

Risk and Protective Factors in the Development of Problem Behavior During Adolescence

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Based on the results of previous research, multiple factors in several domains (individual attributes of the adolescent, family attributes, and extrafamilial factors) were identified as possible risk and protective factors for development of problem behavior during adolescence. The first aim of this study was to examine the relative importance of these factors for the development of externalizing and internalizing problems. In addition to examining the role of particular risk and protective factors, we also tested the hypothesis that risk and protection have a cumulative effect. The results show that the individual attributes of the adolescent play an important role, both as a risk and as a protection, for the development of internalizing problems, but they appear to be of less importance for the development of externalizing problems. The family attributes (support, monitoring, and attachment) seem to be important for both types of problem behavior. Finally, the relationship with peers (especially the association with deviant peers) has both a risk and a protective effect for the development of problem behavior. When index of the number of risk and protective factor is used, it appears that the amount of risk has a stronger relation to variation in problem behavior than protection. Finally, in this sample, no evidence was found for the moderating effect of the protective factors.

INTRODUCTION

Traditionally oriented agencies that offer help for families and children with problems have difficulties addressing the needs of these children and their families. One of the reasons for this is a "single-issue" perspective (i.e., they often address only one single risk factor, for example, incompetent parenting or the lack of the

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child's social skills or a single negative outcome, for example, school problems or drug use) (Resnick and Burt, 1996). It becomes increasingly clear, however, that problem behaviors are complexly determined, and that an intervention that aims at only one component is not likely to be effective. Such fragmented interventions have poor long-term outcome and often lead to unnecessary duplication of efforts (Kazdin, 1993a,b, 1997; Patterson, DeBaryshe, and Ramsey, 1989; Tolan, Guerra, and Kendall, 1995). Current knowledge suggests that instead of dealing with separate, independent and isolated problems, it is necessary to design more complex interventions characterized by more comprehensive and simultaneous efforts to alter multiple domains of functioning and to intervene in each of the relevant settings (i.e., family, school, and peer group) (Borduin *et al.*, 1995). Furthermore, according to the current view, the interventions should be focused not only on factors leading to problematic functioning (risk factors), but also on strengths within the child and within the child-rearing context (protective factors) (Kazdin, 1997).

Ideally, interventions should be derived from conceptual models concerning processes leading to problem behaviors, and from basic research in which these processes are evaluated (Dodge, 1993). Although there exists a body of knowledge and research regarding the disparate factors related to problem behaviors, multiple risk, and protective factors are only rarely studied simultaneously within the same research. In other words, the information that can be used as underpinnings for more conceptually and empirically informed interventions is still rather scarce.

This scarcity is especially true for the period of adolescence. Most of the studies on risk and protection have been conducted among preadolescent and younger children (Garmezy, 1985; Grossman *et al.*, 1992; Werner and Smith, 1982). However, the context of development and importance of the factors that affect development changes with age (Bronfenbrenner, 1986; Kazdin, 1993b). Therefore, an understanding of the development of problem behaviors requires adequate consideration of the different factors during different developmental periods. Adolescence is a period in which numerous changes occur, both inside the individual (physiological and cognitive changes) and outside the individual (changes in the child's relationship with parents and peers). It might therefore be expected that factors that are important both as risk and as protection change as an individual enters adolescence (Kazdin, 1993a; Tolan, Guerra, and Kendall, 1995).

In addition to these developmental considerations, another important concern is a heterotypical expression of adolescent problem behavior. It has been suggested that the importance of a given risk or protective factor might vary depending on the aspect of adjustment studied (i.e., the same factor may play different functional roles in different domains of functioning) (Gest, Nemann, Hubbard, Masten, and Tellegen, 1993). The studies on risk and protection during adolescence have focused mostly on externalizing problem behaviors (e.g., substance use, conduct problems, school problems, and juvenile delinquency). One possible reason for

this is that externalizing problem behavior is more visible and has more direct negative consequences for individuals and for the community. Another reason is that many adolescents become involved in some level of antisocial (delinquent) behavior during the course of their adolescence (Moffit, 1993; Loeber, 1990; Resnick and Burt, 1996). Another type of problem behavior, internalizing problems (e.g., anxiety, depression, withdrawal) has received much less attention, although given its prevalence (depression affects, depending on its definition and assessment, between 7% and 33% of adolescents) and its consequences (depressive mood is a strong predictor of suicidal ideation), this type of problem behavior is hardly less important (Petersen *et al.*, 1993).

The present study extends previous work by examining the ways in which multiple sources of risk and protection may contribute to the development of both externalizing and internalizing problems during adolescence. As a framework for organizing these factors an ecological perspective (Bronfenbrenner, 1986, 1989) was used, in which the child is viewed as being nested within a complex network of interconnected systems. In this study, we focus on factors at individual level—adolescents themselves—and factors within their principal interpersonal environments: family and peer group. Given the complex web of factors influencing adolescents' psychosocial adjustment, it is not easy to determine which of the factors are major and which are minor predictors of problem behavior. Moreover, interrelations among these factors are hardly taken into account in determining their relative predictive value. Based on the results of previous research, most consistently identified factors in several domains (individual attributes of adolescent, family attributes, and extrafamilial factors) were identified as possible risk and protective factors.

Risk factors are defined as those conditions that are associated with a higher likelihood of negative outcome (problem behavior). At the *level of the individual*, risk factors consistently found across studies include low educational aspiration and low self-esteem (Jessor, Bos, Vanderryn, Costa, and Turbin, 1995). Poor school motivation appears to be the single most important marker for identifying adolescents likely to be at high risk (Resnick and Burt, 1996). Adolescents who engage in delinquent behavior typically have a poor school record (McCord, 1992). These adolescents are more likely to show poor school attendance and drop out of school without a high school diploma, which consequently decreases their chances for labor-market participation (Meeus, Deković, and Iedema, 1997). A low degree of commitment to education also appears to be related to drug use in adolescence (Hawkins, Catalano, and Miller, 1992) and early sexual activity (Small and Luster, 1994). It has been suggested that engaging in problem behavior might be a way to cope with a low sense of self-worth, dissatisfaction and low confidence in own abilities (Jessor *et al.*, 1995). Low self-esteem appears indeed to be a significant predictor of mental health problems (Baldwin *et al.*, 1989) and externalizing problems such as drug use (Stacy, Sussman, Dent, Burton, and Flay, 1992).

Regarding the *level of the family*, there is a long history of empirical studies that have identified family variables as consistent covariates for problem behavior. Among many different aspects of family functioning, the evidence seems clearest in showing that a low level of parental support and involvement increases the possibility of problem behavior (McCord, 1992). Another aspect consistently found as important in predicting problem behavior is the degree of structure or control provided by the parent (Maccoby, 1992). Adolescents' striving towards autonomy, their testing and acting-out behavior, might be met with overwhelming and punitive force by parents. Adolescents who are exposed to punitive parenting are more likely to develop problem behavior (Baldwin *et al.*, 1989; Loeber, 1990; Patterson, Reid, and Dishion, 1992).

During adolescence, as the adolescent's environment grows larger, so too do the factors that affect adolescent's adjustment. Because of the increase in the adolescent's independence and in his/her interaction with others, influences outside the family, especially *peers*, might become more important. One aspect of peer relationships that has consistently been found as a potent predictor of problem behavior is the exposure to friends who model deviant behaviors (i.e., involvement with a deviant peer group) (Dishion, Andrews, and Crosby, 1995; Patterson *et al.*, 1992). Deviant peers provide opportunities to engage in problem behavior, provide considerable social pressure and positive reinforcement for deviant behavior, and supply the adolescent with attitudes, motivations, and rationalizations to support antisocial behavior (Patterson *et al.*, 1989). Risk factors within peer relations are not only limited to the involvement with deviant peers. More generally, it appears that strong peer orientation and the unusually dominant role of peers in the lives of adolescents are associated with a more negative self-concept and problem behaviors such as substance use (Conger *et al.*, 1992; Deković, Meeus, and Gerris, *in press*; Wills, Vaccaro, and McNamara, 1992).

While these factors are associated with elevated risks of problem behavior, it is also true that not all adolescents growing up in adverse circumstances develop these problems. Adolescents in this latter group, labeled "resilient," make satisfactory adjustment despite exposure to adversity. This is assumed to be the result of so-called protective factors. Contrary to the risk factors, the definition of the protective factors has been subject of much discussion (Luthar, 1993; Rutter, 1987). Broadly defined, protective factors could be seen as those personal, social, and institutional resources that foster competence, promote successful development and, thus, decrease the likelihood of engaging in problem behavior. In other words, these factors are simply associated with positive outcome. A more strict definition of protective factors requires the presence of risk: Protective factors buffer the risk factors that might otherwise compromise the child's development (Jessor, 1993). In other words, protective factors show their effects under conditions of risk, but provide no advantage under low-risk conditions (Rutter, 1987). In this "interaction-definition" protective factors serve as moderators: they

modify the relationship between risk and problem behavior (Luthar, 1993; Rutter, 1987).

Although the protective factors have been less well-studied than those that increase the risk (Kazdin, 1993b), during the last two decades research has identified several factors that operate in each of the conceptual domains (individual, family, and extrafamilial relations) that may either promote positive development or protect against or mitigate the effects of risk.

Resilience has been defined as "the capacity of the child to meet challenge and use it for psychological growth . . . and to overcome obstacles" (Baldwin *et al.*, 1989, p. 743). Therefore, on the individual level, one of the important personal characteristics that may function as protection is coping skills that permit the adolescent to deal with typical life challenges and problems in a constructive manner. In addition to coping skills, adolescents' competence in normative roles and involvement in activities for which they receive positive recognition might function as a protection against risk. Some evidence suggests that success in school reduces the likelihood of engagement in problem behavior. Wills *et al.* (1992) showed that adolescents' academic competence and high school performance functions as a buffer against risk for substance abuse. Similarly, adolescents from high-risk backgrounds who show resilience to developing externalizing problems appear to enjoy school more (Fergusson and Lynskey, 1996). High school achievement might also reflect high intellectual skills, which has been found as an important protective factor in children (Masten *et al.*, 1988).

Individual characteristics are, of course, just an aspect of potential risk and protection constellation. Another factor that may increase resiliency, and thus functions as a protective factor, is the quality of the relationship within the family: the presence of a warm, nurturing, and supportive relationship with at least one parent (Bradley *et al.*, 1994; Fergusson and Lynskey, 1996; Masten *et al.*, 1988). The quality of attachment to parents is strongly related to adolescent's well-being and depression (Armsden and Greenberg, 1987). Because parents provide support for conventional behavior and sanctions against conduct problems, positive bonding to parents seems to function as a protection against antisocial behavior and delinquency (Hawkins *et al.*, 1992; Nada Raja, McGee, and Stanton, 1992; Kazdin, 1997). In addition to parental bonding, parental ability to supervise their child and parental monitoring of the child's daily activities increases the likelihood that the adolescent will be deterred from problems behaviors (Jessor *et al.*, 1995; Patterson *et al.*, 1992). Parental monitoring decreases unsupervised time and narrows the range of negative social influences (Stacy *et al.*, 1992).

A possible source of resilience to which relatively little attention has been paid is the nature and quality of peer relations. Popular view of peer influence during adolescence tend to emphasize the negative effects of peer pressure, that is, peers are often seen as fostering undesirable behavior, such as early involvement in sexual relations, drug use, and delinquency. However, successful peer relations are

of great importance for social and personality development. Peers offer support, emotional reassurance, a safe setting for experimenting with different roles, for intimate sharing, and for self-disclosure (Berndt, 1990; Hartup, 1993). Therefore, good peer relationships may provide sources of support and positive role models that may mitigate the effects of adverse (family) circumstances (Quinton, Pickles, Maughan, and Rutter, 1993). Furthermore, being accepted by peers makes unnecessary for adolescents to engage in risk-taking behaviors, for example, drinking or smoking marijuana, in order to gain peer approval and respect (Jessor, 1991).

An important criticism on protective factors research concerns the conceptual distinction between risk and protective factors (i.e., the question whether or not these factors are actually the opposite ends of a single dimension). In the present study, we follow the approach suggested by Jessor *et al.* (1995), who specified "... conceptual properties of protective factors that are deliberately different from conceptual properties of risk factors in relation to problem behavior" (p. 932), and found that these factors are neither highly interrelated nor have the same pattern of relationships with other measures. Protective factors are conceptualized as factors that represent personal abilities to handle problems in a constructive manner (coping), that reflect commitment to a conventional social institution (high academic achievement), that control against non-normative activities (attachment to parents and parental monitoring), and that reflect successful accomplishment of important developmental task (acceptance by peers and attachment to peers). Risk factors are defined as factors that increase vulnerability (low achievement, low self-esteem), that reflect developmentally inappropriate child-rearing environment (parental strictness and lack of support) and that increase the opportunity to engage in problem behavior (association with deviant peers and extreme peer orientation). Accordingly, distinctive measures are used in this study to operationalize risk and protection.

In sum, the first aim of the present study was to examine the relative importance of multiple risk and protective factors in three domains (individual attributes of adolescent, family attributes, and extrafamilial attributes) and to determine whether some of these factors can be identified as a more central influence than others. We also examined whether these risk and protective factors have a differential importance for two different types of problem behavior during adolescence: internalizing and externalizing problems. In addition to examining the role of particular risk and protective factors, we also tested the hypothesis that risk and protection have a cumulative effect. Previous research suggested that, in isolation, risk and protective factors may make relatively little contribution to outcome, whereas such factors in combination may be powerful determinants of adolescent development (Jessor *et al.*, 1995; Small and Luster, 1994). The probability of occurrence of problem behavior is expected to be an increasing function of the number of risk factors adolescents are exposed to. Similarly, we expected that

a higher number of protective factors would be associated with lower involvement in problem behavior. The final aim of this study was to determine whether protective factors moderate the relationship between risk and problem behavior. In other words, we examined whether protective factors function directly as positive factors (main effects) or whether they function only in the presences of risk (protection-by-risk interaction).

METHODS

Subjects and Procedure

The sample consisted of 508 families with adolescents (254 females and 254 males). Three age groups were represented: early adolescence (between 12 and 13 years old; 86 females and 84 males), middle adolescence (between 14 and 15; 73 females and 76 males) and late adolescence (between 16 and 18; 95 females and 94 males). Seven percent of the children were the only child in the family, 35% were the oldest child, and 41% the youngest child. Most of the families (91%) were intact families, 7% of the parents were divorced or separated, and 2% were widowed. The sample represented a wide range of socioeconomic and educational backgrounds: unskilled workers (12% of the mothers and 3% of the fathers); semi-skilled workers (20% of the mothers and 8% of the fathers); clerical and sales workers, or semi-professionals (45% of the mothers and 34% of the fathers); small business owners (8% of the mothers and 10% of the fathers); professionals (9% of the mothers and 23% of the fathers); and higher executives (6% of the mothers and 16% of the fathers). Two percent of the mothers and 6% of the fathers had a university degree. The percentage of parents currently employed was 54% of the mothers and 94% of the fathers. Socioeconomic status of the families, based on education and occupation of both parents, was as follows: 29% low class, 62% middle class, and 9% high class.

The data for this study were collected as part of a national program of research on children/adolescents and their parents entitled "Child-rearing in the Netherlands in the 1990s." The families were selected from a larger sample of 10,000 families representative of Dutch population and were first contacted by phone. In the phone interview the general purpose of the research was explained and the criterion for participation (e.g., having an adolescent child) was checked. From all contacted families with adolescent children, 53% agreed to participate. No information is available regarding the demographic variables of nonparticipants. The most frequent reason of refusal was the father's lack of time. Data collection took place at the subjects' homes, where a battery of questionnaires was administered individually to adolescents, mothers, and fathers. All three family members filled the questionnaire independently of each other in the presence of the interviewer. The

central concepts in the present study (i.e., problem behavior and risk and protective factors) were all assessed from the perspective of adolescents themselves. In several published studies based on the same data set (Deković, in press; Deković and Meeus, 1997; Deković, Noom, and Meeus, 1997) we report the findings regarding adolescent development and the family relationships, also from the perspective of the parents. None of these studies, however, deals with adolescent problem behavior.

Measures

Problem Behavior

Internalizing problems. The assessment of internalizing problems included five self-report measures. First measure, Depressive Mood List (Kandel and Davies, 1982), consists of 6 items to be answered on a 5-point scale (1 = never to 5 = always). Adolescents indicated how often in the past year they were bothered or troubled by feelings indicative of depressive mood (e.g., "feeling unhappy, sad or depressed," "feeling hopeless about the future"). The internal consistency was 0.76. Second measure, Cantril ladder (Cantril, 1965), is a single-item measure that assesses feelings of general well-being and happiness. The respondents were asked to indicate on a 10-point scale how they generally feel (1 = very badly to 10 = very well). Third, Life Satisfaction Scale (Diener, Emmons, Larsen, and Griffin, 1985) measures the subjects overall judgment of the quality of their lives and consists of 5 items (e.g., "In most ways my life is close to my ideal") to be answered on a 7-point scale (1 = strongly disagree to 7 = strongly agree) ($\alpha = 0.84$). The tendency towards suicidal thoughts was assessed by a single item: "Have you in the last 12 months thought about committing suicide and putting an end to your life?" (1 = never to 4 = very often). Finally, the assessment of psychosomatic symptoms was conducted by the Mini-VOEG (Joosten and Drop, 1987). The scale consists of 13 items ("Do you often have a headache," "...feel extremely tired"?), which can be answered by "yes" or "no." The internal consistency was 0.66.

These five measures were subjected to a factor analysis, which resulted in a single factor (49% of explained variance). All variables loaded highly (>0.58) on this factor. Thus, each adolescent was assigned a factor score, derived by using the short regression method, for the construct Internalizing Problems.

Externalizing problems. This measure is based on a 18-items scale ($\alpha = 0.83$), which includes a wide range of oppositional and aggressive behaviors, from relatively minor acts, such as disobedience to parents' rules and missing curfew, to more serious deviance, such as using hard drugs, beating someone on purpose, shoplifting, etc. (Noom, Deković, and Meeus, 1996). The adolescents were asked to indicate how often they committed each act over the past year on a 5-point scale (1 = never to 5 = more than 10 times).

Risk Factors

All variables representing risk factors were coded in the manner that a higher score indicates a higher level of risk. Two risk factors represented the individual attributes of adolescents.

Low achievement motivation. A negative orientation toward school, low value of academic achievement, and low expectations of success were assessed with a 6-item questionnaire (Hermanns, 1980). The items (e.g., "Good grades are important to me") could be answered on a 4-point scale (1 = completely disagree to 4 = completely agree). The internal consistency was 0.67.

Low Self-Esteem. Rosenberg's Self-Esteem Scale assesses the value and sense of worth that adolescents perceive about themselves. Adolescents rated themselves on 10 items ($\alpha = 0.85$) using 4 response categories (1 = highly un-descriptive of me to 4 = highly descriptive of me).

The following two measures constitute risk factors within the family. These variables were assessed separately for mothers and for fathers, but given the strength of associations between maternal and paternal scores (correlation varied between 0.57 and 0.71) in the further analysis their scores were averaged to provide a parental score.

High Strictness. A parental strictness scale included five 6-point items measuring the amount of parental autocratic domination in the relationship (e.g., "My mother/father wants me to follow their direction even if I disagree with their reasons" (Fuligni and Eccles, 1993). Internal consistency was 0.64 for mothers and 0.66 for fathers.

Low Support. Adolescents were asked to indicate on a 10-point scale how much support they receive from their mothers and fathers when they experience problems in social relations, at school, and during leisure time. The alphas for these three items were 0.88 for mothers and 0.89 for fathers.

The risk in extrafamilial relations was assessed by the following constructs.

Association with Deviant Peers. Adolescents were asked to indicate the extent to which their friends engage in deviant behavior. The same 18 items were used as for their self-report (see above). The responses range from 1 = none of my friends to 5 = all of my friends. The internal consistency was 0.80.

Extreme Peer Orientation. The degree to which adolescents place importance on their relationship with peers and their readiness to sacrifice developmentally positive aspects of their lives in order to maintain these relationships (Fuligni and Eccles, 1993) was assessed with 4 items (e.g., "It's okay to let your schoolwork slip or get a lower grade in order to be popular with your friends") ($\alpha = 0.61$).

Protective Factors

The individual attributes that may function as protective factors included active coping and high school achievement.

Active Coping. The adolescents' preference for problem-focused coping strategies was assessed by the Utrecht Coping List (UCL). The scale included 6 items (e.g., "I immediately try to do something about it") to be answered on a 4-point scale (1 = rarely or never to 4 = very often). The alpha was 0.77.

High Academic Achievement. Adolescents reported their grade point average in terms of the average overall grade they usually get in the four major courses (mathematics, Dutch, history, and biology). The score ranges, according to the Dutch school system, from 1 = very poor to 10 = excellent. The alpha was 0.70.

The assessment of protective factors within the family included two aspects of the parent-adolescent relationship.

Attachment to Parents. This construct was measured with a short version of the Inventory of Parent and Peer Attachment (IPPA) (Armsden and Greenberg, 1987; Nada Raja *et al.*, 1992). The scale consists of 12 items for each parent (alpha for mother = 0.78 and for father 0.81) tapping the quality of communication, the degree of trust, and alienation in parent-adolescent relationships (e.g., "I tell my mother/father about my problems and troubles"). A 4-point Likert scale was used with categories of 1 = almost never, 2 = sometimes, 3 = often, and 4 = almost always.

Monitoring. The 6-item scale assesses the parent's supervision of the child and monitoring of the child's daily activities. The adolescents were asked to indicate on a 4-point scale (1 = almost nothing to 4 = almost everything) how much their mother and father know about the adolescent's whereabouts after school, in leisure time, when the adolescent goes out in the evenings and during weekend, etc. The alphas for this scale were 0.84 for mothers and 0.78 for fathers.

The following two measures represent protective factors in extrafamilial relations.

Acceptance by Peers. The degree to which the adolescent feels accepted by his/her classmates, was measured by an 8-item scale (e.g., "I often feel lonely in this class"—reverse coded) (Smits and Vorst, 1982). Adolescents indicated whether each statement was true (1), untrue (3) or whether they felt unsure about it (2). The scale has a good internal consistency (alpha = 0.82).

Attachment to Peers. The positive quality of communication and the high degree of trust in the relationship with peers were assessed by a short version of the Inventory of Parent and Peer Attachment (IPPA) (see above). The peers' subscale consists of 12 items (e.g., "My friends listen to what I have to say") to be answered on a 4-point scale. The alpha was 0.82.

Risk and Protection Indexes

The scores on each measure were dichotomized to represent the presence or absence of that risk factor or protective factor (roughly the extreme 20% of scores on that measure). The risk factor index (RFI) and the protective factor index

(PFI) were computed by adding the dichotomized scores on 6 risk and 6 protective measures, respectively. The RFI and the PFI were moderately negatively correlated (-0.20 , $p < 0.001$), indicating that, although related, the two measures represent relatively distinct constructs.

RESULTS

Table I presents the bivariate relations between measures: 6 risk factors, 6 protective factors and 2 measures of problem behavior. It is worth pointing out that the measures of risk and these of protection are, as expected, negatively related, but the magnitude of the correlation coefficients among these measures (between -0.02 and -0.47) indicates that they are empirically distinct constructs. Even two measures that came closest to being the opposite ends of the same dimension—risk factor Low Achievement Motivation and protective factor High Academic Achievement—are only moderately related (-0.31). This underlines the importance of making a conceptual distinction between risk and protective factors and operationalizing them with distinctive measures.

To examine the relative importance of separate risk and protective factors for internalizing and externalizing problems, hierarchical multiple regressions were conducted (see Table II). Age and gender were entered first, followed by risk factors. In the third step, protective factors were entered. The entry of demographic variables explained a significant percentage of variance in both outcomes. Consistently with previously reported results, in this sample also, girls exhibit more *internalizing problems*, whereas boys report more *externalizing problems*. The age effect was found only for externalizing problems. When entered in the next steps, both sets of risk factors and protective factors add a *significant increment in the explained variance in problem behavior beyond that of the demographic variables*. Among the risk factors, Association with Deviant Peers is a substantial predictor of both internalizing and externalizing problems. In addition, low level of parental Support and Low Self-esteem significantly predicted the degree of experienced internalizing problems. Among the protective factors Monitoring, High Academic Achievement, and Acceptance by Peers have the largest beta's for internalizing problems, whereas Attachment to Parents and Attachment to Peers are the most important predictors of externalizing problems.

To summarize, in addition to demographic variables, risk and protective factors assessed in the present study explained a significant amount of variance in adolescent problem behavior. The most important factors on the *individual level* appear to be self-esteem and academic achievement. The factors on the *level of the family* seem to be less important predictors of problem behavior than *extrafamilial factors*. The adolescents' association with peers who themselves show deviant behavior is one of the strongest risk factors for both internalizing and externalizing problems.

Table 1. Intercorrelations Among the Measures

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Risk Factors												
1. Low Achievement Motivation	—											
2. Low Self-esteem	0.18	—										
3. High Strictness	0.09	0.18	—									
4. Low Support	0.35	0.17	0.08	—								
5. Association with Deviant Peers	0.46	0.09	0.02	0.35	—							
6. Extreme Peer Orientation	0.19	0.31	0.22	0.10	0.29	—						
Protective Factors												
7. Active Coping	-0.18	-0.28	0.03	-0.11	0.03	-0.05	—					
8. High Academic Achievement	-0.31	-0.25	-0.08	-0.27	-0.27	-0.14	0.15	—				
9. Attachment to Parents	-0.27	-0.38	-0.09	-0.47	-0.30	-0.23	0.28	0.21	—			
10. Monitoring	-0.35	-0.25	-0.06	-0.41	-0.37	-0.26	0.14	0.23	0.50	—		
11. Acceptance by Peers	-0.08	-0.25	-0.08	-0.05	-0.07	-0.11	0.11	0.08	0.11	0.06	—	
12. Attachment to Peers	-0.02	-0.15	-0.02	-0.03	-0.06	-0.20	0.32	0.03	0.27	0.20	0.33	—
Problem Behavior												
Internalizing	0.24	0.59	0.10	0.37	0.38	0.26	-0.15	-0.33	-0.46	-0.40	-0.23	-0.08
Externalizing	0.42	0.11	0.01	0.29	0.78	0.24	-0.03	-0.23	-0.27	-0.38	-0.06	-0.12

Note. Correlation coefficients higher than 0.09 are significant at $p < 0.05$ level.

Table II. Hierarchical Multiple Regression Analysis Predicting Adolescent Problem Behavior from the Separate Risk Factor and Protective Factor Measures

Step/Predictor	Internalizing			Externalizing		
	Beta	R ²	R ² Change	Beta	R ²	R ² Change
1. Demographic Variables		0.03 ^c			0.07 ^c	
Age	0.02			-0.20 ^c		
Gender	0.12 ^b			-0.13 ^c		
2. Risk Factors		0.48 ^c	0.45 ^b		0.62 ^c	0.55 ^c
Low Achievement Motivation	0.05			0.05		
Low Self-Esteem	0.45 ^c			0.01		
High Strictness	0.00			0.01		
Low Support	0.11 ^a			0.00		
Association with Deviant Peers	0.25 ^c			0.68 ^c		
Extreme Peer Orientation	0.01			0.01		
3. Protective Factors		0.51 ^c	0.03 ^c		0.64 ^c	0.02 ^a
Active Coping	0.01			-0.04		
High Academic Achievement	-0.11 ^b			-0.00		
Attachment to Parents	-0.06			-0.09 ^a		
Monitoring	-0.12 ^b			-0.06		
Acceptance by Peers	-0.09 ^a			-0.02		
Attachment to Peers	0.00			-0.11 ^b		

^a $p < 0.05$.^b $p < 0.01$.^c $p < 0.001$.**Table III.** Hierarchical Multiple Regression Analysis Predicting Adolescent Problem Behavior from the Risk Factor and Protective Factor Indexes

Step/Predictor	Internalizing			Externalizing		
	Beta	R ²	R ² Change	Beta	R ²	R ² Change
1. Demographic Variables		0.04 ^a			0.06 ^a	
Age	0.03			0.18 ^a		
Gender	0.18 ^a			-0.16 ^a		
2. Risk Factor Index (RFI)	0.44 ^a	0.28 ^a	0.24 ^a	0.48 ^a	0.28 ^a	0.22 ^a
3. Protective Factor Index (PFI)	-0.25 ^a	0.34 ^a	0.06 ^a	0.04	0.28 ^a	0.00
4. Risk × Protection Interaction	-0.00	0.34 ^a	0.00	-0.06	0.28 ^a	0.00

^a $p < 0.001$.

In the next set of analyses (Table III), the Risk and Protection Indexes were used to determine the effects of the number of factors present and to examine the possible moderating role of protective factors. Here again, demographic variables (age and gender) were entered first, followed by the Risk Factor Index (RFI), Protective Factor Index (PFI), and in the last step, the interaction term between RFI and PFI. The significant main effects of RFI and PFI would indicate that these factors play an independent (additive) role in adolescents' adjustment. A significant interaction would indicate a moderating effect of protection, that is,

protective factors have a different impact on problem behavior of high versus low-risk group.

The RFI is significantly related to variation in both internalizing and externalizing problems: the higher the number of risk factors, the greater the involvement in problem behavior. The effect of protection was found only for internalizing problems. Once the number of risk actors was taken into account, the number of protective factors still significantly predicted the degree to which adolescents experience internalizing problems. In other words, both the number of risk factors and the number of protective factors made independent contributions to internalizing problems. This was not the case for externalizing problems, for which only main effect of risk was found. There was no evidence of the hypothesized moderating effects of protection on the relationship between risk and problem behavior (no significant Risk \times Protection interactions); that is, the number of protective factors did not have a differential effect on higher and lower risk groups.

DISCUSSION

In this study we examined the relative importance of several possible risk and protective factors for two types of adolescent problem behavior: internalizing and externalizing problems. These factors cover three conceptual domains: individual attributes, family factors, and extrafamilial (peer) factors.

Previous studies concerned with the importance of *individual attributes* relative to the environmental factors produced inconsistent results. It has been suggested that resilience reflects the characteristics of the individual (with substantial levels of heritability), and that family and social environment contribute little to resilience (Fergusson and Lynskey, 1996). On the other hand, Baldwin *et al.* (1989) showed that the individual characteristics of children (intelligence, locus of control, self-esteem) did not differentiate between resilient and nonresilient children. Our results show that the importance of individual attributes might vary with the domain studied. Individual attributes of the adolescent play an important role, both as a protection and as a risk in the development of internalizing problems, but they appear to be of much less importance for the development of externalizing problems.

Several attributes of the adolescent's *family* (parental support, monitoring, and adolescent's attachment to parents) seem to be important for both types of problem behavior. These effects, however, were relatively small. It could be that family factors had their greatest effect on problem behavior prior to our assessment. In several studies it has been found that, from late childhood to adolescence, factors outside the family become more salient predictors of problem behavior (Deković and Meeus, 1995; Patterson *et al.*, 1992).

The results suggest that *peers* play a more important role, both as risk and as protective factors, for development of problem behavior during adolescence.

Especially the adolescent's association with deviant peers appears to be a potent risk factor for both internalizing and externalizing problems.

Regarding the differential importance of these factors for the occurrence of the two types of problem behavior in adolescence, it appears that there may be some risk factors that contribute to a wide range of negative developmental outcomes (for example, association with deviant peers), whereas other factors may be specific markers of increased vulnerability to specific problems (for example, low self-esteem for internalizing problems). In general, we found that individual characteristics are more important for internalizing problems: adolescents with lower self-esteem and low school achievement tend to report more depressive moods, less satisfaction with life, and less general well-being. Externalizing problems were much better predicted by familial and extrafamilial factors than by the individual characteristics of adolescent.

When index of the number of risk and protective factor was used, it appears that the amount of risk has a stronger relation to variation in problem behavior than protection. The severity of the problem behavior increases proportionally with the number of risk factors present.

Finally, in this sample, no evidence was found for the moderating effect of the protective factors. Similar results with adolescents have been reported in earlier research (Grossman *et al.*, 1992). This is not entirely surprising. The statistical power to detect interaction effects is low (Evans, 1991; McClelland and Judd, 1993), because the interaction effect often operates in only small proportion of cases. In these cases, the effect may be quite strong, but in the sample as a whole, little variance is accounted for in the dependent measure, which leads to a statistically nonsignificant effect. The protective factors in this study appear to be beneficial for all adolescents in our sample, regardless of risk. Therefore, these factors are actually compensatory factors, that is, factors that predict better outcomes at both high and low levels of adversity exposure (Gest *et al.*, 1993), rather than strictly defined protective factors, which are associated with sustained adequate functioning in the face of adversity by persons with high levels of characteristics, as suggested by a significant statistical interaction effects between the characteristic and adversity exposure (Luthar, 1993).

It should be noted that this study was carried out at a single point in time and, therefore, the data cannot support any claims regarding the direction of effects. Although some of the assessed risk and protective factors predicted outcome, the causal relations between these factors and outcome are far from clear. We recognize that adolescents play an active role in their own socialization process, and that each relationship found actually reflects bidirectional influences. For example, it is just as reasonable to assume that lack of support and warmth in the family or in peer relationships lead to problem behaviors, as it is to assume that initial problem behaviors of adolescents lead to negative interactions with their environment. The prevailing view in the literature to date suggests complex causal linkages, confluence of factors, multiple causation, and transaction between environment and

individual that mutually influences developmental outcome (Resnick and Burt, 1996).

Another limitation of the present study is that dependent and independent variables are provided by the same agent, which makes it difficult to untangle the contribution of method variance to these relations. This might be especially true for the prediction of internalizing problems. It is known that adolescents who experience depressive moods tend to view and evaluate themselves and their environment more negatively (Deković and Meeus, 1995), and thus, perceive their family and peer relations as less supportive than adolescents who do not experience such problems. Without multiple sources of data, it is difficult to say whether these measures provide actual assessment of adolescent's environment, or whether they should be considered as an indicator of internalizing problems.

Furthermore, the extrafamilial factors in this study were restricted to peers, because they are more proximal to adolescents' experience than, for example, more distal extrafamilial factors, such as living in poverty or neighborhood characteristics. The latter factors, however, also appear to have effects on adolescents. Crime, drug use, and other types of problems are more prevalent in high-density, poor urban areas (McCord, 1992). Small and Luster (1994) showed that neighborhood monitoring is a significant predictor of early engagement in sexual activity.

Nevertheless, this study makes it clear that research on the complex interactions between a broad range of risk and protective factors, as they influence adolescents' adjustment is a promising one. The long-term objective of studies on risk and protection is to derive implications for intervention. Many prevention and intervention efforts are characterized by attempts to reduce risk factors and/or to increase protective factors. The focus of treatment usually is on individuals with problems; such a focus neglects the environments (e.g., families, peer group, families) that might be mobilized to avert problems. Identifying the specific role of varied risk and protective factors on different levels (individual, familial, extrafamilial) will help sharpen the focus and effects of these efforts (Kazdin, 1993a). Especially, regarding the period of adolescence, more information is needed about the nature of risk and protective factors and how they lead to or avert dysfunction. Adolescence is often seen as a period of great vulnerability, because of the multitude of rapid changes occurring in almost all domains of adolescents' functioning. However, because of its transitional nature and normal disequilibrium, adolescence also presents special opportunities for intervention and for turning the developmental trajectories towards more positive outcomes (Petersen, Richmond, and Leffert, 1993; Takanishi, 1993).

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