a number of control variables. As stated earlier,

the presence of such a group is essential in determining (a) the extent to which resilient children resemble children not exposed to the same risks, and (b) the extent to which the resilience factors in question are specific to these children.

The other approach, which is centred on variables, consists of identifying personal or environmental variables which serve to attenuate or – in strict technical terms – to “moderate” the relationship between parental problems and the problems subsequently experienced by children, after first having determined that this relationship is not spurious, which is to say attributable to third variables. The identification of the moderating variables of resilience or protection rests on analytical strategies such as multiple regression, logistic regression, and multi-group structural equation modelling. In the case of multiple or logistic regression, a moderating effect is revealed when a significant interaction is found to occur between a risk factor (i.e., parental addiction in this instance) and a presumed protective or resilience variable (Baron and Kenny, 1986). These two methodological approaches, the person-centred and the variable-centred, are perfectly complementary and equally valuable.

RESILIENT CHILDREN OF ALCOHOL-DEPENDENT PARENTS

Children of alcohol-dependent parents are at greater risk of developing alcohol problems than are children of non-alcohol dependent parents (Goodwin, 1979; Russell, 1990). They are also at greater risk of developing cognitive or behavioural problems which can themselves lead to problems of addiction late in life (Fitzgerald *et al.*, 1993; Sher, 1991; West and Prinz, 1987). However, not all children of alcohol-dependent parents develop such tendencies. In fact, a number of studies have shown that most children of alcohol-dependent parents do not develop alcohol or drug problems (from 60% to 75% according to Bearsdale, Son and Vaillant, 1986). Moreover, some studies report no problems which are specific to children of alcohol-dependent parents, in comparison to children of non-alcohol-dependent parents (Alterman *et al.*, 1989, Bates and Pandina, 1992; Gilles and Hesselbrock, 1992; Pandina and Johnson, 1989). Such disparate findings suggest, at the very least, that children of alcohol-dependent parents are extremely heterogeneous.

As stated earlier, such heterogeneity may stem from methodological differences or from the fact that the degree of severity or comorbidity in parental alcoholism is highly variable. For example, Jacob and Leonard (1986) compared resilient children of alcohol-dependent parents with non-resilient children of alcohol-dependent parents, as well as with children of depressive parents. Based on their results, parents of non-resilient children present more mental health and alcohol related problems than parents of resilient children, confirming the possibility that children in the latter group are not exposed to the same level of risk as those in the former.

The heterogeneous outcomes observed among children of alcohol-dependent parents may also stem from variability in children’s personal attributes and in their degree of exposure

to the kinds of positive experiences (of a compensatory or protective nature) which constitute the protective or resilience and compensatory² factors which interest us here. Unfortunately, as we have already stated, there are far fewer studies on successful adaptation in children of alcohol-dependent parents (that is, studies of resilient children), than there are studies on maladaptive outcomes in such children. Moreover, few studies have employed a longitudinal-prospective design to deal specifically with children of alcohol-dependent parents (fewer still on children of drug-dependent parents or compulsive gamblers). We were able to locate approximately ten studies which looked at resilient children of alcohol-dependent parents, but the methodological qualities of these studies appear to be highly variable.

Among these studies, the oldest is that of Rydelius (1981), a Swedish researcher who tracked a group of children of alcohol-dependent fathers over a twenty-year period. Unfortunately, the absence of a control group of children of non-alcohol dependent fathers, prevents us from extracting elements of resilience or protection according to the definitions previously presented in this paper. The second and better known study, that of Werner (1986), deals with children of alcohol-dependent parents on the Island of Kauai. Werner compared groups of resilient and non-resilient children of alcohol-dependent parents at age 18 and found that resilient children scored higher in terms of easy temperament, intelligence, language skills, self-control and academic performance, beginning in infancy (at age 1 and 2), as well as during childhood (at age 10) and adolescence (at age 18). The author noted other advantages which the resilient children enjoyed, such as a positive relationship with an attachment figure, less socio-economic stress, and less turmoil within the family unit particularly during the first two years of life. The results of this study are inspiring, although hardly conclusive, owing to methodological shortcomings in at least two areas. As the Rydelius study (1981), the absence of a control group of child of non-alcohol-dependent parents makes it impossible to determine whether the presumed resilience factors constitute a more salient distinction between resilient and non-resilient children of alcohol-dependent parents than between resilient and non-resilient children of non-alcohol-dependent parents. Moreover, in the Werner study (1986), the resilient children of alcohol-dependent parents were primarily girls (21 out of 29), while the non-resilient children of alcohol-dependent parents were primarily boys (14 out of 20). Since the process of adaptation is different for boys than for girls, gender alone may explain differences in resilience among children of alcohol-dependent parents. However, Werner (1986) also took into account any prenatal and perinatal complications and problems to which the children of alcohol-dependent parents might have been exposed. Consequently, this factor can safely be eliminated as a potential explanation for the differences in resilience among children exposed to parental alcoholism.

Werner and Smith (2001), who have tracked their groups of resilient and non-resilient children into adulthood (at ages 32 and 40), point out that their resilient subjects appear

² *Given the limited number of studies dealing with the factors of resilience or protection in children of alcohol-dependent parents, we have decided to include studies which examine compensatory factors since these can also lead to relevant intervention strategies or targets. We have done the same for studies which deal with children of drug-dependent parents.*

to have freed themselves better emotionally from the problems which continue to plague their parents, while the non-resilient subjects remained entangled in their parents' problems. This was a surprising finding, even for the authors: one would have expected to find less detachment from parents among resilient offspring. It is important to note that the groups of resilient and non-resilient children in Werner and Smith's recent study (2001) are not limited to children of alcohol-dependent parents, as was the case in the 1986 study, but also include offspring of parents with mental health problems, long-standing marital problems, or marked socio-economic difficulties.

McCord (1988) overcame the deficiencies of the earlier studies by incorporating a group of children of non-alcohol dependent parents and by focusing exclusively on sons of alcohol-dependent fathers. She also shed light on the role of the mother in these situations. She observed that the sons of mothers who show a high degree of esteem for the alcohol-dependent father (a situation which is more common in intact families), are more likely to develop drinking problems. However, when mothers show little tolerance for their partners' alcoholism and provide adequate supervision for their children, their sons appear to be as well-adjusted as those of non-alcohol dependent parents. In another set of studies, McCord (1990; 1991) observed that sons who were separated from their alcohol-dependent or criminal fathers were less likely to become delinquent than their peers who remained in intact families where the father presented similar problems.

McCord's findings are corroborated by those of Dobkin, Tremblay, Desmarais-Gervais and Dépelteau (1994) who found that the sons of alcohol-dependent parents whose families had remained intact were more likely to seek the services of a psychologist than were their counterparts from broken homes. In the case of children of non-alcohol dependent parents, the situation was reversed: those from broken homes were more likely to seek the services of a psychologist. Other studies also report that a positive relationship between mother and child of separated families is preferable for the development of the child than intact families where conflicts are numerous and other adverse conditions prevail (Rutter, 1971; West and Farrington, 1973). On the other hand, the work of Wolin and Bennet (Bennet, Wolin and Reiss, 1988b; Wolin, Bennet, Noonan and Teitlebaum, 1980), shows that children of alcohol-dependent parents whose families maintain certain rituals (birthdays and other celebrations, family vacations) are less susceptible to developing a drinking problem than those whose family rituals are disrupted by the behaviour of alcohol-dependent parents, a finding which adds nuance to the preceding results. However, the absence of a comparison group of children of non-alcohol-dependent parents limits the conclusions which can be derived from Wolin and Bennet's work.

The fourth study compared children whose alcohol-dependent parents had no psychiatric problems and children whose alcohol-dependent parents presented one or more psychiatric disorders (as defined in the DSM) (Reich *et al.* 1988). The authors found that the resilient children of solely alcohol-dependent parents had a better relationship with their non-drinking parent than did the non-resilient children whose parent's alcoholism was compounded by other problems; children in the first category were also less exposed to parental conflict and domestic disturbances.

The next two studies which were reviewed, both included a control group of well-adjusted children of non-alcohol dependent parents and a group of maladjusted children of non-alcohol dependent parents, established on the basis of the same criteria used to determine a group of resilient children of alcohol-dependent parents and a group of non-resilient children of alcohol-dependent parents. Moreover, the group of children of alcohol-dependent parents were matched with the group of children of non-alcohol dependent parents for several socio-demographic variables. In both studies, the presence of paternal alcoholism is based on a self-report screening tool (*Short Michigan Alcohol Screening Test*, Selzer *et al.*, 1975), corroborated by a clinical diagnostic interview based on DSM criteria. Finally, both studies adopted a longitudinal perspective with respect to the presumed resilience factors, but also limited themselves to a single temporal sequence to verify the presence or absence of adjustment problems in children (boys only).

In a study conducted in Montreal by Vitaro *et al.* (1996) with boys from under privileged backgrounds, four groups of children of alcohol-dependent-parents and four groups of children of non-alcohol-dependent parents were established, based on whether or not the children manifested the following behaviours: psychotropic drug abuse, delinquent behaviour, and academic failure at age 14. One of the specifics of this study was that it sought to distinguish among children of alcohol-dependent parents those who presented a single problem from those who demonstrated several problems. The study also called upon teachers and peers to evaluate presumed resilience factors, thus eliminating any possible bias associated with self-evaluation or parental evaluation. Results with respect to resilience factors were collected at three different points in the children's lives (ages 6, 10 and 12). These results show that the mothers of resilient children of alcohol-dependent parents (that is, children with no problems of delinquency, substance abuse or academic failure) were better educated and exercised better supervision over their sons than did the mothers of children with adjustment problems, which corroborates the findings of McCord (1988). The results also show that resilient children of alcohol-dependent parents are perceived by their teachers and their peers as being less hyperactive or inattentive and less aggressive than maladjusted children of alcohol-dependent parents. Resilient children are also perceived as being more sociable and are more popular with their classmates; furthermore, they perform better in school at ages 10 and 12. However, no interaction between the resilience groups (no problems, a single problem, several problems) and the presence or absence of paternal alcoholism was detected, such that the differences previously cited between resilient children of alcohol-dependent parents and non-resilient children of alcohol-dependent parents can also be found among children of alcohol-dependent parents. In other words, the elements uncovered in this study are not resilience elements in the strict sense, but rather compensatory elements.

A study conducted in Michigan by Zucker *et al.* (2003), compares well-adjusted children of alcohol-dependent and non-alcohol dependent parents with maladjusted children of alcohol-dependent and non-alcohol dependent parents, with no distinction as to the number or nature of the problems experienced by the latter. The authors define the absence or presence of adjustment problems by drawing a distinction between children whose score falls on either side of the 80th percentile on a composite measure of behavioural problems evaluated by the parents while their children were between the

ages of 3 and 5. Resilient children are those that obtain a score lower than the 80th percentile on the scale of behavioural problems. All the children are subsequently re-evaluated at ages 6-8, 9-11 and 12-14. Interestingly, the authors take into account the degree of severity of the fathers' alcoholism and the presence or absence of anti-social tendencies in the fathers. In order to increase the validity of their study concerning internal dynamics, the authors excluded subjects affected by foetal alcohol syndrome. However, the study's external validity is compromised by the fact that it is exclusively directed at children living with both biological parents.

The results show that, at ages 3-5, resilient children of alcohol dependent parents received higher scores for intellectual functioning than their non-resilient counterparts, but did not distinguish themselves from well adjusted children of non alcohol-dependent parents. When temperament was evaluated at the same age, the resilient children of alcohol-dependent parents showed a lower level of emotional reactivity than non-resilient children of alcohol-dependent parents. Finally, at ages 3-5, resilient children of alcohol-dependent parents also presented fewer behavioural problems and a higher level of cognitive functioning than maladjusted children of alcohol-dependent parents. However, the same children of alcohol-dependent parents who were initially deemed resilient at ages 3-5 presented more externalized and internalized behavioural problems at ages 9-11 and ages 12-14 than the well-adjusted children of non-alcohol-dependent parents. These last findings demonstrate that resilience should not be viewed as a lasting characteristic since children of alcohol-dependent parents who were deemed to be resilient in early childhood nonetheless went on to develop adjustment problems later in life. In conclusion, this study is interesting for its methodological qualities which reveal the limits of an evaluation on resilience which would rest on a single measurement sequence and on a single source of information.

The penultimate study which was examined is that of Vitaro, Tremblay and Zoccolillo (1999). In this study, the criteria used to constitute a group of resilient children of alcohol-dependent parents were based on abstinence from drugs or alcohol at ages 15-16. Non-resilient children born of alcohol-dependent parents were divided into three sub-groups: subjects presenting an alcohol problem only; subjects presenting a drug problem only; and lastly, subjects presenting both forms of dependency. Only paternal alcoholism was taken into consideration, given the low number of alcohol-dependent mothers (the latter were, in fact, excluded from the study). Resilience factors were measured in childhood (ages 6, 7 and 8), and in pre-adolescences (ages 10, 11 and 12). These factors relate to three dimensions of personality, based on the Cloninger's model (1986): novelty seeking, harm avoidance and reward (or sensitivity to positive reinforcement). These factors also encompassed certain parental practices such as supervision, as well as socio-familial adversity. What is unique and interesting about this study is the very large sample of boys and girls reflective of Quebec youth. As with the preceding studies, the results of this study revealed that, in Quebec, the presence of an alcohol-dependent father substantially increases the risk of using psychotropic drugs in adolescence, even when confounding variables such as socio-familial adversity and gender are taken into account. However, low novelty seeking and the presence of harm avoidance behaviours in childhood and pre-adolescence tend to reduce this risk in mid-adolescence. Such personal

elements must be viewed as beneficial or compensatory factors rather than as protection or resilience factors, since they reduce the risk of psychotropic drug use in all young people, irrespective of the presence or absence of paternal alcoholism. On the other hand, strong maternal supervision would appear to be a protective factor in that it constitutes a more salient distinction between resilient children of alcohol-dependent parents and alcohol-or drug-dependent children of alcohol-dependent parents than between well-adapted children of non-alcohol-dependent parents and alcohol-or drug-dependent children of non-alcohol-dependent parents. In statistical terms, maternal supervision produces a moderating effect on the predictive relationship between paternal alcoholism and alcohol or drug use in adolescence. This moderating effect translates into a significant interaction between maternal supervision and paternal alcoholism. It also corresponds to the definition of protective or resilience variables, as discussed earlier.

Finally, the last study deals with children prenatally exposed to alcohol (Olson, O'Connor and Fitzgerald, 2001). Although such exposure increases the prevalence of so-called internalized problems in children throughout their pre-school development (elevated levels of negative emotional feelings, few positive relationships, and significant levels of depression), it would appear that a healthy interaction between mother and child during the pre-school years has a moderating effect on these harmful consequences.

RESILIENT CHILDREN OF DRUG-DEPENDENT PARENTS

Four studies were identified on the development of children of drug-dependent parents which draw a distinction between problem-free or resilient children and maladjusted children. Unlike the previously cited studies on paternal alcoholism, the studies dealing with children of drug-dependent parents primarily focus on maternal drug use.

According to our research, Kumpfer *et al.* (1986) are likely the first investigators to have identified a property of resilience in the cognitive and behavioural skills of children of drug-dependent parents. However, their studies did not include groups of children whose parents did not use drugs, which does not allow for the derivation of authentic resilience factors from their findings.

A recent study conducted by Luthar, D'Avanzo and Hites (2003) compared children of drug-dependent mothers with children of mothers suffering from emotional problems such as anxiety or depression, as well as with children of mothers suffering from two types of problems at the same time (comorbidity). As in any comparative study, a control group was established which was composed of mothers who had no addictions or emotional problems but they were matched with the other groups in terms of socio-economic status and the age and sex of their children. Resilient children were defined as children of drug-dependent mothers who did not manifest externalizing problems such as aggressiveness, hyperactivity, or opposition – close to 70% of subjects – nor internalizing problems such as anxiety or depression – slightly more than 50% of subjects – or children who manifested a level of personal or social competence which was above average for their age group – approximately 35% of subjects.

In order to identify the variables likely to have a protective or compensatory effect with respect to maternal drug dependency, the groups composed of children of dependent or comorbid mothers were combined into a single group (children of drug-dependent mothers). The group of children of mothers without problems and the group of children of mothers with a single emotional problem were also combined into a single group (children of non-drug-dependent mothers). This highly questionable procedure was adopted as a result of the authors' fear of having insufficient statistical power despite the fact that their sample comprised 227 participants. As a result of this, their analysis overlooks the interactions between presumed resilience variables and maternal drug dependency (group of drug-dependent mothers and group of non-drug-dependent mothers). This regrettable choice makes it impossible to circumscribe resilience variables since, as we know, it would have been necessary to introduce significant interaction terms between maternal drug use and the presumed resilience factors. The authors preferred to directly determine which variables are associated with behavioural problems or with social competence in both the children of drug-dependent mothers and the children of non-drug-dependent mothers. They then proceeded to interpret significant links in the case of children of drug-dependent mothers, and non-significant links in the case of children of non-drug-dependent mothers, as indicators of resilience factors.

With regards to the attributes of children, the results of this study show that gender, age, intellectual quotient and the degree of tolerance of deviant behaviours are partial predictors of externalizing and internalizing problems and of social competency, but only in children of drug-dependent mothers. While derived from two evaluation sources (children and parents), these links are nonetheless weak and non-systematic. From the standpoint of maternal attributes, a lower level of perceived stress and better disciplinary and communication skills are associated with fewer problems and more social competence among children of drug-dependent mothers, but the same associations were equally true for children of non-drug-dependent mothers. Finally, in terms of community-related variables, neither affiliation with deviant peers, nor exposure to neighbourhood violence emerged as predictors of adjustment problems or social competence in children of drug-dependent mothers when the other predictive variables were taken into account. In short, the interest of this study lies in the fact that several variables were considered simultaneously, as is required with any multivariate model. More debatable, however, are the types of analyses used and the cross-sectional nature of the research design. For example, parental stress is shown to be of an important variable in explaining a large portion of behavioural problems in children, supplanting other variables of a personal or socio-familial nature. However, parental stress is predictive of behavioural problems in both children of drug-dependent mothers and children of non-drug-dependent mothers, which confers upon it a compensatory status. Moreover, the cross-sectional nature of the research design forces one to conclude that such a variable could well stem from the adjustment problems of children rather than constitute the cause of these problems. Again, it is not possible with a cross-sectional design to establish the directionality of associative links, much less their causal nature.

In their study, Johnson, Glassman, Files, and Rosen (1989) examined the development of 36 children born of drug-dependent mothers who were, at the time, participating in a

methadone maintenance program. The comparison group was composed of 18 children born of non-drug-dependent mothers. Using cluster analysis, the children were, at age 3, divided into three groups on the basis of their results on a battery of tests evaluating their physical, cognitive and socio-emotional development. The best adjusted children, based on all measurements combined, were those in group 1 which, proportionally speaking, comprised of as many children of drug-dependent mothers as it did of children of non-dependent mothers (9 and 4 respectively). At the opposite end, group 3 was comprised primarily of children of drug-dependent mothers (17 out of 20). It is in group 3 that developmental delays were most prevalent for all measures at the age of 36 months. In group 2, which was comprised of 10 children of drug-dependent mothers and 11 children of non-dependent mothers, the children achieved an intermediate performance level when their development was measured.

In their analysis of resilience, the authors compared the 17 maladjusted children of drug-dependent mothers from group 3 with the 9 resilient children of drug-dependent mothers in group 1. Greater maternal sensitivity, lower levels of domestic violence and abuse distinguished the resilient children of drug-dependent mothers from their non-resilient counterparts. No measure of a socio-economic or medical nature established a distinction between the same two groups. These results demonstrate the protective (and possibly compensatory) role played by the socio-familial environment in the first years of life of children of drug-dependent mothers. The small number of participants in this study and the brief period of development examined impedes any firm conclusions with respect to resilience factors, particularly since the greater maternal sensitivity observed in drug-dependent mothers of resilient children may in fact be the result of their children's more "easy-going" personality rather than be its cause.

The study conducted by Moe (2002) is not specifically directed at resilient children of drug-dependent parents. However, it does shed light on the socio-familial variables which are conducive to healthy adjustment in children of drug-dependent parents. Moe (2002) followed a cohort of 64 children (including 27 girls) born of drug-dependent parents but raised in adoptive or foster homes from birth to the age of 4.5 years, at which time they underwent a series of neurocognitive and psychomotor evaluations. The biological mothers of the children of drug-dependent parents had, in the course of their pregnancies, used psychoactive substances ranging from valium or cannabis to opiates and amphetamines. Some of the mothers had also consumed alcohol and smoked cigarettes. The control group was comprised of 52 children (including 22 girls) born of non-drug-dependent mothers. At the age of 4.5 years, the children of drug-dependent parents who were raised in non-drug-dependent families presented "normal" scores on the neurocognitive and psychomotor scales (average score within one standard deviation of the mean established with respect to a normative group). These results are encouraging for what they reveal about the compensatory effects of a normal socio-familial environment on the children of drug-dependent parents. However, the scores of children of drug-dependent parents (boys in particular) were, on average, significantly lower than those of children of non-drug-dependent parents on several neurocognitive and psychomotor scales, particularly from the standpoint of visual-motor development and perceptual skills. These results indicate the limits of the compensatory or protective

effect of a favourable postnatal environment on children of drug-dependent mothers. It is important to note that approximately 20% of infants of drug-dependent parents had a lower-than-average birth size and weight or had been born prematurely, which was not the case with any of the infants of non-drug-dependent parents. What is more, at age one, these children already presented, on average, mental and psychomotor delays in comparison to the children of non-drug-dependent mothers. A comparison with children of drug-dependent parents raised by their biological parents would have made it possible to specify the degree of compensation or protection which a “normal” environment can provide children of drug-dependent mothers. Subdividing the children of drug-dependent parents and the children of non-drug-dependent parents into groups of “resilients” (showing an above-average level of adjustment) and “non-resilients” (below average) would have shed more light on the compensatory or protective role of adoptive or foster families.

RESILIENT CHILDREN OF COMPULSIVE GAMBLERS

No studies could be identified that specifically dealt with resilient children of parents who are compulsive gamblers, other than the study currently underway which we mentioned earlier (Vitaro *et al.*, 2002). The results of this study may provide greater insight into resilience factors.

Summary table

- Resilient children are children who successfully adapt despite their exposure to risk factors. In epidemiological terms, resilient children correspond to false positive cases.
- Resilience factors are frequently confused with compensatory factors. The former imply an interaction with risk factors while the latter involve additive effects.
- Resilience factors, like protective factors, correspond to moderating factors. The role of moderating factors is to attenuate (or to exacerbate) the relationship between risk factors and subsequent adjustment problems. Consequently, they also include vulnerability factors.
- The role of compensatory factors is to increase the well-being and adaptation of individuals, not by weakening risk factors but by developing opposite strengths. Obviously, knowledge of compensatory factors can be as useful in preventive interventions as knowledge of resilience factors.
- Appropriate analysis of resilience factors requires:
 - the assurance that children presumed to be resilient are exposed to the

same risk factors as their non-resilient counterparts;

- the presence of comparison groups composed of children not exposed to the risk factors;
 - longitudinal follow-up of children presumed to be at risk in order to identify those who go on to develop adjustment problems at various points in life, as well as those who do not develop such problems;
 - an evaluation of various areas of functioning in children at risk and others who are not at risk;
 - the additional presence of children with parents who have a problem other than alcoholism or drug-dependency, in order to establish the specificity of resilience factors; however, the criterion is less important than the preceding one.
- The twelve-odd studies on resilient children of alcohol dependent parents deal primarily with boys of alcohol-dependent fathers. A few of these studies were conducted in Quebec.
 - However, the half-dozen studies of resilient children of drug-dependent parents are directed at children of drug-dependent mothers.
 - Few studies meet all of the criteria of methodological rigour listed here. Consequently, the conclusions derived from these studies are equivocal at times and far from definitive.
 - There are no studies on resilient children of compulsive gamblers.

Lessons learned concerning prevention and treatment for children of parents affected by dependency

The following paragraphs present a summary of resilience and compensation factors in children of alcohol- or drug-dependent parents; we also review resilience factors and compensatory factors in other areas for the sake of comparison. A few prevention programs specifically designed for children of dependent parents are mentioned. Finally, since targeted prevention programs are designed to reduce risk factors and promote resilience and protective factors, the principles and strategies of effective prevention programs are reviewed.

SPECIFIC RESILIENCE FACTORS IN CHILDREN OF ALCOHOL- AND DRUG-DEPENDENT PARENTS

One might conclude that the best strategy for helping children of alcohol- or drug-dependent parents is to introduce or improve the resilience and protective factors discussed earlier, but this would be a premature and highly debatable approach. To begin with, the correlational nature³ of the designs employed in the studies from which presumed resilience, protection or compensatory factors have been derived scarcely lends itself to ascribing a causal status to these factors. This limitation stems from the inability of correlational studies, however sophisticated they might be, to control for all confounding variables or to predict all possible mediating or moderating variables. In addition to resilience variables, once again there may well be other differences between resilient and non-resilient children of alcohol- or drug-dependent parents. Even after reviewing all of the studies on resilience, it is still not possible to determine whether resilient children of alcohol- or drug-dependent parents have something more (resilience factors) or something less than their non-resilient peers (less exposure to risk factors or less genetic or neurophysiological vulnerability).

Studies show that the personal attributes most commonly linked to resilience seem to be an easy temperament, a low level of emotional reactivity, and a normal level of novelty seeking. In fact, these elements of resilience can as easily be defined through their absence in non-resilient children as through their presence in resilient children, since they constitute factors which are favourable for all children regardless of the dependency status of their parents. In other words, their presence constitutes a compensatory factor (rather than a resilience factor), whereas their absence (or the presence of their opposites) simply constitutes a risk factor. Furthermore, these apparent resilience elements (or, more accurately, compensatory elements) are highly hereditary in nature, as several quantitative genetic studies of large samples of twins have shown (Heath, Cloninger and

³ *Longitudinal studies also employ a correlational design. However, unlike cross-sectional studies, these studies make it possible to establish the directionality of the relationship between the variables at play but preclude the identification of causal relationships. At most, they increase the degree of presumption of a potential causal relationship.*

Martin, 1994). Even aspects such as healthy self-esteem and good interpersonal skills seem to be genetically regulated to varying degrees (Kendler, Myers and Neale, 2000).

Additionally, these characteristics (an easy temperament, sociability, good problem-solving skills), which initially stem from an individual's genetic makeup, can give rise to positive social and familial experiences which, in turn, are apparently conducive to resilience. This is referred to by the authors as a genes-environment correlation (or r_{GE} ; Rutter, 2003). There are three types of r_{GE} correlations: passive, active and evocative. The correlation at issue here is the evocative type: seemingly protective social and familial experiences and the personal attributes that give rise to them are, in fact, genetically controlled. However, this does not prevent social experiences from producing specific results which can accelerate adaptation in children deemed to be resilient (Rutter, Pickles, Murray and Eaves, 2001). In other words, personal attributes which have a strong likelihood of being genetically heritable, such as novelty seeking and emotional reactivity, can be substantially influenced by the educational practices and social norms mobilized in response to them. It is precisely because of the genetic nature of these attributes that it is appropriate to focus clinical and educational efforts towards vulnerable children as early as possible, thereby reducing the negative effects and promoting their compensatory counterparts, which are more conducive to successful adaptation.

Moreover, recent research in the field of molecular genetics has shown that unfavourable experiences generate harmful effects only when they are combined with a genetic vulnerability. This is what the authors refer to as gene X environment interactions (or GXE ; Rutter, 2003). Two recent studies conducted by Caspi *et al.*, illustrate such interactions. In the first study, Caspi *et al.*, (2002), demonstrates that some children who had been abused or neglected by their parents do not develop problems in aggressiveness nor anti-social behaviour and, on the genetic level, these children showed a high level of MAOA gene activity. This is the gene which encodes an enzyme (monoamine oxydase A) which enables the metabolization of various neurotransmitters, such as norepinephrine, serotonin and dopamine. Conversely, adjustment problems in adolescence and adulthood have been shown to increase as the activity of this gene decreases. In the second study Caspi *et al.* (2003) report that child abuse and neglect are only associated with major depression and suicide attempts in adulthood when the gene responsible for transporting serotonin, 5-HTT, is found to be deficient (presenting a short allele). In the opposite genetic case, the same unfavourable experiences in childhood are not predictive of similar problems in adulthood. In both studies, the authors ensured that all of their subjects, both with and without genetic vulnerability, had been exposed to equivalent experiences of abuse and neglect in childhood.

One can readily understand the potential repercussions of these research studies into the resilience of children of alcohol- or drug-dependent parents. Given the genetic, psychophysiological and neuropsychological characteristics that distinguish well-adjusted children of alcohol- or drug-dependent parents from their maladjusted counterparts, one can assume that alcohol- or drug-dependent parents affects only or primarily the more genetically vulnerable children as previously cited, or affects them as

a result of prenatal or perinatal factors associated with alcohol- or drug-dependent parents. As a corollary, it may be that compared to their non-resilient peers, resilient children of alcohol- or drug-dependent parents simply benefit from a genetic makeup which protects them from the environmental stress associated with parental alcoholism or drug-dependency. The hypothesis of an interaction between personal attributes and a stressful environment is not new. However, few studies have established a direct link between specific genes and well-documented socio-familial experiences – specifically longitudinal studies of more than 30 years – as Caspi *et al.* have done.

The studies of Caspi *et al.* also demonstrate the protective force of an adequate socio-familial environment for individuals who are genetically vulnerable. In fact, the aforementioned results show that an adequate socio-familial environment (one devoid of abuse or neglect) forestalls the development of anti-social or depressive tendencies even in individuals made vulnerable by weak MAOA activity or a 5-HTT gene deficiency. What is more, Suomi (2001) has discovered that rhesus monkeys who present a serotonin transporter gene (5-HTT) deficiency (which would normally bring about impulsive and inattentive behaviours like those observed in maladjusted children of alcohol- or drug-dependent parents) show no behavioural problems when they are raised by adoptive mothers who are nurturing and attentive. Some even become leaders among their peers. These findings corroborate the conclusions of many investigators whose work is cited here.

In short, one can assume that certain personal and socio-familial characteristics in children of alcohol- or drug-dependent parents will serve as resilience, protection or compensation factors, even if these characteristics are in part or entirely due to an r GE correlation or a GXE interaction. To summarize, the following list of resilience variables in children of alcohol- or drug-dependent parents was gathered from previous studies: an easy temperament, an absence of behavioural problems which could impede school learning (low level of hyperactivity, inattention, and impulsiveness), sociability, a non-dependent parent who maintains a measure of harmony within the family and exercises warm but firm supervision, adequate social support outside the family, self-confidence and a positive outlook towards the future.

GENERIC RESILIENCE FACTORS

After thirty years of research, numerous resilience or protective factors were identified in connection with a variety of risk factors other than parental alcoholism or drug dependency. These factors fall under the headings of individual attributes, family setting as well as social and community networks (Luthar, 2003; Rutter, 2000; Serbin and Karp, 2004). We will review these factors here, in order to: (a) demonstrate that the study of resilience and protective factors is not limited to children of alcohol- or drug-dependent parents; (b) ascertain the specificity or lack of specificity of resilience or protective factors attributed to children of alcohol- or drug-dependent parents; (c) demonstrate their usefulness in the general field of prevention (Vitaro and Caron, 2003); and lastly (d) establish the limits of these resilience factors.

The generic resilience factors which have been identified in a variety of fields over the past 30 years are summarized in tables 1 and 2. Table 1 provides a list of generic resilience factors developed by Master and Coastworth (1998), Werner (2000), and Luthar (2003), while Table 2 presents the generic strategies proposed by Rutter (in press).

Table 1 - Synthesis of generic resilience factors according to Luthar (2003)

<p>Personal characteristics</p> <ul style="list-style-type: none">• Good cognitive skills (above-average IQ, good attention span, adequate executive functions).• Positive self-perception and feeling of competence.• Easy temperament, sociability, adaptability, low-level of emotional reactivity.• Capacity for self-regulation or self awareness (from impulsiveness and negative tendencies).• Positive attitude towards life (confident and positive outlook towards the future). <p>Interpersonal relations</p> <ul style="list-style-type: none">• Quality of the presence of unaffected parent (warmth, positive expectations, strong family structure and firm supervision).• Significant relationships with other competent and attentive adults (relatives, teachers, mentors).• Positive relationships with prosocial and well adjusted peers (in pre-adolescence and in adolescence). <p>Community</p> <ul style="list-style-type: none">• Access to quality schools.• Connection with social or athletic organizations which are structured and supervised by adults.• Quality neighbourhoods (collective supervision, access to cultural and artistic resources, safety and absence of crime).• Access to quality health and social services.

Table 2 – Synthesis of generic resilience strategies according to Rutter (in press)

In the area of personal attributes or experiences which preceded the period of exposure to risk or stress factors

- Promote healthy intellectual development and good school performance.
- Promote selective attachments to other family members or to sympathetic persons outside the family.
- Promote the development of congenial social relationships outside the family.
- Cultivate a feeling of competence.
- Promote the development of a variety of problem-solving skills.
- Encourage openness to others and generosity.
- Encourage flexibility in the face of new experiences.
- Offer a variety of opportunities to meet objectives and overcome stress.
- Provide opportunities for significant individual and community challenges in a variety of fields.

During the period of exposure to risk or stress factors

- Reduce or eliminate the impact of stress or risk situations by, for example, sparing the child from interactions with the depressed or alcohol-dependent parent at inopportune moments.
- Increase social experiences outside the family.
- Promote the acquisition of problem-solving skills and feelings of competence.
- Develop clear and objective perceptions of the source of stress or risk.
- Avoid resorting to strategies or behaviours which hinder healthy development.

The factors and experiences deemed to be conducive to resilience, listed in tables 1 and 2, can be summarized into four points according to Rutter (in press):

- Reduce the impact of the stress or risk situation.
- Avoid the chain reaction of negative events normally associated with the stress or risk situation.
- Promote a “positive chain reaction,” which is to say opportunities and experiences for success and socialization.
- Develop effective strategies to resolve problems and focus on positive rather than negative aspects in the child’s life.

These generic resilience, protection and compensatory factors are strikingly similar to the resilience, protection and compensatory factors identified with respect to children of alcohol- and drug-dependent parents (and, most likely, children of compulsive gamblers as well). Some authors have also proposed a model which promotes a number of fundamental protection or compensatory factors for all children subjected to stress of any kind (Masten, 2001; Masten and Reed, 2002; Serbin and Karp, 2004). These protection or compensatory factors are based on the most salient and readily-modifiable elements in tables 1 and 2. Four areas in particular are targeted: attachment with a significant and well-adjusted adult; a strong motivation to learn; an effective system of behavioural and emotional self-regulation; and responsive organizational and community structures. From an operational standpoint, meeting these objectives may require: (a) offering one-on-one or group training of a personal and social nature to the parents concerned; (b) involving and providing training to the partner of the affected parent, or to another family or community member, to promote bonding with the child and to ensure that the child receives special attention; (c) establish or locate community resources which can provide the child with positive experiences and the motivation to pursue such experiences; (d) supervise and encourage academic success, as well as success in other esteem-building pursuits of a personal or socio-familial nature. A number of early prevention and intervention programs – some of which are described below – reflect one or more of these strategies. A comprehensive survey of such programs and other reference materials can be found in the two volumes published by Vitaro and Gagnon (2000) with respect to prevention programs for youth. Obviously, the implementation of such strategies requires both leaders and promoters. Treatment centres for adults with an alcohol dependence, drug users and pathological gamblers may wish to assume this role, in cooperation with community-based health agencies such as the *Centres locaux de services communautaires (CLSC)* in Quebec, and schools.

Implications in the areas of prevention and social policies

This section identifies some of the lessons learned from the studies on resilience concerning prevention and social policies. Since resilience, protection and compensatory factors seem to be the same for resilient children of alcohol- or drug-dependent parents and as for other categories of resilient children, an overview of promotion and prevention program principles and strategies found to have been effective with vulnerable children

has been provided. This is followed by a description of a few prevention programs specific to children of dependent parents.

EFFECTIVE PREVENTIVE INTERVENTION TARGETS AND STRATEGIES

In relation to personal and social skills likely to promote resilience in children who have a parent in difficulty, Werner (1999) proposes the following objectives, which integrate or refine the suggestions formulated earlier:

- provide youth with prosocial models within their communities;
- mobilize adults who are likely to help youth develop their talents;
- involve youth in supervised community, cultural and athletic activities;
- foster an optimistic vision of the future and knowledge of cultural roots;
- promote humour as a means of dealing with difficulties of life;
- provide individualized support (tutors or mentors) in the various areas of development.

For their part, Rolf and Johnson (1999), attribute the following characteristics to effective prevention and promotion programs:

- they ensure that community agencies are involved in prevention efforts;
- they broaden or use community organizations in efforts to provide assistance to youth with adjustment problems;
- they coordinate prevention activities both within and outside the school setting;
- they establish structured programs designed to improve personal and social skills (see Vitario and Gagnon, 2000);
- they use the media as a means of building and promoting community support;
- they facilitate in connecting youth in difficulty with potential employers;
- they help to connect youth in difficulty with peer leaders in the community;
- they mobilize parents and other responsible adults;
- they seek to intervene, as early as possible, in situations involving children in difficulty;
- they provide consistent support to prevention program promoters through an ongoing process of strategy renewal designed to ensure maximum effectiveness, as well as theoretical coherence;
- they ensure that prevention principles and strategies reflect all relevant cultural paradigms.

SPECIFIC PREVENTION EXPERIENCES WITH CHILDREN OF ALCOHOL- AND DRUG-DEPENDENT PARENTS

Few properly assessed prevention programs are directed specifically at children of alcohol- or drug-dependent parents. To our knowledge, there are no programs for children of compulsive gamblers.

Kumpfer and her partners (De Marsh and Kumpfer, 1986; Kumpfer and De Marsh, 1986; Kumpfer, Molgaard and Spoth, 1996) have developed a program which targets children and families in which one of the parents is alcohol- or drug-dependent. This program, known as the “Strengthening Families Program” or SFP, is designed exclusively for families with one child or more between the ages of 6 and 12 years. Although it targets families in which one of the parents has a drinking problem, the program’s approach is not particularly unique, being based on existing programs aimed at various categories of vulnerable children (see Vitaro and Gagnon, 2000). In order to evaluate the SFP, Kumpfer *et al.*, randomly distributed the families into three groups. The families in the first group took part in 14 sessions designed to improve parenting skills, based on the Patterson method (1975, 1976). Families in the second group also took part in the 14 sessions but their children took part in workshops intended to improve problem-solving skills, based on the technique developed by Shure and Spivack (1982). In addition to the activities performed by the first two groups, the families in the third group also took part in 14 sessions designed to improve their parenting skills, based on the Guernsey method (1977). The analysis revealed that the families in the third group achieved the best results in terms of improving children’s skills and reducing their behavioural problems; parenting skills were enhanced and family functioning and the home atmosphere improved. A reduction in tobacco and alcohol use in older children was also noted, while younger children seemed less drawn to these substances. Finally, the parents also reduced their use of these substances and had a better opinion of their parenting skills.

The SFP was evaluated from a socio-cultural standpoint with several vulnerable clientele (see Kumpfer *et al.*, 1996). A Quebec version of the program has been used with families which have a parent with an alcohol dependency in treatment (Beaudoin, 1996).

There are two other targeted programs for children and families in which there is an alcohol-dependent parent. The first of these, the *Michigan State University Multiple Risk Outreach Program* (Maguin, Zucker and Fitzgerald, 1994; Nye, Zucker and Fitzgerald, 1995), targets families with children between the ages of 3 and 6 years whose fathers have been convicted of impaired driving. Recognizing the elevated risk for children with alcohol-dependent fathers in developing behavioural problems which are, in turn, precursors of adolescent dependency, the goal of this program is to reduce behavioural problems in children by helping parents to develop the disciplinary skills needed to deal with problem behaviour and alternatively to generate an increase on appropriate behaviours. Part of the program deals with marital conflict and various other family problems. Incidentally, the program is solely intended for families in which both parents

(including the alcohol-dependent father) live with the child. An evaluation of this program focuses on studying a group in which approximately half of the alcohol-dependent fathers also display anti-social personality traits. The short-term results indicate that the children in the experimental group show an increase in appropriate behaviours and a decrease in inappropriate behaviours, compared to children in a randomly-selected control group. What remains to be seen is whether these effects will favourably influence later adolescent tendencies (i.e., the distal outcome). The research plan seems reasonably rigorous and long-term follow-up of children and families is anticipated. Furthermore, the program has also incorporated suggestions made by a number of research groups, which were to focus prevention efforts on children exposed to well-known risk factors, such as parental alcoholism, deficient or erratic parenting practices, behavioural problems, and family conflict (Hawkins *et al.*, 1992b; Zucker and Noll, 1987).

The last evaluated program which specifically targeted children of alcohol-dependent parents is that of Emshoff and his collaborators. Unlike the Zucker team, which targets preschool children, the Emshoff team focused on school-age children. Their strategy consists of gathering small groups of children of alcohol-dependent parents and helping them acquire a variety of personal and interpersonal skills (Ayers, Short, Gensheimer, Roosa and Sandler, 1988; Emshoff, 1989). The goal of the group sessions is also to provide vulnerable children with a social support network. The program does not seek to modify the family environment but, rather, to help children discover and develop the personal resources they need to deal with their problems. The available results were shown to be positive in the area of psychotropic drug use (Emshoff, 1989). However, the approach adopted in this program gives rise to a number of practical – if not ethical – problems. First, it is not easy to identify children of alcohol-dependent parents and there are no guarantees that the parents will agree to participate in the proposed prevention program. Secondly, identifying children at school can stigmatize them in the eyes of teachers and peers. Finally, gathering groups of maladjusted children may produce iatrogenic effects, as Dishion, McCord and Poulin (1999) have pointed out.

Obviously, there are many other programs designed to prevent early use or abuse of psychotropic drugs. Since such programs, be they universal or targeted, are not specifically directed at children of alcohol or drug-dependent parents, we have chosen not to review them here. However, a number of critical surveys of such programs are available (for example, Tobler *et al.*, 2000, or Vitaro and Carbonneau, 2000).

On the other hand, there is one high-risk situation which warrants particular attention due to its harmful effects on children, as well as the fact that it is easily preventable based on a prevention approach. Namely, the use of tobacco, alcohol and other drugs during pregnancy by mothers and, in the case of tobacco, by their partners (given the well-documented effects of second-hand smoke). It is generally understood that alcohol and drug use during pregnancy can harm foetal development and cause untold problems later in life. Many research studies have demonstrated that smoking during pregnancy is equally harmful (see Dauphin and Gendreau, in press; Thapar *et al.*, 2003). The situation is even more complex when tobacco, alcohol, and other drugs are used and abused

concomitantly, which is not uncommon among young mothers who are coping with a variety of personal and socio-economic difficulties. Diminishing such practices among young mothers would have a major impact in terms of preventing adjustment problems in children.

Olds and coll. (1998) have created a program to assist single and poor young mothers during pregnancy and after the birth of their children. In comparison with a randomly-selected control group, the results of this program show that parental neglect and dependence on government benefits decreased among the young mothers in the experimental group. The results also show that the mothers in the experimental group reduced levels of smoking, and consumption of psychotropic substances. Finally, the results show that their children showed a higher level of social and academic adjustment in primary and secondary school. This program, which generated the “*Jeunes Parents*” program currently being offered in Quebec’s *CLSC*, involves home visits by trained nurses who help young mothers overcome their personal problems and learn parenting skills which are consistent with healthy child development.

It is hoped that *CLSC* workers are also bringing their attention to bear on tobacco, alcohol and drug use by young mothers and that they will be able to accurately evaluate the efficacy of the “*Jeunes Parents*” program in its general application and particularly in the use of psychotropic drugs. It is equally desirable that the program will take advantage of the resilience elements which exist in the natural environment of the children rather than replace them. As pointed out by Werner and Smith (1993), resilient children of alcohol-dependent parents often prefer to receive support from a family member or from someone in the community rather than from health or social services professionals. The latter can nonetheless play an important role in coordinating and in helping to establish or nourish such supportive relationships.

Other strategies are designed to re-establish family harmony or improve parenting skills. Kumpfer and Alvarado (2003) have produced a highly insightful inventory of prevention programs for parents and families with a vulnerable child. Additionally, Serketick and Dumas (1996) have produced two meta-analyses which review a wide range of parenting programs, while Tobler and Kumpfer (2000) have generated a review of programs designed to improve family dynamics.

Some research results suggest that it is sometimes preferable to temporarily separate a child from an alcohol- or drug-dependent parent, or that a child learns to detach himself or herself from the affected parent, if not the entire family (McCord, 1988). It is in these situations that the involvement of social agencies becomes almost indispensable. Recently, a number of authors have proposed a generic prevention program which builds on current knowledge or resilience factors (Waaktaar, Christie, Borge and Torgersen, 2004). The latter propose strategies involving prosocial peer support and favour the development of satisfying social relationships outside the family. These authors also proposed group activities to stimulate children’s cognitive development. Finally, they stress the importance of developing children’s creativity and emphasize that children also

need to connect positive experiences with their plans for the future. Unfortunately, only a few case studies were taken into consideration during the evaluation.

Summary table

- Individual genetic or psychophysiological vulnerability can moderate the effect of exposure to socio-familial risk factors such as parental addiction. It can also trigger a chain reaction of favourable or unfavourable events within the context of the socio-familial environment.
- In turn, the socio-familial environment can significantly moderate the relationship between genetic or psychophysiological vulnerability and individual adaptation. Analysis of gene-environment interactions and correlations constitutes the cornerstone of future research into resilience factors.
- The resilience and protective factors identified in children of alcohol- or drug-dependent parents are similar to those identified in children exposed to a variety of other risk factors. These factors, which can be termed generic resilience or protective factors, are presented in tables 1 and 2.
- Generic resilience factors suggest that a generic prevention approach may also be needed.
- Some prevention programs exist that are specifically directed at children of alcohol- or drug-dependent parents. On the whole, results are positive but a number of methodological shortcomings, particularly in the area of long-term follow-up, preclude any definitive conclusions. Moreover, the content and strategies of these prevention programs resemble those used with children exposed to various other risk factors. These programs essentially focus on two goals: the first is improving the children's personal skills; the second goal is improving parenting skills and family harmony. Given the progress which has taken place over the last ten years in the field of prevention, it should be possible to establish more complete and potentially more effective prevention programs for children of parents with a dependency.

Conclusions and Recommendations

IN THE AREA OF RESEARCH

Methodological Aspects

The key contribution of research into resilience is the attention paid to the factors which contribute to success despite the presence of risk factors. However, research on resilience has often ignored resilience or protective factors (limited to factors exerting a moderating effect, as discussed earlier) or confused them with beneficial factors which exert a compensatory effect with regard to risk factors. Criticisms have also been leveled against the weakness of research designs used: on this issue, research into resilience is condemned to produce biased results and uncertain conclusions if it avoids longitudinal designs which track subjects from an early age, or if it fails to use reliable measurement instruments, appropriate statistical analysis, or population samples which are sufficiently large or composed of groups matched on the basis of relevant control variables. The research into resilience has also been criticized for the murkiness which surrounds the concept of successful adaptation in resilient children, as well as the failure to integrate various levels of analysis which might serve to explain the mechanisms of resilience (Luthar and Cicchetti, 2000a; Masten, 2001).

One of the important challenges facing research into resilience is clearly to rigorously define *successful adaptation*, rather than view the absence of adjustment problems as the sole criterion for resilience (Jessor, Van Den Bos, Vanderryn, Costa and Turbin, 1995; Rutter, 1999). It should be said, however, that some authors have added a second criterion, namely the acquisition of competencies (Masten and Coastworth, 1998). These two criteria are difficult to reconcile, since an individual can demonstrate competencies in certain areas of functioning while experiencing problems in other areas. Moreover, the concept of successful adaptation is dependent upon social norms which vary according to ethnicity, cultural habits and geographic location (Werner, 1993). Resilience criteria must also be adjusted according to the area of functioning and to the specific period of development. They do not apply uniformly to all areas of functioning, nor to all periods of development, particularly when norms vary. It may well be that children are resilient in certain facets of their personalities, in certain aspects of their experience, or during certain periods of their development only (Cicchetti *et al.*, 1993; Luthar *et al.*, 2000). While some studies have demonstrated that resilient children and adolescents tend to develop, as a general rule, into well-adjusted adults, the continuity of resilience cannot be taken for granted (Masten and Curtis, 2000; Werner, 1995). As some authors have found (Cicchetti, 2003), it is important to view resilience or protective factors not as the absence of adjustment problems at a given point in life, but rather at several sequences spread over a lengthy period of development (infancy, childhood, adolescence, early adulthood, and so on). These various evaluation periods could serve to establish developmental profiles or trajectories for determining success or lack thereof during a complete stage of development (for illustration, see Vitaro, Carbonneau, Tremblay and Gosselin, *in press*). As such, it has been proposed to establish such development profiles

for the various relevant areas of functioning and at every stage of development. Particular attention should be paid to transitional periods between two stages of development, since the new challenges that arise at these times can often lead to problems of adaptation.

As mentioned earlier, with respect to the research into resilience, problems arise with the equivalency criteria of risk factors to which were exposed resilient and non-resilient study groups (Rutter, 2000). These factors are not always clearly defined and ignoring or neglecting the perceptions of the individuals concerned or the mechanisms and other parameters related to their mode of action (Luthar and Cushing, 1999). Furthermore, the same risk factors emanating from the socio-familial environment do not always have the equivalent harmful effect on the adaptation process, since some children are genetically better equipped to deal with them (Caspi *et al.*, 2002, 2003). It may be, for example, that being genetically spared certain vulnerability factors can completely or partially block the psychosocial chain reactions which are the precursors of adjustment problems.

Multiple Levels of Analysis

Future research into resilience should integrate multiple levels of analysis, the first being genotype analysis, as informed by molecular and quantitative genetics. This level of analysis would make it possible to detect elements of vulnerability and, when necessary to intervene at the level of the phenotypical manifestations which are likely to become exacerbated under the effect of stressful social experiences.

The second level of analysis should focus on the risk factors to which the child is exposed. Obviously, this level of analysis includes the factors associated with alcoholism and drug dependency of parents, but it should also take into account the phenomenon of comorbidity, which is to say the presence of other factors which can increase stress, such as parental psychopathology, deficient parenting skills and other similar variables (marital conflict, difficult economic situation, abuse, neglect etc.). This level must equally take into account the neurophysiological effects of prenatal postnatal alcohol, drug and tobacco use by parents.

A third level of analysis relates to the positive and negative social experiences to which children are exposed in the course of their development. This extends to the adults in extended families and with significant adults outside the family, as well as with siblings and peers. Cognitive and behavioural learning as well as the perceptions derived from these experiences are also important. Finally, this third level of analysis should also address the cognitive and socio-cognitive dispositions and personality traits of the child, all of which should be taken into account as early as possible and throughout the child's development.

The fourth level of analysis is that of the processes which distinguish resilient children from others when all else is equal. This involves the microanalysis of transactional processes between the child and the socialization agents or experiences to which he or she is exposed (for example, the manner in which academic or social challenges are

faced, or the socio-cognitive or affective messages derived from this experience in terms of personal competence and self-esteem). The fifth and final level of analysis considers how the child functions in various domains of experience in order to identify areas of successful, moderately successful, and unsuccessful adaptation at various stages in life, from early childhood to adulthood, with particular emphasis on the transitional periods between stages. This kind of follow-up should also consider new positive or negative experiences to which the child continues to be exposed to, as these can play as great a role as past experiences in influencing subsequent adaptation. In fact, a number of studies have demonstrated that individuals exposed to severe stress can nonetheless recover under favourable conditions. An eloquent example of this is the case of Romanian orphans adopted by functional families (Rutter, in press). Having said this, child rehabilitation is subject to strong individual variability; in some cases, after-effects of the accumulated delay experienced by children persist despite the high quality of the new environment.

Another factor which must not be overlooked in this type of study is gender. In fact, it would appear that boys are more vulnerable to the effects of socio-familial stress than are girls (Earls, 1987), although the results of some studies are rather equivocal on this score (Zaslow, 1988, 1989). Similarly, the age at which the child is exposed to risk or stress factors also warrants consideration. Although few studies have shed light on this aspect, children would appear to be particularly vulnerable between the ages of 2 and 6 years (Rutter, 1979). To gain a better understanding of this dimension, one would need to examine children of alcohol- or drug-dependent parents at different ages (including children of parents who have undergone rehabilitation).

IN THE AREA OF INTERVENTION

Earlier, we proposed a generic prevention model which would help vulnerable children to acquire as many personal skills as possible and to integrate as many resilience-building experiences as possible, preferably within the family circle, as well as beyond that circle. However, as Rutter (in press) reminds us, resilience does not always manifest itself in every aspect of life. It is important then, to identify the specific areas in which a child's vulnerability expresses itself, in order to propose appropriate and effective strategies that will promote resilience in these areas. The necessary strategies and learning experiences can be put in place before, during or even after periods of exposure to risk factors, and their efficacy should be evaluated on an ongoing basis.

A rigorous evaluation in an experimental context seems crucial from a research and a clinical standpoint, for at least two reasons. First, if the acquisition of favourable competency skills conducive to resilience translates into better adaptive outcomes for children in the experimental group, as compared to those in an initially equivalent control group, it then becomes possible to:

- objectively observe the desired changes (provided that different evaluation sources and valid measurement instruments are used over several measurement periods); and to
- attribute these changes to the intervention strategies rather than to the usual sources of internal invalidity which include, among others, the passage of time, the repetition of measurement, and positive expectations.

Second, assessing the acquisition of favourable competencies and the integration of experiences which are conducive to resilience in the experimental group, as compared to the control group, constitutes the best and only means of verifying the causal role of these skills and experiences in terms of the subsequent adjustment of at-risk children (of alcohol- and drug-dependent parents). After randomly distributing at-risk children into an experimental group and a control group, the surest way of demonstrating the causal power of a resilience factor is to embed that factor within the experimental group and then to compare the level of adaptation of the children in the experimental group with that of the children in the control group. All else being equal, a better level of adaptation in the experimental group may be viewed as resulting from the manipulation of the resilience factor. On the other hand, the absence of differences between the experimental group and the control group would suggest that the presumed resilience factor is either factitious or that the intervention strategy used to embed it has been ineffective. Obviously, it may be necessary to “manipulate” several resilience factors concomitantly in order to achieve maximum efficacy. Under such circumstances, it would be impossible to determine which specific resilience factor is responsible for the positive effects. The risk of failure or of iatrogenic effects should constitute sufficient reason to use a control group while remaining mindful of ethical considerations (for as long as it takes to clearly establish the efficacy of the intervention strategies under consideration).

A number of authors advocate the use of prevention programs considered to be “experimental manipulations” of resilience variables, in order to determine the causal coefficient of these variables with respect to the chain of psychosocial developments which naturally lead to successful adaptation (Weersing and Weisz, 2002). By using prevention studies to verify whether presumed resilience (or compensation) variables effectively play a causal role in protecting vulnerable children from problems of adaptation, a complete cycle is created, from research to intervention and back again, and the benefits of prevention efforts are maximized.

Without funding for first-class research teams, as well as the active cooperation of practice setting (Treatment Centres, *CLSC*, schools) and without a clear and steadfast political will, these goals will not be achievable.

Summary table

- The next generation of studies on resilience should adopt a longitudinal perspective and integrate multiple levels of analysis.
- Workers dealing with adult drug users and adults with an alcohol dependency should also concern themselves with other family members, particularly children, who are at risk of becoming their future clients. *CLSC* workers, schools and other stakeholders should establish prevention programs based on the research into resilience and prevention, or order to intervene early on behalf of their clients' children. Many of these children will already display early signs of adjustment problems which may emerge in adolescence or adulthood.
- The presence of an alcohol- or drug-dependent parent should not be viewed as the sole risk factor when identifying vulnerable children. An appropriate assessment of children's psychophysiological, behavioural and cognitive makeup is also needed.
- The implementation and evaluation of prevention programs whose targets and strategies are derived from the research into resilience would help to break the cycle of intergenerational transmission of adjustment problems in alcohol- and drug-dependent families. It would also provide a means of testing the causal role of the resilience factors which lead, in principle, to the development of the programs. At present, all of our knowledge about risk and resilience rests on correlational studies.

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