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Stress, Parent-Adolescent Interaction, and the Course of Psychopathology

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2008

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citation for published version (APA)

Willemen, A. M. (2008). *Stress, Parent-Adolescent Interaction, and the Course of Psychopathology*. [PhD-Thesis - Research and graduation internal, Vrije Universiteit Amsterdam].

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CHAPTER 5

Observed Interactions Indicate Protective Effects of Relationships with Parents for Referred Adolescents

Willemen, A. M., Schuengel, C., & Koot, H. M. (under review). Observed Interactions Indicate Protective Effects of Relationships with Parents for Referred Adolescents.

ABSTRACT

This study examined whether observed parent–adolescent interactions are indicative of protective influences of parent–adolescent relationships on internalising and externalising problems in referred adolescents ($N = 101$, M age 13.41 years, $SD = 1.81$). Adolescents and their parents reported psychological problems at the time of referral and four years later. Parents reported stressful life events that occurred during the follow-up. Parent–adolescent dyads were observed during an interaction task on Autonomy, Positive Affect, and Hostility. Findings indicate that not all children who experienced life events were at equal risk for increased internalising and externalising problems. For adolescents exposed to stress, levels of internalising and externalising problems were lower when parent-adolescent interactions were characterized by high Autonomy and low Hostility. These findings underscore the importance of the parent–adolescent relationship protecting against the development of internalising and externalising problems in vulnerable adolescents.

Children referred for mental health services appear vulnerable to the effects of stressful life events on their already increased levels of psychopathology (Compas, Orosan, & Grant, 1993; Mathijssen et al., 1999). As shown in Chapter 2, stressful life events impede children's recovery from psychological problems after referral. In non-referred children, strong family resources have been found to protect children and adolescents against psychological problems after exposure to stressful life events (Quamma & Greenberg, 1994). However, for adolescents who have already shown to be vulnerable for developing psychological problems, the protective role of a supportive environment is less clear. First, because of increased sensitivity to stress and inadequate appraisal in referred children, it is uncertain whether the protective role that parents may play in supporting their adolescent children is as effective in the regulation of stress as in adolescents from the general population. Second, although the important role of parents seems clear in childhood, adolescence is a developmental period characterized by striving for autonomy and it is less clear than for younger children that parent-adolescent relationships are important for the regulation of the adolescents' stress. This study examined whether observed parent-adolescent interactions were associated with improved adolescent resiliency against the negative effects of stressful life events in adolescents referred for outpatient mental health services.

Stress and Psychopathology

Numerous studies have shown that stressful life events, such as parental divorce, loss of a best friend, or serious physical illness are associated with higher levels of psychological problems in referred and non-referred children and adolescents (Compas, Howell, Phares, Williams, & Ledoux, 1989; Grant et al., 2003; Mathijssen et al., 1999). In Chapter 2, we have shown that stressful life events were associated with less recovery from psychopathology among referred adolescents. Children and adolescents with clinical levels of psychopathology themselves tend to use ineffective regulation strategies in the face of stress (Keenan, 2000; Rutter et al., 2006). Therefore, investigating factors that might contribute to the resiliency of referred adolescents is theoretically and clinically relevant.

In non-referred children, the family environment, indicated by factors such as family cohesion and parental support, has been shown to contribute to the resiliency of children against the impact of stress (Grant et al., 2006; Gribble et al., 1993; Kliewer & Kung, 1998). However, studies into the protecting role of the family environment in referred children and adolescents are lacking. Because of their inadequate regulation of stress, referred children

might be most effectively supported by aspects of the family context that contribute to their emotion regulation skills in challenging situations. In Chapter 4 we have shown that the quality of the parent-adolescent relationship improves the regulation of stress and arousal in referred adolescents. Enhanced emotion regulation skills might strengthen children's regulation of stress and arousal, and improve adolescent resiliency in times of stress. Parent-child interactions that promote emotion regulation skills may therefore protect referred adolescents against increasing levels of psychological problems under conditions of stress.

Studies into the protective effect of the family context in times of stress have mainly relied on questionnaires (Formoso, Gonzales, & Aiken, 2000; Jackson & Frick, 1998; Li, Nussbaum, & Richards, 2007; Quamma & Greenberg, 1994), rather than on actual observations of parental behaviour (for an exception, see Boykin McElhaney & Allen, 2001). Firstly, compared to questionnaires that focus on the perceptions of parents or adolescents, observations more directly represent what parents actually *do* when they interact with their adolescent children. Indeed, observations of parent-child interactions have shown to be stronger and more consistent predictors of child outcomes than questionnaires in an at risk sample (Zaslow et al., 2006). Secondly, self-report on qualities of social interactions is likely to confound actual behaviour with the perceptions and expectations that may guide the behaviour (Nisbett & Wilson, 1977). This confound is particularly important when the same persons are reporting on the quality of the relationship and on psychological problems of themselves or their interaction partner. Thirdly, findings based on observations of parent-adolescent interactions may be especially relevant for clinical practice, because observed interactions have been shown to be more responsive to interventions than perceptions as reported on questionnaires (O'Connor, 2002). Therefore, investigating observed parent-adolescent interactions might importantly contribute to the study into factors that promote resiliency in referred adolescents.

Parent-Adolescent Interactions and Emotion Regulation

Dyadic interactions are essential to understanding the quality of parent-adolescent relationships (Patterson & Stouthamer-Loeber, 1984). Dyadic behaviours and reciprocal affect may shape an emotional climate in which the child can learn to regulate (express and control) emotions and behaviour both within the family and in other settings. In addition, the expression of the dyad's affect and reciprocal behaviour lends insight into existing patterns of interaction that are reflections of the dyad's relationship history.

Three aspects of parent-adolescent interactions appear important with respect to adolescent emotion regulation: 1) Autonomy, 2) Positive Affect, and 3) Hostility.

Autonomy. A major developmental challenge adolescents are facing during adolescence is that of behavioural autonomy, such as independent problem solving and participating in family decision making (Steinberg, 2001). In reaction to adolescent strivings for autonomy, parents need to balance between the need to set limits and the need to support adolescents to explore new behaviours and learn from mistakes (Holmbeck, Paikoff, & Brooks-Gunn, 1995). Attunement of parental autonomy support to the needs of the adolescent for guidance might be especially important for referred adolescents, because of their increased vulnerability if their autonomous behaviours lead to stressful situations. Parental support of adolescent autonomy and adolescent striving for autonomy in parent-adolescent interactions have shown to be related to the regulation of negative affect and better relationship quality (Allen & Hauser, 1996; Allen et al., 1994; Allen & Land, 1999). Difficulties in establishing autonomy with parents have been linked to both depressed affect and externalising behaviours (Allen et al., 1994). These associations were found independent of the associations with parental interactive behaviour. Therefore, reciprocal interactions of adolescent autonomy striving and parental autonomy support might promote emotion regulation and protect adolescents against the effects of stress.

Positive Affect. Associations with emotion regulation have also been found for parental behaviours of warmth and positive affect (Eisenberg et al., 2005; Sheffield Morris et al., 2007). Positive affect of adolescents during interactions with their parents may be the result of the underlying emotional bond between parents and adolescents. Striving for autonomy while maintaining relatedness is an important issue for adolescents and was found associated with emotion regulation and relationship quality (Allen & Hauser, 1996; Allen et al., 1994). Positive affect, when reciprocated within the relationship, leads to increased subsequent positive interactions that add to an emotional climate in which adolescents feel secure to display their emotions to their parents. These behaviours might therefore be indicative of resilience against elevated problem levels in times of stress.

Hostility. Finally, negative parental behaviours (e.g., hostility, psychological control, negative control, lack of sensitivity) has been shown associated with poor emotion regulation in children (Sheffield Morris et al., 2007) and with subsequent child behaviour problems (Sheffield Morris et al., 2002). In addition, negative affect, when reciprocated within the relationship, can lead to an escalation of anger and hostility that builds into cycles of coercive interactions (Bugental, 1992). This might create a negative emotional climate, in which

adolescents are not promoted to display their emotions. Therefore, hostile interactions may be indicative of vulnerability to psychological problems in the face of stress.

Internalising and externalising problems are suggested to be differently related to parent–child interactions (Cummings et al., 2000b). High parental warmth is most consistently associated with less externalising problems, while parental hostility is most commonly related to more internalising symptoms (Barber, 1996; Barber, Olsen, & Shagle, 1994). In general, associations between interactions and child internalising problems, such as anxiety and depression, have been shown to be weaker than externalising problems (see for reviews Mcleod, Weisz, & Wood, 2007; Mcleod, Wood, & Weisz, 2007), while associations with externalising problems were moderate to strong (Rothbaum & Weisz, 1994). Therefore, we might expect that high quality parent-adolescent interactions are mainly protective against the effect of stress on externalising problems. However, few studies have taken observations of adolescent behaviour and dyadic interactions into account, and it remains unclear how these will be related to the effects of stress.

There are several ways to model protective effects (Cummings, Davies, & Campbell, 2000a; Luthar, Cicchetti, & Becker, 2000). First, high quality interactions with parents may have a main effect on psychological problems *compensating* for the negative effects that life events may have. Second, high quality interactions with parents may interact with the level of stress, such that they reduce psychological problems, only (or primarily) under stress. As a protective effect, high quality interactions may fully or partially reduce the effect of stress on psychological problems (protective–reactive or protective–stabilizing), or may ameliorate psychological functioning under stress (protective–enhancing). The other side of the same coin is that low quality interactions may exacerbate the effects of stress on psychological problems (risk-enhancing effects). These types of effects are not mutually exclusive, and it remains to be seen what the relative importance is of these effects in different populations.

The Current Study

This study was aimed to extend previous research on the protective role of parent and adolescent relationships with respect to the effect of stress on psychological problems. The focus was on referred adolescents, and used observational methods to assess specific parent, adolescent, and dyadic behaviours and multiple informants for internalising and externalising behaviour problems. Specifically, observations of Autonomy, Positive Affect, and Hostility were examined in terms of how they moderate the association between stressful life events and internalising and externalising problems. The effect of separate aspects within parent-

adolescent interactions have been shown to differ in their association with problem behaviour (McLeod et al., 2007). Therefore, the effects of Autonomy, Positive Affect, and Hostility will be separately investigated. An interaction task was used in which parents and adolescents had to collaborate and compete on four different tasks. These tasks have been shown to elicit a variation of affective and behavioural reactions in parents and children (Weinfeld, Ogawa, & Egeland, 2002). Other studies into parent–adolescent interaction mainly used discussion tasks (Allen et al., 2003; Kobak et al., 1993), rather than interaction tasks. However, a discussion task may primarily be informative about stress emanating from the relationship itself, and less about the role of the relationship in dealing with external stressors as was the focus of this study.

The main hypothesis was that stressful life events would be associated with increased levels of psychological problems. In addition, high levels of Autonomy and Positive Affect in parent-adolescent interactions were expected to be related to weaker associations between stress and internalising and externalising problems, while Hostile interactions were expected to be related to stronger associations. The effect of separate aspects within parent-adolescent interactions differed in their association with problem behaviour (McLeod et al., 2007), and were therefore separately investigated. On the basis of studies that examined the direct effects of parenting on internalising and externalising problems, we expected that positive affect would mainly diminish the effects of stress on externalising problems, while parental hostility would exacerbate internalising problems under conditions of stress. Interactions that support adolescent autonomy were expected to protect against the effects of stress on both internalising and externalising problems.

METHOD

Participants

The sample was recruited from a longitudinal follow-up study of 310 adolescents and their parents who had been referred (Time 1) to a general or a university child psychiatric outpatient clinic in Rotterdam, the Netherlands (Bastiaansen et al., 2004). Four years later, families were followed up (mean follow-up time = 4.28 years, *SD* = 0.27 years). At follow-up, a sample of 125 families was selected for participation in the interaction task based on four criteria: IQ above 70, aged between 10 and 17 years old, living at home with one or two parents, without any diagnosis in the autistic spectrum. Twenty-three families (18%) refused to participate for a variety of reasons (lack of time, serious problems of the adolescent, not interested). One family refused video recording during the interaction task, and could not be

coded afterwards. The remaining 101 adolescents (65 boys) with a mean age of 13.41 years ($SD = 1.81$, range 10–17), were included in the study with their primary caregiver (10 fathers). Sixty-two percent of the adolescents lived with both biological parents, 32% of the parents were divorced, and 23% of the adolescents lived in one-parent families. Based on highest occupational level of father or mother (as classified by the National Bureau of Statistics) 20% of the families were low SES, 31% middle, and 49% were high SES. Adolescents with a broad range of problems, varying from currently no problems to severe problems, were included. Based on the main clinical diagnosis, obtained with the Dutch version of the DSM-IV Checklist Interview (Hudziak et al., 1993) at Time 1, 47% was diagnosed with externalizing problems, 27% with anxiety disorders and 12% with mood disorders. Thirty-two percent of the adolescents received psychological or medical treatment for emotional or behavioural problems at the time of assessment.

Instruments

Parents completed a 12-item *Life Events Questionnaire* (LEQ: Berden et al., 1990), which is a yes-or-no format questionnaire tapping potentially stressful events that have occurred during the past four years. The 12 items refer to the following events: parent left the family, new partner moved into the home, children of new partner moved into the home, hospitalization of the adolescent for two weeks or more, death of a friend of the adolescent, hospitalization of the parent for two weeks or more, serious disease or burn-out of parent, jail-sentence for a parent, death of a parent, death of a sibling. In addition, the last two items asked if events happened more than once, and if events happened that were not yet included. The LEQ was administered as an interview.

For each item, parents were asked to indicate whether the event took place or not, the date of the event, and the impact of the event on the adolescent (5 -point Likert scale ranging from -2 (negative impact) to +2 (positive impact). To help parents to indicate when the event took place, a time line was made where parents could locate important events as anchors (i.e., removal, change school), helping them to remember the timing of the life events. The dates of the life events were compared with the dates that the families participated in the first wave of the study. All events that occurred after Time 1 were included. Serious disease or burn-out of the parent ($n = 27$), and death of a friend ($n = 9$) were most frequently indicated. The item scores were summed into a total life events score. The mean impact score of the events was $M = -0.03$, $SD = 1.12$. Higher scores indicate more life events. Validity and reliability of the LEQ have been demonstrated in a general population sample (Berden et al., 1990); the LEQ

has been successfully used in referred samples (Bastiaansen, Koot, & Ferdinand, 2005a; Mathijssen et al., 1999).

The *Family Interaction Task* (Weinfield et al., 1999; Weinfield et al., 2002) is a 30-minute semi-structured observation paradigm in which parent and adolescent collaborate on four structured tasks. These tasks were designed to elicit variations in parental and adolescent behaviours and emotional affect. In the first task the parent is given a set of ten cards. On each card there is a picture, and a word that labels the picture. The parent is asked to get the adolescent to guess what is on the cards by giving clues to the adolescent. The game is then reversed. The adolescent is given a different set of cards, and asked to get the parent to guess what is on them by giving clues. In the second task, a wooden labyrinth board with one hole in each corner and regular size marbles are used. Parent and adolescent each have one knob to control. There are four trials, in which parent and adolescent have to collaborate or compete to get the marbles in the holes. In the third task, parent and adolescent were asked to plan a pretend birthday party for the adolescent and write an invitation. There are no rules for this task, as the focus is discussion and planning. In the fourth task, the adolescent is asked to complete a difficult, but solvable puzzle by untangling a fixed ring from a standard within four minutes. Because the tasks were originally developed for children in middle childhood, minor adaptations were made to the tasks to use them with adolescents. The difficulty level of the guessing words was increased, and a different puzzle was used that was more difficult to solve. Observations of parent, adolescent and dyadic behaviour were independently coded on nine 5-point scales (Weinfield et al., 1999). In accordance to behaviours that have been described in the introduction to be important with respect to emotion regulation, the nine scales included Autonomy, Positive Affect, and Hostility coded for parents, adolescents and the dyad.

Autonomy. Parents' Autonomy Support indicated how well parents assist adolescents in working toward the goals of the tasks. This assistance includes structuring the situation, monitoring the adolescent's progress, and providing guidance and help that are coordinated with the adolescent's ability level. Parents scoring high on this scale provide assistance in understanding and structuring the tasks, but allow the adolescent to engage in self-directed problem solving whenever possible. Adolescents' Autonomy Striving indicated the adolescent's ability of independent problem solving (such as keeping focused and goal oriented during the difficult puzzle) and clear explanations of opinions and ideas, in a self-confident and assertive manner (e.g., by planning the birthday party). An adolescent scoring high on this scale is actively engaged, persists even if frustrated or bored, and seems not to

require urging by his or her parent to remain on task. The Collaboration/Teamwork scale referred to the ability of the dyad to work together. During collaboration, the dyad have to respond to each other's actions in a complementary manner. But during competition, parent and adolescent should maintain an underlying alliance, showing continued consideration and good sportsmanship despite the competitive element.

Positive Affect. Parents' Positive Responsiveness indicated parents' ability to respond to the adolescents' need for emotional support in the context of working on the tasks. Parents scoring high on this scale respond supportively to adolescents' performance on the various tasks and provide appropriate, well-timed feedback about their performance. Adolescents' Expressions of Positive Affect assessed the verbal and non-verbal expressions of positive affect such as smiling, eye contact, and responding positively when addressed. Adolescents scoring high on this scale express positive affect consistently, well coordinated with the events of the session. Dyadic Positive Affect focused on the degree of synchrony and acknowledgment of positive affect within the dyad rather than individual positive affect. At the high end of the scale, the dyad is characterized by high affective sharing. The expression of positive affect by one member of the dyad (smiling, laughing, sharing happy feelings) is consistently met with positive affect from the other; this coordination of affect seems smooth and natural.

Hostility. Parents' Anger and Hostility indicated the expressions of hostility towards adolescents, such as blaming, derision and rejection. Parents scoring high on this scale overtly reject adolescents, berate, and chastise them for mistakes. Parents scoring low on this scale might lack positive emotion, but do not show any signs of anger, rejection or hostility towards adolescents. Adolescent's Anger, Defiance and Frustration assessed the degree to which adolescents displays anger, hostility and defiance toward the parent and/or toward the situation, such as blaming, resisting involvement, criticizing the parent or session, or negative facial expressions. At the high end of the scale, the adolescent is repeatedly and overtly hostile, angry or defiant of the parent or session, such that these negative eruptions impede the goals of the session. The dyadic Negative Affect/Conflict scale assessed the reciprocal expression of anger and other negative affect in the dyad. This scale focused on how anger and hostility, once expressed by one member of the dyad, is dealt with by the other member of the dyad. At the high end of the scale, expressions of negative affect are reciprocated repeatedly, so that conflict escalates and the ensuing struggle is a dominant feature of the session. At the low end of the scale, there may be no expressions of negative affect, or any expressions of negative affect by one member of the dyad are met by neutral or positive affect

in the other member of the dyad. In either case, there is little reciprocation of negative affect.

Coders naïve to scores on life events and psychopathology determined scale scores by watching each session in its entirety twice, and assigning scores based on the entire session. In accordance with the use of the FIT in earlier studies (Weinfield et al., 2002), no separate scores were assigned to the tasks. It is important to note that the tasks differ in stress and challenges, and coding after each task would give equal weight to all tasks, while tensions or challenges may build over the course of the session.

Overall, higher scores indicate more Autonomy, Positive Affect and Hostility. All sessions were double coded by six coders who were all reliable with the first author. The interrater reliability was adequate ($n = 101$, ICC range .87-.94) and comparable to reliability in the original study ($n = 245$, ICC range .63-.73) (Weinfield et al., 1999). In order to reduce the variables, the subscales measuring autonomy support of the parent, adolescent autonomy striving and dyadic collaboration were averaged into one variable of Autonomy of the interaction (Cronbach's $\alpha = .81$, one factor explained 73% of the variance, range factor loadings .73-.85). In the same way, parental responsiveness, and adolescent and dyadic positive affect were averaged into one variable of Positive Affect in the interaction (Cronbach's $\alpha = .89$, one factor explained 83% of the variance, range factor loadings .86-.97). Also, parent, adolescent, and dyadic anger and hostility were averaged into one variable of Hostility in the interaction (Cronbach's $\alpha = .81$, one factor explained 79% of the variance, range factor loadings .86-.92).

Psychopathology. At Time 1 and at follow-up the Child Behavior Checklist (parent report) (CBCL; Achenbach, 1991a) and the Youth Self-Report (adolescent report) (YSR; Achenbach, 1991b) were used to obtain standardized parent and adolescent reports of the adolescent's emotional and behavioural problems over the preceding six months. The questionnaires consist of 120 (CBCL) and 119 (YSR) problem items rated on a 3-point Likert scale (0 = not true, 1 = somewhat true, 2 = very true or often true). In this study, the Internalising (including withdrawn, anxious/depressed behaviours, and somatic complaints) and Externalising (including aggressive and delinquent behaviours) scales were used. Good psychometric qualities of the Dutch versions of both CBCL and YSR have been demonstrated (Verhulst et al., 1996; Verhulst et al., 1997). When both parents had filled in the CBCL, an average score was computed (Bartels et al., 2003). Parent and adolescent reports were moderately to strongly intercorrelated (Time 1: internalising $r = .58$, externalising $r = .32$, $p < .05$; follow-up: internalising $r = .44$, externalising $r = .55$, $p < .001$) and were averaged to a mean score.

Procedure

At the time of referral (Time 1) a clinician informed the families about the study during the first visit to the clinic. After informed consent was obtained, questionnaires about emotional and behavioural problems were filled out by parents and adolescents. At the time of follow-up, all qualified families were informed by letter and contacted by phone to ask their participation. Families were visited at home. After informed consent was obtained, the interaction-task and the interview about life events were administered. Questionnaires about psychopathology were filled in by parents and adolescents at the end of the home visit. When participants had problems filling out the forms ($n = 5$), the research assistant read the items to the participants. Another interaction task and an interview, as well as other questionnaires were completed during the home visit as part of another study. Adolescents received €10 as acknowledgment for their participation. Permission for this research was granted by the national Central Committee on Research Involving Human Subjects and the university hospital medical ethical committee.

RESULTS***Descriptive Statistics***

Table 5.1 presents the means and standard deviations for the study variables. CBCL scores were distributed across the clinical and non-clinical range. At Time 1 66% of CBCL internalising problem scores, and 60% of CBCL externalising problem scores were in the clinical range, that is above the cut-off point $T \geq 63$ ($\geq 90^{\text{th}}$ percentile) (Achenbach, 1991a). At follow-up 31% of the adolescents had current CBCL internalising scores in the clinical range, and 40% had externalising problems in the clinical range.

Bivariate Associations

Pearson correlations among the study variables (Table 5.1) revealed that age was negatively related to observed Positive Affect and CBCL externalising problems at both Time 1 and follow-up. Gender was positively related to internalising problems, with girls having higher scores than boys. Because of these significant correlations, age and gender were included as control variables in the subsequent analyses. Observations of parent-adolescent interactions during the interaction task were highly interrelated, as were internalising and externalising problems.

TABLE 5.1

Descriptives of the Study Variables at Follow-up and Bivariate Correlations

	Mean	SD	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Age	13.41	1.81	-0.09	-0.12	-0.16	-0.30**	0.08	0.18	-0.32**	-0.18	-0.22*
2. Gender, girls	36%		-	0.07	0.15	0.13	-0.14	0.07	-0.17	0.36**	-0.02
3. Life events	2.68	1.63		-	-0.08	-0.03	0.15	0.05	0.08	0.17	0.25*
4. Autonomy	3.89	0.68			-	0.79**	-0.69**	-0.08	-0.12	0.10	-0.16
5. Positive Affect	3.73	0.87				-	-0.58**	-0.15	-0.06	0.04	-0.15
6. Hostility	1.61	0.61					-	0.17	0.20*	0.10	0.26**
7. Internalising Time 1	17.42	9.84						-	0.29**	0.40**	0.11
8. Externalising Time 1	18.60	10.27							-	0.17	0.58**
9. Internalising	10.71	7.02								-	0.48**
10. Externalising	12.33	7.63									-

* $p < .05$, ** $p < .01$

Life Events and Internalising and Externalising Problems

Multiple hierarchical regression analyses were performed to identify the effect of life events on change in internalising and externalising problems. Two series of analyses were conducted, separately for internalising and externalising problems as dependent variables. To control for psychopathology at Time 1, each series began with time 1 problem behaviour included in the first step. In this way, effects of the following predictors represent effects on change in problem behaviour over time. Gender and age were included in the second step, and life events in the third step. Covariates, predictor variables and moderators were centered before regressing them on internalising and externalising problems to prevent multicollinearity effects (Aiken & West, 1991). As shown in Table 5.2, life events were significantly related to externalising problems, but not to internalising problems. Higher levels of life events were associated with increases in externalizing, but not in internalizing problems.

TABLE 5.2

Hierarchical Regression Analyses for Life Events on Internalising and Externalising Problems

	Internalising				Externalising			
	<i>B</i>	<i>SE B</i>	β	ΔR^2	<i>B</i>	<i>SE B</i>	β	ΔR^2
Step 1				.15*				.34**
Internalising Time 1	.28	.07	.38**		.43	.06	.58**	
Step 2				.16*				.01
Age	-.87	.34	-.23*		-.08	.38	-.02	
Gender	4.51	1.25	.31**		1.30	1.36	.08	
Step 3				.01				.04*
Life events (LE)	.43	.37	.10		.89	.38	.19*	
Model	$R^2 = .32, F(4,97) = 11.31^{**}$				$R^2 = .35, F(4,97) = 14.52^{**}$			

* $p < .05$, ** $p < .01$

Protective Effects of Parent-Adolescent Interaction for Internalising and Externalising Problems

To identify main effects of parent-adolescent interactions, these qualities were included in the fourth step of the hierarchical regression analyses. Because parent-adolescent interaction qualities were expected to be independently related to internalising and

externalising problems, Autonomy, Positive Affect, and Hostility were separately included in the regression analyses. The interaction terms between life events and interaction qualities were included in the fifth step of the hierarchical regression analyses. Again, separate analyses were conducted for internalising and externalising problems.

Autonomy. As shown in Table 5.3, there was no significant main effect of Autonomy on internalising and externalising problems. However, the interaction effect between life events and Autonomy was significant for internalising as well as externalising problems. Autonomy moderated the strength of the association between life events and internalising and externalising problems.

TABLE 5.3

Hierarchical Regression Analyses for Autonomy on Internalising and Externalising Problems

	Internalising				Externalising			
	<i>B</i>	<i>SE B</i>	β	ΔR^2	<i>B</i>	<i>SE B</i>	β	ΔR^2
Step 4				.00				.01
Autonomy (A)	.63	.90	.06		-1.03	.94	-.09	
Step 5				.06**				.06**
Life Events x A	-1.58	.55	-.25**		-1.84	.56	-.27**	
Model	$R^2 = .61, F(6,94) = 9.36^{**}$				$R^2 = .45, F(6,94) = 12.75^{**}$			

** $p < .01$

For post hoc analyses, the Autonomy scores were divided into two groups based on the median split, resulting in adolescents with low versus high Autonomy in the interaction with their parents. Again, life events were regressed on internalising and externalising problems in the two separate groups, with problems at Time 1 in the first, gender and age in the second, and life events in the third step. In the low Autonomy group, life events were significantly related to an increase in internalising problems ($\beta = .25, p < .05$). In the high Autonomy group, however, life events were not related to the change in internalising problems ($\beta = -.04, p = .77$). The same was true for externalising problems. A significant positive association was found in the low Autonomy group ($\beta = .32, p < .01$), and a non-significant association in the high Autonomy group ($\beta = .01, p = .96$). Figures 5.1a and 5.1b represent these protective–stabilizing effects.

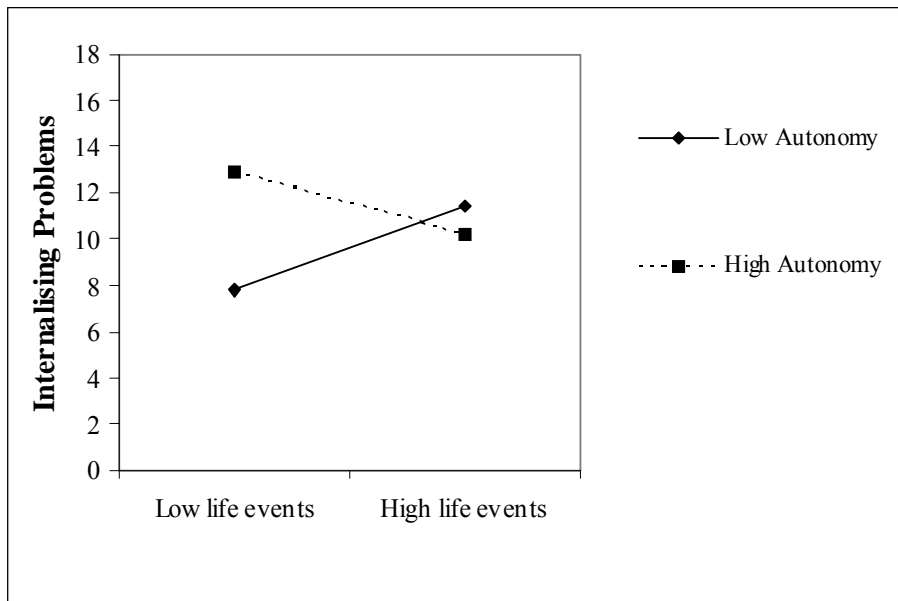


FIGURE 5.1a. Interaction between life events and observations of autonomy support during parent-adolescent interactions in relation to internalising problems.

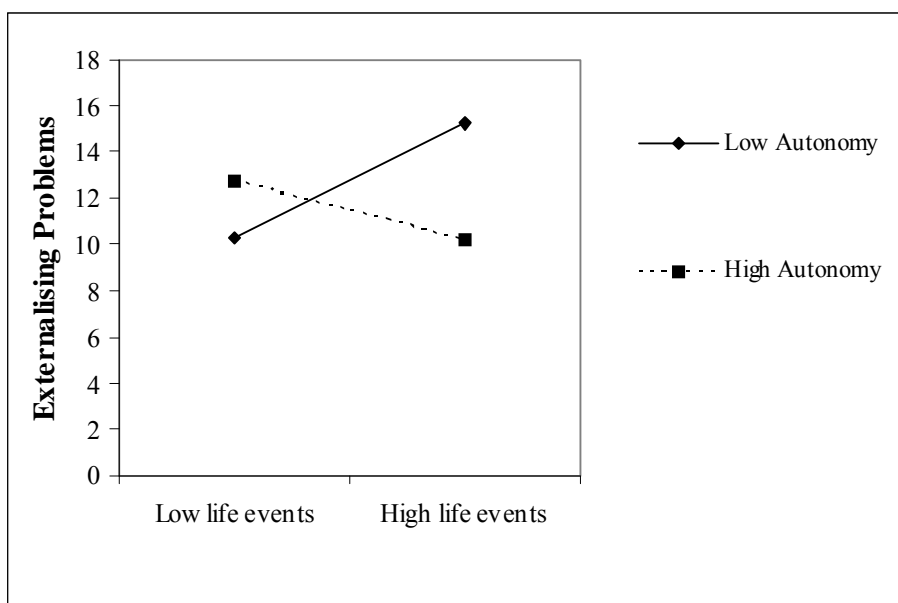


FIGURE 5.1b. Interaction between life events and observations of autonomy support during parent-adolescent interactions in relation to externalising problems.

Positive Affect. As shown in Table 5.4, there was no significant main or interaction effect of positive affect on internalising and externalising problems. However, a non-significant trend was found for the main effect of positive affect on externalising problems ($p = .09$). Also the interaction effect of life events and positive affect fell short of statistical significance for both internalising ($p = .08$) and externalising problems ($p = .07$).

TABLE 5.4

Hierarchical Regression Analyses for Positive Affect on Internalising and Externalising Problems

	Internalising				Externalising			
	<i>B</i>	<i>SE B</i>	β	ΔR^2	<i>B</i>	<i>SE B</i>	β	ΔR^2
Step 4				.00				.02†
Positive Affect (PA)	-.01	.73	-.00		-1.26	.76	-.14†	
Step 5				.02†				.02†
Life Events x PA	-.83	.47	-.15†		-.88	.48	-.15†	
Model	$R^2=.34, F(6,94) = 7.95^{**}$				$R^2=.42, F(6,94) = 11.13^{**}$			

† $p < .10$, ** $p < .01$

Hostility. As shown in Table 5.5, there was no significant main effect of hostility on internalising and externalising problems. However, the interaction effect between life events and hostility was significant for internalising as well as externalising problems. Hostility in the interaction moderated the strength of the association between life events and internalising and externalising problems.

TABLE 5.5

Hierarchical Regression Analyses for Hostility on Internalising and Externalising Problems

	Internalising				Externalising			
	<i>B</i>	<i>SE B</i>	β	ΔR^2	<i>B</i>	<i>SE B</i>	β	ΔR^2
Step 4				.01				.02†
Hostility (H)	1.00	1.02	.09		1.80	1.06	.14	
Step 5				.05*				.03*
Life Events x H	1.36	.53	.22*		1.22	.55	.18*	
Model	$R^2=.37, F(6,94) = 9.04^{**}$				$R^2=.43, F(6,94) = 11.58^{**}$			

† $p < .10$, * $p < .05$, ** $p < .01$

For post hoc analyses, again the hostility scores were divided into two groups, resulting in adolescents with low versus high hostility in the interaction with their parents. Again, life events were regressed on internalising and externalising problems in the two separate groups, with problems at Time 1, and gender and age in the first and second step. In the low hostility group, life events were not related to an increase in internalising problems (β

= -.04, $p = .73$). In the high hostility group, however, life events were significantly related to an increase in internalising problems ($\beta = .23$, $p < .05$). The same was true for externalising problems. A non-significant association was found in the low hostility group ($\beta = .14$, $p = .26$), and a significant association in the high hostility group ($\beta = .24$, $p < .05$). Figures 5.2a and 5.2b represent these risk-enhancing effects.

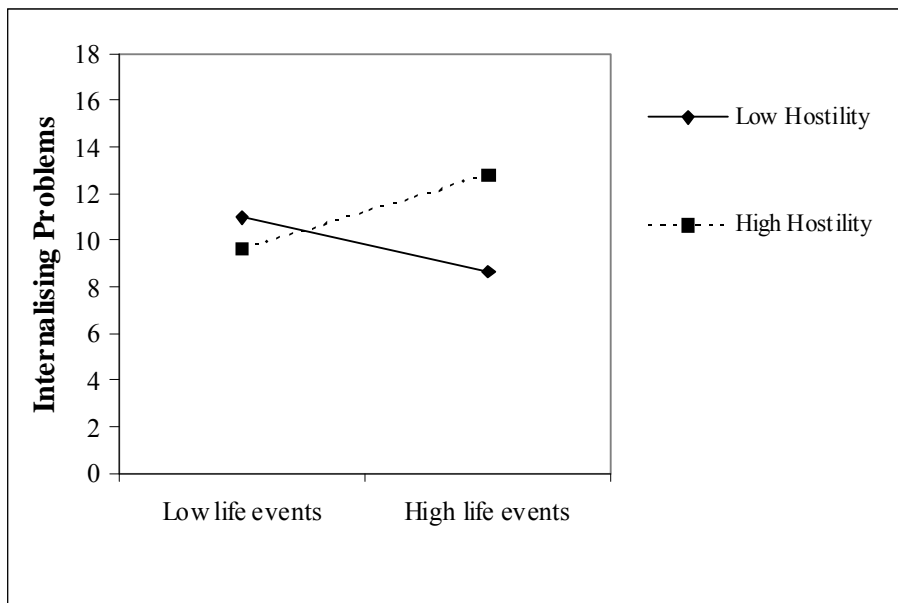


FIGURE 5.2a. Interaction between life events and observations of Hostility during parent-adolescent interactions in relation to internalising problems.

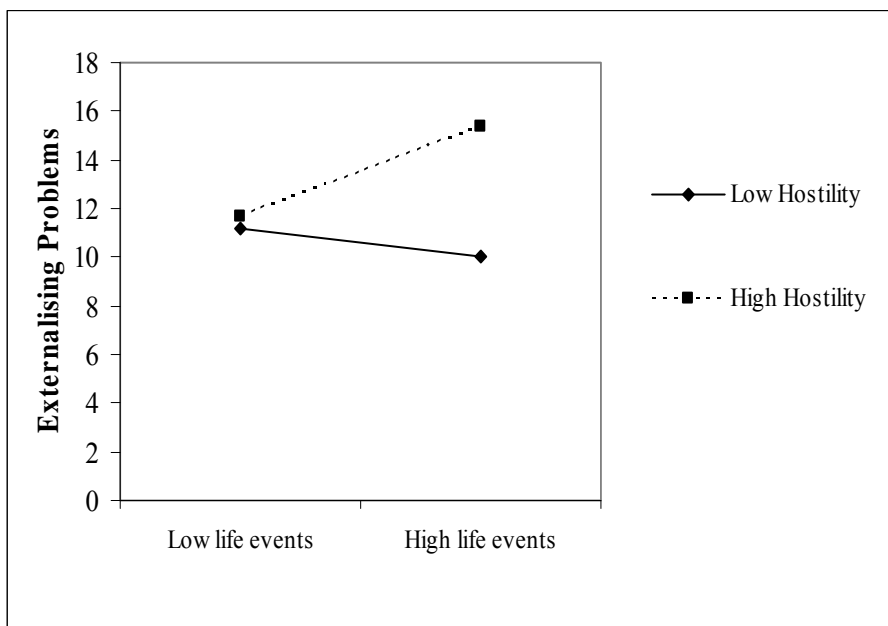


FIGURE 5.2b. Interaction between life events and observations of Hostility during parent-adolescent interactions in relation to externalising problems.

After controlling for demographic variables (SES, time since stressful event, impact of the event, being involved in treatment, and family composition), the interaction effects of parent-adolescent interactions remained significant.

DISCUSSION

This study examined whether observed parent-adolescent interactions indicate resilience or vulnerability for effects of life events on internalising and externalising problems. We investigated this question by following up referred adolescents, because of their heightened vulnerability to the effects of stress. When faced with stressful life events, referred adolescents were less likely to experience internalising and externalising problems when their interactions with parents were characterized by Autonomy. Adolescents with coercive and hostile interactions with their parents showed increased levels of internalising and externalising problems when exposed to stress.

As expected, Autonomy and Hostility moderated the association between stressful life events and internalising and externalising problems. This is congruent with other studies that found protective effects of high quality relationships between parents and adolescents against the effects of stressful life events (Gribble et al., 1993; Wyman et al., 1992). Parent-adolescent interactions that were characterized by parental support of adolescent independent problem solving, by adolescents' competence to explain their ideas and opinions, and by dyadic collaboration on the tasks, were indicative of protective effects against the effects of stress on internalising and externalising problems. This effect was modelled as a protective-stabilizing effect: life events were not associated with psychological problems when autonomy in the interaction was high. In addition, interactions that were characterized by parental anger and hostility, adolescent frustration and dyadic patterns of reciprocal negative were indicative of vulnerability effects, increasing the level of internalising and externalising problem in times of stress. This effect was modelled as a risk-enhancing effect: life events were associated with psychological problems when hostility in the interaction was high.

In contrast to expectations, the interaction effect of Positive Affect in parent-adolescent interactions was only a non-significant trend. We had expected that positive affect would be important as a moderator, because positive affect may be related to warmth and responsiveness and has been found related to emotion regulation in children and adolescents (Eisenberg et al., 2003; Sheffield Morris et al., 2007). There may be at least three explanations for this finding. Firstly, compared to autonomy and negative affect, positive affect in parent-adolescent interaction might be less important to improve the regulation skills of adolescent.

Positive affect during the interaction might be more important to comfort adolescents when distressed, instead of promoting their resiliency. Secondly, positive affect as observed during the interaction task may not be representative of interactions under conditions of stress. Parents and adolescent may behave more socially desirable during the task and show more positive affect than they normally would do. Thirdly, the lack of a significant moderating effect of positive affect might have something to do with the way it was operationalized. From a dyadic perspective, positive affect was computed as a mean score of positive affect as shown by parent, adolescent and the dyad. Specifically, positive affect from both parents and adolescents was expected to add to a relationship in which adolescents feel secure to display their emotions. However, in referred adolescents, affect may be related to the psychological disorder, and bias the positive affect scale. For example, depressed children may direct less positive affect to their parents. Indeed, post-hoc analyses revealed that positive affect as shown by the parent during the interaction significantly interacted with life events, associated with decreased levels of internalising ($\beta = -.80, p = .048$) and externalising problems ($\beta = -.17, p = .05$). Positive affect of the adolescent or the dyad did not significantly moderate this association. Thus, independent of adolescent positive affect, parental positive affect increased adolescent resiliency under stress. This does not mean that positive affect of adolescents is unimportant for adolescent resiliency. The effects that were found in this study were not far from the significance level, and more statistical power may be needed to test for these interaction effects. Future studies are needed to explore whether observations of positive affect of adolescents during interactions do promote adolescent resiliency in times of stress.

Contrary to expectations, autonomy and hostility were indicative of respectively protective and vulnerability effects, for both internalising and externalising problems. On the basis of earlier studies, we expected that observed interactions were differently related to internalising and externalising problems (McLeod et al., 2007). Also, direct effects of family interactions have shown to be stronger for externalising compared to internalising problems (Rothbaum & Weisz, 1994). From the current study it might be concluded that autonomy and hostility in the interaction have influence on the development of emotion regulation in all adolescents, and is therefore related to changes in both internalising and externalising problems under conditions of stress.

Figure 1a represented the interaction effect of autonomy on internalising problems, but shows as somewhat unexpected pattern. The figure shows that when life events were few, high autonomy support was associated with higher levels of internalising problems. This was surprising, because high autonomy support has been shown related to better regulation of

negative affect (Allen et al., 1994). It may be speculated that adolescents with internalising problems may be more quickly overwhelmed by the tasks and elicit more support in response. Because this behaviour of the parent is attuned to the adolescent need, the scores given for parental autonomy support are high. As a result, high levels of autonomy are associated with high levels of internalising problems. Nevertheless, high levels of stress bring out the protective effect of high levels of autonomy support on internalising problems. Thus, adolescent who experienced life events, may have benefitted from parental autonomy support, and developed regulation skills that promote resiliency under stress. The importance of autonomy support and autonomy striving in interactions with adolescents for internalising problems has also been shown by Allen and colleagues (Allen et al., 2003; Allen & Hauser, 1996; Allen, Porter, McFarland, Boykin McElhaney, & Marsh, 2007).

The current findings extend earlier studies showing protective effects of parents' or adolescents' perceptions of their relationship as reported on questionnaires (Formoso et al., 2000; Jackson & Frick, 1998; Li et al., 2007; Quamma & Greenberg, 1994), by demonstrating that the quality of *observed* parent–adolescent interactions is associated with increases in problem behaviour under conditions of stress, and showing that these effects can be found among adolescents at risk. These findings underscore the importance of the quality of the relationship between vulnerable adolescents and their parents for resilience against increased in psychological problems in times of stress. The use of observations of parent–adolescent interaction that focus on parent, adolescent as well as dyadic behaviours might be encouraged in future studies into the protective effects of the parent–adolescent relationships in vulnerable adolescents in times of stress.

Limitations and Directions for Future Research

Although the findings presented appear robust using observations of parent–adolescent interaction and questionnaire data from both parents and adolescents, this study had several noteworthy limitations. The most important limitation of the present study is that parent–adolescent interactions and current psychopathology were assessed at the same time. Therefore, the direction of cause and effect associations can not be established, although we controlled for levels of psychopathology preceding life events and parent–adolescent interaction. Nevertheless, existing patterns of interaction can be seen as reflections of the dyad's relationship history (Eisenberg et al., 2008; Kobak et al., 1993). Also, earlier studies have shown that observed parent–adolescent interactions predict later psychological problems (Allen et al., 1994; Burt, McGue, Krueger, & Iacono, 2005; Eisenberg et al., 2005; Galambos,

Barker, & Almeida, 2003; Scaramella, Conger, & Simons, 1999). Future studies are needed to prove the protective role of observed parent–adolescent interactions on the developmental course of problems over time under stressful circumstances. Secondly, the diversity of emotional and behavioural disorders included in our sample might have diluted the results. Although we controlled for age, the wide age range may have had a similar effect. Given the gender distribution (nearly 75% male) and the overrepresentation of mothers, there was little opportunity to control for different gender compositions of the dyads. Finally, this study focused on interactions during mildly stressful interaction tasks, which were hypothesized to facilitate the regulation of stress in referred adolescents. The reliability to generalize these interactions to real stressful situations is still unclear.

Implications for Research, Policy, and Practice

Children once referred for mental health services are shown to be characterized by inadequate appraisal and coping styles, which make them vulnerable for the effects of life events resulting in the maintenance or reoccurrence of psychological problems (Rutter et al., 2006). The results of this study suggest that one promising avenue for intervention and prevention efforts with referred adolescents is to attempt to increase the quality of parent–adolescent interactions by promoting parents and adolescents to inhibit negative affective expressions. A second avenue might be to assist the parent–adolescent dyad in supporting and striving for adolescent autonomy. Working on conditions that improve the quality of interactions in daily life, such as taking time for adolescents and being sensitive and to their signals of distress, may protect referred adolescents against the deleterious effects of stressful life events on psychological problems.

