INTERNALIZING AND EXTERNALIZING PROBLEM BEHAVIORS IN ADOLESCENCE AND YOUNG ADULTHOOD

LONGITUDINAL STUDIES ON THE ROLE OF CO-OCCURRENCE AND INTIMATE BONDS WITH PARENTS AND PARTNERS

Geertjan Overbeek

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Internalizing and Externalizing Problem Behaviors in Adolescence and Young Adulthood:

Longitudinal Studies on the Role of Co-occurrence and Intimate Bonds with Parents and Partners

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Gerardus Johannes Overbeek
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Promotores: Prof. Dr. W.H.J. Meeus
Prof. Dr. W.A.M. Vollebergh
Prof. Dr. R.C.M.E. Engels

'Cause it's a bittersweet
symphony, this life…'
The Verve

CONTENTS

CHAPTER 1

INTRODUCTION AND THEORETICAL BACKGROUND

Life is like a bittersweet symphony, sometimes. Not only because we experience both good and bad times during our lives, but also because many positive and negative life experiences appear to have their roots in similar social contexts. The relationships with our loved ones help us to get by in life but, at the same time, they can be harmful. Probably, the most important parts in the symphony of adolescence and young adulthood are played by parents and peers, but the dynamics of these different parts change over time. Against the background of these changes in parent-child and child-peer relationships, the present thesis focuses on the development of problem behavior in adolescence and young adulthood, both in terms of psychosocial problems and psychiatric disorders. The definition of problem behavior in this thesis pertains to behaviors that are either inwardly directed (i.e., internalizing - as with depression and anxiety), or outwardly directed (i.e., externalizing - as with delinquency and substance abuse), that may be harmful for oneself or others. In keeping with a differentiation made in the literature (Vermande & Bijl, 1995), we employ the term problem behavior as a higher-order concept that refers both to diagnosed psychiatric disorders (DSM-III-R) and psychosocial problems: problem behaviors of which the severity and number of symptoms are not as high (i.e., 'sub-clinical') as compared with psychiatric disorders.

In particular, two main issues formed a starting point for the different empirical studies: (1) what is the prevalence, course, and comorbidity of problem behavior in adolescence and young adulthood?, and (2) what is the role of social contexts in the development of problem

behavior in adolescence and young adulthood? With regard to our first question, we mainly focused on the extent to which internalizing and externalizing problem behaviors co-occurred in adolescents and young adults. In addressing our second question, the main goal was to establish whether adolescents' and young adults' bonds with parents and their partner relationships would be related to the development of problem behaviors, and whether age-related transitions in these intimate relationships would be associated with the development of problem behaviors. This introductory chapter provides a review of the theoretical and empirical backgrounds behind these two main themes. The chapter starts with a focus on the co-occurrence of internalizing and externalizing problem behavior, and continues with a review of the evidence on the (indirect) relationships between parental bonding and the development of problem behaviors in adolescence and young adulthood. Next, we consider the importance of partner relationships in adolescence and young adulthood as possible moderator of the parental bonding - problem behavior relationship. Finally, after describing the datasets and methods of analyses that were used in the different studies, the chapter ends by providing a further outline of the present thesis.

Co-Occurrence of Internalizing and Externalizing Problem Behaviors

A well-known saying states that 'problems seldom come alone'. This saying might be readily accepted by laymen as an accurate reflection of reality but, until late in the twentieth century, many social scientists and health practitioners have continued to approach problem behaviors as distinct entities (Caron & Rutter, 1991), isolated from developments of other problem behaviors. However, several large-scale epidemiological studies among general populations (Newman et al., 1996; Ravelli, Bijl, & Van Zessen, 1998; Regier et al., 1990), have consistently shown that comorbidity is a very common phenomenon. In the present thesis, 'comorbidity' refers to the simultaneous presence of two or more psychiatric disorders in a given period of time (Burke et al., 1990). Conform Garnefski and Diekstra (1997), we use the term 'co-occurrence' to denote the simultaneous presence of two or more psychosocial problems in individuals in a given period of time.

The comorbidity and co-occurrence of internalizing and externalizing problem behavior has repeatedly been found to exceed chance-levels in populations of children and adolescents (Angold & Costello, 1993; Caron & Rutter, 1991; Cole & Carpentieri, 1990; Ge, Best, Conger, & Simons, 1996; Huizinga & Jakob-Chien, 1998; Kiesner, 2002). Why and how do these qualitatively different types of problem behaviors come together? Apart from its

theoretical relevance, this question is also important with regard to prevention and intervention practices. Research by Dorelijers (1995), for instance, demonstrated that many delinquent youths suffer from a wide range of comorbid psychiatric disorders, among which were depressive disorders. Other studies have demonstrated that youths with multiple problem behaviors are at an increased risk for suicide (Shaffer, 1974), and that multiple problem behaviors are more treatment-resistant and have a poorer prognosis than single problem behaviors (Angold & Costello, 1993; Kessler et al., 1996).

Many studies on the comorbidity of internalizing and externalizing problem behavior have been conducted among clinical samples and have focused on the temporal sequence that may underlie the links between depressive and conduct disorders (Anderson, Williams, McGee, & Silva, 1987; Block & Gjerde, 1990; Harrington et al., 1992; Kovacs, Paulauskas, Gatsonis, & Richards, 1988; Puig-Antich, 1982; Rohde, Lewinsohn, & Seeley, 1996). Overall, the results from these previous studies have contradicted each other. While some studies found temporal primacy for conduct disorders over depressive disorders, other studies showed that depressive disorders predated later conduct disorders. Furthermore, the results from this research can not be directly related to the co-occurrence of psychosocial problems. However, it *is* important to examine psychosocial problems in adolescence and young adulthood because, as do psychiatric disorders, they limit the daily functioning of youths and can be precursors of later psychiatric disorders in young adulthood (Ferdinand, Stijnen, Verhulst, & Van der Heijden, 1999). Results on the temporal order underlying a co-occurrence of internalizing and externalizing psychosocial problems comes from Elliott, Huizinga, and Menard (1989), who found that minor offending usually preceded the onset of internalizing problems which, in turn, generally preceded the onset of index offending in a general population of adolescents. In addition, Capaldi (1992) found that conduct problems at grade 6 predicted depressed mood by grade 8, and found no evidence for a similar cross-lagged relationship from depressed mood at grade 6 to conduct problems at grade 8.

The explanatory mechanism Capaldi (1992) proposed for the finding that conduct problems predicted subsequent depressed moods may be called a 'failure model'. According to this failure model, externalizing problem behaviors predate and predict internalizing problem behaviors. Specifically, noxious behavior and a lack of skills may result in rejection and a lack of support by important others (i.e., parents, teachers, and peers), which in turn may lead to pervasive failure experiences in social interactions with these important others. Failure experiences may eventually lead to an increased vulnerability for depressive moods. Other scholars (Gold, Mattlin, & Osgood, 1989) however, have suggested that internalizing problems may predate

delinquency or other externalizing problem behaviors such as alcohol or drug abuse. This idea goes back to the notion of 'masked depression' (Carlson & Cantwell, 1980), which holds that externalizing problem behaviors belong to an underlying internalizing problem behavior which is 'acted out' in behaviors that are thought to be the equivalent of depression in children or adolescents (Chiles, Miller, & Cox, 1980). In another explanation, however, an increase of internalizing problem behaviors is expected to lead to heightened levels of delinquency, because depressive moods may lead to a lower attentiveness to social cues (Vaux & Ruggiero, 1983) or may lead to an absence of a reaction on emotionally significant stimuli (Rottenberg, Kasch, Gross, & Gotlib, 2002). Accordingly, this may minimize the effects of social control on delinquent behavior.

Although we may assume that one problem behavior is a risk factor in the development of the other, there is another explanation that may underlie their longitudinal associations or temporal sequence. For instance, it might be that the two classes of internalizing and externalizing problem behaviors pertain to different 'core psychopathological processes' (Krueger, Caspi, Moffit, & Silva, 1998), which refer to modulations of basic feelings of anxiety or stress that can be directed in one of two ways: internal or external. It might be that different adolescents and young adults internalize or externalize their basic feelings of anxiety to different levels and, to a certain extent maintain their 'personal' levels of internalizing or externalizing problem behaviors at least until young adulthood. In that case, a third variable might influence the development of both problem behaviors, causing the variance in both types of problem behaviors to be related. Such a third variable might be found in the realm of human genotypes (Gjone & Stevenson, 1997; O'Connor et al., 1998a; 1998b), but may also have environmental determinants such as with chronically adverse life circumstances, family discord, or psychiatric disorder in (one of) the parents (see Caron & Rutter, 1991).

Research Questions and Main Hypotheses - I

In sum, the literature reviewed above revealed that previous research has mainly focused on the comorbidity of conduct and depressive disorders, oftentimes in small clinical samples. More knowledge is required about the extent to which internalizing and externalizing psychosocial problems are linked (both concurrently and longitudinally) in the general population of adolescents and young adults. Second, more information is needed concerning the validity of the different possible explanatory mechanisms underlying the co-occurrence of internalizing

and externalizing problem behavior. In our examination of internalizing and externalizing psychosocial problems, we specifically focused on emotional disturbance and delinquency.

(1) To what extent do emotional disturbance and delinquency co-occur in adolescents and young adults? And how strong are the longitudinal associations between delinquency and emotional disturbance across different age and gender groups?

(2) Do emotional disturbance and delinquent behavior constitute risk factors in each other's development? Or does a stability perspective provide a better account of the longitudinal associations between emotional disturbance and delinquency?

No clear expectations were put forward regarding the extent to which emotional disturbance and delinquency would co-occur because, although delinquency and emotional disturbance have been found to co-occur in general populations of adolescents, a certain degree of norm-violating or delinquent behavior may be a part of normal exploratory, boundary testing behavior and therefore may not necessarily be associated with high levels of emotional disturbance. Likewise, we did not formulate a hypothesis with regard to the question whether emotional disturbance and delinquent behavior would constitute risk factors in each other's development, since previous studies had provided us with conflicting results on the predictive relationships underlying a co-occurrence of internalizing and externalizing problem behavior.

Parental Bonding - Links with Internalizing and Externalizing Problem Behaviors

A concept that has been given much attention in the prediction of both internalizing and externalizing problem behavior is parental bonding. The term parental bonding was originally coined by Parker, Tupling, and Brown (1979) to denote the 'parental contributions to a parent-child bond' (p. 1). Two primary dimensions of care and overprotection were assumed to underlie parental bonding. The care dimension pertains to general levels of parental warmth and affection, whereas the overprotection dimension refers to general levels of parental control and invasion of privacy. During the past two decades, several reviews by Loeber and Stouthamer-Loeber (1986), Goetting (1994), and Rice (1990) have made clear that one of the key predictors of both juvenile delinquency and adolescents' self-esteem and emotional disturbance seems to be the extent to which parent-adolescent interactions are characterized by

respect, affection, and closeness. These results coincide with earlier clinical observations by Parker and his colleagues (Parker, 1983), that low parental care and parental overprotection were consistently linked to the onset of different psychiatric conditions.

The widespread attention for the role of parental bonding in the development of internalizing and externalizing problem behavior has inspired studies on psychosocial problems as well as psychiatric disorders. Specifically, previous cross-sectional studies employing the Parental Bonding Instrument (PBI; Parker et al., 1979) have established significant, positive associations between low parental care and parental overprotection and emotional disturbance (Goldstein & Heaven, 2000; Pedersen, 1994) and delinquency (Mak, 1994). In addition, studies that focused on the links with psychiatric disorders have found similar relationships with alcohol and drug addictions (Bernardi, Jones, & Tennant, 1989), depression (Burbach & Bourduin, 1986; Mackinnon, Henderson, & Andrews, 1993), phobic disorders (Arrindell, Emmelkamp, Monsma, & Brilman, 1983; Gerlsma, Emmelkamp, & Arrindell, 1990), schizophrenia (Onstad, Skre, Torgersen, & Kringlen, 1993), suicidal ideation (Martin & Waite, 1994), and personality disorders (Patrick et al., 1994).

The body of research described above is limited by an exclusive investigation of concurrent relationships, limiting our understanding of what the predictive value of parental bonding might be after one would control for the stability in problem behavior. However, the limited number of studies that have presented longitudinal data (Mackinnon, Henderson, Scott, & Duncan-Jones, 1989; Rodgers, 1996), have provided inconsistent results and only tentative evidence for - rather weak - associations between parental bonding and the course of internalizing problem behavior. Another limitation is that these studies have been conducted among samples of adults, and have not focused on late adolescence or young adulthood as developmentally salient periods. It is especially interesting, however, to study the link of parental bonding with the development of individuals' problem behavior during late adolescence and young adulthood, because the extent to which (interactions with) parents influence developments in their childrens' problem behavior may change as a consequence of an increasing autonomy in children (see Meeus, Iedema, Maassen, & Engels, submitted for publication), as well as the increasing importance of relationships with friends and partners (Furman & Buhrmester, 1992; Laursen & Williams, 1997).

Probably, one of today's most influential theories focusing on continuity from childhood relational experiences to adult intimate relationships is attachment theory. Importantly, the term 'parental attachment' is used to indicate perceived levels of affective quality in the relationships with attachment figures, and does not refer to an actual attachment-relationship

(see Bowlby, 1982). According to Bowlby (1977), parents usually provide their offspring with a 'secure base', meeting their childrens' wired-in propensity to establish safe and protective relationships with people in the direct environment - without limiting the possibility to actively explore the environment. Early attachment-experiences are incorporated into 'internal working models': cognitive-affective schemas that form the basis of an individual's understanding of and participation in intimate relationships throughout life (Parkes & Stevenson-Hinde, 1982). This cognitive-affective dimension of attachment, referring to the *underlying quality of affect* towards attachment figures, remains crucial to individuals' psychological and emotional adjustment beyond childhood (Bretherton, 1985). For instance, the sudden loss of, or abuse from one's caretaker(s) may lead people to perceive themselves as unworthy of love, and others as emotionally unavailable or unresponsive (Kenny & Rice, 1995). Such negative expectations of self-other relationships may, in turn, increase one's vulnerability for developing both internalizing and externalizing problem behavior (Dozier, Stovall, & Albus, 1999).

Previous research has demonstrated that childhood recollections of parents' acceptance and encouragement of autonomy are linked to secure attachment styles in young adults (Carnelley, Pietromonaco, & Jaffe, 1994; Feeney & Noller, 1990), and these attachment styles have been found to be related to the perceived satisfaction with partner relationships (Collins & Read, 1990; Simpson, 1990). Similar results have emerged from research using the PBI, which showed that parental care was related to the satisfaction in later partner relationships (Truant, Herscovitch, & Lohrenz, 1987, in: Parker, Barrett, & Hickie, 1992). Unfortunately, however, only a few studies have explicitly tested whether individuals' experiences in partner relationships mediate the relationship between parental bonding and later problem behavior. Moreover, the exceptional studies that did examine the mediational roles of individuals' experiences in partner relationships on the parental bonding - problem behavior relationship (Rodgers, 1996; Gittelman, Klein, Smider, & Essex, 1998) have either examined concurrent associations - not controlling for earlier levels of problem behavior - and did not specifically focus on adults' partner relationships, but rather examined a broader category of intimate relationships which also comprised close friendships.

Research Questions and Main Hypotheses - II

On the basis of the literature reviewed above, we conclude that a large majority of studies on the links between parental bonding and problem behavior has focused on direct, concurrent

relationships. Clearly, future studies need to establish the predictive value of parental bonding with regard to the development of problem behaviors in longitudinal designs, controlling for earlier levels of individuals' problem behavior. Moreover, the possible indirect relationships from parental bonding to later internalizing and externalizing problem behavior through late adolescents' and young adults' perceptions of the quality of their current partner relationships needs to be studied.

(3) Are late adolescents' and young adults' bonds with their parents longitudinally linked to the development of internalizing and externalizing problem behavior – both in terms of psychosocial problems and psychiatric disorders?

(4) To what extent are the longitudinal relationships between parental bonding and internalizing and externalizing problem behavior mediated by the perceived quality of late adolescents' and young adults' partner relationships?

We expected a significant, negative cross-lagged relationship from parental bonding to subsequent problem behaviors in late adolescence and young adulthood, both in terms of psychosocial problems and psychiatric disorders. Moreover, we hypothesized that high-quality bonds with parents would be positively associated with the later quality of partner relationships which, in turn, was expected to lead to a lower risk for the presence and/or development of internalizing and externalizing problem behavior.

Late Adolescence and Young Adulthood - Importance of Partner Relationships

In the Netherlands, involvement in partner relationships has been found to increase from 4% among early adolescents to 40% among late adolescents (De Zwart & Warnaar, 1995). These romantic involvements provide the context in which issues of sexuality and intimacy are addressed, of central concern to the development of adolescent identity. Young people gradually become aware of the specific, rewarding features of romantic relationships besides sex and love, and experiencing intimacy, sharing thoughts and feelings, or caring for the partner become more important (Roscoe, Diana, & Brooks, 1987).

Some researchers have argued that attachment functions are transferred from parents to partners (Ainsworth, 1989; Hazan & Shaver, 1987), and it therefore seems reasonable to assume that parental influences on adolescents' and young adults' problem behaviors and well-

being will be substituted, at least in part, by the influence of partner relationships. We may expect, therefore, that being involved in partner relationships in late adolescence and young adulthood is associated with internalizing and externalizing problem behaviors. In accordance, research on adolescents and young adults has demonstrated that lower levels of intimacy, perceived quality of, and relational competence in partner relationships are all associated with emotional maladjustment and lower self-esteem (e.g., Cramer & Donachie, 1999; Engels, Finkenauer, Meeus, & Deković, 2001; Hendrick, Hendrick, & Adler, 1988; McLennan & Omodei, 1988) and criminality and substance abuse (Mudar, Leonard, & Soltysinski, 2001; Simons, Chao, Conger, & Elder, 2001; Simons, Stewart, Gordon & Conger, 2002; Quinton, Pickles, Maughan, & Rutter, 1993).

Thus, because partner relationships may become more important for late adolescents' and young adults' emotional and behavioral functioning, they may moderate the association between individuals' earlier intimate relationships with parents and later problem behavior. For example, supportive intimate relationships in later life may alter one's previous insecure representations of intimacy and connectedness (Belsky & Nezworsky, 1988). Hence, it is very well possible that through later relational experiences one may come to re-evaluate former intimate relationships with parents (Sroufe & Waters, 1977). It is likely that, because of the new relationship experiences that late adolescents and young adults encounter, their perceptions and evaluations of their earlier intimate relationships with parents gradually change (Engels et al., 2001). Especially late adolescence and young adulthood are life phases in which people experiment with and learn about intimacy in the context of partner relationships. It is very likely, therefore, that any moderating effects of later partner relationships on the links between parental bonding and problem behavior development will take place during late adolescence and young adulthood. Specifically, we may expect that the relationship between parental bonding and problem behavior is stronger for those adolescents and young adults who are not (yet) involved in partner relationships. However, although previous research has examined possible moderation effects in association with parental bonding, it has done so only in samples of adults and elderly people (Anderson & Stevens, 1993; Gittelman et al., 1998).

Other evidence for the increasing importance of partner relationships may come from studies focusing on the associations between relationship *transitions* and internalizing and externalizing problem behaviors. Previous research has shown links between 'normative' relationship transitions, such as getting married and becoming a parent, and decreases in alchohol and substance use (Chilcoat & Breslau, 1996; Kandel & Raveis, 1989; Miller-

Tutzauer, Leonard, & Windle, 1991) and recovery from - symptoms of - anxious and depressive disorders (Brown, Lemyre, & Bifulco, 1992; Leenstra, Ormel, & Giel, 1995). Furthermore, in studies focusing on the risks associated with non-normative transitions, such as with marital disruptions or divorce, Barrett (1999) showed that divorce was linked to an increased symptomatology of substance abuse and dependence, and in other studies divorce was also found to be associated with lower well-being (Menaghan, 1989), depression (Aseltine & Kessler, 1993), and psychological distress (Hope et al., 1999). These studies, however, only provide us with tentative evidence regarding the importance of relationship transitions for the development of internalizing and externalizing problem behaviors, because they have mainly examined unidirectional links (e.g., from relationship transitions to alcohol use, but not from alcohol use to relationship transitions), and have not demonstrated clearly whether relationship transitions actually *precede* the development of problem behaviors.

Research Questions and Main Hypotheses - III

Overall, with regard to individuals' relationship transitions, our review of the literature points to the importance of examining bidirectional-prospective associations with subsequent onsets of psychiatric disorders. Furthermore, in light of the changing dynamics in parent-child and child-peer relationships during late adolescence and young adulthood, it is necessary to examine possible moderator effects of partner relationships on the link between parental bonding and problem behaviors in these life periods.

(5) To what extent are the longitudinal relationships between parental bonding and internalizing and externalizing problem behavior moderated by late adolescents' and young adults' partner relationships?

(6) Are transitions in partner or parent roles longitudinally associated with the onset of mood, anxiety, and substance disorders in young adulthood? And does an earlier prevalence of mental disorders affect young adults' chances of experiencing relationship transitions?

As for possible mechanisms of moderation, we assumed that in late adolescence and young adulthood the effect of parental bonding on individuals' problem behaviors would be buffered by later relationship status (i.e., being or not being involved in a partner relationship). With

regard to young adults' relationship transitions, we hypothesized that the risk for the onset of mood, anxiety, and substance disorders could be significantly predicted on the basis of earlier transitions in partner and parent roles.

Data Sets and Methodology

The results presented in this thesis reflect the outcomes of secondary data-analyses, which were performed on the basis of two different data sets (see Table 1.1 - detailed descriptions of each dataset can be found in the corresponding articles). Each of these data sets contained information about adolescents and young adults from the general population, and provided an opportunity to follow individuals' development over multiple timepoints. In one of the survey projects (USAD), respondents were probed to answer questions about psychosocial problems, whereas in the other survey project (NEMESIS), participants were interviewed about the presence of possible psychiatric disorders. Both for the USAD and NEMESIS datasets, the respondents were drawn from nationally representative populations of Dutch adolescents and young adults, growing up in the nineties.

Table 1.1
Characteristics of Datasets used for Secondary Data Analyses

Data Characteristics:	USAD[a]	NEMESIS[b]
Number Timepoints	3 (1991; 1994; 1997)	3 (1996; 1997; 1999)
Number Respondents	N = 1,302	N = 4,848
Type of Information	self-report & interviews	interviews
Age Respondents	*T1*: 12-24 Years	*T1*: 18-64 Years

Note. In two studies based on the USAD dataset (see Chapters 3 and 4), we selected a subsample of middle and late adolescents aged 15-19 years (N = 568). For the two studies based on the NEMESIS dataset we selected a subsample of young adults aged 18-34 years (N = 1,581).
[a] USAD = Utrecht Study of Adolescent Development
[b] NEMESIS = Netherlands Mental Health and Incidence Study

All studies presented in this thesis have a longitudinal design, and thus provide information on the stability and change of internalizing and externalizing problem behaviors between multiple timepoints. An advantage of using such longitudinal data is that, in comparison with cross-sectional studies, it allows us to predict developmental processes that may underlie the longitudinal associations between constructs. This provides us with a stronger indication of possible mechanisms of cause and effect. In particular, the longitudinal designs of the studies presented in this thesis enabled us (in most occasions) to examine the bi-directional links

between constructs, enhancing our understanding of the developmental sequence that may underlie an association between different constructs. To provide the reader with a conceptual overview of the studies described in this thesis, we have summarized all concepts and measures that were employed in the different studies in one schema (see Table 1.2).

Table 1.2
Concepts and Measures used from the Datasets

	Measure	Dataset	Chapter
Problem Behaviors			
DSM-III-R Mood Disorders	CIDI - 1.1	NEMESIS	5, 6
DSM-III-R Anxiety Disorders	CIDI - 1.1	NEMESIS	5, 6
DSM-III-R Substance Disorders	CIDI - 1.1	NEMESIS	5, 6
Depressive Mood	GHQ	USAD	2, 3, 4
Psychological Stress	GHQ	USAD	2, 3, 4
Dissatisfaction with Life	SWLS	USAD	4
Non Well-being	Cantril-Ladder	USAD	2
Suicidal Ideation	1-item (Diekstra e.a.)	USAD	2
Delinquency	21-items (Luijpers)	USAD	2, 3
Social Contexts and Relationships			
Negative Life Events	LEQ	USAD	3
Partner-Parent Role Transitions	Transit. Index (Overbeek e.a.)	NEMESIS	6
Relationship Status, Duration & Type	3-items	USAD	4
Relationship Status & Type	2-items	NEMESIS	5, 6
Relationship Quality	U-GIDS	USAD	5
	Social Support	USAD	5
	GSBQ	NEMESIS	6
Parental Bonding	PBI	USAD	3, 4
		NEMESIS	5

Note. Transit. Index = Transition Index; GHQ = General Health Questionnaire; SWLS = Satisfaction With Life Scale; PBI = Parental Bonding Instrument; LEQ = Life Events Questionnaire; GSBQ = Groningen Social Behavior Questionaire; U-GIDS = Utrecht - Grongingen Identity Development Scale; DSM-III-R = Diagnostic and Statistical Manual, Third Revised Edition; CIDI 1.1 = Composite International Diagnostic Interview, computerized version 1.1

Outline of Present Thesis

Chapter 2 presents a three-wave six-year longitudinal study (USAD; see Table 1.1) on the course, co-occurrence, and longitudinal associations of emotional disturbance and delinquency,

focusing specifically on the extent to which emotional disturbance and delinquency are associated with each other and constitute risk factors in each other's development. Chapter 3 describes a study on the mediating effects of late adolescents' emotional disturbance on the longitudinal relationships between parental bonding and life stress with the development of delinquency. In this chapter we also consider the question whether high-quality bonds with parents are able to buffer negative effects of life stress on emotional disturbance. Next, in Chapter 4 we consider the longitudinal association between parental bonding and emotional disturbance in late adolescence, and examine possible moderator effects of partner relationships on the longitudinal associations between parental bonding and emotional disturbance. In Chapters 5 and 6, the focus is on the development of psychiatric disorders among young adults. In particular, Chapter 5 describes a study on the longitudinal associations between individuals' bonds to their parents and the 2-year prevalences of mood, anxiety, and substance disorders in young adulthood, aimed at the examination of possible mediator effects of the quality of current partner relationships. Chapter 6 deals with young adults' relationship transitions and their longitudinal associations with the incidence (first onset) of mood, anxiety, and substance disorders. Finally, in Chapter 7 the results described in the previous chapters are summarized and discussed with respect to their methodological and theoretical implications.

CHAPTER 2

COURSE, CO-OCCURRENCE, AND LONGITUDINAL ASSOCIATIONS OF EMOTIONAL DISTURBANCE AND DELINQUENCY FROM ADOLESCENCE TO YOUNG ADULTHOOD: A SIX-YEAR THREE-WAVE STUDY[1]

Three questions were examined in the present study: (a) what is the course of emotional disturbance and delinquency during adolescence and young adulthood? (b) to what extent do emotional disturbance and delinquency co-occur during adolescence and young adulthood? and (c) what are the longitudinal associations between emotional disturbance and delinquency in different age and gender categories during adolescence and young adulthood? Data were used from a national sample of 1302 adolescents and young adults, who participated in a 6-year 3-wave longitudinal study. Findings showed an increase of emotional disturbance and delinquency from early to mid-adolescence, after which emotional disturbance stabilized and delinquency declined into young adulthood. A significant but relatively weak co-occurrence of emotional disturbance and delinquency was found. Multi-group LISREL analyses demonstrated that a stability model with no cross-lagged relations fit best for the total sample, and across age and gender categories. Thus, co-occurrence of emotional disturbance and delinquency during adolescence and young adulthood seems to result from associated but separate psychopathological processes. The strong stability of internalizing and externalizing behavior suggests that prevention efforts should be aimed at children and young adolescents.

During the past two decades, several community-based epidemiological studies have focused on the course and comorbidity of internalizing and externalizing disorders in adolescence and young adulthood (for reviews see: Angold & Costello, 1993; Loeber & Keenan, 1994; McConaughy & Skiba, 1993; Zoccolillo, 1992). However, there has been a growing awareness that the course and co-occurrence of internalizing and externalizing psychosocial problems deserve attention as well. It is important to study psychosocial problems in adolescence and young adulthood because they limit the daily functioning of youth, as do psychiatric disorders. Furthermore, certain psychosocial problems during adolescence can be precursors of later psychiatric disorders during young adulthood (Ferdinand et al., 1999). Accordingly, the first aim of the present study is to examine the course of emotional

disturbance and delinquency in a longitudinal survey among adolescents and young adults. The second aim is to study the co-occurrence of emotional disturbance and delinquency. Finally, the third aim is to investigate the longitudinal associations underlying this co-occurrence of emotional disturbance and delinquency.

The Course of Internalizing and Externalizing Problems

Previous studies on the course of internalizing problems in adolescence have documented an increase with age in the mean level of depressive mood (e.g., Elliott et al., 1989; Kandel & Davies, 1982). Fewer studies have reported on the course of internalizing problems in young adulthood, although there are some indications that internalizing problems stabilize during this life period (Ferdinand & Verhulst, 1995b; 1996). Among others, Kandel and Davies (1982), Elliott et al. (1989), Campbell et al. (1992), Hankin et al. (1997; 1998), and Leadbeater et al. (1999) have also revealed that adolescent girls report more intense internalizing problems than boys. Moreover, girls generally start developing internalizing problems earlier in adolescence than boys (e.g., Angold & Rutter, 1992; Hankin et al., 1998; Nolen-Hoeksema, 1990). Numerous studies have shown a peak in delinquency at mid-adolescence as well as a steady decline from mid-adolescence to young adulthood (e.g., Hirschi & Gottfredson, 1983; Loeber et al., 1998; Moffit, 1993); likewise, many studies have shown that boys report a higher delinquent activity than girls (e.g., Rantakillio et al., 1995). It should be emphasized that differences in the course of internalizing and externalizing problems during adolescence and young adulthood do not necessarily imply corresponding differences in the co-occurrence and longitudinal associations of such problems during these life periods (Rowe et al., 1994). It does, however, point to the importance of examining possible differences in the co-occurrence and longitudinal associations between emotional disturbance and delinquency across age and gender categories.

Co-occurrence of Internalizing and Externalizing Problems

Previous research has pointed to the existence of a valid co-occurrence between internalizing and externalizing psychosocial problems during adolescence and young adulthood. However, mixed results have been reported concerning the strength of the association. Community-based epidemiological studies conducted by Elliott et al. (1989) and Garnefski and Diekstra (1997) demonstrated that the co-occurrence between conduct problems and depressive symptoms ranged from 31% to 57%. Furthermore, Ferdinand and

Verhulst (1996) found correlations between anxiety-depression and delinquent behavior subscales in young adults of .24 for males and .44 for females. On the other hand, studies on the co-occurrence of internalizing problems and substance use have only found small or insignificant relationships (Pertraitis et al., 1995). An explanation for these contrasting results can be found in studies by Silbereisen and Noack (1988), Shedler and Block (1990), Moffitt (1993), Maggs et al. (1997), and Loeber et al. (1998), who have shown that a certain degree of norm-violating or delinquent behavior can be seen as a part of normal development and, as such, is no correlate of poor emotional health. In their opinion, it is plausible that only the more serious externalizing behaviors are linked to internalizing problems. Thus, although it may be expected that emotional disturbance and delinquency co-occur during adolescence and young adulthood, no clear expectations can be put forward regarding the strength of this association.

Four Alternative Perspectives on the Co-occurrence of Internalizing and Externalizing Problems

Some authors have stressed the need for studies on explanatory mechanisms that underlie the co-occurrence of internalizing and externalizing problems (Angold & Costello, 1993; Caron & Rutter, 1991; Wittchen, 1996). In this article we focus on the longitudinal associations between emotional disturbance and delinquency. Knowledge about these longitudinal associations is important because it provides more insight into the natural course and developmental history of internalizing and externalizing problems during adolescence and young adulthood. According to Caron and Rutter (1991) and Angold and Costello (1993) a number of different interpretations of co-occurrence may be distinguished.

According to the *stability perspective*, a co-occurrence of internalizing and externalizing problems is caused by non-specific (i.e., shared or overlapping) risk factors. Hence, certain risk factors can lead to internalizing as well as externalizing problems, and no cross-lagged relationships can be specified between these problems. Krueger et al. (1998) and Krueger (1999) state that an association between internalizing and externalizing problems is caused by separate but associated core psychopathological processes which refer to internal or external modulations of basic feelings of anxiety. Different people are supposed to internalize and externalize their anxiety feelings to different levels, and maintain their >personal= internalizing and externalizing habits over their life course.

A second interpretation, the *mutual influence perspective*, also is based on the assumption that a co-occurrence of internalizing and externalizing problems is caused by shared or overlapping risk factors. However, according to this interpretation, internalizing and externalizing problems are assumed to be mutually reinforcing throughout a certain time-interval. Since the same risk factors form the basis of both problems, the development of one problem is expected to lead to an increased vulnerability for the other and vice versa. Therefore, cross-lagged relationships would be apparent between internalizing problems and externalizing problems in the same time-interval.

A third interpretation is generally known as the *acting out perspective*. Psychoanalytic theorists have stated that conduct problems are often part of an internalizing problem which is 'acted out'. The depressive feelings of children and young adolescents are supposed to be masked by disruptive behavior and other symptoms that fit into the broader category of externalizing problems (Carlson and Cantwell, 1980). In more general terms, it is often assumed that internalizing problems not only predate, but also predict externalizing problems (e.g., Gold et al., 1989). Thus, in this perspective merely one cross-lagged relationship exists from internalizing problems to externalizing problems.

A fourth interpretation, the *failure perspective*, also contains the thesis that one problem is constituting a risk factor for the other. However, unlike the acting out perspective, this perspective states that externalizing problems predate and predict internalizing problems. According to Capaldi (1992) and Patterson and Capaldi (1990), for example, noxious behavior and a lack of skills may result in rejection and a lack of support by important others (parents, teachers, and peers), which can in turn lead to pervasive failure experiences in social situations and school. These failure experiences are viewed as leading to an increased vulnerability for depressive moods. Therefore, it is stated that only one cross-lagged relationship exists from externalizing problems to internalizing problems.

Previous Research on Explanatory Mechanisms: Temporal Patterns and Longitudinal Associations

In part, the evidence for each of the four alternative perspectives is based on very different types of empirical research: psychiatric-clinical studies, psychiatric-epidemiological studies, and psychosocial-epidemiological studies. Psychiatric-clinical studies are handicapped by Berkson's bias: clinical samples contain a disproportionately large number of patients having co-occurring problems (Caron & Rutter, 1991). Moreover, they have generated contradictory results. Whereas Puig-Antich (1982) found that major depressive disorder predated conduct disorder

in pre-adolescent boys, Kovacs et al. (1988) showed that conduct disorder generally postdated depression in pre- and early adolescents, while Harrington et al. (1990) concluded that adolescents with both depressive and conduct disorders had either a nosologically distinct syndrome or coped with depressions of a secondary nature. Most psychiatric-epidemiological research has suggested that externalizing disorders predate internalizing disorders (Anderson et al., 1987; Block & Gjerde, 1990; Rohde et al., 1996). Although these studies provide insight into the comorbidity of psychiatric disorders in adolescence, their results can not be directly related to the co-occurrence of psychosocial problems. Furthermore, psychiatric-epidemiological research has focused on the temporal patterns between internalizing and externalizing problems, rather than on their longitudinal associations.

Psychosocial-epidemiological research on explanatory mechanisms underlying the co-occurrence of internalizing and externalizing problems is relatively scarce. Elliott et al. (1989) found evidence for a pattern in which minor offending usually preceded the onset of mental health problems, and mental health problems generally preceded the onset of index offending in a general population of adolescents. Only one study has focused on possible longitudinal associations between internalizing and externalizing psychosocial problems. Capaldi (1992), studying lower and working class, early adolescent boys from neighborhoods with relatively high rates of delinquency, found that conduct problems at grade 6 predicted increases in depressed mood by grade 8. The results were concluded to be consistent with a failure model, in which a lack of skills combined with noxious behavior leads to pervasive failures and vulnerability to depressive moods. However, the extent to which the results of this study can be generalized is questionable due to certain sample characteristics. Thus, no definite conclusions can be drawn regarding each of the four alternative perspectives (i.e., stability, mutual influence, acting out, failure). Moreover, possible age and gender differences in the longitudinal associations between internalizing and externalizing problems have remained unexamined. Therefore, the present study concentrates on the longitudinal associations between indicators of internalizing and externalizing problems in a general population sample of both male and female adolescents and young adults.

The Present Study

With the Utrecht Study of Adolescent Development (USAD, 1991-1997), a three-wave six-year longitudinal study, we investigated the course, co-occurrence, and longitudinal associations of emotional disturbance and delinquency in a large, community-based population

of adolescents and young adults. Three main questions were addressed: (a) what is the course of emotional disturbance and delinquency during adolescence and young adulthood? (b) to what extent do emotional disturbance and delinquency co-occur during adolescence and young adulthood? and (c) what are the longitudinal associations between emotional disturbance and delinquency in different age and gender categories during adolescence and young adulthood? Regarding the first question, we expected that mean levels of emotional disturbance and delinquency would increase from early until mid-adolescence, after which emotional disturbance would stabilize and delinquency would decline from late adolescence to young adulthood. Also, we expected that whereas girls would have higher levels of emotional disturbance, boys would have higher levels of delinquency. Regarding the second question we expected a significant level of co-occurrence between emotional disturbance and delinquency without any expectations concerning the strength of this co-occurrence. We also had no expectations with regard to the third question because previous research has not provided us with conclusive evidence in favor or opposition of the stability, mutual influence, acting out, or failure perspectives, and on possible age and gender differences in the longitudinal associations between emotional disturbance and delinquency in general population samples.

METHOD

Procedure and Sample Characteristics

Data for this study were collected as part of a broader longitudinal survey, the Utrecht Study of Adolescent Development (USAD, 1991-1997), in which the life course trajectories of adolescents and young adults were examined (Helsen et al., 2000; Meeus, 1996). To ensure the external validity of the research a non-clinical sample was used, representative of the Dutch population for gender, age, religious affiliation, residential status (e.g., living with parents, living alone, or living in a student dormitory), and educational level (Meeus & 't Hart, 1993).

The first wave of the USAD was conducted in 1991. A national sample of Dutch adolescents and young adults aged 12 to 24 was drawn from an existing panel of 10,000 households. Subjects were interviewed in their home environment by trained interviewers and were given a questionnaire to fill out on their own and to send back to the research organization. Items about emotional disturbance and delinquency were included in this self-report questionnaire because it was expected that some respondents might have trouble answering these questions in face-to-face interviews. Of all 3394 adolescents and young adults

who returned the questionnaire, 3186 respondents (89%) completed all questions regarding emotional disturbance and delinquency, thereby constituting the baseline sample. Four age groups were represented: early adolescence (12 to 14), mid-adolescence (15 to 17), late adolescence (18 to 20) and young adulthood (21 to 24). Two follow-up measurements took place in 1994 and 1997. About 61% of all baseline respondents participated in the second wave of 1994, and approximately 66% of these also cooperated at the third wave of 1997. The total response rate from wave 1 to wave 3 was 41%.

An attrition analysis was carried out to test whether there were differences between the remaining longitudinal sample and those who dropped out from wave 1 to wave 3 according to gender, age, educational level, residential status, and measures of emotional disturbance and delinquency. Logistic regression analyses showed that attrition was associated with gender (OR = -.26, $p < .01$) and age (OR = -.07, $p < .01$). Males and young adults dropped out more often than females and adolescents. However, no significant differences were found between the participants and drop-outs on measures of educational level, residential status, emotional disturbance and delinquency. Although the results of the present study must be interpreted with caution, the findings concerning emotional disturbance and delinquency reported in this article can be generalized to broader populations of adolescents and young adults.

Finally, a total of 1302 respondents participated in all three waves. This longitudinal sample consisted of 550 boys (42%) and 752 girls (58%). The respondents were evenly distributed over the four age categories (based on age at first wave): 321 early adolescents (25%), 341 mid-adolescents (26%), 261 late adolescents (20%), and 379 young adults (29%). Further, the educational level of the respondents could be differentiated as 18% low, 42% average, and 40% high. About 48% of all respondents had a religious affiliation, while 52% had none. Approximately 78% of all respondents lived at home with their parents, whereas 22% lived on their own or in a student dormitory. In total, 99% of the sample consisted of adolescents who were of Dutch origin, whereas 1% had a different ethnic background.

Measures

General well-being. General feelings of well-being were assessed using the Cantrill Ladder (Cantrill, 1965). Respondents were asked to indicate on a 10-point scale how they generally feel (1 = very bad, to 10 = very well).

Psychological stress and depressive mood. Psychological stress and depressive mood were assessed using a short version of the General Health Questionnaire (GHQ; Goldberg, 1978;

Kienhorst et al., 1990; Meeus, 1993). The GHQ consists of two subscales 'psychological stress' (6 items) and 'depressive mood' (4 items), and measures the degree to which psychological stress and depressive mood have recently been experienced. Respondents were asked to indicate on a 4-point scale (1 = not at all, to 4 = much more than usual) the extent to which symptoms of psychic stress (e.g., feeling tense and nervous) or depression (e.g., feeling unhappy and dejected) had been experienced during the past four weeks. Both scales had high internal consistencies: Cronbach's alpha's for psychological stress and depressive mood were .89 and .84 respectively at wave 1, .92 and .94 respectively at wave two, and .91 and .92 respectively at wave three.

Suicidal thoughts. The tendency to think about suicide was assessed with one item: 'In the last twelve months, have you thought about committing suicide and putting an end to your life?' (Diekstra et al., 1991). Respondents answered this question on a 4-point scale (1 = never, to 4 = very often).

Emotional disturbance

The measures mentioned above were highly interrelated, as was indicated by correlation coefficients ranging from .31 to .71 ($p < .01$). In order to determine whether it was possible to obtain a single score for the construct of emotional disturbance, an exploratory factor analysis was conducted, using the four scale scores as variables. Analysis resulted in a single-factor solution (see also: Helsen et al., 2000). At wave 1 and wave 2, this solution explained about 59% of the total variance (with an average factor loading of .76 at wave 1 and .71 at wave 2), while at wave 3 the solution explained 56% of the total variance (with an average factor loading of .64). Therefore, each respondent was assigned a factor score - using a short regression method - for the construct of emotional disturbance at each of the three waves.

Delinquency

Delinquency was assessed as the number of delinquent acts the respondents reported over the previous twelve months. The delinquency measure consists of 21 items pertaining to three types of delinquent behavior: violent crime (e.g., 'Have you ever wounded somebody with a knife or other weapon?'), vandalism (e.g., 'Have you ever covered walls, buses, or entryways with graffiti?'), and crime against property (e.g., 'Have you ever bought something which you knew was stolen?'). Subjects answered if they had behaved in one of these ways during the past twelve months on a two-point scale (0 = no, to 1 = yes). The scores on the 21 items were then summed. Thus, a higher score on this scale indicates a higher delinquent activity. The internal consistency of the scale was Cronbach's alpha = .62 at wave 1, .60 at wave 2, and .58

at wave 3 (for more details on the reliability and validity of this delinquency measure, see 't Hart, 1994, and Luijpers, 1999).

Strategy of Analysis

First, descriptive analyses (standardized means and standard deviations) of the variables were calculated for boys and girls, as well as for the different age groups (12-14 year olds, 15-17 year olds, 18-20 year olds, and 21-24 year olds). In addition, a MANOVA with repeated measures was conducted to analyze the course of emotional disturbance and delinquency across the three waves, controlling for the effects of age and gender. Second, correlation coefficients were computed to examine the co-occurrence of emotional disturbance and delinquency. These data were also used as input for the construction of covariance matrices for the structural equation modeling analyses. Third, longitudinal equation modeling was carried out using the LISREL 8.30-program (Jöreskog and Sörböm,1993), to analyze the longitudinal associations of emotional disturbance and delinquency during adolescence and young adulthood. Respondents' scores on the continuous variables of emotional disturbance and delinquency were standardized and then used to calculate their mutual covariance structure. The covariance matrices were subsequently estimated in PRELIS 2.30 using the weighted least squares method because of the highly non-normal distribution of the scores (Jöreskog and Sörböm,1989).

Four different structural equation models were specified based on the perspectives presented earlier: a stability model, an acting out model, a failure model, and a mutual influence model. In each of these models, emotional disturbance and delinquency were specified as observed variables. Furthermore, each of these four models contained (a) stability paths from wave 1 to wave 2 and from wave 2 to wave 3 for emotional disturbance and delinquency, (b) co-occurrence paths between emotional disturbance and delinquency at each of the three waves, and (c) estimates of residual information for emotional disturbance and delinquency at each of the three waves (see Figure 2.1).

However, the stability model deviated from the other three models in two important respects. First, extra stability paths were specified from wave 1 to wave 3 for both emotional disturbance and delinquency, while these were not specified in the other three models. Second, no cross-lagged relations between emotional disturbance and delinquency were specified in the stability model, as was done in the other three models. The acting out model contained cross-lagged relations between emotional disturbance at wave 1 and wave 2 to delinquency at wave 2 and wave 3, respectively. For the failure model, the cross-lagged relations were specified in the opposite direction: from delinquency at wave 1 and wave 2 to

emotional disturbance at wave 2 and wave 3 respectively. Finally, the mutual influence model contained all of these cross-lagged relationships. The four competing models were fitted on the data of the total longitudinal sample. After this first test, several multi-group analyses were carried out to test if the alternative models fit across different age and gender groups.

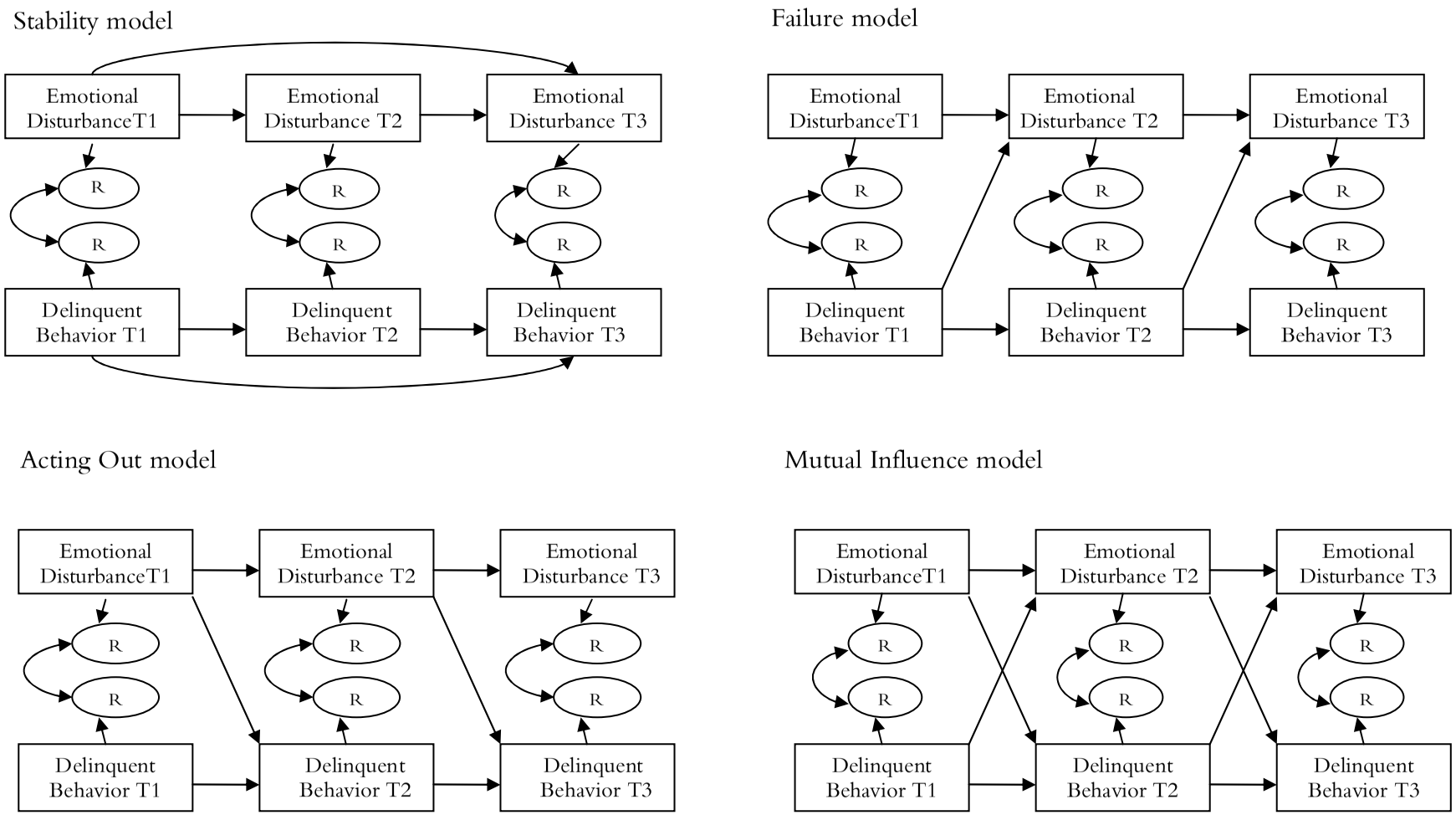
Model fit was assessed by the following global fit measures: χ^2, χ^2/df-ratio, RMSEA, GFI, CFI, and AIC. The χ^2 provides a significance test of the null hypothesis that the model is correct. However, this statistic is extremely vulnerable to the effects of sample size. Large sample sizes lead to a tendency to reject a model, even when most of the covariance in the data is accounted for (Williams & Holahan, 1994). The χ^2/df-ratio, which indicates the fit of a model per df used, was proposed by Jöreskog (1969) as a fit index that could account for sample size effects associated with χ^2. A threshold value smaller or equal to 2 is proposed to indicate an acceptable fit (Wheaton et al., 1977). The Root Mean Square Error of Approximation (RMSEA, see Steiger, 1990) is another measure suitable for assessing the fit of a model per df used. A value of .05 or less indicates a close fit of the model to the data (Browne & Cudeck, 1993). The Goodness of Fit Index (GFI) is an estimate of the extent to which the sample variances and covariances are reproduced by the hypothesized model. Bentler's Comparative Fit Index (CFI, see Bentler, 1989) is an incremental fit index derived from the comparison of the hypothesized model with a null model in which no relationships between the variables in a model are specified. For both the GFI and the CFI a value of .90 and higher indicates an acceptable fit. Finally, Akaike's Information Criterion (AIC, see Akaike, 1987) is used as a parsimony-based fit index. The model that yields the smallest AIC-value can be considered the most parsimonious.

RESULTS

The Course of Emotional Disturbance and Delinquency

The standardized means and standard deviations for emotional disturbance showed a strong continuity over the three waves for the total sample (Table 2.1). Difference contrasts in a repeated measures MANOVA demonstrated there were no differences between the mean levels of emotional disturbance from wave 1 to wave 2 (F (1, 1298) = .01, $p > .05$) and from wave 2 to wave 3 (F (1, 1298) = .01, $p > .05$). However, there was a clear difference between boys and girls in their mean level of emotional disturbance.

Figure 2.1
Four alternative structural models for the longitudinal associations of emotional disturbance and delinquency (R indicates residual information)



Overall, girls were more emotionally disturbed (F (1, 1298) = 34.36, $p < .001$). Furthermore, there was a strong interaction between the respondent's age and mean level of emotional disturbance. An increase in the mean level of emotional disturbance was apparent from early adolescence to mid-adolescence (F (3, 1298) = 7.65, $p < .001$), while from late adolescence to young adulthood the mean level of emotional disturbance stabilized, F (3, 1298) = 3.59, $p > .05$. When the effects of both age and gender on the longitudinal change of emotional disturbance were combined, it became clear that for girls the increase of emotional disturbance occurred from early to mid-adolescence, whereas for boys the mean level of emotional disturbance increased from mid-adolescence to late adolescence (F (4, 1299) = 3.87, $p < .01$).

A different pattern emerged for the longitudinal change of delinquency during adolescence and young adulthood (Table 2.1). As with emotional disturbance, the difference contrasts indicated there was a strong continuity over the three waves for the total sample. No differences were apparent in the mean level of delinquency from wave 1 to wave 2 (F (1, 1298) = .00, $p > .05$) and from wave 2 to wave 3 (F (1, 1298) = .09, $p > .05$). However, gender had a strong main effect (F (1, 1298) = 141.24, $p < .001$). Boys consistently reported higher levels of delinquency than girls. Another main effect was found for age (F (3, 1298) = 23.71, $p < .001$). From adolescence to young adulthood, there was a constant decline in the level of delinquency. There was also a strong interaction between delinquency and age. While there was a sharp increase in the delinquency of youth from early adolescence to mid-adolescence (F (4, 1298) = 10.29, $p < .001$), there was a steady decline in delinquency from late adolescence to young adulthood (F (4, 1298) = 6.52, $p < .001$). When the effects of both age and gender were examined, the increase in delinquency from early adolescence to mid-adolescence appeared to be less intense for girls (F (4, 1298) = 3.79, $p = .01$), and the decline in delinquency from late adolescence to adulthood was stronger for girls than for boys (F (4, 1298) = 3.59, $p < .05$).

Overall, the descriptive analysis showed that the mean level of emotional disturbance increased from early through mid-adolescence, and stabilized during late adolescence and young adulthood. Girls had higher levels of emotional disturbance than boys, and experienced a rise in emotional disturbance earlier in adolescence than boys as well. The mean level of delinquency also increased from early through mid-adolescence, but declined again in late adolescence and young adulthood. Boys reported higher levels of delinquency than girls, as well as a stronger increase in delinquency than girls during adolescence.

Table 2.1
Standardized means and standard deviations for emotional disturbance and delinquency (*N* = 1302)

		Total	*Gender*		*Age*[a]			
			Boys	Girls	12-14	15-17	18-20	21-24
Emot. Disturbance[b]	T1	-.01 (1.00)	-.17 (0.88)	.12 (1.06)	-.24 (0.92)	-.01 (1.01)	.07 (1.00)	.15 (1.01)
	T2	-.02 (1.00)	-.16 (0.91)	.11 (1.05)	.02 (1.09)	-.01 (0.98)	-.01 (1.00)	.00 (0.93)
	T3	-.04 (1.00)	-.12 (0.88)	.08 (1.07)	.04 (0.98)	-.10 (0.88)	-.08 (0.85)	.05 (1.13)
Delinquency[c]	T1	.01 (1.00)	.28 (1.19)	-.20 (0.77)	.01 (0.94)	.26 (1.23)	.00 (0.98)	-.23 (0.74)
	T2	.02 (1.00)	.28 (1.20)	-.20 (0.77)	.22 (1.22)	.08 (1.09)	-.10 (0.88)	-.19 (0.69)
	T3	.02 (1.00)	.29 (1.25)	-.21 (0.70)	.28 (1.25)	.05 (1.07)	.03 (0.86)	-.26 (0.67)

Note. Emot. Disturbance = Emotional Disturbance.
[a] Longitudinal data are presented vertically for each of the age groups; cross-sectional data horizontally.
[b] Standardized scores for Emotional Disturbance in the total sample range from -1.17 to 5.33 (T1), - 1.26 to 5.77 (T2), and -1.28 to 5.34 (T3).
[c] Standardized scores for Delinquency in the total sample range from -.59 to 5.96 (T1), -.59 to 7.84 (T2), and -.53 to 6.15 (T3).

Co-occurrence of Emotional Disturbance and Delinquency

As can be seen in Table 2.2, the co-occurrence of emotional disturbance and delinquency was relatively weak in the total sample, as is indicated by correlation coefficients ranging from .08 ($p < .001$) to .10 ($p < .001$). Nevertheless, all correlations for within-measurement association were significant, which means that the co-occurrence of emotional disturbance and delinquency reached a higher-than-chance level. Between measurement or cross-lagged associations of emotional disturbance and delinquency were somewhat lower and not always significant, ranging from .04 (n.s.) to .08 ($p < .001$). In contrast to the relatively weak co-occurrence and cross-lagged coefficients, the stability coefficients of emotional disturbance and delinquency reached moderate values in the total sample. These 'normative' correlations, which inform us of the extent to which individuals hold the same relative position to one another in a group over time (Verhulst & Van der Ende, 1992), ranged from .31 ($p < .001$) to .41 ($p < .001$).

Descriptive as well as correlational analyses demonstrated the importance of examining longitudinal associations between emotional disturbance and delinquency across different gender and age categories. First, the descriptive analysis showed strong gender and age differences in the longitudinal changes of emotional disturbance and delinquency. Second, the correlation coefficients between emotional disturbance and delinquency also fluctuated across gender and age categories. Girls seemed to have a stronger co-occurrence of emotional disturbance and delinquency than boys and appeared to report higher cross-lagged associations as well. In addition, younger adolescents seemed to have a stronger co-occurrence of emotional disturbance and delinquency as compared to older adolescents and young adults, and they seemed to report higher cross-lagged associations. Thus, both analyses indicated that the explanatory mechanisms underlying the co-occurrence of emotional disturbance and delinquency might be different across gender and age categories.

Longitudinal Associations of Emotional Disturbance and Delinquency

LISREL analysis of the total sample on the four alternative models showed that the stability model offered the closest fit (Table 2.3). Its χ^2/df-ratio almost reached the threshold value of 2, while all other fit indices indicated a close fit of the stability model to the data of the total sample. The acting out model and mutual influence model both fitted poorly, as was indicated in higher values for the χ^2/df-ratio, RMSEA, and AIC, and lower values for the GFI and CFI. Furthermore, the specified cross-lagged relationship from emotional disturbance at wave 1 to

delinquency at wave 2 had a negative value instead of a positive one, which was not in line with a-priori specifications of the acting out model and mutual influence model. For the failure model, high GFI and CFI values were obtained. Nevertheless, its χ^2/df-ratio and AIC value were rather high, indicating that the failure model fit less well than the stability model. Although all cross-lagged relationships specified in the acting out model, failure model, and mutual influence model attained significance (see Figure 2.2), none of these improved the fit over the already existent stability paths.

As is shown in Table 2.3, a multi-group LISREL analysis of gender differences made clear that the stability model best represented the longitudinal associations between emotional disturbance and delinquency for both boys and girls. Although the CFI indicated an insufficient fit, the other fit-indices (which also take the parsimony of a model into account) presented another picture. The χ^2/df-ratio lay close at a threshold value of 2, whereas the RMSEA indicated a close fit of the model to the data, and the AIC also had a relatively low value. The acting out model, failure model and mutual influence model did not fit on the data of both gender groups, as was clearly indicated by the various fit indices (Table 2.3). As in the previous analysis, the relationship from emotional disturbance at wave 1 to delinquency at wave 2 had a negative value, which was not in line with a-priori specifications in the acting out model and mutual influence model. Although all specified cross-lagged relationships between emotional disturbance and delinquency were significant over a three-year period for both boys and girls, none of these improved the fit over the stability paths.

Finally, a multi-group LISREL analysis was conducted to examine whether the longitudinal associations between emotional disturbance and delinquency were the same across age groups. As with the multi-group analysis for gender, it became clear that the stability model provided the best fit with the data of all age groups (Table 2.3). Apart from the CFI, the χ^2/df-ratio, GFI, RMSEA and AIC all indicated an adequate fit with the stability model. The other three models did not properly fit the data for different age groups. As in the previous LISREL analyses, the relationship from emotional disturbance at wave 1 to delinquency at wave 2 had a negative value, which was not in agreement with the a-priori specifications of the acting out model and mutual influence model. Although all estimates of the cross-lagged relations between emotional disturbance and delinquency reached significance over a three-year period, none of these improved the fit of the models over the stability paths in the various models.

Table 2.2
Correlation coefficients between emotional disturbance and delinquency (*N* = 1302)

		Total	*Gender*		*Age*[a]			
			Boys	Girls	12-14	15-17	18-20	21-24
		Co-occurrence and Cross-lagged Correlations						
Emot. Dist. T1	Delinquency T1	.08**	.06	.17**	.26**	.11*	.01	-.04
	Delinquency T2	.04	.01	.14**	.13**	.08	.01	-.02
	Delinquency T3	.00	.03	.05	.05	-.02	.08	.01
Emot. Dist. T2	Delinquency T1	.07**	.08*	.14**	.11*	.10*	.06	.00
	Delinquency T2	.10**	.12**	.16**	.16**	.13**	.03	.01
	Delinquency T3	.08**	.12**	.13**	.13**	.09*	.07	.02
Emot. Dist. T3	Delinquency T1	.04	.06	.06*	.07	.08	-.01	.02
	Delinquency T2	.04	.02	.10**	.05	.05	.01	.03
	Delinquency T3	.10**	.09†	.19**	.16**	.11*	.12*	.05
		Auto Correlations: Emotional Disturbance						
Emot. Dist. T1	Emot. Dist. T2	.38**	.41**	.34**	.44**	.39**	.32**	.38**
	Emot. Dist. T3	.31**	.33**	.28**	.30**	.25**	.37**	.36**
Emot. Dist. T2	Emot. Dist. T3	.40**	.41**	.38**	.30**	.25**	.37**	.36**
		Auto Correlations: Delinquency						
Delinq. T1	Delinquency T2	.41**	.39**	.35**	.40**	.44**	.42**	.35**
	Delinquency T3	.35**	.36**	.22**	.31**	.45**	.15**	.41**
Delinq. T2	Delinquency T3	.39**	.39**	.27**	.36**	.44**	.27**	.34**

Note. Emot. Dist. = Emotional Disturbance; Delinq. = Delinquency
[a] Longitudinal data are presented vertically for each of the age groups; cross-sectional data are presented horizontally
** = $p < .001$, * = $p < .01$, † = $p < .05$.

In conclusion, although descriptive and correlational analyses suggested that there might be different longitudinal associations between emotional disturbance and delinquency in different age and gender groups, multi-group LISREL analyses clearly showed that only one model fit the data of different age and gender groups adequately.[2] Clearly, the stability model is the best representation of the longitudinal associations between emotional disturbance and delinquency for both boys and girls and for all age groups studied. Cross-lagged relationships between

emotional disturbance and delinquency are relatively weak (at least over these periods of time), and have little predictive power as compared to the strong stability paths. Because our LISREL analyses revealed no differences across gender and age categories, the stability model is presented for the total sample in Figure 2.2.

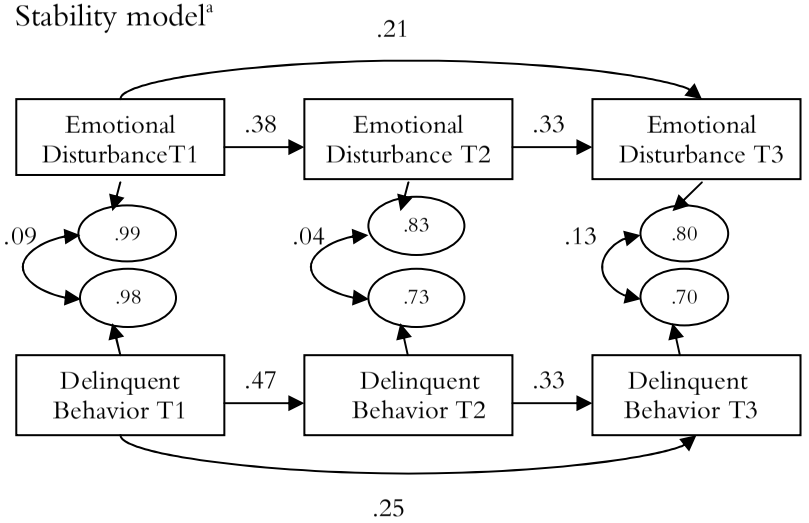
Table 2.3
Weighted least square estimations of the stability model, acting out model, failure model, and mutual influence model (*N*= 1302)

				Fit index			
	χ^2 (df)	p-value	χ^2/df-ratio	GFI	CFI	RMSEA	AIC
			Whole sample				
Stability	13.01 (6)	.04	2.17	.98	.97	.03	43.01
Acting Out	67.63 (6)	.00	11.27	.92	.78	.09	97.63
Failure	190.94 (6)	.00	31.82	.99	.97	.11	132.69
Mut. Infl.	63.15 (4)	.00	15.79	.93	.79	.11	97.15
			Multi-group: gender differences				
Stability	55.63 (21)	.00	2.65	.97	.83	.05	97.63
Acting Out	107.13 (21)	.00	5.10	.95	.58	.08	149.13
Failure	98.83 (21)	.00	4.70	.96	.62	.08	140.83
Mut. Infl.	94.42 (19)	.00	4.97	.96	.63	.08	140.42
			Multi-group: age differences				
Stability	107.21 (51)	.00	2.10	.96	.84	.06	173.21
Acting Out	167.29 (51)	.00	3.28	.92	.67	.08	233.29
Failure	161.81 (51)	.00	3.17	.92	.68	.08	227.81
Mut. Infl.	160.33 (49)	.00	3.27	.92	.68	.08	230.33

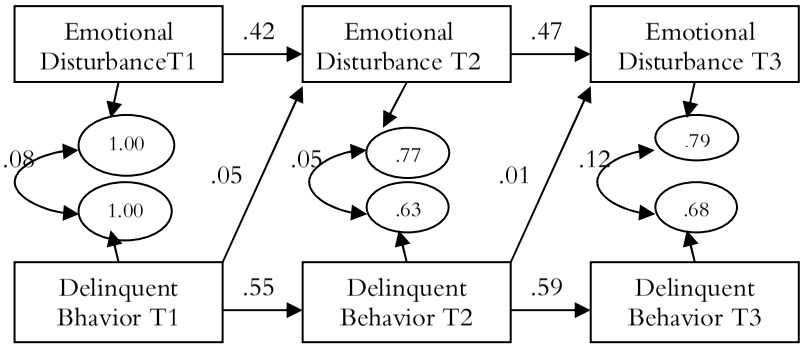
Note. Mut. inf. = Mutual influence.

Figure 2.2
Parameter estimations for each of the 4 alternative structural models in the total sample

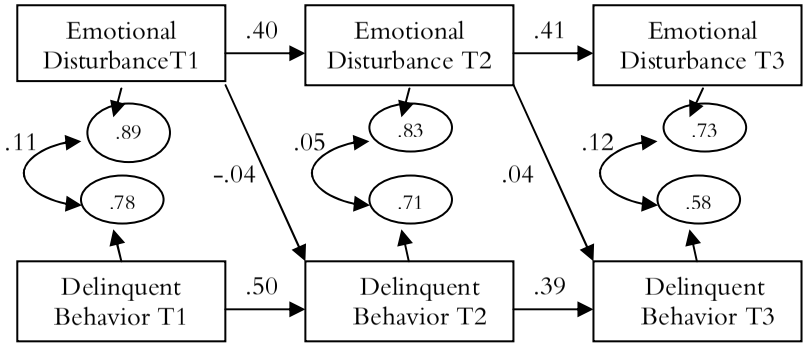
Stability model[a]



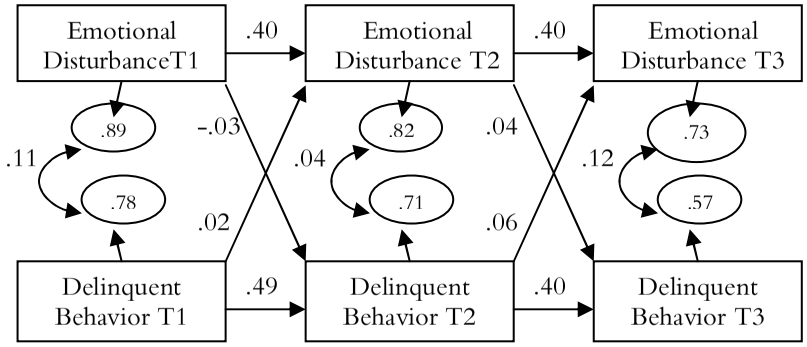
Failure model



Acting Out model



Mutual Influence model



DISCUSSION

Whereas previous studies have often relied on clinical samples (e.g., Harrington et al., 1990; Kovacs et al., 1988; Puig-Antich, 1982), samples consisting only of males (e.g., Block & Gjerde, 1990; Capaldi, 1992), or samples consisting of early adolescents (e.g., Carlson & Cantwell, 1980; Anderson et al., 1987), the present study offered us the possibility to examine the course, co-occurrence, and longitudinal associations of emotional disturbance and delinquency in a non-clinical, general population sample of both male and female adolescents and young adults.

Longitudinal Change and Stability of Emotional Disturbance and Delinquency

The present study demonstrated that from early through mid-adolescence the mean level of emotional disturbance increases, which is in accordance with results of previous research (Elliott et al., 1989; Kandel & Davies, 1982). Moreover, our results showed that internalizing problems stabilize from late adolescence to young adulthood, as was also indicated by studies of Ferdinand and Verhulst (1995b; 1996). Further, our study corresponds to earlier findings that girls report higher levels of emotional disturbance than boys, and that they start developing internalizing problems earlier in adolescence than boys (Campbell et al., 1992; Elliott et al., 1989; Hankin et al., 1997; 1998; Kandel & Davies, 1982; Leadbeater et al., 1999).

The present study also showed a peak in delinquency at mid-adolescence and a steady decline from mid-adolescence until young adulthood, which is in agreement with research on the age-crime curve (Hirschi & Gottfredson, 1983; Loeber et al., 1998; Moffitt, 1993). Our finding that boys report a higher delinquent activity than girls has been found in numerous other studies as well (e.g., Rantakillio et al., 1995). Thus, our expectations concerning the course of emotional disturbance and delinquency during adolescence and young adulthood were confirmed.Overall, the findings indicate that adolescence is an important risk period for the development of more severe internalizing and externalizing psychosocial problems, whereas emotional disturbance stabilizes and delinquency decreases steadily during young adulthood.

According to Steinberg (1987), a substantial amount of adolescents' risk behavior might be caused by a difference in opinions between adolescents and their parents over the pace of the process of becoming independent. The notion of juvenile delinquency as a form of testing personal boundaries and exploring values and beliefs fits in with this explanation, because adolescents will probably want to 'push their limits' and see how far they can go in certain life

domains. Moreover, it is closely linked to Arnett's (2000) conception of adolescent risk behavior as a form of thrill seeking, which concerns the active seeking out of novel and intense experiences. Probably, the decline of delinquent behavior in young adulthood is due to the fact that other risk behaviors (e.g., binge drinking, risky sexual behavior) become more prominent and replace earlier forms, since these behaviors can be pursued more easily as soon as monitoring parents are absent (Arnett, 1999; 2000).

Although the results demonstrated fluctuations in the mean level of emotional disturbance and delinquency during adolescence and young adulthood, the normative stability coefficients (i.e., auto correlations for emotional disturbance and delinquency) were of a moderate strength, indicating that a large number of adolescents and young adults are experiencing similar levels of emotional disturbance and delinquency relative to their peers over time. The three-year and six-year stability coefficients found in the present study were somewhat lower than those found in other community-based studies among adolescents and young adults, but were of a roughly comparable strength. Ferdinand et al. (1995) for example, found stability estimates over a four-year interval of anxious/depressed and delinquency syndromes to be .43 and .41 respectively in 15 to 18 year old adolescents. Achenbach et al. (1995) found stability coefficients over a three-year period of .53 and .44 for the same anxious/depressed and delinquency syndromes respectively in 16 to 19 year old adolescents. Among researchers who have concentrated explicitly on the stability of depressive mood, Kandel and Davies (1986) found stability estimates over a nine-year interval of .35 for boys and .44 for girls in a sample of adolescents aged 15 to 16.

Co-occurrence of Emotional Disturbance and Delinquency

The co-occurrence correlations found in the present study ranged from .08 to .10 over the three waves. Thus, when the focus is on the associations of internalizing and externalizing psychosocial problems in a normal population of adolescents and young adults rather than on psychiatric disorders, there is a significant but low co-occurrence between emotional disturbance and delinquency. There are some possible explanations for the different results of studies focusing on psychiatric disorders and psychosocial problems. For example, substance use in adolescence is often considered to be a risk factor for later psychosocial problems (e.g., Aneshensel & Huba, 1983; Brook et al., 1998; Damphousse & Kaplan, 1998). However, numerous studies have shown no or only small associations between low self-esteem, depression or psychological stress on the one hand and, for instance, alcohol use on the other (Pertraitis et al., 1995). Thus, for the majority of adolescents, alcohol use is quite normal and

no signal of a threatened emotional development. A similar argument can be made regarding delinquency. Previous research has clearly shown that a certain amount of norm-violating or delinquent behavior can be seen as a part of normal development and is not associated with severe emotional problems in adolescence (Loeber et al., 1998; Maggs et al., 1997; Moffitt, 1993; Shedler & Block, 1990; Silbereisen & Noack, 1988). Testing personal boundaries and exploring values and beliefs are normative behaviors during adolescence and serve important developmental ends (Erikson, 1968; Havighurst, 1972). In addition, the relatively low co-occurrence found in the present study seems to indicate that only the more serious delinquent behaviors are linked to emotional disturbance. It is possible that if we had concentrated on more serious externalizing behaviors, as for example Capaldi (1992) did, we would have found stronger relationships with emotional disturbance.

Longitudinal Associations between Emotional Disturbance and Delinquency

Despite the age and gender differences in the course and co-occurrence of emotional disturbance and delinquency, the stability model provided an adequate fit for the data of the total sample, and provided the closest fit for different age and gender categories. The cross-lagged mechanisms that were examined in the co-occurrence of emotional disturbance and delinquency did not fit the data well. This finding stands in contrast with the results of psychiatric-clinical or psychiatric-epidemiological studies, which have often pointed towards the temporal primacy of depressive over conduct disorders or vice versa (e.g., Block and Gjerde, 1990; Kovacs et al., 1988; Rohde et al., 1996). An explanation for this might be the fact that whereas the present study focused on delinquency, most other studies focused on a broader category of conduct problems. It is likely that behaviors which are seen as problematic but are no manifestations of delinquency (e.g., frequent arguments with parents, lying, destroying one's own property, teasing) have a stronger relationship with emotional disturbances in adolescence and young adulthood.

The results of the current study also contradict the findings of earlier psychosocial-epidemiological research conducted by Elliott et al. (1989) and Capaldi (1992). While these two studies pointed to the existence of specific temporal patterns and cross-lagged longitudinal associations, our study demonstrated that a stability model was the best representation for the longitudinal associations between internalizing and externalizing psychosocial problems. Two reasons might be put forward to explain the different results. First, different samples were used. Capaldi's sample, for instance, consisted of early adolescent boys living in a neighborhood with a relatively high delinquency rate, whereas the sample in the present study consisted of

adolescent and young adult males and females from the general population. Cross-lagged influence between various manifestations of internalizing and externalizing problems is probably only relevant for 'at risk' populations. An indication of this phenomenon might be the fact that co-occurrence appears to be related to a more severe prognosis of psychic problems as well (Angold & Costello, 1993). Accordingly, it might be stated that internalizing and externalizing problems must develop beyond a certain 'intensity-threshold' before they become risk factors for the development of subsequent psychic problems. Second, different time intervals were used between the measurements. In the studies of Elliott et al. and Capaldi the time intervals between measurements were one year and two years respectively, while in the present study the time-interval spanned three years. Shorter time intervals may lead to stronger cross-lagged relationships in longitudinal research, because over longer periods of time certain intermittent variables (i.e., negative life events, status transitions) have a higher chance of influencing these relationships. On the other hand, it might be stated that even with shorter time-intervals between waves, the relatively low cross-sectional co-occurrence between emotional disturbance and delinquency would still lead us to expect weak cross-lagged associations.

Stability of Psychosocial Problems during Adolescence and Young Adulthood

The moderate stability and relatively low co-occurrence during adolescence and young adulthood lead to a structural model in which emotional disturbance and delinquency are predicted only by their earlier manifestations. This argues for the importance of controlling for the influence of early manifestations of internalizing and externalizing problems in the prediction of their subsequent development. The relatively high stability of emotional disturbance and delinquency during adolescence and young adulthood does not necessarily imply that once an internalizing or externalizing problem has begun to develop this process is unchangeable. It merely implies that even if a person scores below a clinical-diagnostic range, this person still might have the highest score relative to his or her peers (Krueger et al., 1998).

The results of our study are in agreement with the assumptions of Krueger et al. (1998) about 'core psychopathological processes', which refer to modulations of basic feelings of anxiety that can be directed in one of two ways: internal or external. The current study showed that different adolescents internalize or externalize their basic feelings of anxiety to different levels and, to a certain extent, maintain their 'personal' internalizing or externalizing habits at least until young adulthood. Further, the results of our study indicate that a co-occurrence of internalizing and externalizing problems might be caused by certain non-specific

risk factors, some of which have been revealed in previous research. Parental depression, a family history of mental illness or criminality, family discord, chronically adverse life circumstances, alcoholism in a first degree relative, and acute adverse life events all constitute risk factors for the development of both depressive and conduct problems (Chiles et al., 1980; Costello, 1989; Rutter, 1989b; Rutter & Quinton, 1984). Most of these risk factors seem to emphasize the importance of certain environmental influences in the development of psychopathology. However, some behavioral-genetic sibling studies have demonstrated that approximately half of the covariance between depressive symptoms and antisocial behavior can be explained by a common genetic liability, while a relatively minor role was played by shared or non-shared environmental influences (O'Connor et al., 1998; O'Connor et al., 1998). Thus, more research is needed before any firm conclusions on the origin of non-specific risk factors can be formulated.

Limitations of the Present Study

Some shortcomings of the present study should be mentioned. First, our study can not elucidate whether the rather low estimates of the cross-lagged relationships (found for the acting out model, failure model and mutual influence model) have been caused by the relatively long time-interval between each of the waves. During the tumultuous years of adolescence, the precision of predictions can be negatively influenced by a lack of insight into the individual's development between waves (Engels et al., 1999; Kraus, 1995). Thus, it remains possible that in a longitudinal study with one measurement each year, stronger cross-lagged paths would appear. Although our study can not show whether this is the case, the significant cross-lagged paths over three-year time-intervals do give an indication of the existence of stronger cross-lagged relationships between emotional disturbance and delinquency.

Second, although the measures that made up the construct of emotional disturbance can be considered valid and reliable instruments (Cantrill, 1965; Goldberg, 1978; Kienhorst et al., 1990; Meeus, 1993), the delinquency-measure used in the present study seems to be only moderately reliable. This is probably due to the broad range of different delinquent behaviors that were taken into account (i.e., violent crime, vandalism, and crime against property) as well as the dichotomous answering options. Nevertheless, our results concerning the course of delinquency during adolescence and young adulthood resembled those of numerous earlier studies, while the relatively high stability of delinquency over the three waves also justifies the use of this instrument.

Third, an attrition analysis showed that our results should be interpreted with caution, because of the selective attrition of males and young adults in the sample. On the other hand, no significant differences were found between the participants and drop-outs on measures of emotional disturbance and delinquency, which means that the findings concerning emotional disturbance and delinquency may be generalized to broader populations of adolescents and young adults.

Implications for Future Research and Prevention Efforts

The temporal order of various internalizing and externalizing problems has been the main focus of many studies, whereas research on longitudinal associations underlying a co-occurrence of these problems is very scarce. Knowledge about the latter subject is needed because it provides more insight into the natural course and developmental history of internalizing and externalizing problems. It is Import that longitudinal research be designed to have one measurement each year. In that way, a comparison can be made between short term and long term cross-lagged relationships of the problems under study. It also seems important that future research focuses systematically on the identification of non-specific risk factors for both the development of internalizing and externalizing problems. Finally, it is important that research which seeks to explain manifestations of internalizing and externalizing problems incorporates previous manifestations of these same problems as independent predictors.

With regard to possible prevention efforts, the relatively high stability of emotional disturbance and delinquency suggests that interventions should take place as soon as possible. Children who have high levels of internalizing or externalizing problems early in life, run a risk of developing relatively higher levels of these same problems in adolescence and young adulthood. To enable professionals to identify psychic problems at an early stage, the set-up of a screening system aimed at the psychosocial problems of youth may be helpful. Last, the results of our study showed that in adolescence the mean level of emotional disturbance increases, whereas young adulthood is a period in which emotional disturbance stabilizes. Therefore, young adulthood seems to be a period in which the treatment of internalizing problems becomes increasingly important, whereas in adolescence (a life phase in which internalizing problems often have their onset) the main focus should be on prevention efforts.

NOTES

[1] Overbeek, G., Vollebergh, W., Meeus, W., Engels, R.C.M.E., & Luijpers, E. (2001). Course, co-occurrence, and longitudinal associations of emotional disturbance and delinquency from adolescence to young adulthood: A six-year three-wave study. *Journal of Youth and Adolescence, 30 (4), 401-426*

[2] Additional LISREL analyses were conducted for each gender and age group separately. The stability model had an adequate fit in each of these different groups, whereas the acting out model, failure model, and mutual influence model did not fit the data well. Additional data can be obtained from the first author.

CHAPTER 3

LATE ADOLESCENTS' DELINQUENT BEHAVIOR: EMOTIONAL DISTURBANCE MEDIATING THE EFFECTS OF PARENTAL ATTACHMENT AND LIFE STRESS[1]

Previous research has shown that high quality parent-adolescent attachments are negatively associated with juvenile delinquency, while stressful life events are positively related to this form of externalizing problem behavior. Instead of testing only these direct relationships, in the present study we examined a model in which emotional disturbance would mediate the effects of parental attachment and life stress on delinquency. Further, we investigated whether high-quality parental attachment would buffer the detrimental effects of life stress on emotional disturbance. Data were used from a national representative sample of 568 adolescents aged 15-19, who had participated in the second (1994) and third (1997) wave of an ongoing longitudinal survey. Multiple regression and LISREL analyses showed that emotional disturbance significantly predicted subsequent delinquent behavior, and that emotional disturbance mediated the effects of parental attachment and life stress in boys as well as girls. Preliminary support was also found for a buffering effect of parental attachment in the relationship from life stress to emotional disturbance.

Reviews of the deviancy literature by Loeber and Stouthamer-Loeber (1986) and Goetting (1994) have made clear that one of the key predictors of juvenile delinquency is parental attachment, or the extent to which parent-child interactions are characterized by respect, affection, and closeness. These findings are in accordance with social control theory (Hirschi, 1969), in which the ties to conventional institutions - including family relationships - are believed to prevent people from acting on deviant motives. Later, Parker suggested that not the actual, but rather perceived parenting behaviors were important in predicting behavioral problems. This notion led to the development of the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979), which provides a measure of maternal and paternal care and (over)protection as perceived by respondents over their childhood and adolescent years. Earlier studies by Mak (1990; 1994) who used the PBI as a measure of parental attachment, showed that parental bonding was inversely related to self-report measures of delinquency, and that

adolescents experiencing neglect and overprotection reported more delinquent behavior than other respondents.

Life Stress and Juvenile Delinquency

Adolescents' perceptions of parenting behaviors have been hypothesized to be relatively stable over the life course (Bowlby, 1982; Sroufe, Carlson, Levy, & Egeland, 1999). Although such stable explanatory mechanisms remain important during adolescence, this period is also characterized by a 'pile-up' of important life changes which cause a significant increase in levels of negative affect (Larson & Ham, 1993). However, Swearingen and Cohen (1985) have stated that it is negative events rather than life change per se, that accounts for the significant relationship between life stress and problem behavior. Indeed, reviews by Johnson (1986) and Compas (1987) made clear that most studies provide support for a relationship between life stress and problem behavior among children and adolescents, whereas later longitudinal studies (e.g., Berden, Althaus, & Verhulst, 1990; Windle, 1992) showed that life stress leads to higher levels of juvenile delinquency and other behavioral problems. Unfortunately, relatively little effort has been made to explain how life stress should lead to juvenile delinquency, or to suggest what possible mediators of such relationships could be (Vaux & Ruggiero, 1983).

Emotional Disturbance as Mediator of the Effects of Life Stress and Parental Attachment

One variable that may be expected to mediate the impact of parental attachment and life stress is adolescents' emotional disturbance. Previous research by Ferdinand and Verhulst (1996) has clearly shown that emotional disturbance and delinquency co-occur in general populations of adolescents and young adults. Although different interpretations exist about the direction of influence (Angold & Costello, 1993; Caron & Rutter, 1991), a co-occurrence between emotional disturbance and delinquency may be meaningfully interpreted as reflecting an 'acting out' relationship, in which emotional problems are hypothesized to lead to conduct problems (Gold, Mattlin, & Osgood, 1989).

Vaux and Ruggiero (1983) suggested that life stress may act as an impetus to emotional disturbance leading in turn to heightened levels of delinquency, because exposure to stressors leads to reduced attentiveness to social cues and thus minimizes the effects of social control on individual behavior. Until recently, only a few studies have been carried out to examine possible mediators of the life stress - delinquency relationship (Liu et al., 2000; Newcomb & Harlow, 1986; Sim, 1995). However, these focused on 'personal resources' such as locus of

control, the perception of life to be meaningful, and self esteem and were characterized by cross-sectional designs. Hence, no definite conclusions can be drawn regarding the possible mediation effects of emotional disturbance in the relationship from life stress to juvenile delinquency. Nevertheless, earlier investigations have clearly shown that life stress is significantly related to different measures of emotional disturbance, such as psychological distress (Swearingen & Cohen, 1985), depressive mood (Siegel & Brown, 1988), and dysphoric affect (Larson & Ham, 1993).

A similar pattern of findings emerges from the literature with regard to the relationship from parental attachment to delinquency. Most previous research has focused on the main effects of parental attachment on juvenile delinquency (e.g., Goldstein & Heaven, 2000; Mak, 1994; Pedersen, 1994). However, in light of Bowlby's (1944) classic study on the personal backgrounds of 44 delinquents - as well as one of the central theses of attachment theory - we may conclude that experiencing neglect and overprotection in the relationship with parents is primarily linked to *emotional disturbance* in adolescence and young adulthood (see Sroufe & Waters, 1977). So, it seems more logical to expect emotional disturbance to mediate the impact of parental attachment on the development of juvenile delinquency. Many studies have provided evidence for a significant association between parental attachment and life satisfaction (Greenberg, Siegal, & Leitch, 1983), depressive mood (Burbach & Bourduin, 1986; Engels et al., in press), and different measures of emotional adjustment (Armsden & Greenberg, 1987; Helsen, Vollebergh, & Meeus, 1999; Nada Raja, McGee, & Stanton, 1992).

Parental Attachment as Buffer of the Negative Effects of Life Stress

Parental attachment and life stress are probably not independent predictors of emotional disturbance and delinquency (Johnson, 1986). Rather, adolescents may withstand a pile-up of negative life changes because of certain stress-moderating variables such as social support, positive family climate, and parental attachment. Conflicting results have emerged from studies on the stress-moderating effects of social support (Barrera, 1981; Windle, 1992), whereas previous research has not supported a possible stress-moderating effect of positive family climate (Burt, Cohen, & Bjorck, 1988). In contrast, tentative evidence has been presented by Greenberg et al. (1983) for a protective effect of high quality parental attachment in the relationship from life stress to emotional adjustment. However, as Berden et al. (1990) have stated, further investigation of possible buffering effects in children's and adolescents' responses to stressful situations are needed.

The Present Study

In the present study we relied on longitudinal data of 568 adolescents who were 15 to 19 years old. We aimed to provide more insight into the predictive mechanisms that contribute to the development of juvenile delinquency by focusing on the relationships between parental attachment, negative life events, and emotional disturbance. Two main research questions were addressed: (1) does emotional disturbance mediate the effects of attachment to parents and life stress on juvenile delinquency?, and (2) does parental attachment buffer the negative effect of life stress on emotional disturbance? The hypothesized relationships were modeled using the LISREL program, which was also employed to explore whether the model would hold across separate groups of boys and girls.

METHOD

Procedure and Sample Characteristics

Data for this study were collected as part of a broader longitudinal survey, the Utrecht Study of Adolescent Development (USAD, 1991-1997), in which the life course trajectories of adolescents and young adults were examined (Meeus & 't Hart, 1993). A representative sample of the Dutch population for gender, age, religious affiliation, residential status, and educational level was used. The USAD consists of three waves, the first one of which was conducted in 1991.Wave 2 and wave 3 measurements took place in 1994 and 1997. For the present study, only the data of the two follow-up measurements were used. For reasons of clarity, we shall use the term time 1 (T1) to refer to wave 2-data, and time 2 (T2) to refer to wave 3-data.

Of all 1966 adolescents and young adults who participated at wave 2, 1302 respondents (66%) participated again 3 years later. We analyzed data of a subgroup of 568 respondents aged 15 to 19 at wave 2 (aged 18 to 22 at wave 3), because we wanted to study possible predictors of delinquency from late adolescence to young adulthood. The longitudinal sample consisted of 319 girls (56%) and 249 boys (44%). At T1, the mean age was 17,1 (*SD* = 1.40). Approximately 93% of the respondents still lived at home with their parents. About 18% had a lower vocational or general education, 53% had an average level of vocational or general education, and 30% were enrolled in high school or involved in undergraduate studies.

Measurements

Psychological Stress and Depressive Mood. Adolescents' psychological stress and depressive mood were assessed with a short version of the General Health Questionnaire (GHQ; Goldberg, 1978; Kienhorst, Wilde, Van den Bout, & Diekstra, 1990). The GHQ consists of two subscales, 'psychological stress' (6 items) and 'depressive mood' (4 items), and measures the degree to which psychological stress and depressive mood have recently been experienced. Respondents were asked to indicate on a 4-point scale (1 = *not at all*, to 4 = *much more than usual*) the extent to which symptoms of psychological stress (e.g., feeling tense and nervous) or depression (e.g., feeling unhappy and dejected) had been experienced during the past four weeks. Both scales had high internal consistencies: Cronbach's alphas for psychological stress and depressive mood were .90 and .85 respectively at time 1, and .90 and .84 at time 2.

Dissatisfaction with life. Respondents' overall (dis)satisfaction with life was assessed using the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). A study on the psychometric properties of this instrument showed that it had one underlying factor and high interval reliability (Neto, 1993). The SWLS consists of 5 items (e.g., 'If I could live my life over, I would change almost nothing') which are answered on a 7-point scale (1 = *strongly disagree*, to 7 = *strongly agree*). All answers were recoded to reflect a dissatisfaction rather than a satisfaction with life. In the present study, Cronbach's alpha was .84 at T1 and T2.

Juvenile Delinquency. Adolescents' delinquent behavior was assessed as the number of delinquent acts the respondents reported over the previous twelve months. The delinquency measure consists of 21 items pertaining to three types of delinquent behavior: violent crime (e.g., 'Have you ever wounded somebody with a knife or other weapon?'), vandalism (e.g., 'Have you ever covered walls, buses, or entryways with graffiti?'), and crime against property (e.g., 'Have you ever bought something which you knew was stolen?'). Subjects answered if they had behaved in one of these ways during the past twelve months on a two-point scale (0 = *no*, to 1 = *yes*). The scores on the 21 items were then summed. Thus, a higher score on this scale indicates a higher delinquent activity.

Parental Attachment. Adolescents' quality of attachment to parents was measured with the Parental Bonding Instrument (PBI; Parker et al., 1979). The scale contains two dimensions of 'care' and 'overprotection' that are separately assessed for the relationships with father and mother. The care dimension (10 items) assesses a general level of parental warmth and affection (e.g., 'My father/mother spoke to me in a warm and friendly voice'). The overprotection dimension (10 items) assesses the level of parental control and invasion of privacy (e.g., 'My

father/mother invaded my privacy'). Respondents answered all items on a 4-point scale (1 = *not true*, to 4 = *true*). The PBI has been found to possess a robust factor structure (Lopez & Gover, 1993; Parker, 1990) and a high test-retest stability. In the present study, the care and overprotection subscales had high internal consistencies. Cronbach's alpha was .82 for maternal care, .89 for paternal care, .73 for maternal overprotection, and .71 for paternal overprotection.

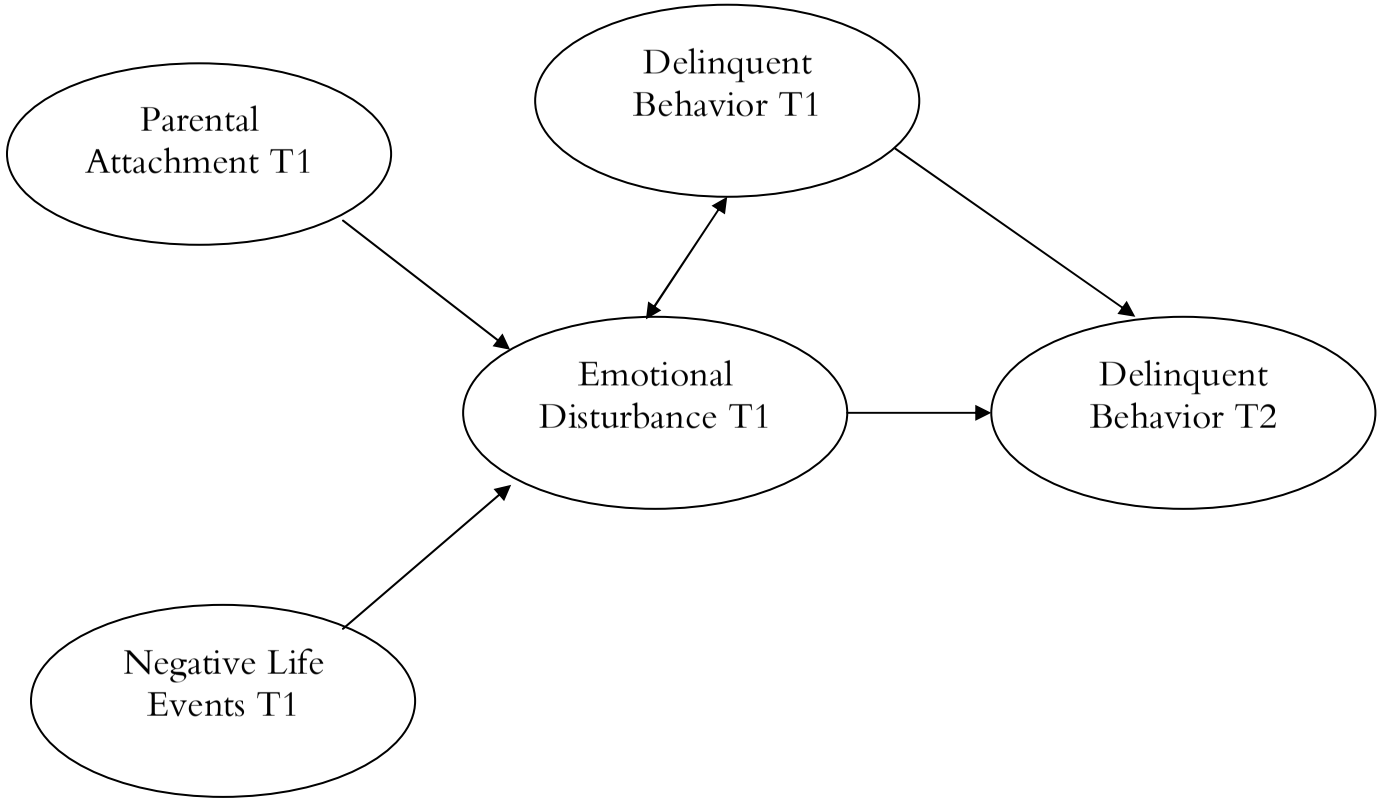
Life Stress. The number of negative life events the respondents had experienced were assessed using the Life Events Questionnaire (LEQ; Mirovsky and Ross). Five of the 24 items of the original scale were left out of further analyses, because they did not pertain to negative life events unambiguously. Thus, the respondents indicated if they had experienced any of 19 negative life events during the past 3 years (e.g., 'I have moved', or 'One of my parents has died'). If they had experienced one, they indicated if it had a small or large impact on their lives. The scores on the 19 items were summed. Thus, a higher score on this measure reflects a higher number of negative life events an individual has experienced over the last 3 years.

Strategy of Analyses

First, means and standard deviations of emotional disturbance, juvenile delinquency, parental attachment, and life stress were calculated. Second, Pearson correlation coefficients were computed to examine cross-sectional and longitudinal associations between parental attachment, life stress, emotional disturbance, and juvenile delinquency. Third, two separate multiple regression analyses were conducted to test whether emotional disturbance at T1 would predict subsequent levels of delinquency at T2 (controlling for earlier levels of delinquency at T1), or whether delinquent behavior at T1 would predict subsequent levels of emotional disturbance at T2 (controlling for earlier levels of emotional disturbance at T1).

Next, structural equation modeling was carried out using the LISREL 8.30-program (Jöreskog and Sörböm, 1993), to examine whether (a) the longitudinal effects of life stress and parental attachment at T1 on subsequent juvenile delinquency at T2 would be mediated by emotional disturbance at T1, and (b) whether parental attachment at T1 would buffer the effect of life stress at T1 on emotional disturbance at T1 (see Figure 3.1 for the conceptual model). In addition, the LISREL model was tested separately for boys and girls in order to examine whether gender differences might exist in the hypothesized relationships. Respondents' scores on the several continuous variables were standardized and then used to calculate their mutual covariance structure.

Figure 3.1
Conceptual Model for the Structural Relations between Parental Attachment, Negative Life Events, and Emotional Disturbance at T1, and Juvenile Delinquency at T2



Fit indices used were the Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), and the Root Mean Square Error of Approximation (RMSEA).

RESULTS

The means and standard deviations shown in Table 3.1 make clear that on average, the respondents experienced rather low levels of emotional disturbance, and reported little delinquent behavior. In addition, they had not experienced many negative life events over a three-year period and generally rated the relationship with their parents as warm and supportive. Further, Pearson correlations show that all hypothesized cross-sectional and longitudinal associations were significant, ranging from .14 to .38 ($p < .001$). Adolescents' attachment to parents was moderately associated with emotional disturbance, and was significantly related to delinquency at T2 and T3. In addition, adolescents' experience of negative life events was moderately associated with emotional disturbance and delinquent behavior at T2 and T3. Also, the experience of negative life events was associated with adolescents' attachment to parents.

The two multiple regression analyses shown in Table 3.2 made clear that emotional disturbance at T1 was associated with delinquent behavior at T2, even when earlier levels of delinquency at T1 were controlled for. In contrast, a regression model in which delinquent behavior was specified to predict changes in emotional disturbance from T1 to T2 (see for example Capaldi, 1992; Overbeek, Vollebergh, Meeus, Engels, & Luijpers, 2001), did not fit the data. Since the correlations and regression coefficients showed that the direct relationships between independent, mediator, and dependent variables were significant, all necessary conditions for testing a mediational model (cf. Baron & Kenny, 1986) were met. Next, we analyzed the covariance matrices in LISREL using the Generalized Least Squares method, to test the hypothesis that effects of life stress and parental attachment on subsequent levels of delinquency might be mediated by emotional disturbance. In the estimated model in which emotional disturbance mediated the effects of attachment to parents and negative life events on delinquency, we also specified the stability of adolescents' delinquency from T1 to T2, as well as the concurrent links between the independent variables.

Table 3.1
Means, Standard Deviations, and Pearson Correlations for Emotional Disturbance, Juvenile Delinquency, Parental Attachment, and Negative Life Events

	Mean (SD)	1	2	3	4	5
Emotional Disturbance T1 (1)	0.00 (1.00)	1.00				
Delinquent Behavior T1 (2)	0.94 (1.43)	.16***	1.00			
Delinquent Behavior T2 (3)	0.66 (1.07)	.17***	.38***	1.00		
Attachment to Parents T1 (4)	3.32 (0.36)	-.29***	-.17***	-.17***	1.00	
Negative Life Events T1 (5)	1.80 (1.71)	.18***	.33***	.23***	-.14***	1.00

Note. 'Emotional Disturbance' reflects the standardized factor scores (Z-transformed) of four separate variables: Dissatisfaction with Life (M = 3.00, SD = 1.08), Psychological stress (M = 1.74, SD = 0.68), Depressive mood (M = 1.37, SD = 0.56), and Suicidal ideation (M = 1.17, SD = 0.48).
*** = p < .001.

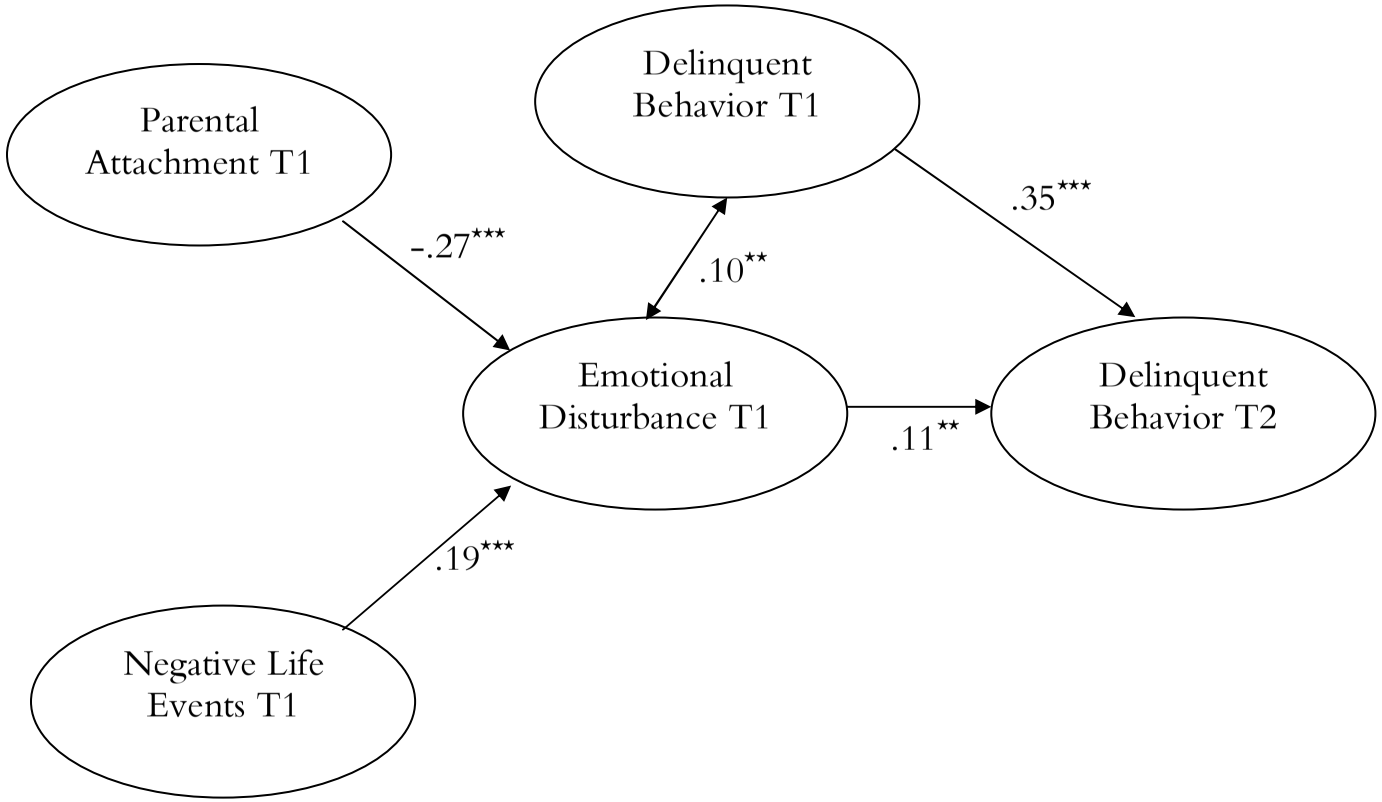
Figure 3.2 shows the standardized estimates of the proposed model for the total sample. Approximately 15% of the variance in juvenile delinquency at T2 and 12% of the variance in emotional disturbance at T1 could be explained with this model. The fit of the model to the data was not close but nevertheless satisfactory, as was indicated by the various fit indices (see Table 3.3). All hypothesized concurrent and longitudinal relationships were significant in the model. Lower-quality attachments to parents and experiencing negative life events both were related to higher evels of emotional disturbance, which in turn predicted higher levels of delinquent behavior. Moreover, LISREL modification indices did not point out that any direct relationships from attachment to parents or negative life events to delinquency would significantly increase the fit of the model. Thus, we found that emotional disturbance mediated the effects of attachment to parents and life stress on delinquency. Next, we examined this mediation-model separately for groups of boys and girls.

Table 3.2
Emotional Disturbance and Delinquency: Cross-Effects and Stability

	Emotional Disturbance T2			Delinquent Behavior T2		
	Rxy	*β*	*ΔF*	*Rxy*	*β*	*ΔF*
Emotional Disturbance T1	.46***	.47***	148.18***	.16***	.10***	6.77***
Delinquent Behavior T1	.06n.s.	.03n.s.	.06n.s.	.40***	.36***	91.10***

Note. *Rxy* = zero-order correlation between the independent and dependent variable; *β* = standardized regression coefficient; *ΔF* = F-change; n.s. = not significant
* $p < .05$, *** $p < .001$

Figure 3.2
Estimated Model for the Structural Relations between Parental Attachment, Negative Life Events, and Emotional Disturbance at T1 and Juvenile Delinqueny at T2



The fit indices for the separate models for the gender groups are shown in Table 3.3. For both gender groups the model had a satisfactory fit to the data, but for the group of girls especially, the model fit well. Nevertheless, some differences were apparent in the data. Although for both boys and girls all hypothesized relationships reached significance, the relationship from life stress at T1 to emotional disturbance at T1 appeared to be stronger for girls (.24) than for boys (.15). Finally, the stability of delinquency seemed to be somewhat higher in males (.35) than in females (.20). Notably, in both models for boys and girls separately, the relationship from emotional disturbance at T1 to delinquency at T2 was significant and of higher value than in the model for the total sample (.15 for girls, .21 for boys, respectively).

Table 3.3
Estimations of Mediation Effects for Emotional Disturbance in the Relationship from Parental Attachment and Life Stress to Juvenile Delinquency

	χ^2 (df)	p-value	GFI	NFI	AGFI	RMSEA
Total Sample						
Mediational Model	9.06 (2)	0.01	0.99	0.93	0.95	0.08
Gender Differences						
Model for Boys	6.06 (2)	0.05	0.99	0.91	0.93	0.09
Model for Girls	2.61 (2)	0.27	1.00	0.95	0.98	0.03
Buffering Mechanism						
High Attachment	8.70 (1)	0.00	0.99	0.83	0.88	0.16
Low Attachment	0.31 (2)	0.54	1.00	0.99	0.99	0.00

The hypothesis that high levels of parental attachment form a buffer against the negative effect of life stress on emotional disturbance was supported by the results of our present study. To test the buffering mechanism, we first divided the total sample in two groups (one with scores above and one with scores below the mean on the standardized variable of 'parental attachment'). For both of these groups we then specified a model in which the construct of parental attachment - and thus the effect of parental attachment on emotional disturbance - was left out. The results of the LISREL analysis showed that the model had a satisfactory fit in the group of respondents who experienced relatively low levels of parental attachment (n = 239), but did *not* fit well to the data of adolescents who experienced relatively high levels of parental attachment (n = 309): see Table 3.3. Specifically, there was a difference between the

standardized estimate of the relationship from life stress at T1 to emotional disturbance at T1 between the 'high' and 'low' attachment groups (0.28 vs. 0.13), which was roughly similar to the difference in Pearson correlations in each of the two groups (R = .27, p < .001 vs. R = .13, p < .05). This means that, in line with our expectations, the negative effect of life stress on emotional adjustment is buffered by high quality parental attachments.

DISCUSSION

The present study provides support for emotional disturbance as a predictor of adolescents' delinquent behavior, contrasting the results from Capaldi (1992), who found that adolescents' emotional disturbance is - in part, at least - a consequence of earlier conduct problems. However, Capaldi' study concerned early adolescent boys from high-risk neighborhoods, whereas in the present study both male and female middle and late adolescents from the general population were involved. Importantly, it should be stressed that the two different directions of influence are not mutually exclusive. There might be recursive causal processes at work, in which the directions of influence between emotional disturbance and delinquency fluctuate across the different stages of adolescent development. For instance, it might be that an adolescent reporting high levels of delinquency runs into troubles with authority figures such as parents and teachers which, in turn, negatively affect his or her well-being or leads to experiences of personal failure in these social domains (Capaldi, 1992). However, these failure experiences might lead youths to move away from social situations or interactions in which their self-esteem is threatened (Jang & Thornberry, 1998), increasing their chances of engaging in contacts with deviant peers and delinquency. In addition, failure experiences that are associated with low self-esteem and depressive moods might lead adolescents to be less receptive of social cues and emotionally relevant environmental stimuli, which may minimize the effects of social control on delinquent behavior (Rottenberg, Kasch, Gross, & Gotlib, 2002; Vaux & Ruggiero, 1983).

Both the cross-sectional and longitudinal negative associations between parental attachment and juvenile delinquency were significant and of moderate strength, which is in accordance with earlier studies (Goldstein & Heaven, 2000; Mak, 1994; Pedersen, 1994). Furthermore, we found significant correlations of a moderate strength for both the cross-sectional and longitudinal relationships between life stress and delinquency, which is also in line with previous research (Berden et al., 1990; Compas, 1987; Johnson, 1986). Although the

association of life stress and delinquency is probably affected by the severity of events or by the life domains on which they occur (Swearingen & Cohen, 1985), a 'pile-up' or cumulation of life stress *alone* also appears to exert a moderately strong, though indirect, negative influence on adolescents' delinquent behavior. Thus, although most previous studies have focused on direct relationships between parental attachment and juvenile delinquency (e.g., Goldstein & Heaven, 2000; Mak, 1994; Pedersen, 1994), the results of the present study argue for the consideration of possible mediator effects of emotional adjustment-variables. Experiencing a lack of warmth and overprotection in the relationship with parents in the first 16 years of life appears to be primarily linked to *emotional disturbance* in late adolescence (see Sroufe & Waters, 1977).

The results from the LISREL analyses, specifically those conducted separately for the different gender and attachment-quality groups, should be seen as a starting point for a future, more elaborate test of the hypothesized model and the group differences. Specifically, in the present structural equation analyses, the values of the latent variables were all specified to be directly related to the values of the observed variables. In future analyses, multiple indicators may be used for some of the latent variables (i.e., emotional disturbance and parental attachment) in order to rule out the influence of error variances in model estimates. Moreover, to employ an *exact* test of possible differences between gender and attachment-quality groups, multigroup analyses need to be performed rather than separate analyses for separate groups.

The results from this study, first of all, tentatively support the notion that the mediation-effects for emotional disturbance are present in both boys and girls. However, the fact that for girls the stability in delinquent behavior from T1 to T2 appeared to be lower than for boys might indicate that for girls, both chronic and discrete environmental stressors may have a larger impact on the development of delinquency, whereas for boys this behavior develops more independent of environmental factors and has a broader biological or temperamental foundation (Baldwin, 1985). Second, the results tentatively support the notion that high-quality attachments to parents buffer the detrimental effects of negative life events and one's emotional adjustment. The present findings should be interpreted with some caution, however, since they are contradicted by the results from a number of studies that have failed to provide clear-cut support for the 'stress buffering' idea (Burt et al., 1988; Windle, 1992). Our results seem to be in accordance with the findings of Greenberg et al. (1983), who also found such a moderating effect of parental attachment in predicting self esteem and life satisfaction. Thus, although a pile-up of negative life events is an important risk factor for the development of emotional disturbance and - indirectly - juvenile delinquency, parents seem to have the

opportunity to protect their children from the harmful psychological consequences by being there: showing their love and providing their children with care and support.

NOTES

[1] Based on: Overbeek, G., Vollebergh, W., Engels, R.C.M.E., & Meeus, W. (in press). Late adolescents' delinquent behavior: Emotional disturbance mediating the effects of parental attachment and life stress. In: W. Koops, R. Loeber, & W. Slot (Eds.), *The development of antisocial behavior.*

CHAPTER 4

PARENTAL ATTACHMENT AND ROMANTIC RELATIONSHIPS: ASSOCIATIONS WITH EMOTIONAL DISTURBANCE DURING LATE ADOLESCENCE[1]

In the present study we examined cross-sectional and longitudinal associations between late adolescents' parental attachment and emotional disturbance. Because we hypothesized that parents become less influential for emotional disturbance when adolescents are involved in romantic relationships, we investigated whether associations between parental attachment and emotional disturbance were less strong for adolescents with romantic partners. In addition, we tested whether the quality and duration of romantic relationships were related to adolescents' emotional disturbance. Data were used from a sample of 568 adolescents aged 15 to 19, interviewed in 1994 and 1997. Cross-sectional analyses showed significant associations between parental attachment and emotional disturbance, but no systematic longitudinal relationships were found. The link between parental attachment and emotional disturbance was less strong for youths with romantic partners cross-sectionally, but not longitudinally. Neither the quality nor the duration of romantic relationships were related to emotional disturbance in this age group.

Although previous notions that childhood experiences have an overriding and irreversible effect have been abandoned (Shaffer, 2000), the quality of parent-child bonds is still believed to exert an important influence on individual adjustment later in life (Sroufe, Carlson, Levy, & Egeland, 1999). Empirical evidence suggests that insecure attachments in infancy are associated with various forms of psychopathology in adults (e.g., Belsky & Cassidy, 1994), and that young people growing up in supportive and warm families report relatively high levels of self-esteem and low levels of psychological distress (for a review see Rice, 1990). However, during the adolescent years, the second separation-individuation process takes place, in which youths gradually abandon idealized representations of their parents and become increasingly involved in their relationships with peers, especially those which have a romantic nature. As they grow older, adolescents experience an increasing amount of interdependence and closeness in their romantic relationships (Laursen & Williams, 1997), which usually become the most important source of social support in late adolescence (Furman & Buhrmester, 1992).

The individuation process is generally believed to occur in a context of warm and caring relationships with parents, who remain influential in providing guidance and support for their offspring (Grotevant & Cooper, 1986). Thus, although friends and romantic partners may replace the parents as primary attachment figures, this does not imply that adolescents' attachment to parents disappears (Ainsworth, 1989). Nevertheless, it seems plausible that the relative importance of parental influence on their offsprings' emotional adjustment diminishes in late adolescence, since romantic relationships then may become the basic source of support and intimacy. Unfortunately, this issue has never been the subject of prospective research. Therefore, with the present article we intended to examine (a) the cross-sectional and longitudinal relationships between parental attachment and emotional disturbance among late adolescents, and (b) to investigate the possible moderating influence that having a romantic partner has on the relationship between parental attachment and emotional disturbance.

Associations between Parental Attachment and Emotional Disturbance

The term 'attachment' refers to a close, enduring affectional bond between an infant and caregiver. The attachment figure provides a safe and secure base from which the child can actively explore and master his/her environment (Bowlby, 1977). This early attachment relationship forms the core of 'internal working models': schemata that influence a child's understanding of, and participation in, future relationships (Parkes & Stevenson-Hinde, 1982). This cognitive-affective dimension of attachment, referring to the underlying quality of affect toward attachment figures, remains crucial to psychological and emotional adjustment beyond childhood (Bretherton, 1985). More specifically, internal working models are supposed to have an impact on subsequent development through their capacity to alter the perceptions and interpretations of new experiences. For instance, Bartholomew (1990) proposed that adult avoidance of intimacy results from early attachment experiences in which emotional vulnerability has become associated with parental rejection. In turn, such an insecure working model of self-and-others (i.e., perceiving oneself as unworthy of love, and perceiving others as unavailable and unresponsive) may cause individuals to interpret losses and disappointments as personal failures, which contributes to the development of distress (Kenny & Rice, 1995). In addition to an indirect influence on emotional disturbance via the contribution to working models, attachment to parents is directly linked to adolescents' emotional disturbance as an important source of protection and support. The hypothesis that low attachment to parents is linked to later emotional disturbance is generally thought to be valid across all contemporary

Western societies (Van IJzendoorn & Sagi, 1999). Thus, we expect this to hold true for Dutch adolescents as well. In the present study, the term 'emotional disturbance' refers to being emotionally maladjusted and denotes three specific phenomena: psychological stress, depressive mood, and dissatisfaction with life.

In line with theorizing on the attachment-disturbance relationship, most empirical findings - some from studies conducted in the Netherlands - indicate that a high level of attachment is linked to better emotional adjustment. A number of cross-sectional studies have shown moderately strong associations in the expected direction between the quality of adolescents' attachment to parents and self-esteem (Engels, Finkenauer, Meeus, & Deković, 2001; Paterson, Pryor, & Field, 1995), life satisfaction (Greenberg, Siegal, & Leitch, 1983), depressive mood (Burbach & Bourduin, 1986; Engels et al., 2001), and measures of emotional adjustment or well-being (Armsden & Greenberg, 1987; Helsen, Vollebergh, & Meeus, 1999; Nada Raja, McGee, & Stanton, 1992). Contradictory results have been presented regarding whether parental attachment is differentially associated with emotional adjustment over time. While Greenberg et al. (1983) found no changes across the adolescent years, Rice (1990) and Engels et al. (2001) showed that cross-sectional associations between parental attachment and emotional adjustment were stronger among early and middle adolescents than among late adolescents and young adults.

Only a few longitudinal studies have been conducted concerning the relation between adolescents' attachment to parents and their emotional disturbance. Research among American college students by Rice and Fitzgerald (1995) showed that parental attachment was moderately stable over a two-year period. In addition, parental attachment was found to be significantly associated with emotional adjustment two years later. However, Rice and Fitzgerald (1995) did not control for earlier levels of emotional adjustment in their analyses, and only examined across-time correlations. A study by Kenny and Lomax (1998), focusing on American high school students, also demonstrated that adolescents' parental attachment was moderately stable over a one-year period. Additionally, parental attachment predicted emotional adjustment at the follow-up measurement one year later. However, when Kenny and Lomax (1998) controlled for earlier levels of emotional adjustment, they found that there was only one significant association between paternal attachment and later emotional adjustment, for boys only. To sum up, although the quality of adolescents' attachment to parents is related to their emotional disturbance cross-sectionally, the longitudinal evidence for a predictive relationship from parental attachment to later emotional disturbance is weak.

Moreover, it is not clear whether parental attachment is differentially associated with adolescents' emotional disturbance across different age categories.

The Increasing Importance of Romantic Relationships in Adolescence

Love and romance become increasingly important in the lives of many adolescents (Paul & White, 1990). Studies conducted in the United States have shown that from early to late adolescence the involvement in romantic relationships approximately doubles, from 30% - 36% in early adolescence to 67% - 72% in late adolescence (Furman & Wehner, 1997; Laursen & Williams, 1997). In the Netherlands, involvement in romantic relationships has been found to increase from 4% among early adolescents to 40% among late adolescents (De Zwart & Warnaar, 1995). Moreover, romantic involvements provide the context in which issues of sexuality and intimacy are addressed, of central concern to the development of adolescent identity. Not being able to establish and maintain romantic relationships may lead to withdrawal and isolation among adolescents (Erikson, 1963), which may result in depressive moods and feelings of low self-worth. Finally, young people become aware of the specific, rewarding features of romantic relationships besides sex and love. Gradually, attachment and caregiving components such as experiencing intimacy, sharing thoughts and feelings, or caring for the partner become more important for adolescents (Roscoe, Diana, & Brooks, 1987).

Since researchers have argued that attachment functions are transferred from parents to romantic partners (Ainsworth, 1989; Hazan & Shaver, 1987), it seems reasonable to assume that parental influences on adolescents' emotional adjustment will be substituted, at least in part, by the influence of romantic partners. One might expect that being involved in a romantic relationship is negatively associated with emotional disturbance, since interpersonal relations in general are considered to be of critical importance to an individual's emotional adjustment throughout life (e.g., Roscoe, Kennedy, & Pope, 1987). Moreover, research has shown that adolescents' involvement in romantic relationships is related to a more elaborate structure of peer networks (Connolly & Johnson, 1996). In addition, earlier studies among adults have made clear that satisfaction in romantic relationships is associated with self-esteem (Hendrick, Hendrick, & Adler, 1988) and that romantic involvements with supportive and idealizing partners leads to an enhancement of the self-image (Murray, Holmes, & Griffin, 1996).

Does Engagement in Romantic Relationships Moderate the Influence of Parents?

Assuming that the functions of attachment are transferred from parents to romantic partners, one might expect that the relationship between parental attachment and emotional disturbance is strongest for those adolescents who are not involved in romantic relationships. In other words, the quality of attachment to parents should be differentially associated with emotional disturbance across groups of adolescents with and without romantic partners. Previous studies have not examined a possible moderator effect of 'relationship status' on the association between parental attachment and emotional disturbance. Such a moderator effect assumes that specific characteristics of romantic relationships contribute to adolescents' satisfactory emotional adjustment. Thus, it is important to examine different characteristics of romantic relationships, in order to determine more precisely which ones may have an impact on young people's emotional disturbance. With respect to the quality of romantic relations, Brennan and Shaver (1995) found a negative association between the extent to which adolescents experienced their relationships as safe and secure and different forms of problem behavior, such as alcohol abuse and eating disorders. Further, the duration of romantic relationships appears to be a good proximal indicator of relationship quality, as it is found to be associated with experiencing higher amounts of social support in relationships (Connolly & Johnson, 1996).

The Present Study

In the present study we used longitudinal data of 568 adolescents aged 15 to 19 to examine the cross-sectional and longitudinal associations between adolescents' parental attachment and emotional disturbance. Because we hypothesized that parent-child relationships would become less important for adolescents' adjustment when they were involved in romantic relationships, we investigated whether the associations between parental attachment and emotional disturbance were less strong for adolescents with romantic partners. Further, we explored whether the quality (i.e., social support and commitment) and duration of romantic relationships affected adolescents' emotional disturbance. Whereas most earlier investigations have provided cross-sectional data only (for exceptions see Kenny & Lomax, 1998; Rice & Fitzgerald, 1995), this study also focused on the longitudinal associations between parental attachment and emotional disturbance in late adolescents, providing data across a three-year time interval. The present study further contributes to current knowledge by considering a possible moderator effect of romantic involvement on the relationship between parental attachment and emotional disturbance.

METHODS

Procedure and Sample

Data for this study were collected as part of a broader longitudinal panel-survey, the Utrecht Study of Adolescent Development (USAD, 1991-1997), in which the life course trajectories of adolescents and young adults were examined. The sample was representative of the Dutch Caucasian population for gender, age, religious affiliation, residential status, and educational level (Meeus & 't Hart, 1993). The USAD consists of three waves, the first of which was conducted in 1991. A total of 3,924 Dutch families, with adolescents and young adults in the age of 12 to 24, was drawn from an existing panel of 10,000 households. Participants were interviewed in their home environment by trained interviewers. They were also asked to fill out an extensive questionnaire in the presence of the interviewer. In this questionnaire all items about the quality of romantic relationships and emotional disturbance were included. Respondents were then given a questionnaire to fill out on their own and to send back to the research organization. A total of 3394 adolescents and young adults returned this questionnaire.

Follow-up measurements took place in 1994 (wave 2) and 1997 (wave 3). Since no measure of parental attachment was included in the baseline measurement of 1991, we only used the data from these two follow-up measurements. For reasons of clarity, we shall use the term time 1 (T1) to refer to wave 2 and time 2 (T2) to refer to wave 3. In total, 1966 respondents aged 15 to 27 participated at time 1 [T1] in 1994, and 1302 of these participants (66%) also took part in the measurement at time 2 [T2] in 1997. Of the respondents who had participated in both T1 and T2, we selected a subgroup of 568 youths aged 15 to 19 at T1 (n = 568; aged 18 to 22 at T2), in order to examine the link between parental attachment and the characteristics of romantic relationships and emotional disturbance during late adolescence. Of all 568 participants aged 15 to 19 at T1, about 68% (n = 388) were not involved in a romantic relationship, whereas about 31% (n = 178) were involved.

The remaining sample consisted of 249 boys (44%) and 319 girls (56%). At T1, the mean age was 17.1 (SD = 1.40). In total, 96 adolescents were 15 years old, 119 were 16 years old, 106 were 17 years old, 126 were 18 years old, and 121 were 19 years old. About 18% of the respondents had a lower vocational or general education, 53% had an average level of vocational or general education, and 30% were enrolled in high school preparing for college or university, or were already involved in undergraduate studies. Approximately 93% of all respondents lived with their parents, while 7% lived on their own or in student dormitories.

An attrition analysis was conducted to examine potential differences between the longitudinal sample and those who dropped out from T1 to T2 according to gender, age, educational level, residential status, and measures of parental attachment and emotional disturbance. A logistic regression analysis showed that sample attrition was predicted by male gender [OR = 1.53, $p < .05$], having a low level of education (vs. having a high level of education: OR = .49, $p < .05$), perceiving mother as overprotective [OR = 2.26, $p < .05$], being involved in an intimate relationship for a period of 3 to 12 months [OR = 1.79, $p < .05$], and having a relatively high level of emotional disturbance [OR = 1.22, $p < .05$]. However, the regression model did not fit the data well. An R^2L value - which is comparable to the R^2 statistic in multiple regression analyses (DeMaris, 1995) - of .03 indicated that it explained little variance. Thus, the differences between participants and drop-outs on the predicted variables were relatively small.

Measures

All concepts under investigation were assessed using self-report measures. Hence, the scores on each of the scales reflect late adolescents' perceptions of reality rather than objective assessments of their life situation. The questionnaires used to assess parental attachment and dissatisfaction with life were translated using a back-translation procedure (Arrindell, Hanewald, & Kolk, 1989; Arrindell, Meeuwesen, & Huyse, 1991). The instrument measuring psychological stress and depressive mood was translated by other researchers (Koeter et al., 1987), and these authors did not provide information about the translation procedure.

Parental attachment. Adolescents' quality of attachment to parents was measured with the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979). Originally, the PBI was developed to examine parental contributions to a parent-child bond using 50 items. Later, Parker omitted 10 items and created a 40-item scale (20 items for each parent) that has been used extensively over the past decade. The scale contains two dimensions of care and overprotection that are separately assessed for the relationships with father and mother. The care dimension (10 items) assesses a general level of parental warmth and affection versus indifference and neglect (e.g., 'My father/mother spoke to me in a warm and friendly voice' versus 'My father/mother seemed emotionally cold to me'), whereas the overprotection dimension (10 items) assesses the level of parental control and invasion of privacy versus the encouragement of autonomy (e.g., 'My father/mother invaded my privacy' versus 'My father/mother let me dress in any way I pleased'). Respondents answered all items on a 4-point

scale (1 = not true, to 4 = true). In some studies the 2 dimensions are combined to produce 4 different styles of parental bonding: neglectful parenting (low care, low control), affectionless control (low care, high control), affectionate constraint (high care, high control), and optimal bonding (high care, low control). However, in the present study we focused on the 2 continuous dimensions of care and overprotection, since previous research by Arrindell, Hanewald, and Kolk (1989) has shown that this 2-factor structure is applicable to Dutch samples. The PBI has been employed in many psychological and psychiatric studies and has been found to possess a robust factor structure and a high test-retest reliability (Lopez & Gover, 1993; Parker, 1990). Further, support for the construct and predictive validity of the PBI has been found in clinical samples (Parker, 1990) and previous studies among Dutch adolescents (Engels et al., 2001). In the present study, care and overprotection scales had high internal consistencies: Cronbach's alpha was .82 for maternal care, .89 for paternal care, .73 for maternal overprotection, and .71 for paternal overprotection.

Psychological stress and depressive mood. Adolescents' psychological stress and depressive mood were assessed with a short version of the General Health Questionnaire (GHQ; Goldberg, 1978; Kienhorst, Wilde, Van den Bout, & Diekstra, 1990). The GHQ consists of two subscales of psychological stress (6 items) and depressive mood (4 items), measuring the degree to which psychological stress and depressive mood have recently been experienced. Respondents were asked to indicate on a 4-point scale (1 = not at all, to 4 = much more than usual) the extent to which symptoms of psychological stress (e.g., feeling tense and nervous) or depression (e.g., feeling unhappy and dejected) had been experienced during the past four weeks. In samples of Dutch adolescents, Kienhorst et al. (1990) found the GHQ to have moderate to strong associations with measures of self-esteem and hopelessness, and to possess a consistent and stable factor structure. As in previous research with Dutch adolescents (Koeter et al., 1987), in the current study, both scales had high internal consistencies: Cronbach's alphas for psychological stress and depressive mood were .90 and .85 respectively at T1, and .90 and .84 respectively at T2.

Dissatisfaction with life. Respondents' overall (dis)satisfaction with life was assessed using the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The SWLS consists of 5 items (e.g., 'If I could live my life over, I would change almost nothing') which are answered on a 7-point scale (1 = strongly disagree, to 7 = strongly agree). All answers were recoded to reflect a dissatisfaction rather than a satisfaction with life. A study on the psychometric properties of this instrument showed that it had one underlying factor and high internal consistency (Neto, 1993). Arrindell, Heesink, and Feij (1999) found the SWLS to

have a satisfactory construct validity in a Dutch sample. Evidence for the convergent validity of the instrument was also established, since the SWLS was predictably associated with indices of general health, euphoria, dysphoria, and neuroticism. In the present study, Cronbach's alphas were .84 at T1 and T2.

Social support of partner. The perceived level of social support received from the romantic partner was measured using the role-relation method (see Meeus, 1989). Participants were asked to indicate on a 10-point scale the degree of support they received from their partner when they encountered problems in relationships ('When you are having problems in relationships with someone else, or when you are feeling lonely, to what extent does your partner help you?'). Because respondents' scores on this measure reflected their scores on this one item, no reliability coefficients could be calculated. An earlier study with Dutch youths by Helsen, Vollebergh, and Meeus (submitted for publication) provided data in favor of the predictive validity of this instrument, showing it to be longitudinally associated with a composite measure of 'internalizing problem behavior'.

Commitment to partner. Commitment to the partner was measured using the U-GIDS (Utrecht-Groningen Identity Development Scale; Meeus, 1996), which contains six 5-point items (e.g., 'In the relationship with him/her I have learned what I want out of life.'). The response categories ranged from 1 = completely untrue, to 5 = completely true. Cronbach's alpha for this measure was .86 at T1 and .89 at T2. No previous studies have examined the reliability and validity-characteristics of this instrument in its present form.

Duration of romantic relationship. The duration of romantic relationships was assessed using a single item: 'At this moment, are you going steady or do you have a boyfriend or girlfriend?' Respondents answered this question on a 5-point scale. The respondents who indicated being involved in a romantic relationship also provided information on the duration of their relationship. The response categories were 0 = no, not involved, 1 = yes, for a period shorter than 3 months, 2 = yes, for a period between 3 and 12 months, 3 = yes, for a period between 1 and 3 years, and 4 = yes, for more than 3 years.

RESULTS

Emotional Disturbance, Parental Attachment, and Quality of Romantic Relationships

At T1, 31% (n = 178) of all participants were involved in a romantic relationship. Of these adolescents, about 8% (n = 48) were involved in a romantic relationship for a period longer

than 3 months, 9% (n = 53) had a romantic relationship for a period between 3 and 12 months, approximately 12% (n = 65) had romantic relationships for a period between 1 and 3 years, and about 2% (n = 12) had a romantic relationships for more than 3 years.

The mean differences between adolescents with and without romantic partners were examined with t-tests, using romantic relationship status as the independent variable. Table 4.1 shows that for all respondents at T1 the mean levels of psychological stress, depressive mood, and dissatisfaction with life were rather low. Respondents who were involved in romantic relationships differed from the respondents who were not involved in romantic relationships in that they experienced a lower dissatisfaction with life [t (428) = 3.78, p < .001)]. No differences were found between respondents with and without romantic partners in their perceptions of parental attachment. In both groups, respondents made clear that they experienced high levels of care - especially from the mother - and low levels of overprotection. In addition, respondents involved in romantic relationships reported high levels of social support from the partner and commitment to the partner.

Table 4.1
Means and Standard Deviations for Emotional Disturbance, Parental Attachment, and Quality of Romantic Relationship at T1

	With Romantic Relationship (n = 178)		Without Romantic Relationship (n = 388)	
	Mean	*SD*	*Mean*	*SD*
Psychological stress (1-4)	1.71	0.61	1.76	0.71
Depressive mood (1-4)	1.33	0.48	1.38	0.60
Dissatisfaction with life (1-7)	2.77	0.90	3.10***	1.14
Maternal care (1-4)	3.54	0.39	3.54	0.39
Maternal overprotection (1-4)	1.72	0.42	1.74	0.44
Paternal care (1-4)	3.24	0.58	3.24	0.56
Paternal overprotection (1-4)	1.79	0.45	1.76	0.44
Social support of partner (1-10)	8.63	1.51		
Commitment to partner (1-5)	4.12	0.56		

Note. The answering scale-ranges for each of the variables are presented in parentheses after the variable names. The significant t-test result for the mean difference between the groups of adolescents with and without romantic relationships is: *** p < .001.

Additional analyses were conducted to examine gender differences in the groups of respondents with and without romantic partners. For adolescents who were involved in a romantic relationship, girls generally had a higher level of depressive mood than boys [t (150) = 2.04, $p < .05$], whereas in the group of respondents without a romantic partner, girls had higher levels of psychological stress [t (383) = 4.22, $p < .001$)] and depressive mood [t (368) = 3.81, $p < .001$] as compared to boys. No gender differences were found on parental attachment and quality or duration of romantic relationships.

Associations between Emotional Disturbance and Parental Attachment

Pearson correlations, presented in Table 4.2, were computed to examine cross-sectional and longitudinal bivariate associations between parental attachment and the indicators of emotional disturbance. As with the t-tests, this was done separately for groups of respondents who were or were not currently involved in a romantic relationship. Although no differences existed between respondents with and without romantic partners in the mean levels of care and overprotection they perceived, the strength of the link between parental attachment at T1 (1994) and levels of depressive mood, psychological stress, and dissatisfaction with life at T1 and T2 (1997) seemed to vary between the groups.

For adolescents not involved with romantic partners, most cross-sectional correlations were significant, ranging in magnitude from .11 (n.s.) to .34 ($p < .001$). Overall, higher levels of depressive mood, psychological stress, and dissatisfaction with life were associated with less parental care and more parental overprotection. In contrast, for those currently involved in a romantic relationship, only two cross-sectional associations between parental attachment and emotional disturbance were significant: paternal care [R = -.28, $p < .001$] and paternal overprotection [R = .21, $p < .01$] were both correlated with dissatisfaction with life at T1. An examination of the longitudinal associations pointed to similar differences between respondents with and without romantic partners.

Eight of 12 Pearson correlations between parental care and overprotection at T1 and the three indicators of emotional disturbance at T2 were significant for those without romantic partners, ranging in magnitude from .13 ($p < .01$) to .26 ($p < .001$), whereas for those with romantic partners only one correlation was significant: between paternal care at T1 and dissatisfaction with life at T2 [R = -.34, $p < .001$].

Table 4.2
Pearson Correlations between Emotional Disturbance and Parental Attachment

	1	2	3	4	5	6	7	8	9	10
(1) Psychological stress T1		.74***	.46***	.42***	.32***	.16***	-.12	.16**	-.23**	.13
(2) Depressive mood T1	.70***		.46***	.42***	.37***	.23***	-.19***	.20***	-.23***	.11
(3) Dissatisfaction with life T1	.31***	.35***		.27***	.29***	.44***	-.32***	.23***	-.34***	.24***
(4) Psychological stress T2	.38***	.35***	.18		.70***	.30***	-.06	.10	-.17***	.13**
(5) Depressive mood T2	.30***	.37***	.32***	.69***		.43***	-.10	.12	-.20***	.18***
(6) Dissatisfaction with life T2	.09	.22	.46***	.34***	.43***		-.19***	.14**	-.26***	.22***
(7) Maternal care T1	-.05	-.09	-.18	.00	-.01	-.11		-.51***	.51***	-.39***
(8) Maternal overprotection T1	.06	.07	.07	-.02	-.06	-.07	-.57***		-.28***	.61***
(9) Paternal care T1	-.10	-.13	-.28***	-.04	-.07	-.34***	.53***	-.31**		-.55***
(10) Paternal overprotection T1	.14	.16	.21**	.03	.01	.17	-.35***	.64***	-.56***	

Note. Correlations for adolescents not involved in romantic relationships (n = 388) are presented in the upper-right triangle of the matrix; correlations for adolescents involved in romantic relationships (n = 178) are presented in the lower-left triangle. Alpha-level was set to p <.01.
** p < .01, *** p < .001.

Although visual inspection suggested that most Pearson correlations were larger for respondents who were not involved in romantic relationships, this difference could not be demonstrated statistically. Z-tests for comparing correlations across independent samples made clear that only a minority of correlations (3 out of 24 comparisons) in the group of adolescents without romantic partners had significantly higher values than the same correlations in the group of adolescents with romantic partners. For all other comparisons, the differences did not reach statistical significance.

Cross-sectional Regression - Emotional Disturbance T1 on Parental Attachment T1

The bivariate associations made clear that fathers' and mothers' overprotection and care were strongly interrelated. This stresses the importance of multivariate analyses, in which the predictive power of one indicator of parental attachment (e.g., paternal care) is controlled for the influence of other indicators of parental attachment (e.g., maternal care). Thus, we performed hierarchical regression analyses on the total sample to test multivariate relations between parental attachment and psychological stress, depressive mood, and dissatisfaction with life in late adolescence. Since we aimed to examine whether parental attachment might be predictive of emotional disturbance apart from the influence of sociodemographic variables, we controlled for gender, age, residential status, and educational status. Interaction terms between parental attachment and relationship status were calculated (cf. Aiken & West, 1991) and included in the regression equation to examine the possible moderator effect of being romantically involved on the relationship between parental attachment and emotional disturbance. All variables included in the regression equation were z-transformed. Although several predictor variables of parental attachment had rather strong intercorrelations, this did not appear to confound the outcomes of the regression analyses. The values of the Variance Inflation Factor (VIF) did not exceed 10 for any predictor, which indicates that the results are not confounded by multi-collinearity (Stevens, 1996).

The 3 cross-sectional multiple regression analyses presented in Table 4.3 show that gender had significant negative associations with emotional disturbance, indicating that girls reported higher levels of psychological stress, depressive mood, and dissatisfaction with life than boys. Other sociodemographic variables (i.e., age, residential status, educational status) were not related to emotional disturbance in these multivariate analyses. In addition, paternal overprotection and paternal care were significantly associated with emotional disturbance. Paternal overprotection was related to lower levels of psychological stress and depressive mood,

while paternal care was related to lower levels of psychological stress, depressive mood, and dissatisfaction with life. Although maternal care was associated with a lower level of dissatisfaction with life and maternal overprotection was linked to a higher level of depressive moods, no *systematic* associations were found between maternal care and maternal overprotection and the indicators of emotional disturbance.

Table 4.3
Cross-Sectional Hierarchical Regression Analyses: Emotional Disturbance at T1 on Parental Attachment and Relational Status at T1 *(continues on next page)*

	Psychological Stress - T1	Depressive Mood – T1	Dissatisfaction With Life – T1
Step 1			
Gender	-.16***	-.17***	-.08
Age	-.01	-.01	-.02
Residential status	.07	.07	.02
Educational status	.08	.05	.01
ΔR^2 for Step 1:	*$\Delta R^2 = .04^{***}$*	*$\Delta R^2 = .04^{***}$*	*$\Delta R^2 = .01$ (n.s.)*
Step 2			
Gender	-.20***	-.20***	-.14**
Age	-.01	.02	.05
Residential status	.04	.04	-.01
Educational status	.08	.04	-.01
Maternal care	-.03	-.08	-.13*
Maternal overprotection	.06	.17**	.09
Paternal care	-.22***	-.21***	-.23***
Paternal overprotection	-.17*	-.21**	-.10
Relational status	-.03	-.03	-.18***
ΔR^2 for Step 2:	*$\Delta R^2 = .05^{***}$*	*$\Delta R^2 = .07^{***}$*	*$\Delta R^2 = .14^{***}$*
Step 3			
Gender	-.20***	-.20***	-.14**
Age	-.00	.02	.05
Residential status	.04	.04	-.02

Educational status	.08	.04	-.00
Maternal care	-.02	-.08	-.13*
Maternal overprotection	.05	.15*	.08
Paternal care	-.21***	-.20***	-.23***
Paternal overprotection	-.16*	-.19**	-.08
Relational status	-.04	-.04	-.19***
Maternal care x Rel. stat.	-.03	-.02	.02
Maternal ovpr. x Rel. stat.	-.13*	-.23**	-.16*
Paternal care x Rel. stat.	.09	.06	.08
Paternal ovpr. x Rel. stat.	.09	.16*	.15*
ΔR^2 for Step 3:	*ΔR^2 = .01 (n.s.)*	*ΔR^2 = .03***	*ΔR^2 = .02**
R^2 for Total Model:	*R^2 = .11*	*R^2 = .14*	*R^2 = .17*

Note. Gender, residential status, and relational status were dummy-coded (0 = female / not living with parents / without romantic partner). All regression equations were statistically significant: F (13, 465) = 4,17 ($p < .001$) for psychological stress, F (13, 462) = 5,45 ($p < .001$) for depressive mood, and F (13, 466) = 6,97 ($p < .001$) for dissatisfaction with life. Standardized beta's are presented for both main and interaction effects. Rel. stat. = Relational status, ovpr. = Overprotection.
* $p < .05$, ** $p < .01$, *** $p < .001$.

One interaction effect, overprotection mother x relational status, was a significant predictor of psychological stress [β = -.13, $p < .05$], depressive mood [β = -.23, $p < .01$], and dissatisfaction with life [β = -.16, $p < .05$]. This means that, for adolescents who were not romantically involved, the variation in scores on maternal overprotection was more strongly associated with psychological stress, depressive mood, or dissatisfaction with life, than for youths with romantic partners. Another interaction effect, overprotection father x relational status, was a significant predictor of depressive mood [β = .16, $p < .05$] and dissatisfaction with life [β = .15, $p < .05$]. This, again, indicates that, for respondents without a romantic relationship, the variation in scores on paternal overprotection was more strongly associated with depressive mood and dissatisfaction with life than for adolescents without romantic partners. Because the group of respondents romantically involved contained more girls (n = 118, 66%) than boys, we examined possible three-way interactions of parental attachment x relational status x gender. No significant interaction effects were found, which means that differences in cross-sectional associations between parental attachment and emotional disturbance between late adolescents with and without romantic relationships were equally strong across groups of boys and girls.

In conclusion, the cross-sectional results support the notion that parental attachment is associated with emotional disturbance in late adolescence, and provides tentative evidence for the hypothesis that parental attachment is differentially associated with emotional disturbance in groups of late adolescents with and without romantic relationships.

Longitudinal Regression - Emotional Disturbance T2 on Parental Attachment T1

In addition, we examined the relationship between parental attachment and emotional disturbance at T2, controlling for earlier levels of emotional disturbance at T1. The results of these 3 multiple regression analyses, presented in Table 4.4, show that residential status (i.e., living away from the parents) had a significant positive association with respondents' psychological stress. In addition, respondents' age had significant negative associations with psychological stress and depressive mood, while gender (i.e., being male) was negatively associated with depressive mood. Clearly, the most relevant predictors of psychological stress, depressive mood, or dissatisfaction with life at T2 were these same variables at T1. In contrast with the outcomes of the cross-sectional analyses, parental attachment at T1 had no systematic longitudinal relationships with emotional disturbance over a three-year period. Nevertheless, paternal care at T1 was a significant predictor of relatively low levels of dissatisfaction with life and depressive moods at T2. No significant interaction effects were found between measures of parental attachment and relational status. Overall, the longitudinal multivariate analyses showed that parental attachment at T1 was not systematically related to emotional disturbance at T2, for both groups of adolescents with and without romantic relationships.

Table 4.4
Longitudinal Hierarchical Regression Analyses: Emotional Disturbance at T2 on Parental Attachment and Relational Status at T1 *(continues on pages 71 and 72)*

	Psychological Stress – T2	Depressive Mood – T2	Dissatisfaction With Life – T2
Step 1			
Gender	-.12**	-.14**	-.03
Age	-.09	-.10	-.01
Residential status	.13**	.13*	.06
Educational status	.06	.05	-.04
ΔR^2 for Step 1:	*$\Delta R^2 = .04$****	*$\Delta R^2 = .04$****	*$\Delta R^2 = .00$ (n.s.)*

Step 2			
Gender	-.06	-.09*	.01
Age	-.09	-.10	.00
Residential status	.11*	.10*	.05
Educational status	.03	.03	-.04
Emot. Dist. Predictor T1	.36***	.34***	.48***
ΔR^2 for Step 2:	*$\Delta R^2 = .12$****	*$\Delta R^2 = .11$****	*$\Delta R^2 = .23$****
Step 3			
Gender	-.08	-.10*	-.00
Age	-.11*	-.11*	.01
Residential status	.10*	.09*	.03
Educational status	.04	.04	-.04
Emot. Dist. Predictor T1	.34***	.31***	.44***
Maternal care	-.00	-.01	.03
Maternal overprotection	.00	-.01	.02
Paternal care	-.11*	-.12*	-.15**
Paternal overprotection	-.10	-.07	-.03
Relational status T1	.04	.01	-.02
ΔR^2 for Step 3:	*$\Delta R^2 = .02$ (n.s.)*	*$\Delta R^2 = .02$ (n.s.)*	*$\Delta R^2 = .02$ (n.s.)*
Step 4			
Gender	-.08	-.10*	-.01
Age	-.11*	-.11*	.01
Residential status	.10*	.09	.03
Educational status	.05	.05	-.04
Emot. Dist. Predictor T1	.33***	.31***	.43***
Maternal care	-.01	-.01	.03
Maternal overprotection	-.00	-.02	.01
Paternal care	-.10	-.11*	-.15**
Paternal overprotection	-.09	-.07	-.03
Relational status T1	.03	.01	-.03

Maternal care x Rel. stat.	-.01	.00	.02
Maternal ovpr. x Rel. stat.	-.03	-.03	-.08
Paternal care x Rel. stat.	.05	.05	.01
Paternal ovpr. x Rel. stat.	.07	.07	.08
ΔR^2 for Step 4:	*ΔR^2 = .00 (n.s.)*	*ΔR^2 = .00 (n.s.)*	*ΔR^2 = .00 (n.s.)*
R^2 for Total Model:	*R^2 = .18*	*R^2 = .17*	*R^2 = .25*

Note. Gender, residential status, and relational status were dummy-coded (0 = female / not living with parents / without romantic partner). All regression equations were statistically significant: F (14, 462) = 7,10 ($p < .001$) for psychological stress, F (14, 458) = 6,62 ($p < .001$) for depressive mood, and F (14, 462) = 10,71 ($p < .001$) for dissatisfaction with life. Standardized beta's are presented for both main and interaction effects. Rel. stat. = Relational status, Ovpr. = Overprotection.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Longitudinal Regression - Emotional Disturbance T2 on Quality and Duration of Romantic Relationship T1

We performed another set of longitudinal multiple regression analyses for respondents who were involved in a romantic relationship, to test whether emotional disturbance at T2 could be predicted by the quality and duration of romantic relationships at T1. In Table 4.5, the bivariate correlations and multivariate regression coefficients are presented for longitudinal relationships between quality and duration of romantic relations and emotional disturbance.

Table 4.5
Longitudinal Hierarchical Regression Analyses: Emotional Disturbance at T2 on Quality and Duration of Romantic Relationships at T1

	Psychological Stress – T2		Depressive Mood – T2		Dissatisfaction With Life – T2	
	Rxy[a]	*β*[b]	*Rxy*	*β*	*Rxy*	*β*
Commitment to Partner T1	-.11	-.03	-.08	.02	-.12	-.18
Social Support of Partner T1	-.02	-.06	-.04	-.08	-.11	.11
Duration of Relationship T1	.02	-.06	-.02	-.15	.07	-.14
R^2 of Step in Total Model:	*R^2 = .01 (n.s.)*		*R^2 = .03 (n.s.)*		*R^2 = .04 (n.s.)*	

Note. Only the third, last step of the regression model is presented, since in these analyses we specifically focused on possible longer-term effects of romantic relationships. Gender, age, residential status, and educational status are included in step 1, the specific indicator of emotional disturbance at T1 is included in step 2. Regression statistics of total models: F (8, 107) = 1,91 (p = .07) for psychological stress, F (8, 104) = 2,42 (p = .02) for depressive mood, F (8, 104) = 3,72 (p = .001) for dissatisfaction with life.
[a] = The term 'Rxy' refers to the longitudinal correlation between the predictor and dependent variable.
[b] = The symbol 'β' refers to the standardized beta-coefficient in the longitudinal regression analyses.

In general the results showed that, controlling for earlier levels of emotional disturbance at T1, the duration of romantic relationships, the social support adolescents receive from their romantic partners, and the extent to which adolescents feel committed to their romantic partners, were not related to emotional disturbance at T2.

DISCUSSION

In the present study, we analyzed the data of 568 adolescents aged 15 to 19, who participated in two waves (1994 and 1997) of a longitudinal study. The cross-sectional results showed that paternal overprotection and paternal care were both negatively related to adolescents' depressive mood, psychological stress, and dissatisfaction with life. In addition, the cross-sectional analyses provided tentative evidence for the hypothesis that parental attachment is differentially associated with emotional disturbance in groups of late adolescents with and without romantic relationships. Longitudinal analyses, however, suggested that parental attachment was not systematically related to subsequent emotional disturbance. No associations were found between the quality and duration of romantic relationships and emotional disturbance.

Respondents generally perceived their parents as caring and protective personalities, and reported rather low levels of emotional disturbance. In accordance with research by Parker (1990), we found that adolescents experienced higher levels of maternal care than paternal care, although mothers were not rated as less overprotective than fathers. The correlation coefficients seemed to be at odds with these findings, since maternal and paternal care had equally strong associations with emotional disturbance. However, Paterson et al. (1995) argued that lower levels of paternal care may be judged as normal by a majority of young people and, therefore, may not have strong associations with emotional disturbance. The present study showed that adolescents who were involved in romantic relationships did not report lower levels of emotional disturbance. With increasing age, however, such a link between '(not) being involved' and emotional disturbance may become stronger (Moore, 1987). This may be so, because an increasing number of peers become involved in a romantic relationship during adolescence, which may lead adolescents without such a relationship to perceive themselves as an increasingly small minority in their age group.

The results of the cross-sectional regressions showed that paternal overprotection had moderately strong negative associations with depressive mood and dissatisfaction with life,

whereas paternal care was negatively related to all three indicators of disturbance. This replicates earlier findings showing that parental attachment has moderate cross-sectional associations with life satisfaction (Greenberg et al., 1983), depressive mood (e.g, Engels et al., 2001), and emotional adjustment or well-being (e.g., Armsden and Greenberg, 1987). In contrast with outcomes of earlier studies, however, we found paternal overprotection to have negative instead of positive associations with the indicators of emotional disturbance. Maybe, up to a certain extent - and in combination with high levels of care - youths might perceive their fathers' autonomy-limiting behavior as normal protective behavior fitting the father-role in a family. Further, our results suggest that maternal care and maternal overprotection were not systematically associated with late adolescents' emotional disturbance. Caution is warranted in interpreting these findings, however, because it is possible that when the impact of both parents is examined simultaneously, the influence of one parent surpresses that of the other, since paternal and maternal parenting behaviors are often strongly correlated with one another. Thus, paternal care and overprotection might surpress the influence of maternal care and overprotection, maybe because higher levels of paternal care and overprotection are relatively extraordinary in the perception of adolescents and therefore more influential (see also Paterson et al., 1995).

Although the cross-sectional results indicated that there were moderately strong associations between parental attachment and emotional disturbance, the longitudinal analyses yielded no systematic predictive relationships between parental attachment at T1 and psychological stress, depressive mood, and dissatisfaction with life at T2. Generally, these results are in line with longitudinal research by Kenny and Lomax (1998) and Rice and Fitzgerald (1995), which did not generate strong support for the existence of a longitudinal relationship between parental attachment and emotional disturbance. Similar to these previous longitudinal studies, in this study a two-wave longitudinal design was employed. However, different time-intervals (1, 2, and 3 years) were used in the three studies, as well as different measurements of parental attachment (PAQ, Kenny, 1987; IPPA, Armsden & Greenberg, 1987; PBI, Parker et al., 1979). Thus, despite different research designs and questionnaires, the present body of longitudinal research suggests that adolescents' attachment to parents does not have a systematic longitudinal connection with later emotional disturbance.

Why are there No Systematic Longitudinal Relationships between Parental Attachment and Emotional Disturbance in Late Adolescence?

Not only do the longitudinal results of the present study contradict the moderately strong relationships between parental attachment and emotional adjustment generally found in cross-sectional research, they also seem to diverge from the core notion of 'continuity of adaptation' in attachment theory (e.g., Sroufe & Waters, 1977). According to this notion, we would expect parental attachment to be moderately stable over time, since - although early attachment experiences frame an individual's later encounters - attachment patterns are probably "... not immutable and (...) independent of subsequent experience" (Sroufe et al., 1999, p. 1). The findings regarding the strength of longitudinal associations between parental attachment and emotional disturbance do not allow us to draw clear-cut inferences regarding the stability of attachment concepts. Nevertheless, the absence of a longitudinal relationship between parental attachment and emotional disturbance in the present study might suggest that internal working models are less-than-moderately stable during late adolescence. Previous studies (e.g., Wilhelm & Parker, 1990) have shown parental attachment to be relatively stable in populations of adults, but a meta-analysis by Rice (1990) showed that associations between parental attachment and emotional adjustment were stronger for early and middle adolescents than for late adolescents.

Late adolescents learn to establish and maintain romantic relationships, and begin experimenting with sex, love, and intimacy (Paul & White, 1990; Roscoe et al., 1987). Because young people at this age are particularly 'eager to learn' about romantic relationships, late adolescence may be seen as a sensitive period in the development of attachment and caregiving needs and behavior. There might be an increased openness to new, romantic experiences such as dating (Sanderson & Cantor, 1995) and a stronger inclination to actively seek out situations in which the chance of having a romantic encounter is high, for instance by going out to a disco (Noack, 1990). It is likely that late adolescents' views of intimate relationships change because of the new attachment experiences they encounter when they start focusing on romantic relationships (Engels et al., submitted for publication). The relatively low stability of parental attachment in late adolescence would imply that earlier perceptions of the parent-child relationship would be transformed during a three-year period and no longer be relevant for emotional functioning.

Several other explanations for the absence of a longitudinal relationship between parental attachment and emotional disturbance should also be considered. The association between emotional disturbance and parental attachment might be caused by a 'third variable'. For instance, neuroticism, difficult temperament, or low sociability of the adolescent can all lead to both higher levels of emotional disturbance and less caring and protective parenting, which might explain why we found concurrent but not cross-lagged longitudinal relationships. Another possibility is that there is 'reversed causation' or a cross-lagged relationship in the opposite direction: from emotional disturbance to subsequent parental attachment. Depressive moods or psychic stress in late adolescents might lead to less caring and less protective parenting (neglect) or less caring and overprotective parenting (harsh control), when parents lack the skills to efficiently cope with their children's disturbance. Such a direction of causality is supported by research of Kerr and Stattin (2000), which shows that parents' efforts to monitor or control their offspring were mostly the consequence of information children provided about their adjustment. A third explanation is that emotional disturbance and parental attachment are mutually reinforcing and involved in a transactional process with origins in early childhood. Thus, when children, and later adolescents, perceive the relationship with their parents as warm and supportive, this will positively affect their emotional adjustment, which will in turn lead to higher levels of parental attachment. Because these 'transactions' probably unfold in short periods of time, it is unlikely that a significant cross-lagged relationship will be found from parental attachment to emotional disturbance employing a three-year time interval.

Associations between Romantic Relationships and Late Adolescents' Emotional Adjustment

The hypothesis that being involved in a romantic relationship moderates the relationship between parental attachment and emotional disturbance was tentatively supported in the cross-sectional analyses, indicating that there might be a shift in primary attachment figures during late adolescence (Ainsworth, 1989; Hazan & Shaver, 1987). The fact that mean levels of parental attachment were equal for adolescents with and without romantic partners, supports the notion that adolescents' individuation generally takes place in a context of warm, supportive relations with parents (Grotevant & Cooper, 1986). Second, significant interaction effects were found for paternal care and overprotection with relational status in predicting depressive mood, psychological stress, and dissatisfaction with life. These effects illustrated that

paternal care and overprotection were more strongly related to emotional disturbance for adolescents without romantic relationships as compared to adolescents with romantic relationships. Overall, the results show that the influence of romantic partners at least partially replaces the influence of parents. However, the longitudinal results did not yield any moderator effects of relational status on the relationship from parental attachment to emotional disturbance, which probably reflects the fact that while the quality of parent-child relations may become less relevant for late adolescents' emotional disturbance, the quality of (not the actual involvement in) romantic relations may become more important.

In the present study, however, we found that the two measures of relationship quality were not related to emotional disturbance at T2. One explanation for this finding might be that social support and commitment are not very good indicators of relationship quality. First of all, the measure used to assess social support in the present study consisted only of one item. Secondly, adolescents may not be satisfied with their romantic relationships but still feel committed to them, or they can experience relatively little social support from their partner but still be satisfied with the relationship. Still, social support and commitment have often been considered proximal indicators for relationship quality (e.g., Connolly & Johnson, 1996; Rusbult, Martz, & Agnew, 1998), and do appear to have at least some heuristic value. A more meaningful explanation might be that for 15 to 19 year olds, quality of romantic relationships is not yet important in an absolute manner. According to Roscoe et al. (1987), the motives for engaging in romantic relationships during this age period primarily concern sex and social status, while attachment and caregiving behaviors are probably more closely tied to perceived social support of the partner and commitment to the partner in enduring relationships.

Limitations of the Present Study

Although the present study may provide more insight into the relationships between parental attachment, romantic relationships, and emotional disturbance in late adolescence, our findings should be generalized with caution due to some methodological shortcomings. First, this study did not ask participants whether their romantic relationships were homosexual or heterosexual in nature, thereby limiting the interpretations of these results. Also, there was selective attrition from the sample of individuals with relatively high levels of emotional disturbance, which may have caused us to underestimate the strength of the associations between adolescents' parental attachment, romantic relationships, and emotional disturbance. However, the differences between participants and drop-outs were relatively small and

contributed only in a minor way to the attrition in the sample. In addition, the PBI was not employed in both waves, but only at T1. Therefore, we were unable to examine the cross-lagged relation between emotional disturbance at T1 and parental attachment at T2, which restricts us from making causal inferences regarding the longitudinal relationships between parental attachment and emotional disturbance, and made it impossible to examine the stability and change of late adolescents' internal working models. Finally, although social support from the partner and commitment to the partner have been used in previous research as indicators for relationship quality (e.g., Connolly & Johnson, 1996), one should incorporate measures of global satisfaction with or functioning of romantic relationships to gain a more valid picture of the quality of romantic relationships.

Recommendations for Future Research and Clinical Practice

Until now, the longitudinal evidence for a relationship between parental attachment and emotional disturbance has been rather weak. However, before any straightforward conclusions can be drawn about this relationship in samples of late adolescents, more longitudinal research is required. It is important that future studies adopt 'cross-lagged panel designs' that examine (a) concurrent relationships of parental attachment and emotional disturbance, (b) the cross-lagged relations from emotional disturbance to parental attachment, and (c) the stability of parental attachment and emotional disturbance. Additionally, to check whether adolescents' memory and thinking about the parent-child relationship resembles that of their parents, future research should rely on multi-informant designs. Interesting topics of inquiry would concern the stability of late adolescents' working models, and the impact of characteristics of romantic relationships on emotional adjustment during this life period.

As Bartholomew and Thompson (1995) wisely noted, more longitudinal and especially applied research is needed before any firm recommendations can be made regarding the use of attachment theory in counseling practice. Bearing this in mind, then, the following implications are tentatively offered for counseling practices. First, the relatively high stability of emotional disturbance found in this study suggests that intervention efforts should take place early in life, because poor emotional functioning tends to persist through time to a moderate degree (e.g., Ferdinand & Verhulst, 1995; Overbeek, Vollebergh, Meeus, Engels, & Luijpers, 2001). Moreover, our findings support the notion that counselors should not focus exclusively on traumatic childhood experiences or negative perceptions of the parent-child relationship as possible causes of emotional difficulties. In late adolescence, romantic relationships and new

attachment experiences become increasingly important for an individual's emotional adjustment.

Notably, the increasing importance of new attachment experiences in late adolescence also implies that counselors can provide their clients with 'corrective relational experiences' (see Rice, Cunningham, & Young, 1997). The counselor can provide a secure base, that enables clients to explore their attachment-related memories and helps them to clarify the meaning of attachment-related feelings and interactions that arise in the context of intimate relationships, for instance with parents or romantic partners (Pistole & Edwards, 1995). The primary goal of examining such experiences is for the client to gain perspective on negative attachment experiences and change the internal working model, shifting toward more competent behavior. It seems that the therapeutic process can be divided in two main parts, and can best be described as a 'cognitive-behavioral intervention'. First of all, the client gains new insights about old attachment experiences and learns that current problematic attachment behavior, although functional and reasonable in earlier contexts, is inadequate in the current life situation. Second, on the basis of a transformed working model of self-and-others, the counselor helps the client in developing new interpersonal skills and coping behaviors.

It should be noted, however, that counseling practices based on attachment concepts have some problems as well. For instance, since persons have developed hierarchically arranged multiple attachments by late adolescence, it is questionable whether the newly developed interpersonal skills and self-other cognitions will generalize over all different relational contexts in an adolescent's life. Also, because in establishing a secure base two parties are involved, counselors may encounter problems in establishing a secure base with adolescents who, for whatever reason, are reluctant to pay any attention to earlier attachment experiences (Pistole & Edwards, 1995). Nevertheless, considering the *possibility* that late adolescence is a sensitive period for the formation of attachment and caregiving, this life phase may prove to be fertile ground for counseling aimed at the repudiation of clients' false beliefs and negative preconceptions about intimacy and relationships (Kenny & Rice, 1995). Counselors dealing with late adolescents, for instance in secondary schools or colleges, may well take advantage of these opportunities.

NOTES

[1] Overbeek, G., Vollebergh, W., Engels, R.C.M.E., & Meeus, W. (2003). Parental atachment and romantic relationships: Associations with emotional disturbance during late adolescence. *Journal of Counseling Psychology, 50 (1),* 28-39.

CHAPTER 5

YOUNG ADULTS' PARENTAL BONDS, PARTNER RELATIONS, AND MENTAL DISORDERS: RESULTS FROM THE NETHERLANDS MENTAL HEALTH SURVEY AND INCIDENCE STUDY[1]

In this study we examined (1) whether parental bonding was related to the prevalence of DSM-III-R mental disorders in young adulthood, and (2) whether young adults' experiences in partner relationships would mediate these associations. Data were used from 1,581 Dutch young adults aged 18-34 years, who were interviewed in 3 waves (1996, 1997, and 1999) of the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Structural Equation Modelling demonstrated that parental bonding was significantly, negatively associated with later mood and anxiety disorders, but not substance disorders. Partner relationship quality did not mediate these negative associations between parental bonding and mood and anxiety disorders. Thus, a model in which only direct linkages between parental bonding and the presence of mental disorders were specified provided an adequate fit to the data. Overall, the results suggest that mental disorders are directly related to parental care and overprotection during childhood and adolescence, but the lower-quality parental bonds were found to be related only to anxiety and mood disorders - and not substance disorders - and were of a relatively modest strength. Keywords: young adulthood, parental bonds, partner relationships, prevalence, mental disorders, DSM-III-R

The nature and quality of people's childhood experiences with parents are generally believed to exert an important influence on individual adjustment in later life (Shaffer, 2002; Sroufe, Carlson, Levy, & Egeland, 1999). Although the structure of parent-child relationships changes during adolescence, parents remain influential in providing support and guidance for their children and continue to serve as important attachment figures (Ainsworth, 1989; Grotevant & Cooper, 1986). In adolescence and young adulthood, however, most people learn how to establish and maintain partner relationships (Erikson, 1963), and these relationships become increasingly important sources of support and intimacy (Furman & Burmester, 1992; Laursen & Williams, 1997). In accordance, research on adolescents and young adults has demonstrated that lower levels of intimacy and perceived quality in partner relationships are associated with emotional maladjustment (Cramer & Donachie, 1999;

McLennan & Omodei, 1988) and criminality and substance abuse (e.g., Mudar, Leonard, & Soltysinski, 2001; Simons, Stewart, Gordon & Conger, 2002; Quinton, Pickles, Maughan, & Rutter, 1993). Until now, however, only a limited number of studies focusing on individual adjustment have examined parent-child bonds in conjunction with intimate partner relationships (Anderson & Stevens, 1993; Gittleman, Klein, Smider, & Essex, 1998; Bartholomew & Horowitz, 1991).

An explanation for the relationship between people's bonds with parents and the later prevalence of mental disorders is based on the assumption of 'cross-relationship continuity'. Parental bonding might contribute to the development of mental disorders through its effect on individuals' experiences in a later partner relationship. According to attachment theory, parents usually provide their offspring with a 'secure base' - meeting childrens' propensity to establish safe and protective relationships with people in their direct surroundings - without limiting the possibility to actively explore the environment (Bowlby, 1977). These early attachment-experiences are incorporated into internal working models: cognitive-affective schemas that form the basis of an individual's understanding of and participation in intimate relationships throughout life (Parkes & Stevenson-Hinde, 1982). Specifically, negative bonding experiences such as with the unavailability or insensitivity of caretakers may lead people to perceive themselves as unworthy of love, and others as emotionally unavailable or unresponsive (Kenny & Rice, 1995). Eventually, this may lead to negative evaluations of the partner relationship which, in turn, may increase the vulnerability for both internalizing and externalizing types of mental disorders (Dozier, Stovall, & Albus, 1999). Previous research has demonstrated that childhood recollections of parents' acceptance and encouragement of autonomy are linked to secure attachment styles in young adults (Carnelley, Pietromonaco, & Jaffe, 1994; Feeney & Noller, 1990). These attachment styles have been found to be related to the perceived satisfaction with partner relationships as well (Collins & Read, 1990; Simpson, 1990). Similar results have emerged from research using the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979), which showed that parental care was related to higher satisfaction levels in later partner relationships (Truant, Herscovitch, & Lohrenz, 1987).

Although it might be expected that parental bonding contributes to the development of mental disorders through its effect on individuals' later partner relationships, most previous research has exclusively examined direct associations between parental bonding and the prevalence of alcohol and narcotic addictions (Bernardi, Jones, & Tennant, 1989), depression (Burbach, Kashani, & Rosenberg, 1989; Mackinnon, Henderson, & Andrews, 1993) and anxiety and phobic disorders (Arrindell, Emmelkamp, Monsma, & Brilman, 1983; Gerlsma,

Emmelkamp, & Arrindell, 1990). Results from these previous studies have consistenly indicated that low-quality parental bonds, as is expressed in a perceived overprotection by parents and a lack of parental warmth, are cross-sectionally associated with a higher risk for the prevalence of both internalizing and externalizing types of psychopathology. Most recently, cross-sectional results from a large-scale epidemiological survey (i.e., US National Comorbidity Survey; Enns, Cox, & Clara, 2002), demonstrated that parental care and overprotection were significantly, but modestly associated with the lifetime prevalences of DSM-III-R disorders, explaining about 1% to 5% of the total prevalence rates. Only a limited number of studies have employed a longitudinal design in examining parental bonds - mental disorder links, and these have found only weak or insignificant cross-lagged relationships between low-quality parental bonding and - the frequency of - psychiatric symptoms (MacKinnon, Scott, & Duncan-Jones, 1989; Rodgers, 1996). Until now, no previous study has explicitly tested the *prospective* associations between parental bonding and full-blown *mental disorders* in the general population. Such a prospective examination is of crucial importance, however, as it controls for the influence of previously experienced mental disorders.

Moreover, despite the fact that previous research has shown the quality of a partner relationship in adolescence and young adulthood to be associated with internalizing and externalizing forms of mental health problems (e.g., Cramer & Donachie, 1999; McLennan & Omodei, 1988; Mudar et al., 2001; Simons et al., 2002), relatively little knowledge has been gained with regard to the question whether individuals' experiences in partner relationships *mediate* the relationship between parental bonding and mental health problems. In a sample of 1,022 adults aged 20 to 43, Gittelman et al. (1998) found one - rather weak, cross-sectional - mediation effect in women: maternal care predicted depressive moods via the insecurity of adults' attachment styles. Another study among 1,622 adults (Rodgers, 1996) showed that emotional support in adults' relationships accounted for a considerable part of the covariance between parental bonding and psychiatric symptom frequency. In addition, Bartholomew and Horowitz (1991) found that the relationship of early family experiences with later emotional adjustment was mediated by warmth and dominance in subsequent peer relationships. Certain methodological characteristics of these studies limit their generalizability, however. Two studies (Bartholomew & Horowitz, 1991; Gittleman et al., 1998) had a cross-sectional design and did not control for earlier adjustment problems and two studies (Bartholomew & Horowitz, 1991; Rodgers, 1996) did not specifically focus on adults' partner relationships, but rather examined a category of 'intimate relationships' which also comprised friendships.

In the present study, we used longitudinal data of 1,581 young adults aged 18 to 34 in order to examine (1) whether parental bonding in the first 16 years of life would be longitudinally related to the prevalence of mental disorders (DSM-III-R) in young adulthood, and (2) whether the quality of young adults' partner relationships would mediate these longitudinal associations. With regard to the first question, we assumed that parental bonding would be significantly - but modestly - negatively related to the later prevalence of mood, anxiety, and substance disorders. For the second question, we assumed that the quality of young adults' partner relationships would mediate the longitudinal association between parental bonding and the prevalence of mood, anxiety, and substance disorders. The present study provides a more stringent test of possible mediation effects, because the longitudinal design allows us to control for an earlier presence of mental disorders and the earlier quality of partner relationships which, in the cross-sectional studies discussed earlier, were not assessed. Moreover, this study is the first to examine parent-partner linkages in the prediction of clinically relevant, mental disorders in young adulthood.

METHODS

Sample and Procedure

All subjects taking part in NEMESIS (the Netherlands Mental Health Survey and Incidence Study) were selected using a multi-stage, stratified, random sampling procedure. First, a sample of 90 Dutch municipalities was selected based on the level of urbanization and dispersion over the 12 provinces of the Netherlands. Second, a sample of private households was drawn from the post office registers. The number of households selected in each municipality was determined by the size of its population. Third, selected households were sent a letter of introduction and were contacted by telephone shortly thereafter (households with no telephones or unlisted numbers were visited in person). In all households, members with the most recent birthday were selected, on the condition that they were between 18 and 64 years of age and sufficiently fluent in Dutch to be interviewed. Those respondents who were not immediately available due to circumstances such as hospitalization or imprisonment were contacted again later in the year. Interviewers made a minimum of 10 phone calls or visits to a given address. Respondents were interviewed in person, and received a small token of appreciation at the end of the interview. In total, 7,076 individuals were interviewed at the first wave in 1996 (T_1) - initial response rate 70%. This baseline-sample was representative for

the Dutch population in terms of gender, marital status, and degree of urbanization of the residential municipality. The age group of 18-24 year olds, however, was slightly under-represented. Of all respondents interviewed at baseline, 5,618 (79%) were interviewed again at the second wave in 1997 (T_2), and of these a total of 4,848 (85%) were interviewed again in the third wave of 1999 (T_3).

Of all people who were interviewed at each of the three waves, we selected a subsample of 1,581 young adults aged 18 to 34. We selected this age group because individuals' intimate bonds with parents were expected to be especially relevant in the prediction of mental disorders among young adults, for whom - in comparison with older adults - the memories of parental behaviors may be more accurate (i.e., less time elapsed since the first 16 years of life), reducing the effects of recall-bias. Further, parental bonds may be more relevant for the emotional functioning of young adults in comparison with older adults, because many young adults have not yet established a complete shift in primary attachment figures from parents to partner (Ainsworth, 1989), or experienced a complete transference of attachment needs from the bond with parents to the bond with partners (Fraley & Davis, 1997). The young adult-sample included 698 men (44%) and 883 women (56%). At T_1, 335 young adults (21%) were aged 18 to 24, while 563 respondents (36%) were aged 25 to 29, and 683 (43%) were aged 30 to 34. The mean age was 28,1 (SD = 4.41). About 16% had finished or were currently enrolled in lower levels of education, 49% had an intermediate level of vocational or general education, and 34% were involved in professional or scientific studies. An attrition analysis showed that respondents aged 18-24 were more likely to drop out of the sample from T_1 to T_3 [OR = 1.67, $p < .01$] than young adults in the age range of 25-34 years, and that the presence of mood disorders [OR = 1.66, $p < .05$] and substance disorders [OR = 1.65, $p < .01$] one year before baseline were related to dropping out of the sample.

Measures

DSM-III-R Diagnoses. Diagnoses were based on the Diagnostic and Statistical Manual of Mental Disorders, third revised edition (DSM-III-R; American Psychiatric Association, 1987). The instrument used to determine the diagnoses was the Composite International Diagnostic Interview, computerized version 1.1 (CIDI; Smeets & Dingemans, 1993), which is a structured interview developed by the World Health Organisation on the basis of the Diagnostic Interview Schedule (DIS) and the Present State Examination (PSE), and was designed for use by trained interviewers who are not clinicians. The CIDI has been employed in studies

worldwide, and WHO research has provided evidence for a high inter-rater reliability as well as a high test-retest reliability (Wittchen, 1994), and an acceptable validity for most diagnoses (Farmer et al., 1991). The diagnoses examined were made with the imposition of hierarchical exclusion rules. We focused on three dimensions of pathology that underlie the diagnoses assessed by the CIDI: (1) substance disorders - drug and alcohol abuse and dependency, (2) mood disorders - major depression, bipolar disorder, and dysthymia, and (3) anxiety disorders - panic disorder, social, simple, and agoraphobia, generalized anxiety disorder, and obsessive compulsive disorder. For these categories of mood, anxiety, and substance disorders we examined the two-year prevalence rates between 1997 (T_2) and 1999 (T_3), controlling for earlier lifetime prevalence rates before 1997 (T_2).

Parental Bonding. Young adults' recollections of the relationship with their parents during their first 16 years of life were measured at T_1 using the Parental Bonding Instrument (PBI; Parker et al., 1979). The PBI consists of 50 items tapping into two main dimensions of 'care' and 'protection', separately assessed for relationships with father and mother during the first 16 years in life. The care dimension involves two poles - one characterized by affection, empathy, and closeness, the other by indifference and neglect (e.g., 'My father/mother spoke to me in a warm and friendly voice' versus 'My father/mother seemed emotionally cold to me'). Similarly, the protection dimension assesses two poles - one pertaining to intrusiveness, overprotection, and infantilization, the other to encouragement of autonomy (e.g., 'My father/mother invaded my privacy' versus 'My father/mother let me dress in any way I pleased'). Respondents answered all items on a 4-point scale (0 *not true* to 3 *true*). In this study, high scores on the PBI reflect high levels of care and high levels of encouragement of autonomy. The PBI has been employed in many previous studies and has been found to possess a high test-retest reliability (see Parker, 1990; Wilhem & Parker, 1990). Moreover, the two-factor structure of the PBI has been replicated in many studies (Lopez & Gover, 1993) and is also applicable to Dutch samples (Arrindell et al., 1989). Cronbach's alpha was .93 for maternal care, .84 for maternal overprotection, .92 for paternal care, and .80 for paternal overprotection.

Quality and Type of Partner Relationship. Respondents' evaluation of the quality of their partner relationship was assessed at each of the three waves using the Grongingen Social Behavior Questionnaire (GSBQ; De Jong & Van der Lubbe, 1994). The GSBQ consists of 8 subscales pertaining to respondents' general satisfaction with different social roles, one of which is the partner role. The partner-subscale contains 11 items about different relational topics, such as support (e.g., 'I was able to discuss personal problems with my partner'), conflicts ('My

behavior has clearly irritated my partner'), shared activities ('My partner and I did a lot of things together lately'), and sex ('My partner and I fit well together in sexual respect'). Respondents answered all items on a 4-point scale (1 *never* to 4 *always*). Previous studies employing the GSBQ have demonstrated both a sufficient reliability and validity (De Jong & Van der Lubbe, 1994; Matthys & Rietvelt, 1995). In the present study, Cronbach's alpha was .80 at T1, .83 at T2, and .83 at T3. In addition to the quality of partner relations, we differentiated partner relationships according to type. For all respondents who were involved in an intimate partner relationship [N = 1198 (75,8%) at T_1, N = 1237 (78,2%) at T_2, and N = 1291 (81,7%) at T_3], two types of partner relationships were defined at each of the three waves: (a) those in which the partners were married or cohabited [T_1: N = 946 (79,0%); T_2: N = 1010 (81,6%); T_3: N = 1101 (85,3%)], and (b) those in which partners did not live together [T_1: N = 252 (21,0%); T_2: N = 227 (18,4%); T_3: N = 190 (14,7%)].

Strategy of Analyses

In a first set of descriptive analyses, we examined the mean levels of parental bonding across gender, age, and relationship status in a MANOVA with paternal bonding (i.e., father's care and overprotection) and maternal bonding (i.e., mother's care and overprotection) as dependent variables. A relatively large number of respondents (N = 401) were raised exclusively by their mother in one-parent families. as was indicated by the lower number of young adults with valid scores for paternal care and overprotection. In order to avoid the confounding of results as a consequence of diffences in family background, we selected respondents with scores on both maternal and paternal subscales of the PBI. To study the mean levels of partner relationship quality, we performed a MANOVA - repeated measures in order to control for the stability in partner relationship quality across timepoints (within-subjects) in examining mean differences between gender and age groups and relationship types (between-subjects). Next, we investigated the two-year prevalences of mood, anxiety, and substance disorders in young adults, and the concurrent and longitudinal bivariate associations of these two-year prevalences with young adults' bonds with parents and partner relationship quality. These correlational findings were used as input for structural equation modeling analyses, which we carried out using the LISREL 8.30-program (Jöreskog and Sörböm,1993). Because of the non-normal distribution of the scores, polychoric correlation matrices were calculated in PRELIS 2.30, which were used as input for LISREL estimations. Identical path models were

examined for the prediction of the 2-year prevalence of mood, anxiety, and substance disorders.

For each type of disorder, we tested a *mediation* hypothesis by comparing the fit and path coefficients of two different models: a 'direct linkages-model' (Model A) and a 'mediation-model' (Model B). Model A identified structural relationships from *(a)* parental bonding at T_1 to the 2-year prevalence of mental disorders between T_2-T_3, and *(b)* the earlier presence of mental disorders before T_2 to the later 2-year prevalence of mental disorders between T_2-T_3. In contrast, the extended Model B identified strucutral relationships from *(a)* parental bonding at T_1 to the 2-year prevalence of mental disorders between T_2-T_3, *(b)* parental bonding at T_1 to partner relationship quality at T_2, *(c)* partner relationship quality at T_2 to the 2-year prevalence of mental disorders between T_2-T_3, *(d)* partner relationship quality at T_1 to partner relationship quality at T_2, *(e)* the presence of mental disorders before T_2 to partner relationship quality at T_2, and *(f)* the presence of mental disorders before T_2 to the later 2-year prevalence of mental disorder between T_2-T_3 (see Figure 5.1). The latent variable parental bonding loaded on 2 observed factors (i.e., paternal and maternal bonding), as did the latent variable 'partner relationship quality' (i.e., split half-factors of 5 and 6 items of the 11-item scale). Cronbach's alphas for these 2 split-half factors were .65 and .65 at T_1, and .70 and .72 at T_2, respectively. Each of the models were examined in the total sample, and in multigroup analyses to assess possible differences across gender, age, and relationship type. Model fit was assessed with the χ^2:df ratio, GFI, AGFI, NFI, NNFI, and RMSEA.

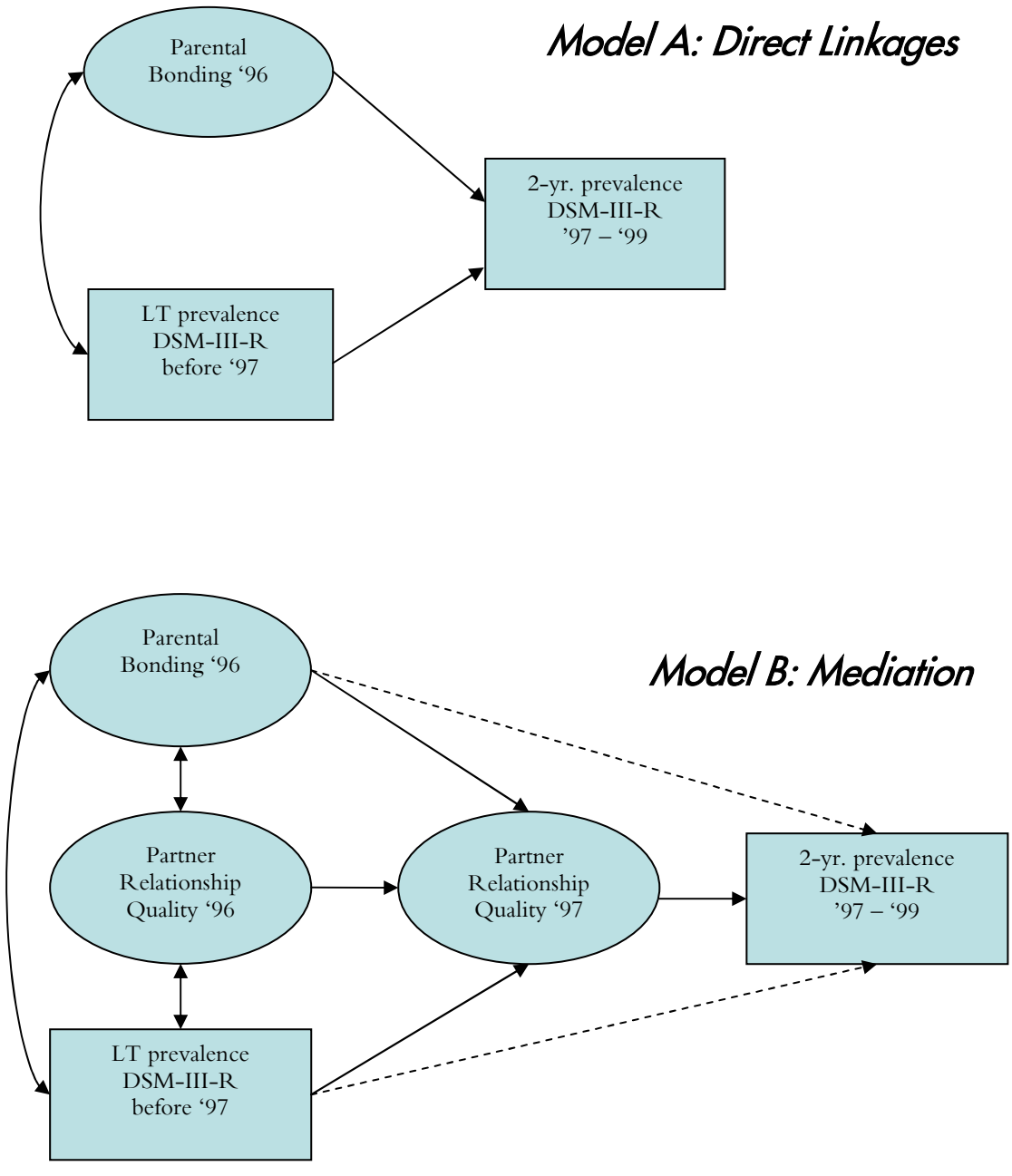
RESULTS

Young Adults' Parental Bonds and Partner Relationship Quality

Overall, respondents indicated to have received high levels of care and low levels of overprotection from their father and mother (see Table 1). Women rated their bond with mother to be of higher quality than men did [F (1, 1,163) = 5,94, $p < .05$]. Further, Bonferroni contrasts indicated that 30-34 year olds in comparison with the younger age groups rated their bonds with father and mother to be of lower affective quality [paternal bonds: F (2, 1,163) = 6,71, $p < .01$; maternal bonds: F (2, 1,163) = 6,98, $p < .01$]. No significant differences were observed between respondents who were or were not currently involved in a partner relationship at T_1.

Figure 5.1

Conceptual Relationships for Model A (Direct Linkages) and Model B (Mediation)



Next, we examined the mean levels of partner relationship quality at T_1 and T_2 with a MANOVA repeated measures. At each wave, the means were equally high for men and women. In contrast, significant age differences were found [F (2, 1,144) = 6,88, p < .01]. Bonferroni contrasts showed that young adults aged 30-34 rated their partner relationship to be of lower quality in comparison with young adults aged 25-29. A similar was observed in comparison with young adults 18-24, although this remained insignificant. Even after controlling for earlier partner relationship quality, we found significant differences between relationship type at T_2. Respondents with a cohabitation/marriage perceived their relationship to be of higher quality than those involved in a partner relationship other than cohabitations/marriages [F (1, 1,144) = 7,98, p < .01].

Prevalence of Mental Disorders - Links with Parental Bonding and Partner Relationships

In total, 8,3% of the young adults reported the presence of at least one mood disorder during the past two years. For anxiety and substance disorders, these percentages were 6,9% and 6,1%, respectively. Mood disorders were more prevalent among women than among men [χ^2 (1, 1581) = 13,78, p < .001; 5,4% in men vs. 10,6% in women], as were anxiety disorders [χ^2 (1, 1581) = 27,27, p < .001; 3,2% in men vs. 9,9% in women]. Substance disorders were more prevalent among men than among women [χ^2 (1, 1581) = 37,91, p < .001; 10,3% in men vs. 2,8% in women]. Also, substance disorders were more prevalent among 18-24 year olds in comparison with the oldest age group [χ^2 (2, 1581) = 22,82, p < .001; 11,6% in 18-24 year olds vs. 4,2% in 30-34 year olds]. As for the associations between these 2-year prevalences and young adults' perceptions of parental bonds and partner relationship quality, Spearman correlations presented in Table 5.2 showed that parental bonds were significantly, positively related to the quality of one's partner relationship in young adulthood, correlations ranging from .18 to .27 [p < .001]. Both paternal and maternal bonding had moderately strong, negative assocations with lifetime mood and anxiety disorders - correlations ranging from -.20 to -.24 [p < .001] - and less strong negative associations with the 2-year mood and anxiety disorders, with correlations ranging from -.11 to -.14 [p < .01]. Smaller associations were observed between paternal and maternal bonding and substance disorders, with only significant correlations for lifetime prevalence rates [paternal bonding: R = .09, p < .01; maternal bonding: R = .10, p < .01].

Table 5.1
Mean Levels and Standard Deviations of Parental Bonding: MANOVA for Gender, Age, and Relationship Status (*N* = 1,163)

		Gender		Age			Relationship Status	
	Total	*Men*	*Women*	*18-24*	*25-29*	*30-34*	*Involved*	*Not Involved*
Paternal Bonding	3,30 (0.48)	3,33 (0.46)	3,27 (0.50)	3,39 (0.42)[a,b]	3,29 (0.48)	3,26 (0.50)	3,29 (0.50)	3,31 (0.47)
Maternal Bonding	3,41 (0.46)	3,44 (0.41)	3,37 (0.49)	3,49 (0.38)[a,b]	3,40 (0.45)	3,37 (0.50)	3,41 (0.45)	3,40 (0.49)
		Multivariate F = 3,20*		*Multivariate F* = 4,40**			*Multivariate F* = 0,29	

Note. Superscript letters refer to significant age differences as observed with Bonferroni post-hoc tests; Overprot. = Overprotection

[a] Significant age difference between 18-24 versus 25-29 year olds ($p < .05$)

[b] Significant age difference between 18-24 versus 30-34 year olds ($p < .05$)

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 5.2

Cross-sectional and Longitudinal Associations of Parental Bonding, Partner Relationship Quality, and Mental Disorders (N = 809)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Bond with Father - T1										
(2) Bond with Mother - T1	.60***									
(3) Relationship Quality - T1	.27***	.25***								
(4) Relationship Quality - T2	.20***	.18***	.59***							
(5) Life Prev. Mood Disorder - T2	-.24***	-.27***	-.17***	-.12***						
(6) Life Prev. Anxiety Disorder - T2	-.22***	-.20***	-.13***	-.14***	.40***					
(7) Life Prev. Substance Disorder - T2	-.09**	-.10**	-.18***	-.09**	.07	.08				
(8) 2-Yr. Prev. Mood Disorders - T2/3	-.12***	-.14***	-.14**	-.11**	.28***	.19***	.02			
(9) 2-Yr. Prev. Anxiety Disorders - T2/3	-.14***	-.11**	-.06	-.07	.24***	.29***	.01	.31***		
(10) 2-Yr. Prev. Substance Disorders - T2/3	-.02	-.05	-.08	-.12**	.01	.08	33***	.02	.03	

Note. We examined the 2-year prevalence of mood, anxiety, and substance disorders from T2 (1997) to T3 (1999), and the lifetime prevalences in the period before T2; Analysis was performed with a missing listwise – procedure; Alpha-level was set to $p < .01$; Life Prev. = Lifetime Prevalence; 2-Yr. Prev. = 2-Year Prevalence

** $p < .01$, *** $p < .001$

We observed a similar pattern of associations with regard to young adults' partner relationship quality: moderately strong, negative links with lifetime prevalences - correlations ranging from -.09 [$p < .01$] to -.18 [$p < .001$] - and smaller links with subsequent 2-year mood and anxiety disorders - except for the insignificant link with the 2-year anxiety disorders. As expected, auto correlations between the measures of partner relationship quality at the different waves were relatively high, ranging from .51 to .57 [$p < .001$]. The correlations between the lifetime and 2-year prevalence rates across waves were moderately strong, ranging from .28 (mood) to .29 (anxiety) and .33 (substance).

Mediation - Partner Relationships in the Link from Parental Bonds to Mental Disorders

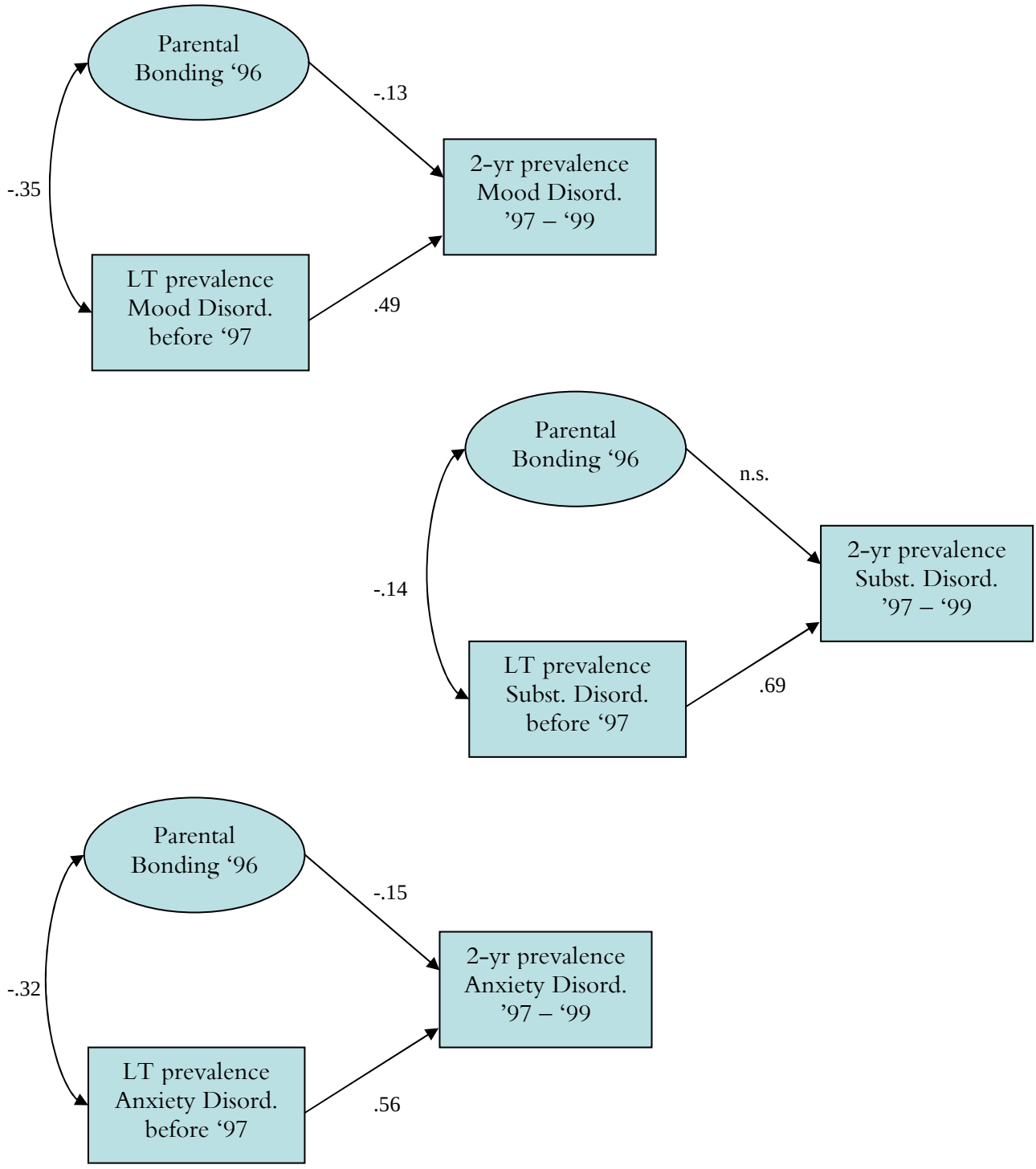
The results from the LISREL analyses, presented in Figure 5.2 and Table 5.3, demonstrated that a parsimonious, direct linkages-model for the structural relations between young adults' bonds with parents and the prevalence of mood and anxiety disorders provided a better fit to the data than the mediation-model, which also comprised measures of partner relationship quality at T_1 and T_2 (see Table 5.3).

Table 5.3
Fit Indices of the Direct Linkages and Mediation Models for the 2-Year Prevalence Rates of Mood, Anxiety, and Substance Disorders

	Mood Disorders		Anxiety Disorders		Substance Disorders	
	Model A	*Model B*	*Model A*	*Model B*	*Model A*	*Model B*
X^2: df (p-value)	2.01 (0.16)	24.81 (0.000)	5.16 (0.02)	25.95 (0.000)	7.44 (0.001)	24.59 (0.000)
GFI	1.00	0.91	1.00	0.91	0.99	0.91
AGFI	0.99	0.76	0.97	0.75	0.96	0.77
NFI	1.00	0.87	0.99	0.87	0.98	0.87
NNFI	0.99	0.73	0.97	0.73	0.96	0.74
RMSEA	0.04	0.17	0.07	0.17	0.08	0.17

Note. Model A denotes the direct linkages model, Model B denotes the mediation model; GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; NFI = Normed Fit Index; NNFI = Non Normed Fit Index; RMSEA = Root Mean Square Error of Approximation.

Figure 5.2
Standardized Parameter Estimates for 'Direct Linkages' between Parental Bonding and DSM-III-R Mood, Anxiety, and Substance Disorders



Note. All parameters significant at the p = .05 level, except for *n.s.* = not significant

The standardized loadings of the latent variables on their manifest indicators ranged from .70 to .81 for parental bonding (i.e., paternal and maternal bonding) across the direct linkages-models. Moreover, the negative longitudinal associations between parental bonding at T_1 and the 2-year mood and anxiety disorders between T_2 and T_3 remained significant in the mediation models after inclusion of the paths from parental bonds to partner relationship quality, and from partner relationship quality to mental disorders. Moreover, although the direct negative links from partner relationship quality at T_2 to the 2-year mood [β = -.09, p < .05], anxiety [β = -.11, p < .05], and substance disorders [β = -.10, p < .05] between T_2 and T_3 were significant, we found no significant associations between parental bonding T_1 and partner relationship quality T_2 in the models for anxiety and substance disorders after controlling for earlier levels of partner relationship quality. In all mediation models, direct association between lifetime prevalence rates at T_2 and partner relationship quality at T_2 were significant [mood disorders: γ = -.16, p < .05; anxiety disorders: γ = -.11, p < .05; substance disorders: γ = -.07, p < .05]. The direct linkages-models explained 29% of the variance in mood disorders and 38% of the variance in anxiety disorders. There were no significant direct associations between parental bonding at T_1 and the prevalence of substance disorders between T_2 and T_3. The direct linkages-model explained 47% of the variance in substance disorders and the medation-model 48%.

Multigroup LISREL analyses were performed to examine whether the good fit of the direct linkages-models of mood and anxiety disorders would hold across groups of gender, age, and relationship type. This was done by performing a most conservative test, in which all path values were specified to have equal values in the different groups. Thus, paths from parental bonding at T_1 to the 2-year prevalence of mood or anxiety disorders between T_2 and T_3 was hypothesized to be equal across different groups, as were the parameters for all the other structural relations. For both mood and anxiety disorders, multigroup analyses demonstrated the direct linkages-models to fit the data well for men and women [mood disorders: χ^2 (6) = 12,89, p = .03; anxiety disorders: χ^2 (6) = 10,25, p = .11] and for young adults who were involved in relationships other than cohabitations/marriages vs. those who *were* involved in cohabitations/marriages [χ^2 (6) = 6,13, p = .41, and χ^2 (6) = 12,63, p = .05, respectively]. With regard to the 2-year prevalence of anxiety disorders, the direct linkages model fit the data well across the age groups of 18-24 years, 25-29 years, and 30-34 years [χ^2 (15) = 33,85, p = .004]. For the 2-year prevalence of mood disorders, however, the direct linkages model did not provide an adequate fit for all age groups [χ^2 (15) = 54,93, p < .0001]. Specifically, in the

18-24 year old age group the auto-regression from the earlier presence of mood disorders before 1997 to late 2-year mood disorders between 1997 and 1999 was stronger than in the two older age groups (i.e., .71 vs. .40 and .46). Overall, however, the results demonstrated that in the total sample of young adults partner relationship quality did not mediate the association between parental bonding and mood, anxiety, or substance disorders.

DISCUSSION

The results of the present study demonstrated that, from childhood and adolescence to young adulthood, partner relationship quality did not mediate the negative associations from parental bonding to the later prevalence of DSM-III-R mood, anxiety, and substance disorders. Clearly, a 'direct linkages'-model best represented the longitudinal links between parental bonding in the first 16 years of life and the later prevalence of mood and anxiety disorders. However, lower-quality parental bonds were associated only with anxiety and mood disorders - not substance disorders - and were of a relatively modest strength.

These results partly converge with recent cross-sectional findings from the US National Comorbidity Survey (Enns et al., 2002), which also demonstrated that parental care and overprotection - together with a measure of parental authoritarianism - were significantly associated with the prevalence of mental disorders in a general population. Notably, the present study comprised a more stringent, prospective examination of the parental bonding - mental disorder link, which illustrates that even after controlling for an earlier presence of mental disorders and the quality of current partner relationships, young adults' memories of parental care and overprotection during their childhood and adolescence remain influential with regard to the development of mental disorders. Considering the fact that we exclusively assessed parental care and overprotection in the context of a parent-child dyad, the results may be an underestimation of the actual link between family and parental factors and mental disorders. Had we focused on the dynamics and content of interactions within the broader family context, we might have found the parental context to have a stronger impact on mental disorders and the quality of partner relationships. Marital conflict and disruption in the father-mother dyad might have a relatively large impact on well-being and the development of problem behavior of children (Shaw, Winslow, & Flanagan, 1999) and adolescents (Forehand et al., 1989). Additionally, family climate - to which not only parents but also siblings and the respondents' themselves contribute - may explain some of the variance in problem behaviors

(Delsing, Oud, & De Bruyn, 2001). On the other hand, we should consider that the significant cross-lagged relationships between low-quality parental bonds and problem behavior in the present study may only for a smaller part be ascribed to environmental factors. Specifically, behavioral-genetic studies have shown that measures of parental behavior and child outcomes may be associated because of an underlying shared genotype (e.g., Neiderhiser, Reiss, Hetherington, & Plomin, 1999).

Notably, parental bonding was not significantly associated with the prevalence of substance disorders. It might be, that alcohol and drug dependence and abuse arise mainly as a consequence of young adults' relatively unattached relationship status (Overbeek, Vollebergh, Engels, & Meeus, in press). For example, not being involved in a stable cohabitation/marriage might be linked to a higher number of drinking opportunities and an emphasis on relationships in which drinking is normal (Hajema & Knibbe, 1998), which may increase the risk for alcohol abuse or dependency. Thus, not the affective quality of intimate relationships with parents or partners, but rather the entry into new relationships that diminish the possibilities for alcohol and drug use may be important explanatory factors (e.g., Kandel & Raveis, 1989; Miller-Tutzauer, Leonard, & Windle, 1991).

The absence of the hypothesized mediation effects of partner relationship quality on the longitudinal relationship between parental bonding and mental disorders corresponds to earlier cross-sectional findings from Gittelman et al. (1998) and Rodgers (1996), which did not provide strong support for the existence of mediation effects in the links between parental bonding and *sub-clinical levels* of mental health-problems. Furthermore, the present study demonstrated that most people who experienced their parents to be emotionally distant and overprotective, still reported their later partner relationships to be of average or high quality. Thus, instead of emphasizing 'cross-relationship continuity' in people's experience and perceptions of intimate relationships from childhood to young adulthood (Simpson, Rholes, & Philips, 1996; Waldinger et al., 2002), it seems important to focus on why representations *change* over time. We may consider, then, the possibility that we have underestimated the true amount of 'cross-relationship continuity' because we studied related, but different constructs across different intimate relationships. Specifically, we examined young adults' perceptions of care and overprotection in the relationship with parents and their perceptions of shared activities, satisfaction with sex, support, and conflicts in the relationship with partners. However, the relatively weak links between individuals' bonds with parents and partners have also been found in research using the PBI in conjunction with the Intimate Bond Measure (Wilhelm & Parker, 1990), a self-report measure tapping into identical dimensions of care and

control perceived from intimate partners (see Parker et al., 1992). A more valid explanation may be, then, that the activation of internalized representations of intimate relationships is, to a large extent, more context-specific than is usually assumed on the basis of attachment theory (Bretherton, 1985) or social-cognitive perspectives (Baldwin, 1992). Young adults may be aware of the unique differences between intimacy experienced in the context with parents or with partners. Intimacy in partner relationships is embedded in a symmetrical-reciprocal relationship with partners, while in relationships with parents there is intimacy in the context of parents' unilateral authority (Younnis & Smollar, 1985). Moreover, partner relationships have an emphasis on romantic love and sexual intimacy. Individuals' awareness of these differences may obstruct the simple generalization of individuals' cognitive representations of the broad construct of 'relationships' and, instead, may lead to the development of more relationship-specific schemas.

This study may contribute to our current knowledge of the link between parental bonding and mental health, because of its three-wave longitudinal design and its focus on DSM-III-R mental disorders, which enabled us to perform a relatively stringent test of the mediation effects of partner relationship quality on the parental bonding - mental health link in young adulthood. Nevertheless, the results should be generalized with caution due to certain limitations in the measurements and research design. First, an attrition analysis over the 3-year time interval had shown that young adults aged 18-24, and young adults suffering from mood or substance disorders in the year before the baseline interview were more likely to drop out of the sample, which might have led us to underestimate the strength of the longitudinal relationships from parental bonding and partner relationship quality to mental disorders. In addition, although we controlled for lifetime prevalences in the prediction of later 2-year prevalence rates between 1997 and 1999, we did not have information about sub-clinical levels of mental health-problems. This may have obscured differences between respondents who had little or no psychiatric symptoms and developed a mental disorder over time (i.e., many new symptoms) versus those who scored just below the clinical cut-off point and developed a mental disorder (i.e., few new symptoms). Furthermore, the PBI was used only at T1, which frustrated an examination of the possible cross-lagged relationships from an earlier prevalence of mental disorders to young adults' later perceptions of parental care and overprotection. This limitation restricts us from making causal inferences regarding the links between parental bonding and mental health-problems, because we do not know to what extent young adults' cognitive representations of the earlier relationship with parents is based on their recent life

experiences or mood states, and are affected by recall-bias (see Gerlsma, Snijders, Van Duijn, & Emmelkamp, 1997).

It is important, therefore, that future longitudinal research on parental bonding or parental attachment allows for an estimation of stability and changes in individuals' representations of their intimate relationships or interactions with parents (e.g., Lopez & Gormley, 2002). In particular longitudinal studies, in which bi-directional cross-lagged relationships between parental bonding and mental health are examined, can help to establish to what extent these representations are stable over time and to what extent they are influenced by people's current emotional states or recent intimate experiences. In addition, future research may benefit from a broader examination of adversity in the family context by focusing not only on uni-directional parent-to-child communications, but instead on the affective quality of *reciprocal* interactions in the broader family context, where parental or sibling dyads may also have an influence on the individual's mental health. Furthermore, in building on the present findings, future studies may focus not on the question to what extent, but instead *under what conditions* young adults' partner relationships mediate the link from parental bonding to mental disorders. An inquiry into specific risk factors for selected subsamples of respondents may be most fruitful. For instance, little is known about why some people, who experienced their parents as emotionally distant and overprotective, later enter partner relationships of a similar quality and style, whereas others have a certain 'resiliency' and develop healthy romantic attachments in young adulthood.

NOTES

[1] Overbeek, G., Vollebergh, W., Meeus, W., De Graaf, R., & Engels, R.C.M.E. (2003). Young adults' parental bonds, partner relations, and mental disorders: Results from the Netherlands Mental Health Survey and Incidence Study. *Submitted for Publication.*

CHAPTER 6

YOUNG ADULTS' RELATIONSHIP TRANSITIONS AND THE INCIDENCE OF MENTAL DISORDERS: A THREE-WAVE LONGITUDINAL STUDY[1]

Background. Relationship transitions have consistently been found to be associated with mental health in young adulthood, Background. Relationship transitions have consistently been found to be associated with mental health in young adulthood, but previous studies have not demonstrated clearly whether such relationship transitions actually precede the development of mental health problems and have focused almost exclusively on subclinical levels of problem behavior. Methods. Longitudinal associations between the incidence of mood, anxiety, and substance disorders (DSM-III-R) and relationship transitions during young adulthood were examined using data from 1,583 Dutch young adults aged 18 to 34, who participated in three waves (1996, 1997, and 1999) of a nation-wide epidemiological survey. Results. Concurrent 3-year longitudinal associations showed that the incidence of mood and substance disorders was linked to relationship stability and change (i.e. staying single; breaking up/divorcing), but more rigorous, prospective analyses demonstrated that only the incidence of substance disorders was associated with previous relationship developments. Earlier prevalence of mood disorders increased young adults' likelihood of subsequently experiencing a break up/ divorce and lowered the likelihood of becoming a parent, but mood disorders were in turn predicted by previously experienced relationship difficulties. Conclusions. Apart from the negative consequences of a break up/divorce, having a relatively unattached relationship status (i.e. not stably cohabiting/married, not being a parent) may be an important factor in explaining the onset of substance disorders. Furthermore, results qualify the notion of de-selection in certain partner roles by mood disorders: mood disorders negatively affect individuals' chances of staying with one's partner, but are in turn dependent on earlier partner relationship quality. Keywords: young adulthood, longitudinal, incidence, DSM-III-R, mood disorders, anxiety disorders, substance disorders, relationship transitions.

During young adulthood many people go through normative developmental transitions, such as getting married or becoming a parent. Although these normative transitions are generally supposed to be key factors in young adults' healthy adjustment (Marks and Lambert 1998), non-normative, atypical events such as divorce have also been found to be associated with decreased mental health in adult samples (Kitson and Morgan 1990). Unfortunately, many previous studies have been cross-sectional and therefore do not provide insight into the

direction of associations between mental health and relationship transitions (see Hope et al. 1999). Although relationship transitions may have benificial or detrimental effects on young adults' mental health, from a selection perspective it is argued that previous mental health problems may affect individuals' chances of experiencing later relationship transitions (Maughan and Taylor 2001). Until now, however, only tentative evidence has been provided for both perspectives, since even previous longitudinal studies have mainly examined uni-directional links, and have not demonstrated whether relationship transitions actually *precede* the development of mental health problems. In addition, they have focused almost exclusively on sub-clinical levels of problem behavior.

Links between *normative* relationship transitions and mental health have been studied mainly from a role theoretical perspective and the notion of 'maturing out' (e.g. Miller-Tutzauer et al. 1991). Maturing out refers to decreasing levels of delinquency by the end of adolescence, as well as decreases in alcohol and drug use commonly observed later in young adulthood. A role theoretical explanation of this phenomenon is that mean levels of externalizing problem behavior decline because of an entry into new social roles (e.g. Hajema and Knibbe 1998). Becoming a parent, for instance, may reduce the number of drinking opportunities, increase one's feelings of responsibility, and lower the emphasis on relationships in which drinking is normal. Indeed, much research has explained decreasing substance (ab)use as consequences of relationship transitions. For instance, Kandel and Raveis (1989) found that cessation of marijuana and cocaine use in young adults was predicted by transitions into marriage and parenthood over a 4-year period, while Miller-Tutzauer et al. (1991) found that decreases in alcohol use accompanied a transition into marriage over a 1-year period. In addition to studies focusing on the links between substance (ab)use and normative relationship transitions, life events-research has suggested that 'positive life change' such as the birth of a child or getting married, may facilitate recovery from (symptoms of) depression and anxiety because it provides people with an increased sense of security and hope, and increases levels of social support (Brown et al. 1992; Leenstra et al. 1995).

Apart from normative transitions, much previous research has also examined the risks associated with *non-normative*, atypical transitions, specifically focusing on marital disruptions. Barrett (1999) showed that divorce was linked to an increased symptomatology of substance abuse and dependence, and in other studies divorce was found to be associated with lower well-being (Menaghan 1989), depression (Aseltine and Kessler 1993), and psychological distress (Hope et al. 1999). The detrimental effects of marital disruption on individuals' mental health may partly be ascribed to the emotional stress associated with a divorce - transient effects that

dissappear again after a divorce has been settled (Amato 2000). Recent research, however, established that most detrimental effects linked to divorce were more permanent, probably due to the fact that being divorced often involves economic hardship and diminishes one's social network (Johnson and Wu, 2002). Importantly, apart from an element of 'loss' that constitutes a risk factor, inadequate timing of relationship transitions may have negative effects as well. In young adulthood, for example, staying single throughout ones twenties and thirties might lead to mental health problems, since it leads people to perceive themselves as a small minority in their age group (Lee et al. 1991).

Although many studies have focused on relationship transitions in association with subclinical levels of problem behavior, relatively little knowledge has been gained on the possible longitudinal associations with psychiatric syndromes. As an expection, Chilcoat and Breslau (1996) found that transitions into marriage and parenthood reduced the risk for the onset of DSM-III-R alcohol disorder-symptoms during a 3,5-year follow-up period. The researchers could not, however, determine the temporal order between the transitions and the alcohol-related symptoms, because it remained unclear whether changes in drinking behavior actually *post-dated* relationship transitions. Of importance to the issue of temporal order, Forthofer (1997) showed that psychiatric disorders were linked to selection effects: a lower probability and later timing of marriage. Such selection effects, however, may play only a modest role in the link between partnership transitions and young adults' psychological distress (Maughan and Taylor 2001). Further, we may consider that the reason why people suffer from certain disorders, such as with mood disorders for example, may in part be due to earlier marital problems. Thus, marital dissatisfaction may act as a 'third variable', linked both to later mental disorders and marital break-ups (Whisman et al. 2000).

Overall, previous longitudinal research has found links between relationship transitions and mental health in young adults, but has focused mainly on sub-clinical levels of mental health problems and, inasfar earlier studies have focused on mental disorders, they did not demonstrate whether relationship transitions predated the onset of disorders. Therefore, with this study we examined whether stability and changes in young adults' partner and parent status over a 1-year period was related to the subsequent 2-year onset of mood, anxiety, and substance disorders. We hypothesized that entering a partner relationship or cohabitation/marriage (opposed to staying single) would be linked to a lower risk for the onset of disorders, while the break-up of a partner relationship or cohabitation/marriage (opposed to staying in such relations) would be linked to a higher risk for the onset of disorders. Becoming a parent was also assumed to be associated with a lower risk for the onset of disorders. To

control for selection effects, we examined whether relationship transitions over a 2-year period could be predicted from an earlier 1-year prevalence of anxiety, mood, and substance disorders. Here, we assumed that earlier prevalence of disorders might be linked to a higher likelihood of staying single and, for those in a partner relationship or cohabitation/marriage, a higher chance of breaking up their relationships. Finally, we explored whether an earlier prevalence of disorders might, in turn, be predicted by previously experienced difficulties in partner relationships or cohabitations/marriages.

METHODS

Sample and Procedure

All subjects taking part in NEMESIS (Netherlands Mental Health Survey and Incidence Study) were selected using a multi-stage, stratified, random sampling procedure. First, a sample of 90 Dutch municipalities was selected based on the level of urbanization and dispersion over the 12 provinces. Second, a sample of private households was drawn from post office registers. Third, the selected households were sent a letter of introduction signed by the minister of Public Health, Welfare, and Sports, and were contacted by telephone shortly after. In each household, the member with the most recent birthday was selected. Respondents who were not available due to circumstances such as hospitalization or imprisonment were contacted again later in the year. To optimize response levels and control for possible seasonal influences, we spread the baseline data collection from February through December 1996. All respondents received a small token of appreciation at the end of the interview. In total, 7,076 individuals were interviewed at the first wave in 1996. The initial response was 70%, which is somewhat lower than initial response rates in comparable large-scale epidemiological studies such as the National Comorbidity Survey (83%; Kessler et al. 1996) and the Epidemiological Catchment Area Surveys (80%; Eaton et al. 1992). The somewhat lower initial response level in the present study is probably a consequence of its longitudinal design (the NCS and ECA-surveys had cross-sectional designs). The prospect of participating in multiple interviews in the future might have caused some people to decline participation in the first interview alltogether. Our baseline sample was representative of the Dutch population in terms of gender, marital status, and degree of urbanization of the residential municipality. Of the respondents interviewed at baseline, 5,618 were interviewed again in the second wave of 1997, and a total of 4,848 were

interviewed again in the third wave of 1999. The total response rate from wave 1 to wave 3 was 69%.

Of all people who were interviewed at each of the three waves, we selected a subsample of 1,581 young adults aged 18-34. We chose this group because between ages 18 and 34, at least 75% of the respondents had married or had become a parent. Considering that young adulthood ends with the occurrence of such *normative* developmental transitions (thus, not *a-typical* transitions such as divorce, or breaking up a partner relationship), this age range may empirically reflect the period of young adulthood. The sample of young adults included 698 men (44%) and 883 women (56%). At T1, 335 young adults (21%) were aged 18 to 24, while 1246 respondents (79%) were aged 25 to 34. The mean age was 28,1 (SD = 4.41). About 16% had finished or were currently enrolled in lower levels of education, 49% had an intermediate level of vocational or general education, and 34% were involved in professional or scientific studies. Attrition analysis for the subsample of 18 to 34 year olds - over the three-year period from T1 to T3 - showed that the presence of a substance disorder in the year before the baseline was linked to dropping out (OR = 1.57, $p < .001$), as was being 18 to 24 years old (OR = 1.67, $p < .001$).

Measures

Diagnoses of Psychiatric Disorders. Diagnoses were based on the Diagnostic and Statistical Manual of Mental Disorders, third revised edition (DSM-III-R; American Psychiatric Association 1987). The instrument used to determine the diagnoses was the Composite Internal Diagnostic Interview, computerized version 1.1 (Smeets and Dingemans 1993). The CIDI is a structured interview developed by the World Health Organization and designed for use by trained interviewers who are not clinicians. In WHO-research, the CIDI has been found to have a high inter-rater and test-retest reliability (Wittchen 1994), and an acceptable validity for most diagnoses (Farmer et al. 1991). The diagnoses examined were made without imposition of hierarchical exclusion rules, in order to allow different DSM-III-R diagnoses to co-occur. This enabled us to focus on three 'broad' dimensions of psychopathology that underlie the diagnoses assessed by CIDI (Krueger 1999), namely (1) substance use disorders - substance and alcohol abuse and dependency, (2) mood disorders - major depression, bipolar disorder, and dysthymia, and (3) anxiety disorders - panic disorder, social, simple, and agoraphobia, generalized anxiety disorder, and obsessive compulsive disorder. Apart from an adequate structural stability for such a three-dimensional model, the differential stability across

a 1-year time span has also been demonstrated to be high (Vollebergh et al. 2001). For each of these categories of mood, anxiety, and substance disorders we examined the incidence or *first onset* of disorder(s). Thus, for the analyses in which we predicted the incidence of mental disorders only those respondents without a prior history of the disorders under study were included in the analyses. This enabled us to avoid the problem that an impact of transitions on mental disorders would be confounded by the presence of earlier lifetime disorders. Moreover, it helped to provide a stringent test of the impact of relationship transitions as it was more likely to be tested on a fairly resilient group.

Relationship Transition Indices. At all measurements, information was collected on marital status. This information was used to create two separate indices of relational status, one for the partner role and one for the parent role. Stability and change in the roles were measured by comparing earlier with later status-scores. Comparisons were made between T1-T2 scores, T2-T3 scores, and T1-T3 scores. For this last comparison, we coded multiple transitions when necessary, to avoid contamination of the stability and 'single-transition' categories (e.g. some people broke up/got divorced between T1-T2, and remarried/repartnered between T2-T3; some people were single at T1 and T3, but were married at T2). The small number of people who experienced multiple transitions from T1-T3 did not allow us to examine associations between remarriage/repartnering and the onset of mental disorders. Next, we dummy-coded different categories of stability (e.g. 'stayed single', 0 = no, 1 = yes) and change (e.g. 'became parent', 0 = no, 1 = yes). Importantly, for the partner role we defined 'partner relationships' as including all partner relationships *except* cohabitations/marriages, because cohabitations and marriages differ from other partner relationships in terms of stability, levels of support and intimacy, and legal commitments. In total, seven categories were defined for the partner role: (1) stayed cohabiting/ married, (2) stayed with partner, (3) stayed single, (4) entered partner-relationship, (5) entered cohabitation/got married, (6) broke up partner-relationship, (7) broke up cohabitation/divorced. The second category includes all respondents who stayed with their partner in relationships other than a cohabitation/marriage. For the parent role, three categories were defined: (1) parent at both waves, (2) not a parent at either wave, and (3) became parent.

Low Quality of Partner Relationship. Young adults' negative evaluation of the quality of their partner relationships was assessed at the first wave using the Grongingen Social Behavior Questionnaire (GSBQ; De Jong & Van der Lubbe, 1994). The GSBQ consists of 8 subscales pertaining to respondents' general satisfaction with different social roles, one of which is the partner role. The partner-subscale contains 11 items about different relational topics, such as

support (e.g., 'I was able to discuss personal problems with my partner'), conflicts ('My behavior has clearly irritated my partner'), shared activities ('My partner and I did a lot of things together lately'), and sex ('My partner and I fit well together in sexual respect'). Respondents answered all items on a 4-point scale (1 *never* to 4 *always*). Previous studies employing the GSBQ have demonstrated both a sufficient reliability and validity (De Jong & Van der Lubbe, 1994; Matthys & Rietvelt, 1995). In the present study, Cronbach's alpha was .80 at T1.

RESULTS

Total incidence scores were calculated for each psychopathology-dimension by summing the number of incident cases of all separate disorders. Because we focused on the incidence of psychiatric disorders, all persons with a lifetime history of any of the disorders under study were excluded (mood disorders: N = 305, 19,3%; anxiety disorders: N = 311, 19,7%; substance disorders: N = 307, 19,5%). In all 18-34 year olds, the 3-year incidence of mood disorders was 5,6%, while for anxiety disorders it was 4,2%, and for substance disorders it was 3,8%. Gender differences were found in the number of incident cases for different forms of pathology. Over the 3-year period the incidence of mood disorders (χ^2 = 3.86, p < .05) and anxiety disorders (χ^2 = 12.47, p < .001) was higher among women than among men (8,3% vs. 7,6%, and 5,5% vs. 3,0% respectively). In contrast, the incidence of substance disorders (χ^2 = 14.78, p < .001) was higher among men than among women (7,7% vs. 3,0%). In addition to gender differences, clear age differences emerged. The incidence of mood disorders (χ^2 = 8.47, p < .01) was higher among 25-34 year olds than among 18-24 year olds (8,1% vs. 3,1%), whereas the incidence of substance disorders (χ^2 = 16.22, p < .001) was higher among 18-24 year olds than among 25-34 year olds (9,5% vs. 3,5%). When we examined the occurrence of normative relationship transitions in young adults, we found an age difference for 'becoming a parent' (χ^2 = 49.82, p < .001), which occurred more often among 25-34 year olds than among 18-24 year olds (26,2% vs. 6,7%).

Concurrent (3-Year) Longitudinal Associations

Was the 3-year incidence of mental disorders associated with relationship stability and change during this same time interval? Using logistic regression analyses, we predicted 3-year onsets of mood, anxiety, and substance disorders from T1-T3 by stability and changes in young

adults' partner and parent roles from T1-T3, controlling for the effects of age and gender. Respondents who had experienced multiple transitions were excluded from these regression analyses, in order to avoid contamination of the stability and 'single transition' categories. Table 6.1 shows that relationship transitions were not associated with the incidence of anxiety disorders during the 3-year time interval. Yet, the incidence of mood disorders was significantly associated with staying single (OR = 2.04, $p < .05$) and breaking up a cohabitation/divorce (OR = 5.04, $p < .01$). Further, the incidence of substance disorders was significantly associated with all categories of stability and change in the partner role, as well as with not becoming a parent (OR = 4.95, $p < .001$). In order to test our hypotheses regarding relationship stability and changes more specifically, we contrasted three theoretically relevant groups against each other: (1) stayed cohabiting/married vs. broke up cohabitation/divorced, (2) stayed with partner vs. broke up partner relationship, and (3) stayed single vs. entered partner relationship and entered cohabitation/marriage. Simple contrasts in logistic regression analyses showed that breaking up a partner relationship - opposed to staying in such a relationship - was not linked to a higher risk for the incidence of mood or substance disorders. Also, entering a partner relationship or a cohabitation/marriage - opposed to staying single - was not linked to a lower risk for the onset of mood or substance disorders. The only significant contrasts were found for breaking up a cohabitation/ marriage, which - opposed to staying in a cohabitation/marriage - was linked to higher risks for the incidence of both mood and substance disorders (see Table 6.1).

Onset of Mental Disorders by Previous Relationship Developments

Results from the previous analyses established that relationship transitions and incidence of psychiatric disorders were concurrently associated over a 3-year time interval. However, we did not gain insight into the temporal sequence underlying this association. Therefore, in a next set of analyses we employed a prospective design to study associations of *previous* relationship transitions and the *subsequent* incidence of mental disorders in young adults. With logistic regression analyses (again controlling for age and gender) we examined whether the stability and change in young adults' parent and partner roles from T1-T2 would predict subsequent incidence of mood, anxiety, and substance disorders from T2-T3. As shown in Table 6.2, the stability and change in young adults' parent and partner roles did not predict the subsequent onset of anxiety and mood disorders.

Table 6.1
Prediction of 3-year Incidence from T1-T3 of DSM-III-R Disorders by Relationship Stability and Change from T1-T3

	Mood Disorders				Anxiety Disorders				Substance Disorders			
	N	*INC*	*OR*	*95% CI*	*N*	*INC*	*OR*	*95% CI*	*N*	*INC*	*OR*	*95% CI*
Stayed cohab./married	743	5,9%	1.00		712	5,2%	1.00		744	1,2%	1.00	
Stayed with partner	37	2,7%	0.96	0.12 – 7.53	33	0,0%	0.00	0.00 – 2.90^{-10a}	39	12,8%	8.52***	2.47 – 29.31
Stayed single	160	8,1%	2.04*	1.05 – 4.00	157	6,4%	1.29	0.60 – 2.78	167	9,6%	5.90***	2.45 – 14.20
Entered partn. relationship	59	6,8%	1.80	0.61 – 5.35	60	6,7%	1.34	0.44 – 4.08	58	6,9%	4.36*	1.25 – 15.16
Entered cohab./marriage	144	5,6%	1.27	0.58 – 2.80	147	4,1%	0.80	0.32 – 2.03	139	8,6%	5.82***	2.33 – 14.58
Broke up with partner	29	3,4%	1.10	0.14 – 8.10	32	3,1%	0.57	0.07 – 4.51	20	15,0%	9.79***	2.30 – 41.76
Broke up cohab./divorced	24	20,8%	5.14**	1.80 – 14.74	29	6,9%	1.35	0.30 - 6.01	31	12,9%	11.33***	3.24 - 39.54
Stayed parent	382	6,5%	1.00		381	7,3%	1.00		409	1,0%	1.00	
Became parent	178	3,9%	0.65	0.28 – 1.54	173	2,9%	0.40	0.15 – 1.06	172	2,3%	1.98	0.49 – 8.09
Never parent	663	6,8%	1.54	0.90 – 2.64	644	4,5%	0.60	0.32 - 1.12	642	7,2%	4.95**	1.70 - 14.40

Note. INC = incidence, *OR* = odds ratio, 95% CI = 95% confidence interval, 'Stayed cohab./married' and 'Stayed parent' are reference groups.
[a] '-10' indicates that the decimal-position in this upper-boundary statistic is placed 10 numbers to the right
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 6.2
Prediction of 2-year Incidence from T2-T3 of DSM-III-R Disorders by Relationship Stability and Change from T1-T2

	Mood Disorders				Anxiety Disorders				Substance Disorders			
	N	*INC*	*OR*	*95% CI*	*N*	*INC*	*OR*	*95% CI*	*N*	*INC*	*OR*	*95% CI*
Stayed cohab./married	744	4,4%	1.00		713	2,8%	1.00		755	0,9%	1.00	
Stayed with partner	104	1,9%	0.67	0.15 – 2.99	102	2,0%	0.75	0.20 – 2.79	88	5,7%	5.05*	1.41 – 18.03
Stayed single	220	5,9%	1.90	0.95 – 3.82	220	2,7%	1.16	0.52 – 2.62	225	3,6%	2.82	0.96 – 8.30
Entered partn. relationship	49	4,1%	1.32	0.30 – 5.85	46	4,3%	1.86	0.52 – 6.71	43	4,7%	4.01	0.78 – 20.75
Entered cohab./marriage	56	3,6%	1.04	0.24 – 4.50	61	3,3%	1.39	0.39 – 4.94	59	5,1%	4.37**	1.07 – 17.94
Broke up with partner	26	0,0%	0.09	0.00 – 6.57^{-10a}	28	3,6%	1.36	0.23 – 7.90	21	14,3%	14.81***	3.26 – 67.29
Broke up cohab./divorced	11	9,1%	2.99	0.36 – 24.58	13	0,0%	0.01	0.00 - 8.39^{-10a}	12	8,3%	7.18	0.79 – 64.72
Stayed parent	377	5,7%	1.00		368	4,3%	1.00		405	0,2%	1.00	
Became parent	56	3,6%	0.63	0.14 – 2.76	54	3,7%	0.78	0.17 – 3.53	62	1,6%	6.55	0.40 – 106.32
Never parent	772	4,3%	1.02	0.56 – 1.86	755	2,0%	0.44	0.19 - 1.01	738	3,7%	10.82*	1.43 – 81.96

Note. INC = incidence, *OR* = odds ratio, 95% CI = 95% confidence interval, 'Stayed cohab./married' and 'Stayed parent' are reference groups. [a] '-10' indicates that the decimal-position in this upper-boundary statistic is placed 10 numbers to the right
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 6.3
Prediction of Relationship Transitions from T2-T3 by 1-year Prevalence of Mood, Anxiety, and Substance Disorders from T1-T2

		Entered Partner Relationship			Entered Cohabit./Marriage			Became Parent			Broke up/Divorced		
		N (%)	*OR*	*95% CI*	*N (%)*	*OR*	*95% CI*	*N (%)*	*OR*	*95% CI*	*N (%)*	*OR*	*95% CI*
Mood Disorders	Non-prevalents	268 (23,9%)	1.00		373 (29,2%)	1.00		915 (16,5%)	1.00		906 (7,2%)	1.00	
	Prevalents	26 (38,5%)	2.12	0.90 – 4.50	33 (36,4%)	1.36	0.64 – 2.87	69 (8,7%)	0.41*	0.17 – 0.98	51 (23,5%)	5.65***	2.68 – 11.91
Anxiety Disorders	Non-prevalents	269 (24,2%)	1.00		375 (30,7%)	1.00		912 (16,2%)	1.00		888 (7,8%)	1.00	
	Prevalents	25 (36,0%)	1.65	0.74 – 4.25	31 (19,4%)	0.52	0.21 - 1.32	72 (12,5%)	0.75	0.36 – 1.58	69 (11,6%)	1.62	0.72 – 3.66
Substance Disorders	Non-prevalents	261 (25,3%)	1.00		360 (29,7%)	1.00		905 (16,0%)	1.00		920 (7,7%)	1.00	
	Prevalents	33 (22,2%)	1.87	0.86 – 4.07	46 (33,3%)	1.50	0.78 – 2.88	79 (12,5%)	0.59	0.26 – 1.32	37 (12,5%)	2.28	0.94 – 5.51

Note. OR = odds ratio, 95% CI = 95% confidence interval, 'Prevalents' are reference group.
* $p < .05$, ** $p < .01$, *** $p < .001$

However, the onset of substance disorders between T2-T3 was significantly associated with staying with a partner, entering a cohabitation/marriage, breaking up a partner relationship, and not becoming parent (see Table 6.2). In accordance with previous outcomes, however, simple contrasts between relevant groups showed that breaking up a partner relationship - opposed to staying in such a relationship - was not linked to a higher risk for the onset of mood or substance disorders, and that entering a partner relationship or a cohabitation/ marriage - opposed to staying single - was not linked to a lower risk for the incidence of mood or substance disorders. Only one trend effect was found for the break-up of a cohabitation/marriage, which - opposed to staying in a cohabitation/marriage - seemed to predate the onset of substance disorders (OR = 7.18, p = .08). Overall, analyses showed that in comparison with respondents stably cohabitating/married, those who stayed with a partner (other than those in a cohabitation/ marriage), entered a partner relationship or a cohabitation/marriage, and did not become a parent between T1-T2, were at a higher risk for the subsequent onset of substance disorders from T2-T3. Only one hypothesis was confirmed, however: young adults who broke up a cohabitation/ marriage from T1-T2 were more likely to develop substance disorders from T2-T3, compared to young adults who stayed in a cohabitation/marriage.

Selection: Associations of Mental Disorders with Subsequent Relationship Transitions

Finally, we conducted logistic regression analyses to test whether the prevalence of mood, anxiety, and substance disorders from T1-T2 might affect the odds of experiencing relationship transitions from T2-T3. All respondents - also those with a lifetime diagnosis of any of the disorders under study - were included in the analyses. Again, we controlled for age and gender. As in previous analyses, it appeared that only limited numbers of young adults had experienced certain relationship transitions. Thus, to ensure that the analyses would have enough power, we examined the most prevalent transitions: (1) entered partner relationship, (2) entered cohabitation/marriage, (3) became parent, and (4) broke up cohabitation/marriage. Table 6.3 shows that the likelihood of becoming a parent was lower for those who had suffered from a mood disorder between T1-T2 than for those who had not suffered from a mood disorder in this period (OR = 0.41, p < .05). In addition, for young adults who had suffered from a mood disorder, the risk of subsequent break-up or divorce was more than 5 times higher (OR = 5.65, p < .001) than for those who had not suffered from a mood disorder. However, we assumed that respondents' mood disorders might be a consequence of earlier problems in their

relationships or marriages (Whisman et al. 2000). In this case, mood disorders would be expected to mediate the impact of partner relationship quality on later relationship break-ups (see Baron and Kenny 1986). Logistic regression analyses showed that indeed, low partner relationship quality at T1 was significantly linked to the prevalence of mood disorders from T1-T2 [OR = 5.42, $p < .001$] and relationship break-ups from T2-T3 [OR = 2.17, $p < .05$]. Moreover, the results of a mediation test demonstrated that mood disorders from T1-T2 mediated the longitudinal association from partner relationship quality at T1 to relationship break-ups from T2-T3 [*Sobel* = 3.54, $p < .001$]. In other words, young adults who broke up their partner relationships were more likely to have previously suffered from mood disorders but, in turn, these mood disorders were dependent on previously experienced relationship difficulties.

DISCUSSION

The main results of the present study can be summarized as follows. Both the incidence of mood and substance disorders between 1996 and 1999 were longitudinally associated with relationship stability and change in young adulthood over the same 3-year interval. However, more rigorous, prospective analyses showed that only an onset of substance disorders was predicted by previous relationship stability and change. In comparison with the category 'stayed cohabiting/married', other groups of both relationship stability and change (i.e. staying with partner - other than in a cohabitation/marriage; entering a partner relationship or cohabitation/marriage; breaking up a partner relationship; not becoming a parent) were linked to a higher risk for the onset of substance disorders. No evidence was found to support the hypothesis that entering a partner relationship or cohabitation/marriage - as compared to staying single - decreased the risk for the onset of mental disorders, or that breaking up a partner relationship (other than a cohabitation/marriage) - compared to staying in such a relationship - increased the risk for the onset of mental disorders. Selection effects were found in young adults' chances of breaking up a partner relationship or cohabitation/marriage, the risk of which was higher for those who had previously suffered from mood disorders. In turn, however, these mood disorders were predicted by previously experienced diffuclties in partner relationships. An earlier prevalence of mood disorders also decreased the chance of becoming a parent.

The concurrent (3-year) longitudinal associations showed that the onset of anxiety disorders was not associated with relational stability and change in young adulthood. Maybe this is because a key factor in the onset of most anxiety disorders, such as phobias and panic disorder, is the 'perceived uncontrollability' of events, which is not per se characteristic of young adults' relationship transitions. For example, divorce is not something that suddenly happens to people, but rather reflects an underlying process (Vandervalk et al. in press). In contrast to the anxiety-related pathologies, mood and substance disorders were associated with relational stability and change. Staying single, experiencing the break-up of a cohabitation/marriage, and not becoming a parent were related to a 2 to 7 times higher risk of developing mood and substance disorders, which fits in with earlier findings (Chilcoat and Breslau 1996). However, in comparison with young adults who stayed single, entering a partner relationship or cohabitation/marriage was not significantly related to a lower risk for the onset of substance disorders, which contradicts the role theoretical notion that substance (ab)use decreases as a consequence of acquiring new social roles. It may also be, however, that the benificial components of such relationships start exerting an influence after a longer time period than currently assessed in this study. In contrast to non-significant contrasts between young adults staying single and those entering a new partner relationship or cohabitation/marriage, we *did* find evidence to support the hypothesized link between relationship breakdowns and an increased risk for the onset of substance disorders in young adults, but only for those who broke up a cohabitation/marriage. This is probably due to the fact that, in comparison with cohabitations/marriages, other partner relationships - in which the partners have not (yet) decided to live together - are usually of a shorter duration and, consequently, may not involve as high levels of support and intimacy. Also, being divorced is linked to certain 'strains' (e.g. legal issues, child custody arrangements) that do not accompany the status of being single.

A more rigorous, prospective test of longitudinal associations showed that relational stability and change during young adulthood only predicted the subsequent onset of substance disorders. In comparison with young adults stably cohabiting/married, those who stayed with a partner (in a relationship other than a cohabitation/marriage), who entered a cohabitation/marriage, and who did not become a parent were at higher risk for the onset of substance disorders. Also, there was a trend effect for young adults who stayed single to be at a higher risk for the onset of substance disorders (see Table 3: $OR = 2.98$, $p = .06$). This may reflect the effects of a relatively unattached relationship status in young adulthood: the people who have not yet psychologically committed themselves to an enduring, longer-term partner relationship or cohabitation/marriage (and thus, in most cases, have not yet become a parent)

probably have more contacts with peers in which substance use is normal, have less feelings of responsibility as a partner or parent, and encounter more drinking opportunities. In line with earlier research (Maughan and Taylor 2001), the results of this study provided evidence for the existence of selection effects - but only with regard to the prevalence of mood disorders. Young adults who had previously suffered from mood disorders were less likely to become a parent and, for those involved in a partner relationship or cohabitation/marriage, more likely to break up these relationships. The present study made clear, however, that the reason why these respondents were depressed is strongly related to earlier relational problems. Thus, marital dissatisfaction acts as a 'third variable', and is linked both to later mood disorders and break-up/divorce.

This study contributes to our present knowledge about the associations of relationship transitions and mental health by employing a three-wave prospective-longitudinal design, and by focusing on the incidence of DSM-III-R diagnoses of mood, anxiety, and substance disorders. Nevertheless, the results should be generalized with caution due to certain limitations in the measurements and research design. First, an attrition analysis over the 3-year time interval had shown that young adults suffering from substance disorders in the year before the baseline were more likely to drop out, which might have led us to underestimate the true amount of pathology that developed as a consequence of going through relationship transitions. Also, the statistical power in some of the prospective analyses involving relationship change (e.g. breaking up) was limited, which made it impossible to examine the extent to which transition-disorder relations were moderated by confounding factors, such as marital dissatisfaction or social support from the partner. Further, the limited power frustrated an examination of the partner-transitions in conjunction with parent roles, which leaves us with unanswered questions regarding differential effects of divorce for people with and without children. Finally, because the respondents only filled out questions concerning their marital status at each wave, we could not be precise about the number of relationship transitions that occurred between the waves. However, time intervals in this study were short (1 and 2 years, respectively); it is unlikely that the observed transitions are an underestimation of the actual number of relationship transitions that occured.

CONCLUSION

The main contribution of this study is that it sheds new light on the associations of young adults' relationship transitions and their mental health, by examining prospective-longitudinal relationships with the incidence of DSM-III-R diagnoses of mood, anxiety, and substance disorders. Overall, the results suggest that apart from the negative consequences of a break up/divorce, having a relatively unattached relationship status (i.e. not stably cohabiting/married, not being a parent) may be an important factor in explaining the onset of substance disorders. Furthermore, the results qualify the notion of de-selection in partner roles. Although mood disorders predate later relationship break-ups, these mood disorders are in turn predicted by earlier difficulties in partner relationships.

NOTES

[1] Overbeek, G., Vollebergh, W., Engels, R.C.M.E., Meeus, W. (in press). Young adults' relationship transitions and the incidence of mental disorders: A three-wave longitudinal study. *Social Psychiatry and Psychiatric Epidemiology.*

CHAPTER 7

CONCLUSIONS AND GENERAL DISCUSSION

The present thesis was aimed at examining the development of internalizing and externalizing problem behavior, both in terms of psychosocial problems and psychiatric disorders. A first issue that was addressed concerned the extent to which internalizing and externalizing problem behaviors would co-occur in adolescents and young adults, and focused on the question whether these problem behaviors constituted risk factors in each other's development. A second aim was to examine the question whether adolescents' and young adults' bonds with their parents and their partner relationships were linked to the development of internalizing and externalizing problem behavior, and whether age-related transitions in the partner relationships would be linked to the development of these problem behaviors. This final chapter concludes the thesis by providing a concise summary and discussion of key findings on these topics from the different empirical studies. Furthermore, in consideration of the methodological limitations of our studies, we discuss some important theoretical implications of the results. In particular, we attempt to explain the associations between internalizing and externalizing problem behaviors in terms of the high-level stability of problem behaviors that may, in cases of chronic or highly intense problematic behavior, be compromised by cross-context generalizations of problem behaviors. Additionally, we evaluate the risks associated with low-quality affective bonds with parents for people's future perceptions of intimacy in partner relationships and the development of internalizing and externalizing problem behaviors.

Co-occurrence of Internalizing and Externalizing Problem Behaviors

Do emotional disturbance and delinquent behavior co-occur in adolescents and young adults from the general population? An answer to this question was given in Chapter 2: yes, emotional disturbance and delinquent behavior are significantly associated in adolescence and young adulthood, but only to a limited extent. Analyses showed moderately high levels of stability in both emotional disturbance and delinquency, and concurrent associations typically of a small magnitude (ranging from .04 to .13). This finding was replicated across different gender and age groups. Thus, in comparison with the outcomes of previous research among clinical samples and studies on psychiatric disorders, in the present thesis we demonstrated the co-occurrence between internalizing and externalizing problem behaviors to be rather low. One explanation for the diverging results lies in different operationalizations of the construct 'externalizing problem behavior' across the studies. In our research we focused on delinquency instead of conduct problems - as was done in most other studies (e.g., Harrington et al., 1990; Kovacs et al., 1988; Rohde et al., 1996). Many delinquent behaviors, such as shoplifting or vandalism, may be considered as boundary-testing, exploratory behavior in adolescence (e.g., Silbereisen & Noack, 1988; Shedler & Block, 1990) and, as such, it may not be a correlate of poor emotional health. In contrast, however, another study conducted among Dutch young adults (Ferdinand & Verhulst, 1996) showed that syndromes of delinquency and anxiety/depression were correlated .24 in males and .44 in females. It might be, however, that these higher estimates are - in part - the result of using one instrument (i.e., the Young Adult Self Report; Achenbach, 1990) instead of two different measures for two different types of problem behavior, as was done in the present thesis. Thus, due to a 'shared-method variance', caused by the use of similar instruments to obtain information about different problem behaviors (see Cole, 1987; Cole & Carpentieri, 1990), the coefficients might be somewhat inflated.

The multigroup analyses in Chapter 2 demonstrated that a stability model without significant cross-lagged longitudinal associations best fit the data of the different gender and age groups. The high levels of stability in problem behaviors are in accordance with earlier results of Krueger et al. (1998), with regard to 'core psychopathological processes'. These processes may best be described as processes in which basic feelings of anxiety are modulated either internally or externally. Probably, different individuals internalize or externalize their basic feelings of anxiety to different levels and, to a certain extent, maintain their 'personal' levels of internalizing or externalizing problem behaviors over their life course. Then, any association

between the two problem behaviors may come about as the consequence of a third variable, that may be found in a common genetic denominator (Gjone & Stevenson, 1997; O'Connor et al., 1998a, 1998b) or in shared environmental risks, for example as with family discord or chronically adverse life circumstances (Caron & Rutter, 1991). However, in contrast with the stability perspective on co-occurrence, the LISREL analyses presented in Chapter 3 showed that in a subgroup of 568 adolescents aged 15 to 19, emotional disturbance was significantly, positively associated with subsequent delinquency. In part, these divergent results may stem from the selection of different age groups between the two studies, because for the analyses in Chapter 2 we constructed two adolescent age groups (i.e., 15-17 and 18-20). Despite this difference, however, it is very likely that the results diverged as a consequence of the different types of structural equation models that were tested across the studies. While in Chapter 2 we examined the concurrent and longitudinal relationships between delinquency and emotional disturbance and controlled for the - moderately strong - levels of longer-term stability in problem behavior (over a 6-year period), the analyses in Chapter 3 were focused on predicting increases in delinquency (over a 3-year period) from negative life events and parental bonding, with emotional disturbance as a mediator of these longitudinal associations. The significant predictive relationship from emotional disturbance to delinquency found in Chapter 3, may counter the expectations of other scholars in this field (e.g., Anderson et al., 1987; Capaldi, 1992; Rohde et al., 1996), many of whom have assumed that conduct problems lead to subsequent emotional disturbance. However, we may assume that failure experiences in social domains, associated with low self-esteem and depressive moods, might lead adolescents to be less receptive of social cues which may minimize effects of social control or emotionally relevant environmental stimuli on individuals' delinquent behavior (Vaux & Ruggiero, 1983; Rottenberg et al., 2002).

Associations between Parental Bonding and Internalizing and Externalizing Problem Behaviors

The results presented in Chapters 3, 4, and 5 made clear that higher-quality affective bonds with parents are concurrently, negatively associated with late adolescents' and young adults' emotional disturbance and delinquency, and with the prevalence of DSM-III-R mood, anxiety, and substance disorders. These findings are in line with the outcomes of previous studies that have focused on the cross-sectional links between parental bonding and emotional disturbance (e.g., Goldstein & Heaven, 2000; Pedersen, 1994), delinquency (e.g., Mak, 1994; Pedersen, 1994) and internalizing and externalizing psychiatric disorders (e.g., Bernardi et al., 1989,

Gerlsma et al., 1990; Mackinnon et al., 1993; Patrick et al., 1994). Despite the moderately strong concurrent relationships, however, only modest cross-lagged associations were found between parental bonding and the development of problem behavior - both in terms of psychosocial problems and psychiatric disorders. This finding is in line with outcomes of previous research that showed parental bonds to have weak or modest cross-lagged associations with psychosocial problems (e.g., Kenny & Lomax, 1998; Rice & Fitzgerald, 1995), and - the frequency of - psychiatric symptoms (e.g., Mackinnon et al., 1989; Rodgers, 1996). Specifically, in Chapter 4 we found that only paternal care was linked to subsequent depressed mood and dissatisfaction with life. An explanation for this finding may be that paternal care and overprotection surpress the influence of maternal care and overprotection when they are examined simultaneously, because higher levels of paternal care and overprotection are more extraordinary in the perception of adolescents and therefore more influential (Paterson, Pryor, & Field, 1995). Further, the results of Chapter 5 demonstrated that parental bonding was significantly, but modestly related to the later prevalence of DSM-III-R mood and anxiety disorders, but not substance disorders. These findings converge with the results from the US National Comorbidity Survey (Enns, Cox, & Clara, 2002) which showed that parental bonding was modestly, but significantly related to different forms of adult psychopathology, explaining about 1 to 5% of the total variance in the occurrence of mental disorders. A possible explanation for the lack of significant results with regard to substance disorders may be, that alcohol and drug addiction arise mainly as a consequency of young adults' relatively unattached relationship status - and the higher number of drinking or drug use possibilities that accompanies such a status (e.g., Hajema & Knibbe, 1998). Thus, not the affective quality of intimate relationships with one's parents or partners, but rather the entry into new relationships that diminish the possibilities for substance use may be an important explanatory factor (Kandel & Raveis, 1989; Miller-Tutzauer, Leonard, & Windle, 1991).

Apart from the direct links we found between parental bonding and problem behavior, the study presented in Chapter 3 demonstrated that higher-quality affective bonds with parents may act as a buffer against the detrimental effects of negative life events, which fits in with earlier findings on similar buffer-mechanisms (Greenberg et al., 1983). Further, in examining the effects of young adults' partner relationships on the cross-lagged associations between parental bonding and the prevalence of mood, anxiety, and substance disorders in Chapter 5, no evidence was found to support the notion that parental bonding was indirectly, through an association with the quality of partner relationships, linked to internalizing or externalizing problem behaviors. The cross-relationship continuity - in terms of individuals' generic

representations of the affective quality of intimate relationships - was rather low. This finding is in line with the outcomes of previous research (Gittelman et al., 1998; Rodgers, 1996) who, examining univariate regression models, also did not provide convincing evidence to support an indirect link from parental bonding to problem behavior through adults' current partner relationships. These results may be explained as a consequence of an increased sensitivity to new, romantic experiences in late adolescence and young adulthood (Noack, 1990; Sanderson & Cantor, 1995), which increases the chance that the already existing representation of the intimate relationship with parents is accomodated to the new experiences with intimacy that one encounters in the context of romantic partner relationships (see Engels et al., 2001). As another explanation, we may consider that young adults are aware of the unique differences between intimacy experienced in the relationship with parents and with partners. For instance, intimacy in the context of one's relationships with parents is experienced in the context of one's compliance to the 'unilateral authority' of parents (Younnis & Smollar, 1985), while intimacy in the context of partner relationships is experienced in a context of equality and reciprocity, and is emphasized also in terms of romantic love and sexual attraction. As a consequence of young adults' awareness of these differences, the generalization of internal working models from one intimate relationship to another may be limited or precluded.

Duration and Quality of Partner Relationships and Relationship Transitions

In our prediction of internalizing and externalizing problem behaviors by earlier levels of parental bonding, we examined the moderating influence of late adolescents' and young adults' current partner relationships. The results presented in Chapter 4 showed that for late adolescents who were not involved in romantic relationships, the cross-sectional associations of parental bonding with problem behaviors were stronger than for youths who *were* romantically involved. In the longitudinal analyses, however, these results were not replicated. Furthermore, the results made clear that for late adolescents neither their commitment to partner relationships, nor their perceived social support from the partner, nor the duration of the romantic relationship was longitudinally associated with decreases in the levels of emotional disturbance. This finding suggests that for 15 to 19 year olds, quality of romantic relationships is not yet important in an absolute manner. For instance, Roscoe et al. (1987) stated that motives for engaging in romantic relationships during this age period primarily concern sex and social status, while attachment and caregiving behaviors are probably more closely tied to perceived social support of the partner and commitment to partners in longer-term relationships. The results presented in Chapter 5 indicated, however, that even in young adulthood the link

between partner relationships and mental health may not be very strong. Although the quality of young adults' partner relationships was significantly, negatively associated with the prevalence of mental disorders, these cross-lagged associations ranged only from –.09 to –.11.

Table 7.1
Summary of Key Findings

Chapter 2:	In general populations of adolescents the co-occurrence of emotional disturbance and delinquency is rather low. Juvenile delinquency may be a part of normative exploratory behavior and, as such, not be a correlate of poor emotional health.
Chapter 2:	No signficant cross-lagged relationships were found between emotional disturbance and delinquency in adolescence and young adulthood. A stability model best represents the separate developments of these problem behaviors.
Chapter 3:	Parental bonding and negative life events significantly predict late adolescents' emotional disturbance which, in turn, is associated with subsequent developments in delinquent behavior.
Chapter 3:	In addition to their direct associations with emotional disturbance, higher-quality parent-child bonds function as a buffer against the detrimental effects of a pile-up of negative life events in late adolescence.
Chapter 4:	Despite the moderately strong concurrent associations between parental bonding and mental health, the longitudinal results showed that only fathers' care was negatively associated with youths' depressive moods and dissatisfaction with life.
Chapter 4:	Late adolescents' partner relationships do not exert a positive – longitudinal – influence on their mental health; there were no positive effects for social support of partners, commitment to the partner relationship, or duration of relationships.
Chapter 5:	There is limited 'cross-relationship continuity' between the affective quality of intimate relationships with parents and partners. Quality of partner relationships in young adulthood does not mediate the cross-lagged relationships between parental bonding and mood and anxiety disorders.
Chapter 5:	After controlling for an earlier lifetime prevalence of disorders, the perceived quality of one's parental bonds in the first 16 years of life still significantly predicts the later prevalence of mood and anxiety disorders in young adults aged 18 to 34.
Chapter 6:	Apart from the negative effects of a break up/divorce, having a relatively unattached relationship status (i.e., not stably cohabiting/married, not being a parent) is an important factor in explaining the onset of substance disorders.
Chapter 6:	Results support the notion of de-selection into certain partner and parent roles by mood disorders, which negatively affect individuals' chances of having children and remaining cohabiting/married.

With regard to the importance of relationship transitions, Chapter 6 clearly demonstrated that stability and changes in the partner role were linked to the incidence (i.e., first onset) of DSM-III-R disorders. Specifically, this particular study among young adults aged 18-34 years made clear that over a 3-year interval both the incidence of mood and substance disorders were longitudinally associated with relationship stability and change in young adulthood over the

same 3-year interval (i.e., 'correlated change'). However, more rigorous, prospective analyses showed that only an onset of substance disorders was predicted by previous relationship stability and change. Specifically, in comparison with young adults stably cohabiting/married, those who stayed single, who stayed with a partner (in relationships other than a cohabitation or marriage), who entered a cohabitation/marriage, and who did not become a parent were at a higher risk for the onset of substance disorders. This may reflect the effect of having a relatively unattached relationship status in young adulthood; people who have not (yet) psychologically committed themselves to an enduring, longer-term partner relationship or cohabitation/marriage may have more contacts with peers in which substance use is normal, have less feelings of responsibility as a partner or parent, and encounter more drinking opportunities (see Hajema & Knibbe, 1998). Overall, the results suggested that apart from negative consequences of a break up/divorce, having a relatively unattached relationship status (i.e., not stably cohabiting/married, not being a parent) may be an important factor in explaining the onset of substance disorders. The results also supported the notion (Maughan & Taylor, 2001; Forthofer, 1997) of de-selection in certain partner and parent roles by mood disorders, which means that an earlier prevalence of mood disorders in people negatively affected their chances of becoming a parent and remaining cohabiting/married.

Social Contexts and Developments in Problem Behavior from Adolescence to Young Adulthood

One of the main conclusions in this thesis is that no signficant cross-lagged relationships were found between internalizing and externalizing problem behaviors in the general population of adolescents and young adults, and that a longitudinal stability model best represented the separate developments of these problem behaviors. Nevertheless, other studies among general populations of youths have found the co-occurrence of internalizing and externalizing problem behavior to significantly exceed chance-levels (Capaldi, 1991, Ge et al., 1996; Kiesner, 2002). Furthermore, clinical samples (e.g., Kovacs et al., 1988; Rohde et al., 1996) and samples of incarcerated youths (Dorelijers, 1995) contain quite a number of youths in who internalizing and externalizing problem behaviors come together. Such samples have disproportionately large numbers of people suffering from multiple problem behaviors (i.e., 'Berkson's bias', Caron & Rutter, 1991), most likely because co-occurring problem behaviors have a poor prognosis in comparison with single problem behaviors (Angold & Costello, 1993; Kessler et al., 1996), and more seriously limit youths' daily functioning than do single problem behaviors - increasing the likelihood of referral to treatment or detention facilities. How can we

integrate this phenomenon with our finding that, in the general population of adolescents and young adults, there is only a relatively weak association between internalizing and externalizing problem behaviors?

An explanation might be found in a 'threshold principle' and cross-context generalizations of problem behaviors. In the general population, most youths probably will have either an internalizing *or* an externalizing way of dealing with environmental stress (e.g., having an argument with parents, failing a school examination, being bullied by one's peers) and the stress that it brings about (see Krueger et al., 1998). However, a small minority of adolescents will show more intense externalizing problem behaviors that might generalize across situations and life periods (Moffitt, 1993). Although these adolescents will not have a strong tendency towards the internalization of basic anxieties and stress, the repeated and intensely negative interactions with authority figures (i.e., parents, teachers) and peers - which may occur as a consequence of, for instance, unusually frequent and intense aggressive behavior - may stimulate the development of lower levels of self-esteem and depressogenic affect and cognitions (Patterson & Capaldi, 1991). Similarly, some adolescents will show more intense internalizing problem behaviors, that exceeds a certain threshold and pervades multiple social domains. For these youths, there may be an increased risk for the development of externalizing problem behaviors, because high levels of depressed affect and behavior may lead people to (perceive to) be rejected in conventional social contexts, for instance in the relationship with one's partner (Hale et al., 1997) and peers (Waas & Graczyk, 1999). In turn, this increases the likelihood of associating with deviant peers, because a need for self enhancement (see Jang & Thornberry, 1998) will lead people to select social contexts in which one's personality or behavior does not stand out in a negative way. For example, peer rejection and academic failure have been found to be linked to an increased involvement with deviant peers (Dishion, Patterson, Stoolmiller, & Skinner, 1991). Furthermore, depressive moods may lead to a reduced attentiveness for social cues, diminishing the influence of social control on individuals' normbreaking and delinquent behavior (Vaux & Ruggiero, 1983). Overall, then, internalizing and externalizing problem behaviors may constitute risk factors in each other's development, but only after a threshold level of problematic behavior is exceeded.

Other main conclusions from this thesis are, that adolescents' and young adults' bonds to their parents seem to have a relatively modest predictive value with regard to the development of internalizing and externalizing problem behavior, and that the cross-relationship continuity in the perceptions of affective quality across intimate relationships with parents and partners is relatively limited. Although moderately strong concurrent relationships existed, the

longitudinal associations between parental bonding and problem behavior were not very strong (see also Enns et al., 2002; Kenny & Lomax, 1998; Rice & Fitzgerald, 1995). Although these findings do not contradict the importance that is generally ascribed to warm and loving relationships with parents for the development of individual adjustment (Schaffer, 2000; Sroufe et al., 1999), they do show that this importance is limited to a certain extent. On the one hand, one may state that parents - at least, individuals' memories of parental care and overprotection - remain influential far into young adulthood, even after controlling for the earlier presence of disorders in people's lives. On the other hand, one may recognize that parental bonding explains only a little part of the total number of occurrences of mental disorders, and that even in these cases we should hesitate to conlude that 'low-quality parental bonds lead to mental disorders in later life'.

One explanation for the modest strength of the parental bonding - problem behavior relationship in our studies, is that we exclusively assessed parental care and overprotection in the context of the parent-child dyad. We might have found the parental context to have a larger impact on the development of problem behavior and the quality of partner relationships had we also focused on the dynamics and content of interactions within the broader family context. For instance, marital conflict and disruption in the father-mother dyad might have a relatively large impact on well-being and the development of problem behavior of children (Shaw, Winslow, & Flanagan, 1999) and adolescents (Forehand et al., 1989). Additionally, family climate - to which not only parents but also siblings and the respondents' themselves contribute - may explain some of the variance in problem behavior development (Delsing, Oud, & De Bruyn, 2001). Even in this case, however, we should hesitate to conclude that environmental influences are important explanatory factors for later developments in individual adjustment. For instance, a large-scale twin-study (Kendler, Heath, Martin, & Eaves, 1986) showed that there was no link between familial factors and symptoms of anxiety and depression, but that there was genetic influence on all of the symptoms. In accordance, a study among adolescent twins (Neiderhiser, Reiss, Hetherington, & Plomin, 1999) demonstrated that cross-lagged associations between parental conflict and negativity and adolescents' antisocial behavior and depressive symptoms could be primarily explained by genetic factors. Thus, the significant cross-lagged relationships between low-quality parental bonds and problem behavior in the present thesis may only for a smaller part be ascribed to non-shared (parenting) environmental factors.

In an interpretation of the modest cross-lagged relationships between parental bonding and the development of problem behavior, it is important to consider the fact that we controlled

for socio-demographic background characteristics of the respondents: educational level, residential status (i.e., living at home with or away from one's parents), age, and gender. In particular, gender played an important role in explaining the variance of problem behavior – for psychosocial problems as well as psychiatric disorders. In accordance with the outcomes of many previous studies on gender differences and problem behaviors (e.g., Hankin et al., 1998; Ihle & Esser, 2002; Nolen-Hoeksema, 1990; Rantakillio, Myhrman, & Koiranen, 1995; Ten Have, Schoemaker, & Vollebergh, 2002), we found that female respondents had higher mean levels of emotional disturbance than male respondents, and that mood and anxiety disorders were more prevalent among women than among men. In contrast, substance disorders were more prevalent among men than among women, and the frequencey of delinquent activities was also higher among males than among females. These gender differences may be best explained by an integration of traditional socialization and cognitive theories, combined with a psychobiological perspective (see Eagly & Wood, 1999; Maccoby, 2000). Specifically, gender-differential treatments, gender-specific modelling and imitation, individuals' preconceived notions of gender-appropriate behavior, and dispositional gender differences may all lead to different vulnerabilities for internalizing and externalizing problem behaviors. For instance, adolescent males' hormonally induced disposition towards thrill-seeking behaviors (Baldwin, 1985), in combination with a socialization aimed towards the development of explorative and assertive behavior, may increase boys' likelihood for the development of delinquency and substance abuse. Likewise, adolescent females' tendency towards internalizing behaviors, in combination with a strong endorsement of 'feminine' behaviors such as emotional dependency or a sensitivity for emotionally intimate disclosures, may increase girls' risk for developing emotional problems, as with mood and anxiety disorders.

Methodological Limitations

The studies presented in this thesis may help to improve our knowledge on adolescents' and young adults' social contexts and the development of internalizing and externalizing problem behaviors, because of certain methodological strengths: the studies were all characterized by longitudinal designs and by large samples from general populations of adolescents and young adults. Despite these strengths, however, several methodological shortcomings need to be taken into account in interpreting the results from the different studies. One limitation is that we almost exclusively relied on self-report and interview data from adolescents and young adults in our studies, which might have caused us to overestimate the strength of relationships between

the variables examined across the different studies due to a unirater-bias (e.g., Cole, Truglio & Peeke, 1997). For example, correlation and regression coefficients may partly reflect individuals' tendencies to fill in questionnaires in coherent or socially desirable ways. In order to control for this unirater-bias we should rely on multi-informant designs in future research. However, since each informant reports on a subject's behavior on the basis of unique (non-shared) information about that person, it may be most accurate to integrate the reports of different raters so as to create a maximally informed, intersubjective report (e.g., Ladd & Kochenderfer, 2002). In family contexts, another approach might be to adopt 'round robin' designs, in which family members rate all other family members on the same measure, which allows for a differentiation in variance components that are specific for a dyadic relationship, a perceiver, the broader family context, and the dyadic partner (SRM; Kenny & La Voie, 1984).

Another possible limitation concerns the Parental Bonding Instrument (PBI; Parker et al., 1979), which we used in three of the five studies in this thesis. The PBI was developed because of the conviction that not the actual, but rather the perceived parental attitudes and behaviors of the parents tend to exert an effect on problem behavior development (see Mak, 1994). However, people's perceptions and memories of their parents' behavior may be constructed on the basis of present personality, and may be modified by people's current affect about themselves or their parents (Halverson, 1988). A twin study (Mackinnon et al., 1991), studies examining the confounding effects of depressive disorders on the recall of parental warmth and overprotection (Gerlsma et al., 1993), and research focusing on differences in family members' perceptions of parental rearing styles (Gerlsma et al., 1997), have provided contradictory evidence concerning the question whether or not the PBI scores are influenced by current negative affect or current circumstances. Recent research (Buist, Deković, Meeus, & Van Aken, submitted for publication) on the bidirectional cross-lagged associations between parental attachment - measured with the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1983) - and internalizing problem behaviors demonstrated, however, that withdrawal and anxiety/depression were significantly related to later lower-quality parental attachments in adolescents. Furthermore, most previous studies in which the PBI was used have employed either cross-sectional or unidirectional-longitudinal designs, which leaves us with questions about the extent to which adolescents' recollections of their relationship with parents are stable, or shaped by their recent intimate experiences in the context of partner relationships. The studies presented in this thesis resembled previous studies in this regard: they

were characterized by unidirectional-longitudinal designs, because in both the USAD and NEMESIS datasets the PBI was administered only once to the respondents.

Other limitations pertain to the sample attrition in the longitudinal studies, and to our selection of specific age groups and measurements to operationalize the construct of 'problem behavior' across the different studies. First, in the longitudinal designs from the USAD and NEMESIS datasets, we found evidence for selective attrition processes. Specifically, in most attrition analyses it appeared there was a small, but significantly higher likelihood for respondents with higher scores on measures of internalizing or externalizing problem behaviors to drop out of the samples. In addition, a somewhat higher likelihood of dropping out was found for males and for 18-24 year olds in some studies. Thus, although in general the attrition effects were not very strong, the associations between parental bonding, partner relationships, and problem behaviors may be slightly underestimated because respondents with higher scores on measures of problem behaviors had dropped out of the samples. Secondly, the selection of specific age groups and use of different operationalizations of 'problem behaviors' across the different studies does not allow us to put forward general statements about the development of internalizing and externalizing problem behaviors in relation to adolescents' and young adults' social contexts. In particular, we selected a broader sample of 12-24 year olds for the examination of concurrent and longitudinal associations between internalizing and externalizing problem behaviors in different age groups (Chapter 2), a subsample of 15 to 19 year old middle and late adolescents for the inquiry into the cross-lagged associations between negative life events, parental bonding, partner relationship status and quality, and internalizing and externalizing problem behavior (Chapters 3 and 4), and a sample of 18-34 year old young adults among which we studied the cross-lagged links of parental bonding, partner relationship type and quality, and relationship transitions with the later prevalence and incidence of DSM-III-R disorders (Chapters 5 and 6). Clearly, then, the interpretation of findings is for each different study presented in this thesis best made in the context of the particular age group or instrument that is described.

Implications for Future Research

Until now, many studies on multiple problem behaviors were of an epidemiological character (e.g., Anderson et al., 1987; Harrington et al., 1990; Rohde et al., 1991), and focused on socio-demographic backgrounds of comorbodity and on the percentages of adolescents afflicted by two or more disorders. The limited number of studies that did examine the social

risks associated with co-occurrence (Ge et al., 1996; Capaldi, 1992), focused exclusively on the main effects of risk factors associated with both internalizing and externalizing problem behaviors. In addition to a cumulative negative effect of an increasing *number* of risk factors (e.g., Sameroff & Fiese, 1990), however, certain environmental risks may be qualitatively different from others and associated with only one type of problem behavior. This would allow for a study of cross-context interactions (Beam, Gil-Rivas, Greenberger, & Chen, 2002), which may be especially relevant in the prediction of co-occurring internalizing and externalizing problem behaviors (see Dishion, 2000). For instance, Brendgen, Vitaro, & Boivin (1998) suggested that delinquency might only be associated with lower levels of self-esteem in youths if they simultaneously experience to be rejected by their peers. Clearly, this is not always the case, as was indicated by a study of Coie, Terry, Zakriski, & Lochman (1995), in which delinquent adolescents were found to be popular among their peers, who also did not rate them as being unhappy. So, these findings indicate that our insight into the co-occurrence of internalizing and externalizing problem behaviors may be enhanced by the results from studies performed within a cross-context interactional perspective or focusing on specific person-environment interactions (Van Aken, 2002).

Furthermore, instead of adopting unidirectional designs, future longitudinal studies should consider full-recursive, explanatory mechanisms underlying the co-occurrence of internalizing and externalizing problem behaviors, specifically with a focus on depressive moods and serious conduct problems or serious and persistent delinquency. In such explanatory models, the links from delinquency or conduct problems to depression and low self-esteem should be modeled through youths' negative interactions with important people (i.e., parents, teachers, peers) in multiple social domains (see Capaldi, 1992). In a similar fashion, the relationship from depressive moods and low self-esteem to delinquency or conduct problems should be modeled via adolescents' self-protective and self-enhancing behaviors (Jang & Thornberry, 1998) as well as via their decreased receptability for the effects of social control (Vaux & Ruggiero, 1987). In terms of a possible study design, this would imply a person oriented analyses of bidirectional-longitudinal associations between youths' internalizing and externalizing problem behaviors. In particular, it would be interesting to select (the minority of) adolescents who developed multiple problem behaviors between timepoints, for example those who would follow a developmental path from 'delinquency' at a first timepoint to 'co-occurrence' at a second, later timepoint, and those who would follow another developmental path from 'depressed' at a first timepoint to 'co-occurrence' at a second timepoint. In each of these groups, multi-informant data from adolescents, parents, and peers could help to establish to what extent (and in which

social domains) negative or harmful social interactions took place, and to what extent adolescents' engagement in different social domains diminished or augmented as a consequence of these interactions.

With regard to future research using the Parental Bonding Instrument, it is important that more insight is provided into (a) the stability of late adolescents' and young adults' perceptions of parental warmth and overprotection, and (b) the extent to which parental bonding is influenced by current relationship developments or emotional functioning. To make this possible, longitudinal studies need to adopt cross-lagged panel designs that take into account not only the concurrent relationships between parental bonding and mental health problems, but also the cross-lagged associations from mental health problems to subsequent levels of parental bonding, and the stability of parental bonding. Furthermore, an explicit test may be made in future research of the developmental significance of late adolescence and young adulthood as 'sensitive periods' with regard to individuals' relationship developments: are one's affective-cognitive representations of the relationship with parents altered as a consequence of new relational experiences? In addition, it seems of interest that future studies focus not on the extent to which, but also on the *conditions* under which young adults' partner relationships mediate or moderate the link from parental bonding to mental disorders. An inquiry into specific risk factors for selected subsamples of respondents may be most fruitful here. For instance, little is known about why some people, who experienced their parents as emotionally distant and overprotective, later enter partner relationships of a similar quality and style, whereas others have a certain 'resiliency' and develop healthy romantic commitments in late adolescence and young adulthood. Finally, although we stated explicitly that the PBI and our use of the term 'parental attachment' referred to the affective quality of parent-adolescent relationships, it would nevertheless be interesting to examine the construct validity of the PBI in relation to measures of adolescents' attachment styles. Recently, a successful effort has been made to link scores on a pen-and-paper measure of parental attachment, the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987), to a three-way attachment classification (Vivona, 2000) - findings that have more recently been replicated across two samples of Dutch adolescents (Overbeek, Noom, & Engels, manuscript in preparation).

REFERENCES

Achenbach, T.M. (1990). *The Young Adult Self Report*. Burlington: Dept. of Psychiatry, University of Vermont.

Achenbach, T.M., Howell, C.T., McConaughy, S.H., & Stanger, C. (1995). Six-year predictors of problems in a national sample of children and youth: II. Signs of disturbance. *Journal of the American Academy of Child and Adolescent Psychiatry, 34 (4),* 488-498.

Aiken, L.S., & West, S.G. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park: Sage Publications.

Ainsworth, M.D.S. (1989). Attachments beyond infancy. *American Psychologist, 44,* 709-716.

Akaike, H. (1987). Factor analysis and AIC. *Psychometrika, 52,* 317-332.

Amato, P.R. (2000). The consequences of divorce for adults and children. *Journal of Marriage and the Family, 62,* 1269-1287.

American Psychiatric Association (1987). *Diagnostic and statistical manual of mental disorders*, rev. 3d edition. Washington: APA.

Anderson, J., Williams, S., McGee, R., & Silva, P.A. (1987). The prevalence of DSM-III disorders in a large sample of preadolescent children from the general population. *Archives of General Psychiatry, 44,* 69-81.

Aneshensel, C.S., & Huba, G.J. (1983). Depression, alcohol use, and smoking over one year: A four-wave longitudinal causal model. *Journal of Abnormal Psychology, 92(2),* 134-150.

Angold, A., & Costello, E.J. (1993). Depressive comorbidity in children and adolescents: Empirical, theoretical and methodological issues. *American Journal of Psychiatry, 150 (12),* 1779-1791.

Angold, A., & Rutter, M. (1992). Effects of age and pubertal status on depression in a large clinical sample. *Development and Psychopathology, 4,* 5-28.

Armsden, G.C., & Greenberg, M.T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence, 16,* 427-454.

References

Arrindell, W.A., Emmelkamp, P.M.G., Monsma, A., & Brilman, E. (1983). The role of perceived parental rearing practices in the aetiology of phobic disorders: A controlled study. *British Journal of Psychiatry, 143,* 183-187.

Arrindell, W.A., Hanewald, G.J., & Kolk, A.M. (1989). Cross-national constancy of dimensions of parental rearing style: The Dutch version of the Parental Bonding Instrument (PBI). *Personality and Individual Differences, 10,* 949-956.

Arrindell, W.A., Heesink, J., Feij, J.A. (1999). The Satisfaction With Life Scale (SWLS): Appraisal with 1700 health young adults in the Netherlands. *Personality and Individual Differences, 26,* 815-826.

Arrindell, W.A., Meeuwesen, L., & Huyse, F.J. (1991). The Satisfaction With Life Scale (SWLS): Psychometric properties in a non-psychiatric medical outpatients sample. *Personality and Individual Differences, 12,* 117-123.

Arnett, J.J. (1999). Adolescent storm and stress, reconsidered. *American Psychologist, 54,* 317-326.

Arnett, J.J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55,* 469-480.

Aseltine, R.H., & Kessler, R.C. (1993). Marital disruption and depression in a community sample. *Journal of Health and Social Behavior, 34,* 237-251.

Baldwin, J.D. (1985). Thrill and adventure seeking and the age distribution of crime. *American Journal of Sociology, 90 (6),* 1326-1329.

Baldwin, M.W. (1992). Relational schemas and the processing of social information. *Psychological Bulletin, 112 (3),* 461-484.

Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships, 7,* 147-178.

Bartholomew, K., & Horowitz, L.M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61,* 226-244.

Bartholomew, K., & Thompson, J.M. (1995). The application of attachment theory to counseling psychology. *Counseling Psychologist, 23,* 484-491.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182.

Barrera, M. (1981). Social support in the adjustment of pregnant adolescents: Assessment issues and findings. In: B.H. Gottlieb (Ed.), *Social networks and social support in community and mental health* (pp. 69-96). Newbury Park: Sage.

Barrett, A.E. (1999). Marital trajectories and mental health: A typological approach to the social causation hypothesis [on-line]. Abstract from: *Dissertation Abstracts International, 60 (5-A)*: 1781.

Beam, M.R., Gil-Rivas, V., Greenberger, E., & Chen, C. (2002). Adolescent problem behavior and depressed mood: Risk and protection within and across social contexts. *Journal of Youth and Adolescence, 31 (5),* 343-357.

Belsky, J., & Cassidy, J. (1994). Attachment: Theory and evidence. In: M. Rutter, & D. Hay (Eds.), *Development through life: A handbook for clinicians* (pp. 373-402). Oxford: Blackwell Scientific.

Belsky, J., & Nezworski, T. (1988). Clinical implications of attachment. In: J. Belsky & T. Nezworski (Eds.), *Clinical implications of attachment. Child psychology* (pp. 3-17). Hillsdale: Lawrence Erlbaum.

Bentler, P.M. (1989). *EQS: Structural equations program manual.* Los Angeles: BMDP Statistical Software.

Berden, G.F.M.G., Althaus, M., & Verhulst, F.C. (1990). Major life events and changes in the behavioural functioning of children. *Journal of Child Psychology and Psychiatry, 31 (6),* 949-959.

Bernardi, E., Jones, M., & Tennant, C. (1989). Quality of parenting in alcoholics and narcotic addicts. *British Journal of Psychiatry, 154,* 677-682.

Block, J., & Gjerde, P.F. (1990). Depressive symptoms in late adolescence: A longitudinal perspective on personality antecedents. In: J. Rolf, A.S. Masten, D. Cicchetti, K.H. Nuechterlein, & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 334-360). New York: Cambridge University Press.

Bowlby, J. (1944). Forty-four juvenile thieves: Their characteristics and home life. *International Journal of Psychoanalysis, 25,* 19-52 and 107-127.

Bowlby, J. (1977). The making and breaking of affectional bonds. *British Journal of Psychiatry, 130,* 201-210.

Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry, 52(4),* 664-678.

Bretherton, I. (1985). Attachment theory: Retrospect and prospect. *Monographs of the Society for Research on Child Development, 50* (1-2, Serial No. 209).

Brendgen, M., Vitaro, F., Bukowski, W.M. (1998). Affiliation with delinquent friends: Contributions of parents, self-esteem, delinquent behavior, and rejection by peers. *Journal of Early Adolescence, 18 (3),* 244-265.

References

Brennan, K.A., & Shaver, P.R. (1995). Dimensions of adult attachment, affect regulation, and romantic relationship functioning. *Personality and Social Psychology Bulletin, 21,* 267-283.

Brook, J.S., Cohen, P., & Brook, D.W. (1998). Longitudinal study of co-occuring psychiatric disorders and substance use. *Journal of the American Academy of Child and Adolescent Psychiatry, 37 (3),* 322-330.

Brown, G.W., Lemyre, L., & Bifulco, A. (1992). Social factors and recovery from anxiety and depressive disorders: A test of specificity. *British Journal of Psychiatry, 161,* 44-54.

Browne, M.W. & Cudeck, R. (1993). Alternative ways of assessing model fit. In K.A. Bollen & J. Scott Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.

Buist, K.L., Deković, M., Meeus, W., Van Aken, M.A.G. (2002). *The reciprocal relationship between adolescent attachment and psychosocial adjustment.* Submitted for publication.

Burbach, D.J., & Borduin, C.M. (1986). Parent-child relations and the etiology of depression: A review of methods and findings. *Clinical Psychology Review, 6,* 133-153.

Burke, J.D., Wittchen, H-U., Regier, D.A., & Sartorius, N. (1990). Extracting information from diagnostic interviews on co-occurrence of symptoms of anxiety and depression. In: J.D. Maser & C.R. Cloninger (Eds.), *Comorbidity of mood and anxiety disorders* (pp. 649-667). Washington DC: American Psychiatric Association.

Burt, C.E., Cohen, L.H., & Bjorck, J.P. (1988). Perceived family environment as a moderator of young adolescents' life stress adjustment. *American Journal of Community Psychology, 16 (1),* 101-122.

Campbell, T.L., Byrne, B.M., & Baron, P. (1992). Gender differences in the expression of depressive symptoms in early adolescents. *Journal of Early Adolescence, 12,* 326-338.

Cantril, H. (1965). *The pattern of human concerns.* New Jersey: Rutgers University Press.

Capaldi, D.M. (1992). Co-occurrence of conduct problems and depressive symptoms in early adolescent boys: II. A 2-year follow-up at grade 8. *Development and Psychopathology, 4,* 125-144.

Carlson, G.A., & Cantwell, D.P. (1980). Unmasking masked depression in children and adolescents. *American Journal of Psychiatry, 137 (4),* 445-449.

Carnelley, K.B., Pietromonaco, P.R., & Jaffe, K. (1994). Depression, working models of others, and relationship functioning. *Journal of Personality and Social Psychology, 66,* 127-140.

Cramer, D., & Donachie, M. (1999). Psychological health and change in closeness in platonic and romantic relationships. *Journal of Social Psychology, 139,* 762-767.

Caron, C., & Rutter, M. (1991). Comorbidity in child psychopathology: Concepts, issues and research strategies. *Journal of Child Psychology and Psychiatry, 32 (7),* 1063-1080.

Chilcoat, H.D., & Breslau, N. (1996). Alcohol disorders in young adulthood: Effects of transitions into adult roles. *Journal of Health and Social Behavior, 37,* 339-349.

Chiles, J.A., Miller, M.L., & Cox, G.B. (1980). Depression in an adolescent delinquent population. *Archives of General Psychiatry, 37,* 1179-1184.

Coie, J.D., Terry, R., Zakriski, A., & Lochman, J. (1995). Early adolescent social influences on delinquent behavior. In: J. McCord (Ed.), *Coercion and punishment in long-term perspectives* (pp. 229-244). New York: Cambridge University Press.

Compas, B.E. (1987). Stress and life events during childhood and adolescence. *Clinical Psychology Review, 7,* 275-302.

Cole, D.A. (1987). Utility of confirmatory factor analysis in test validation research. *Journal of Consulting and Clinical Psychology, 55 (4),* 584-594.

Cole, D.A., & Carpentieri, S. (1990). Social status and the comorbidity of child depression and conduct disorder. *Journal of Consulting and Clinical Psychology, 58 (6),* 748-757.

Cole, D.A., Truglio, R., & Peeke, L. (1997). Relation between symptoms of anxiety and depression in children: A multi-trait multi-method-multigroup assessment. *Journal of Consulting and Clinical Psychology, 65 (1),* 110-119.

Collins, N.L., & Read, S.J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology,* 58 (4), 644-663.

Conolly, J.A., & Johnson, A.M. (1996). Adolescents' romantic relationships and the structure and quality of their close interpersonal ties. *Personal Relationships, 3,* 185-195.

Costello, E.J. (1989). Developments in child psychiatric epidemiology. *Journal of the American Academy of Child and Adolescent Psychiatry, 28,* 836-841.

Damphousse, K., & Kaplan, H.B. (1998). Intervening processes between adolescent drug use and psychological distress: An examination of the self-medication hypothesis. *Social behavior and Personality, 26 (2),* 115-130.

References

Delsing, M.J.M.H., Oud, J.H.L., & De Bruyn, E.E.J. (2001). *Reciprocal influences between family relationships and adolescent externalizing problem behavior*. Paper presented at the symposium 'Labor of Love', at the Xth European Conference on Developmental Psychology, Uppsala, Sweden.

DeMaris, A. (1995). A tutorial in logistic regression. *Journal of Marriage and the Family, 57,* 956-968.

Diekstra, R.W.F., Garnefski, N., De Heus, P., De Zwart, R., Van Praag, B.M.S., & Warnaar, M. (1991). *Scholierenonderzoek 1990. Gedrag en gezondheid van scholieren uit het voortgezet onderwijs.* [Survey of pupils1990; health and behavior]. Den Haag: NIBUD.

Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49,* 71-75.

Dishion, T.J. (2000). Cross-setting consistency in early adolescent psychopathology: Deviant friendships and problem behavior sequelae. *Journal of Personality, 68 (6),* 1109-1126.

Dishion, T.J., Patterson, G.R., Stoolmiller, M., & Skinner, M.L. (1991). Family, school, and behavioral antecedents to early adolescent involvement with antisocial peers. *Developmental Psychology, 27 (1),* 172-180.

Doreleijers, T.A.H. (1995). *Diagnostiek tussen jeugdstrafrecht en hulpverlening.* Gouda: Quint.

Dozier, M., Stovall, K.C., & Albus, K.E. (1999). Attachment and psychopathology in adulthood. In: J. Cassidy & P.R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 497-519). New York: Guilford.

Eagly, A.H., & Wood, W. (1999). The origins of sex differences in human behavior: Evolved dispositions versus social roles. *American Psychologist, 54 (6),* 408-423.

Eaton, W.W., Anthony, J.C., Tepper, S., & Dryman, A.(1992). Psychopathology and attrition in the epidemiologic catchment area surveys. *American Journal of Epidemiology, 135,* 1051-1059.

Engels, R.C.M.E., Knibbe, R.A., & Drop, M.J. (1999). Predictability of smoking in adolescence: Between optimism and pessimism. *Addiction, 94,* 115-124.

Engels, R.C.M.E., Dekovic, M., Finkenauer, C., & Meeus, W. (2000). Stability and change in attachment styles in adolescence: The effects of parental attachment and emotional adjustment. *Manuscript submitted for publication.*

Engels, R.C.M.E., Finkenauer, C., Meeus, W., & Dekovic, M. (2001). Parental attachment and adolescents' emotional adjustment: The role of interpersonal tasks and social competence. *Journal of Counseling Psychology, 48,* 428-439.

Elliott, D.S., Huizinga, D., & Menard, S. (1989). *Multiple problem youth: Delinquency, substance use, and mental health problems.* New York: Springer-Verlag.

Enns, M.W., Cox, B.J., & Clara, I. (2002). Parental bonding and adult psychopathology: Results from the US National Comorbidity Survey. *Psychological Medicine, 32,* 997-1008.

Erikson, E.H. (1963). *Childhood and society,* 2nd ed. New York: Norton.

Farmer, A.E., Jenkins, P.L., Katz, R., & Ryder, L. (1990). Comparison of CATEGO-derived ICD-8 and DSM-III classifications using the CIDI in severely ill subjects. *British Journal of Psychiatry, 158,* 177-182.

Feeney, J.A., Noller, P. (1990). Attachment style as a predictor of adult romantic relationships. *Journal of Personality and Social Psychology, 58,* 281-291.

Ferdinand, R.F., & Verhulst, F.C. (1995). Continuity and change of self-reported problem behaviors from adolescence into young adulthood. *Journal of the American Academy of Child and Adolescent Psychiatry, 34,* 680-690.

Ferdinand, R.F., Stijnen, T., Verhulst, F.C., & Van der Reijden, M. (1999). Associations between behavioural and emotional problems in adolescence and maladjustment in young adulthood. *Journal of Adolescence, 22,* 123-136.

Ferdinand, R.F., & Verhulst, F.C. (1995b). Psychopathology in Dutch young adults: Enduring or changeable? *Social Psychiatry and Psychiatric Epidemiology, 30,* 60-64.

Ferdinand, R.F., & Verhulst, F.C. (1996). The prevalence of self-reported problems in young adults from the general population. Social Psychiatry and Psychiatric Epidemiology, 31, 10-20.

Ferdinand, R.F., Verhulst, F.C., & Wiznitzer, M. (1995). Continuity and change of self-reported problem behaviours from adolescence into young adulthood. *Journal of the American Academy of Child and Adolescent Psychiatry, 34 (5),* 680-690.

Forehand, R., Wierson, M., McCombs, A., Brody, G., & Fauber, R. (1989). Interparental conflict and adolescent problem behavior: An examination of mechanisms. Behaviour *Research and Therapy, 27 (4),* 365-371.

Forthofer, M.S. (1997). The associations between psychiatric disorders and marital transitions in a United States national sample [on-line]. Abstract from: *Dissertation Abstracts International, 57 (11-A)*: 4946.

Furman, W., & Buhrmester, D. (1992). Age and sex in perceptions of networks of personal relationships. *Child Development, 63,* 103-115.

References

Furman, W., & Wehner, E.A. (1997). Adolescent romantic relationships: A developmental perspective. In: S. Shulman, & W.A. Collins (Eds.), *Romantic relationships in adolescence: Developmental perspectives* (pp. 21-36). San Francisco: Jossey-Bass.

Fraley, R.C., & Davis, K.E. (1997). Attachment formation and transfer in young adults' close friendships and romantic relationships. *Personal Relationships, 4,* 131-144.

Garnefski, N., & Diekstra, R.F.W. (1997). 'Comorbidity' of behavioral, emotional and cognitive problems in adolescence. *Journal of Youth and Adolescence, 26 (3),* 321-338.

Ge, X., Best, K.M., Conger, R.D., & Simons, R.L. (1996). Parenting behaviors and the occurrence and co-occurrence of adolescent depressive symptoms and conduct problems. *Developmental Psychology, 32 (4),* 717-731.

Gerlsma, C., Das, J., & Emmelkamp, P.M.G. (1993). Depressed patients' parental representations: Stability across changes in depressed mood and specificity across diagnoses. *Journal of Affective Disorders, 27,* 173-181.

Gerlsma, C., Emmelkamp, P.M.G., & Arrindell, W.A. (1990). Anxiety, depression, and perception of early parenting: A meta-analysis. *Clinical Psychology Review, 10,* 251-277.

Gerlsma, C., Snijders, T.A.B., Van Duijn, M.A.J., & Emmelkamp, P.M.G. (1997). Parenting and psychopathology: Differences in family members' perceptions of parental rearing styles. *Personality and Individual Differences, 23,* 271-282.

Gittleman, M.G., Klein, M.H., Smider, N.A., & Essex, M.J. (1998). Recollections of parental behaviour, adult attachment and mental health: Mediating and moderating effects. *Psychological Medicine, 28,* 1443-1455.

Gjone, H., & Stevenson, J. (1997). The association between internalizing and externalizing behavior in childhood and early adolescence: Genetic or environmental common influences? *Journal of Abnormal Child Psychology, 25 (4),* 277-286.

Goetting, A. (1994). The parenting-crime connection. *The Journal of Primary Prevention, 14 (3),* 169-186.

Gold, M., Mattlin, M., & Osgood, D.W. (1989). Background characteristics and responses to treatment of two types of institutionalized delinquent boys. *Criminal Justice and Behavior, 16 (1),* 5-33.

Goldberg, D.P. (1978). *Manual of the General Health Questionnaire.* Horsham: General Practice Research Unit.

Goldstein, M., & Heaven, P.C.L. (2000). Perceptions of the family, delinquency, and emotional adjustment among youth. *Personality and individual differences, 29(6),* 1169-1178.

Greenberg, M., Siegal, J., & Leitch, C.J. (1983). The nature and importance of attachment relationships to parents and peers during adolescence. *Journal of Youth and Adolescence, 12,* 373-386.

Grotevant, H.D., Cooper, C.R. (1986). Individuation in family relationships. *Human Development, 29,* 82-100.

Hajema, K., & Knibbe, R.A. (1998). Changes in social roles as predictors of changes in drinking behavior. *Addiction, 93,* 1717-1728.

Hale, W.W., Jansen, J.H.C., Bouhuys, A.L., Jenner, J.A., Van den Hoofdakker, R.H. (1997). Non-verbal behavioral interactions of depressed patients with partners and strangers: The role of behavioral social support and involvement in depression persistence. Journal *of Affective Disorders, 44,* 111-122.

Hankin, B.L., Abramson, L.Y., Moffitt, T.E., Silva, P.A., McGee, R., & Angell, K.E. (1998). Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology, 107 (1),* 128-140.

Hankin, B.L., Roberts, J., & Gotlib, I.H. (1997). Elevated self-standards and emotional distress during adolescence: Emotional specificity and gender differences. *Cognitive therapy and research, 21 (6),* 663-679.

Harrington, R., Fudge, H., Rutter, M., Pickles, A., & Hill, J. (1990). Adult outcomes of childhood and adolescent depression. *Archives of General Psychiatry, 47,* 465-473.

Hart, H. 't. (1994). *Criminaliteit in latente klassen: Een voorlopige analyse van de structuur van crimineel gedrag van jongeren.* [Criminal behavior in latent classes: A preliminary analysis of the structure of adolescents' criminal behavior]. Internal report: Utrecht University.

Havighurst, R.J. (1972). *Developmental tasks and education (3d ed.).* New York: McKay.

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52,* 511-524.

Helsen, M., Vollebergh, W., & Meeus, W. (2000). Social support from parents and friends and emotional problems in adolescence. *Journal of Youth and Adolescence, 29 (3),* 319-335.

Helsen, M., Vollebergh, W., & Meeus, W. (1999). Psychosociale problemen in de adolescentie: de samenhang met hechting aan ouders en vrienden en identiteit. [Psychosocial problems in adolescence: The associations with attachment to parents and friends and identity]. *Nederlands Tijdschrift voor de Psychologie, 54,* 256-276.

Hendrick, S.S., Hendrick, C., & Adler, N.L. (1988). Romantic relationships: Love, satisfaction, and staying together. *Journal of Personality and Social Psychology, 54,* 980-988.

Hirschi, T. (1969). *Causes of delinquency.* Berkeley: Univ. California Press.

Hirschi, T., & Gottfredson, M. (1983). Age and the explanation of crime. *American Journal of Sociology, 89,* 552-584.

Hope, S., Rodgers, B., & Power, C. (1999). Marital status transitions and psychological distress: Longitudinal evidence from a national population sample. *Psychological Medicine, 29,* 381-389.

Huizinga, D., & Jakob-Chien, C. (1998). The contemporaneous co-occurrence of serious and violent juvenile offending and other problem behaviors. In: R. Loeber & D.P. Farrington (Eds.), *Serious and violent juvenile offenders: Risk factors and succesful interventions* (pp. 47-67). Thousand Oaks: Sage.

Ihle, W., & Esser, G. (2002). Epidemiologie psychischer stoerungen im kindes- un jugendalter: Praevalenz, verlauf, komorbiditaet and geslechtsundterschiede. [Epidemiology of mental disorders in childhood and adolescence: Prevalence, course, comorbidity, and gender differences. *Psychologische Rundschau, 53 (4),* 159-169.

Jang, S.J., & Thornberry, T.P. (1998). Self-esteem, delinquent peers, and delinquency: A test of the self-enhancement thesis. American *Sociological Review, 63,* 586-598.

Johnson, J.H. (1986). *Life events as stressors in childhood and adolescence.* Bev. Hills: Sage.

Johnson, D.R., & Wu, J. (2002). An empirical test of crisis, social selection, and role explanations of the relationship between marital disruption and psychological distress: A pooled time series analysis of four-wave panel data. *Journal of Marriage and the Family, 64,* 211-224.

Jöreskog, K.G. (1969). A general approach to confirmatory maximum likelihood factor analysis. *Psychometrika, 34,* 183-202.

Jöreskog, K.G., & Sörbom, D. (1989*). LISREL 7: A guide to the program and applications.* Chicago: SPPS Inc.

Jöreskog, K.G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language.* Chicago: SSI Inc.

Kandel, D.B., & Davies, M. (1982). Epidemiology of depressive mood in adolescents: An empirical study. *Archives of General Psychiatry, 39,* 1205-1212.

Kandel, D.B., & Davies, M. (1986). Adult sequelae of adolescent depressive symptoms. *Archives of General Psychiatry, 43,* 255-264.

Kandel, D.B., & Raveis, V.H. (1989). Cessation of illicit drug use in young adulthood. *Archives of General Psychiatry, 46,* 109-116.

Kendler, K.S., Heath, A., Martin, N.G., & Eaves, L.J. (1986). Symptoms of anxiety and depression in a volunteer twin population. *Archives of General Psychiatry, 43,* 213-221.

Kenny, D.A., & La Voie, L. (1984). The social relations model. In : L. Berkowitz (Ed.), *Advances in experimental social psychology* (vol. 18, pp. 141-182). San Diego: Academic Press.

Kenny, M.E. (1987). The extent and function of parental attachment among first-year college students. *Journal of Youth and Adolescence, 16,* 17-29.

Kenny, M.E., & Lomax, R. (1998). Longitudinal pathways linking adolescent reports of maternal and paternal attachments to psychological well-being. *Journal of Early Adolescence, 18,* 221-244.

Kenny, M.E., & Rice, K.G. (1995). Attachment to parents and adjustment in late adolescent college students: Current status, applications, and future considerations. *Counseling Psychologist, 23,* 433-451.

Kerr, M., & Stattin, H. (2000). What parents know, how they know it, and several forms of adolescent adjustment. *Developmental Psychology, 36,* 381-394.

Kessler, R.C., Nelson, C.B., McGonagle, K.A., Liu, J., Swartz, M., & Blazer, D.G. (1996). Comorbidity of DSM-III-R major depressive disorder in the general population: Results from the US National Comorbidity Survey. *British Journal of Psychiatry, 168,* 17-30.

Kienhorst, C.W.M., Wilde, E.J., Van den Bout, J., & Diekstra, R.F.W. (1990). Psychometrische eigenschappen van een aantal zelfrapportage-vragenlijsten over '(on)welbevinden' [Psychometric characteristics of a number of self report measures of '(non) well being']. *Nederlands Tijdschrift voor de Psychologie, 45,* 124-133.

Kiesner, J. (2002). Depressive symptoms in early adolescence: Their relations with classroom problem behavior and peer status. *Journal of Research on Adolescence, 12 (4),* 463-478.

Kitson, G.C., & Morgan, L.A. (1990). The multiple consequences of divorce: A decade review. *Journal of Marriage and the Family, 52,* 901-911.

Koeter, M.W.J., Ormel, J., Van den Brink, W., Dijkstra, W., Schoenmacker, J., & Staal, J. (1987). De waarde van de GHQ als toestandsmaat [The value of the GHQ as a state measure]. *Tijdschrift voor Psychiatrie, 29,* 667-674.

Kovacs, M., Paulauskas, S., Gatsonis, C., & Richards, C. (1988). Depressive disorders in childhood. III. A longitudinal study of comorbidity with and risk for conduct disorders. *Journal of Affective disorders, 15,* 205-217.

Kraus, S. J. (1995). Attitudes and the prediction of behavior: A meta-analysis of the empirical literature. *Personality and Social Psychology Bulletin, 21,* 58-75.

Krueger, R.F., Caspi, A., Moffitt, T.E., & Silva, P.A. (1998). The structure and stability of common mental disorders (DSM-III-R): A longitudinal-epidemiological study. *Journal of Abnormal Psychology, 107 (2),* 216-227.

Krueger, R.F. (1999). The structure of common mental disorders. *Archives of General Psychiatry, 56,* 921-926.

Ladd, G.W., & Kochenderfer, L.B. (2002). Identifying victims of peer aggression from early to middle childhood: Analysis of cross-informant data for concordance, estimation of relational adjustment, prevalence of victimization, and characteristics of identified victims. *Psychological Assessment, 14 (1),* 74-96.

Larson, R., & Ham, M. (1993). Stress and 'storm and stress' in early adolescence: The relationship of negative events with dysphoric affect. *Developmental Psychology, 29 (1),* 130-140.

Laursen, B., & Williams, V.A. (1997). Perceptions of interdependence and closeness in family and peer relationships among adolescents with and without romantic partners. In: S. Shulman & W.A. Collins (Eds.), *Romantic relationships in adolescence: Developmental perspectives* (pp. 3-21). San Francisco: Jossey-Bass.

Leadbeater, B.J., Kuperminc, G.P., Blatt, S.J., & Hertzog, C. (1999). A multivariate model of gender differences in adolescents' internalizing and externalizing problems. *Developmental Psychology, 35 (5),* 1268-1282.

Lee, G.R., Seccombe, K., & Shehan, C.L. (1991). Marital status and personal happiness: An analysis of trend data. *Journal of Marriage and the Family, 53,* 839-844.

Leenstra, A.S., Ormel, J., & Giel, R. (1995). Positive life change and recovery from depression and anxiety: A three-stage longitudinal study of primary care attenders. *British Journal of Psychiatry, 166,* 333-343.

Liu, X., Kurita, H., Uchiyama, M., Okawa, M., Liu. L., & Ma, D. (2000). Life events, locus of control, and behavioral problems among Chinese adolescents. *Journal of Clinical Psychology, 56 (12),* 1565-1577.

Loeber, R., & Stouthamer-Loeber, M. (1986). Family factors as correlates and predictors of juvenile conduct problems and delinquency In: M. Tonry & N. Morris (Eds.), *Crime and justice: An annual review of research* (vol. 7). Chicago: Univ. Chicago Press.

Loeber, R., Farrington, D.P., Stouthamer-Loeber, M., Moffitt, T.E., & Caspi, A. (1998). The development of male offending: Key findings from the first decade of the Pittsburgh Youth Study. *Studies on Crime and Crime prevention, 7,* 141-171.

Loeber, R., & Keenan, K. (1994). Interaction between conduct disorder and its comorbid conditions: Effects of age and gender. *Clinical Psychology Review, 14 (6),* 497-523.

Lopez, F.G., & Gover, M.R. (1993). Self-report measures of parent-adolescent attachment and separation-individuation: A selective review. *Journal of Counseling and Development, 71,* 560-569.

Luijpers, E.T.H. (1999). *Exploratie, sociale binding, en crimineel gedrag van adolescenten.* [Exploration, social commitments, and criminal behavior of adolescents]. Unpublished manuscript.

Maccoby, E.E. (2000). Perspectives on gender development. *International Journal of Behavioral Development, 24 (4),* 398-406.

MacKinnon, A.J., Henderson, A.S., & Andrews, G. (1991). The Parental Bonding Instrument: A measure of perceived or actual parental behavior*? Acta Psychiatrica Scandinavica, 83,* 153-159.

MacKinnon, A.J., Henderson, A.S., & Andrews, G. (1993). Parental 'affectionless control' as an antecedent to adult depression: A risk factor refined. *Psychological Medicine, 23,* 135-141.

MacKinnon, A.J., Henderson, A.S., Scott, R., & Duncan-Jones, P. (1989). The Parental Bonding Instrument (PBI): An epidemiological study in a general population sample. *Psychological Medicine, 19,* 1023-1034.

Main, M., Kaplan, N., & Cassidy, J. (1985). *Security in infancy, childhood, and adulthood: A move to the level of representation*. Monographs of the Society for Research in Child Development, vol. 50 (1-2), 66-104.

Maggs, J.L., Frome, P.M., Eccles, J.S., & Barber, B.L. (1997). Psychosocial resources, adolescent risk behaviour and young adult adjustment: Is risk taking more dangerous for some than others? *Journal of Adolescence, 20,* 103-119.

Mak, A.S. (1990). Testing a psychosocial control theory of delinquency. *Criminal Justice and Behavior, 17,* 215-230.

Mak, A.S. (1994). Parental neglect and overprotection as risk factors in delinquency. *Australian Journal of Psychology, 46 (2),* 107-111.

Marks, N.F., & Lambert, J.D. (1998). Marital status continuity and change among young and midlife adults: Longitudinal effects on psychological well-being. *Journal of Family Issues, 19,* 652-686.

Martin, G., & Waite, S. (1994). Parental bonding and vulnerability to adolescent suicide. *Acta Psychiatrica Scandinavica, 89,* 246-254.

References

Maughan, B., & Taylor, A. (2001). Adolescent psychological problems, partnership transitions and adult mental health: An investigation of selection effects. *Psychological Medicine, 31,* 291-305.

McConaughy, S.H., & Skiba, R.J. (1993). Comorbidity of externalizing and internalizing problems. *School Psychology Review, 22 (3),* 421-438.

McLennan, J., & Omodei, M.M. (1988). Psychological adjustment, close personal relationships and personality. *British Journal of Medical Psychology, 61,* 285-290.

Meeus, W. (1993). De psychosociale ontwikkeling van adolescenten [Psychosocial development in adolescents]. In: W.Meeus & H. 't Hart (Eds.). Jongeren in Nederland: *Een nationaal survey naar ontwikkeling in de adolescentie en naar intergenerationele overdracht* [Young people in the Netherlands: A national survey on development in adolescence and on intergenerational transference], (pp. 31-55). Amersfoort: Academische Uitgeverij Amersfoort.

Meeus, W. (1996). Studies on identity development in adolescence: An overview of research and some new data. *Journal of Youth and Adolescence, 25 (5),* 569-597.

Meeus, W., & Hart, H. 't (1993). *Jongeren in Nederland: Een nationaal survey naar ontwikkeling in de adolescentie en naar intergenerationele overdracht* [Young people in the Netherlands: A national survey on development in adolescence and on intergenerational transference]. Amersfoort: Academische Uitgeverij Amersfoort.

Meeus, W. (1989). Parental and peer support in adolescence. In: K. Hurrelmann & U. Engel (Eds.), *The social world of adolescents* (pp. 167-185). New York: De Gruyter.

Meeus, W. (1996). Studies on identity development in adolescence. An overview of research and some new data. *Journal of Youth and Adolescence, 25,* 569-598.

Meeus, W., Iedema, J., Maassen, G., & Engels. R. (2003). Separation-individuation revisited: On the interplay of parent and peer relations, identity, and psychological well-being in adolescence. *Submitted for Publication.*

Menaghan, E.G. (1989). Role changes and psychological well-being: Variations in effects by gender and role repertoire. *Social Forces, 67,* 693-714.

Miller-Tutzauer, C., Leonard, K.E., Windle, M. (1991). Marriage and alcohol use: A longitudinal study of 'maturing out'. *Journal of Studies on Alcohol, 52,* 434-440.

Moffitt, T.E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100 (4),* 674-701.

Moore, D. (1987). Parent-adolescent separation: The construction of adulthood by late adolescents. *Developmental Psychology, 23,* 298-307.

Mudar, P., Leonard, K.E., & Soltysinski, K. (2001). Discrepant substance use and marital functioning in newlywed couples. *Journal of Consulting and Clinical Psychology, 69 (1),* 130-134.

Murray, S.L., Holmes, J.G., & Griffin, D.W. (1996). The self-fulfilling nature of positive illusions in romantic relationships: Love is not blind, but prescient. *Journal of Personality and Social Psychology, 71,* 1155-1180.

Nada Raja, S., McGee, R., & Stanton, W.R. (1992). Perceived attachments to parents and peers and psychological well-being in adolescence. *Journal of Youth and Adolescence, 21,* 471-485.

Neiderhiser, J.M., Reiss, D., Hetherington, E.M., & Plomin, R. (1999). Relationships between parenting and adolescent adjustment over time. Genetic and environmental contributions. *Developmental Psychology, 35 (3),* 680-692.

Neto, F. (1993). The satisfaction with life scale: Psychometric properties in an adolescent sample. *Journal of Youth and Adolescence, 22,* 125-134.

Newman, D.L., Moffitt, T.E., Caspi, A., Magdol, L., Silva, P.A., Stanton, W.R. (1996). Psychiatric disorder in a birth cohort of young adults: Prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. *Journal of Consulting and Clinical Psychology, 64 (3),* 552-562.

Noack, P. (1990). Development of heterosexual friendship in adolescence as purposive person x environment interaction. In: C. Vandenplas-Holper & B.P. Campos (Eds.), *Interpersonal and identity development: New directions in psychological development* (pp. 63-75). Oporto, Inst. de Consulta Psicologica.

Nolen-Hoeksema, S. (1990). *Sex differences in depression.* Stanford: Stanford University Press.

O'Connor, T.G., McGuire, S., Reiss, D., Hetherington, E.M., & Plomin, R. (1998). Co-occurrence of depressive symptoms and antisocial behavior in adolescence: A common genetic liability. *Journal of Abnormal Psychology, 107 (1),* 27-37.

O'Connor, T.G., Neiderhiser, J.M., Reiss, D., Hetherington, E.M., & Plomin, R. (1998). Genetic contributions to continuity, change, and co-occurrence of antisocial and depressive symptoms in adolescence. *Journal of Child Psychology and Psychiatry, 39 (3),* 323-336.

Onstad, S., Skre, I., Torgersen, S., & Kringlen, E. (1993). Parental representation in twins discordant for schizophrenia. *Psychological Medicine, 23,* 335-340.

Overbeek, G., Noom, M.J., Engels, R.C.M.E. (2003). *Secure, ambivalent, and avoidant attachment in adolescents: Fact or Fiction?* Manuscript in preparation.

Overbeek, G., Vollebergh, W., Engels, R.C.M.E., & Meeus, W. (2003). Parental attachment and romantic relationships: Associations with emotional disturbance during late adolescence. *Journal of Counseling Psychology, 50,* 28-39.

Overbeek, G., Vollebergh, W., Meeus, W., Engels, R., & Luijpers, E. (2001). Course, co-occurrence, and longitudinal associations of emotional disturbance and delinquency from adolescence to young adulthood: A three-wave six-year study. *Journal of Youth and Adolescence, 30,* 401-427.

Patterson, G.R., & Capaldi, D.M. (1990). A mediational model for boys= depressed mood. In: J. Rolf, A.S. Masten, D. Cicchetti, K.H. Nuechterlein, & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 141-163). New York: Cambridge University Press.

Parker, G. (1979). Parental characteristics in relation to depressive disorders. *British Journal of Psychiatry, 134,* 138-147.

Parker, G. (1983). Parental 'affectionless control' as an antecedent to adult depression. *Archives of General Psychiatry, 40,* 956-960.

Parker, G. (1990). The parental bonding instrument: A decade of research. *Social Psychiatry and Psychiatric Epidemiology, 25,* 281-282.

Parker, G.B., Barrett, E.A., Hickie, I.B. (1992). From nurture to network: Examining links between perceptions of parenting received in childhood and social bonds in adulthood. *American Journal of Psychiatry, 149,* 877-885.

Parker, G., Hadzi-Pavlovic, D., Greenwald, S., & Seissman, M. (1995). Low parental care as a risk factor to lifetime depression in a community sample. *Journal of Affective Disorders, 33,* 173-180.

Parker, G., Tupling, H., & Brown, L.B. (1979). A Parental Bonding Instrument. *Journal of Medical Psychology, 52,* 1-10.

Parkes, C.M., & Stevenson-Hinde, J. (Eds.) (1982). *The place of attachment in human behaviour.* London: Tavistock Publishing.

Patrick, M., Hobson, R.P., Castle, D., Howard, R., & Maughan, B. (1994). Personality disorder and the representation of early social experience. *Development and Psychopathology, 6,* 375-388.

Paterson, J., Pryor, J., & Field, J. (1995). Adolescent attachment to parents and friends in relation to aspects of self-esteem. *Journal of Youth and Adolescence, 24,* 365-376.

Paul, E.L., & White, K.M. (1990). The development of intimate relationships in late adolescence. *Adolescence, 25,* 375-400.

Pedersen, W. (1994). Parental relations, mental health, and delinquency in adolescents. *Adolescence, 29 (116),* 975-990.

Pertraitis, J., Flay, B.R., & Miller, T.Q. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. *Psychological Bulletin, 117 (1),* 67-86

Pistole, M.C., & C.E. Edwards Jr. (1995). Attachment theory, counseling process, and supervision. *Counseling Psychologist, 23,* 457-479.

Puig-Antich, J. (1982). Major depression and conduct disorder in prepuberty. *Journal of the American Academy of Child and Adolescent Psychiatry, 21 (2),* 118-128.

Quinton, D., Pickles, A., Maughan, B., & Rutter, M. (1993). Partners, peers, and pathways: Assortative pairing and continuities in conduct disorder. *Development and Psychopathology, 5 (4),* 763-783.

Rantakillio, P., Myhrman, A., & Koiranen, M. (1995). Juvenile offenders, with special reference to sex differences. *Social Psychiatry and Psychiatric Epidemiology, 30,* 113-120.

Ravelli, A., Bijl, R.V., & Van Zessen, G. (1998). Comorbiditeit van psychiatrische stoornissen in de Nederlandse bevolking: Resultaten van de Netherlands Mental Health Survey and Incidence Study (NEMESIS). [Comorbidity of psychiatric disorders in the Dutch population: Results of the Netherlands Mental Health Survey and Incidence Study (NEMESIS)]. *Tijdschrift voor Psychiatry, 40 (9),* 531-544.

Regier, D.A., Farmer, M.E., Rae, D.S., Locke, B.Z., Keith, S.J., Judd, L.L., & Goodwin, F.K. (1990). Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiologic Catchment Area (ECA) Study. *Journal of the American Medical Association, 264 (19),* 2511-2518.

Rice, K.G. (1990). Attachment in adolescence: A narrative and meta-analytic review. *Journal of Youth and Adolescence, 19,* 511-538.

Rice, K.G., & Fitzgerald, D.P. (1995). Cross-sectional and longitudinal examination of attachment, separation-individuation, and college student adjustment. *Journal of Counseling and Development, 73,* 463-475.

Rodgers, B. (1996). Reported parental behaviour and adult affective symptoms. 2. Mediating factors. *Psychological Medicine, 26,* 63-77.

Rohde, P., Lewinsohn, P.M., & Seeley, J.R. (1996). Psychiatric comorbidity with problematic alcohol use in high school students. *Journal of the American Academy of Child and Adolescent Psychiatry, 35 (1),* 101-109.

Roscoe, B., Kennedy, D., & Pope, T. (1987). Adolescents' views of intimacy: Distinguishing intimate from nonintimate relationships. *Adolescence, 22,* 511-516.

Rottenbergh, J., Kasch, K.L., Gross, J.J., & Gotlib, I.H. (2002). Sadness and amusement reactivity differentially predict concurrent and prospective functioning in major depressive disorder. *Emotion, 2 (2),* 135-146.

Rowe, D. C., Vazsonyi, A. T., & Flannery, D. J. (1994). No more than skin deep: Ethnic and racial similarity in developmental processes. *Psychological Review, 101,* 396-413.

Rutter, M. (1989b). Psychiatric disorder in parents as a risk factor for children. In: D. Shaffer, J. Philips, & N.B. Enzer (Eds.), with M.M. Silverman & V. Anthony (Ass. Eds.), *Prevention of mental disorders, alcohol and other drug use in children and adolescents* (pp. 157-189). OSAP Prevention Monograph 2. Rockville: Office for Substance Abuse Prevention, U.S. Department of Health and Human Sciences.

Rutter, M., & Quinton, D. (1984). Parental psychiatric disorder: Effects on children. *Psychological Medicine, 14,* 853-880.

Rusbult, C.E., Martz, J.M., Agnew, C.R. (1998). The Investment Model Scale: Measuring commitment level, satisfaction level, quality of alternatives, and investment size. *Personal Relationships, 5,* 357-391.

Sameroff, A., & Fiese, B. (1990). Transactional regulations and early intervention. In: S. Meisels & J. Shonkoff (Eds.), *Handbook of early childhood intervention* (pp. 119-149). Cambridge: Cambridge University Press.

Sanderson, C.A., & Cantor, N. (1995). Social dating goals in late adolescence: Implications for safer sexual activity. *Journal of Personality and Social Psychology, 68,* 1121-1134.

Shaffer, D. (1974). Suicide in childhood ad early adolescence. *Journal of Child Psychology and Psychiatry, 15,* 275-291.

Schaffer, H.R. (2000). The early experience assumption: Past, present, and future. *International Journal of Behavioral Development, 24,* 5-14.

Shaw, D.S., Winslow, E.B., & Flanagan, C. (1999). A prospective study of the effects of marital status and family relations on young children's adjustment among African American and European American families. *Child Development, 70 (3),* 742-755.

Shedler, J. & Block, J. (1990). Adolescent drug use and psychological health: A longitudinal inquiry. *American Psychologist, 45 (5),* 612-630.

Siegel, J.M., & Brown, J.D. (1988). A prospective study of stressful circumstances, illness symptoms, and depressed mood among adolescents. *Developmental Psychology, 24 (5),* 715-721.

Silbereisen, R.K., & Noack, P. (1988). On the constructive role of problem behavior in adolescence. In: N. Bolger, A. Caspi, G. Downey, & M. Moorehouse (Eds.*), Persons in context: Developmental processes* (pp 152-180). New York: Cambridge University Press.

Sim, H.O. (1995). *Coping resources mediating the relationship between stressful life events and delinquent behavior among adolescents.* Dissertation Abstracts International, 55 (9-A), 2778.

Simons, R.L., Chao, W., Conger, R.D., & Elder, G.H. (2001). Quality of parenting as mediator of the effect of childhood deviance on adolescent friendship choices and delinquency: A growth curve analysis. *Journal of Marriage and the Family, 63,* 63-79.

Simpson, J.A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology, 59,* 971-980.

Steiger, J.H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25,* 173-180.

Steinberg, L. (1987). Family processes in adolescence: A developmental perspective. *Family Therapy, 14,* 77-86.

Smeets, R.M.W., & Dingemans, P.M.A.J. (1993). *Composite International Diagnostic Interview (CIDI), version 1.1.* Amsterdam: WHO.

Sroufe, L.A., Carlson, E.A., Levy, A.K., & Egeland, B. (1999). Implications of attachment theory for developmental psychopathology. *Development and Psychopathology, 11,* 1-13.

Sroufe, L.A., & Waters, E. (1977). Attachment as an organizational construct. *Child Development, 48,* 1184-1199.

Stevens, J. (1996). *Applied multivariate statistics for the social sciences.* New Jersey: Lawrence Erlbaum.

Swearingen, E.M., & Cohen, L.H. (1985). Life events and psychological distress: A prospective study of young adolescents. *Developmental Psychology, 21 (6),* 1045-1054.

Truant, G.S., Herscovitch, J., Lohrenz, J.G. (1987). The relationship of childhoood experience to the quality of marriage. *Canadian Journal of Psychiatry, 145,* 479-482.

Van Aken, M.A.G. (2002). *Ontwikkeling in relaties*. [Development in Relationships]. Utrecht: Quickprint.

Vandervalk, I.E., Spruijt, E., De Goede, M., Meeus, W., & Maas, C. (in press). Marital status, marital process, and parental resources in predicting adolescents' emotional adjustment: A multilevel analysis. *Journal of Family Issues*.

References

Van IJzendoorn, M.H., & Sagi, A. (2000). Cross-cultural patterns of attachment. In: J. Cassidy, & P.R. Shaver (Eds.), *Handbook of attachment* (pp.713-734). New York: Guilford Press.

Vaux, A., & Ruggiero, M. (1983). Stressful life change and delinquent behavior. *American Journal of Community Psychology, 11 (2),* 169-183.

Verhulst, F.C. , & Van der Ende, J. (1992). Six year developmental course of internalizing and externalizing problem behaviours. *Journal of the American Academy of Child and Adolescent Psychiatry, 5,* 924-931.

Vermande, M., & Bijl, R. (1995). Psychische problematiek in Nederland: Een inventarisatie van epidemiologisch onderzoek naar de omvang van psychische problematiek. [Mental health problems in The Netherlands: An inventarisation of epidemiological research on the scope of mental health problems.

Verschueren, K., & Marcoen, A. (1993). Gehechtheidsstijl, intimiteit, en vertrouwen in de jong volwassenheid: Een reflectie van de ervaren ouderlijke sensitiviteit? [Attachment style, intimacy and trust in young adulthood: A reflection of perceived parental sensitivity?] *Psychologica Belgica, 33,* 49-76.

Vivona, J.M. (2000). Parental attachment styles of late adolescents: Qualities of attachment relationships and consequences for adjustment. *Journal of Counseling Psychology, 47 (3),* 316-329.

Vollebergh, W.A.M., Iedema, J., Bijl, R.V., De Graaf, R., Smit, F., & Ormel, J. (2001). The structure and stability of common mental disorders: The NEMESIS-study. *Archives of General Psychiatry, 58,* 597-603.

Waas, G.A., & Graczyk, P.A. (2002). Child behaviors leading to peer rejection: A view from the peer group. *Child Study Journal, 29 (4)*, 291-306.

Wagner, B.M., Cohen, P., & Brook, J.S. (1996). Parent/adolescent relationships: Moderators of the effects of stressful life events. *Journal of Adolescent Research, 11 (3),* 347-374.

Windle, M. (1992). A longitudinal study of stress buffering for adolescent problem behaviors. *Developmental Psychology, 28 (3),* 522-530.

Wheaton, D.E., Muthén, B., Alwin, D.F., & Sommers, G.F. (1977). Assessing reliability and stability in panel models. In: D.R. Heisse (Ed.), *Sociological methodology* (pp. 84-136). San Fransisco: Jossey Bass.

Whisman, M.A., Sheldon, T.A., & Goering, P. (2000). Psychiatric disorders and dissatisfaction with social relationships: Does type of relationship matter? *Journal of Abnormal Psychology, 109,* 803-808.

Wilhelm, K., & Parker, G. (1990). Reliability of the Parental Bonding Instrument and Intimate Bond Measure scales. *Australian and New Zealand Journal of Psychiatry, 24,* 199-202.

Williams, L.J., & Holahan, P.J. (1994). Parsimony-based fit indices for multiple-indicator models: Do they work? *Structural Equation Modeling, 1 (2),* 161-189.

Wittchen, H-U. (1994). Reliability and validity studies of the WHO-Composite International Diagnostic Interview (CIDI): A critical review. *Journal of Psychiaty Research, 28,* 57-84.

Wittchen, H.U. (1996). Critical issues in the evaluation of comorbidity of psychiatric disorders. *British Journal of Psychiatry, 168,* 9-16.

Younnis, J., & Smollar, J. (1985). *Adolescent relations with mothers, fathers, and friends.* Chicago: University of Chicago Press.

Zwart, R. de, & Warnaar, M. (1995). *Nationaal scholierenonderzoek 1994. Een beeld van de leefgewoonten, inkomsten, bestedingspatronen, attitudes en tijdsbesteding van scholieren uit het Nederlands voortgezet en beroepsonderwijs.* [National Youth Survey 1994. An image of the habits, sources of income, patterns of spending, attitudes and spending of time of pupils from Dutch general and vocational education]. Den Haag: Nationaal Instituut voor Budgetvoorlichting.

Zoccolillo, M. (1992). Co-occurrence of conduct disorder and its adult outcomes with depressive and anxiety disorders: A review. *Journal of the American Academy of Child and Adolescent Psychiatry, 31(3),* 547-556.

SAMENVATTING
(SUMMARY IN DUTCH)

Het leven smaakt bitterzoet, soms. Waarschijnlijk niet alleen omdat we zowel vrolijke als verdrietige momenten beleven gedurende ons leven, maar ook omdat veel positieve en negatieve ervaringen hun oorsprong vinden in dezelfde sociale contexten. De relaties met onze naasten sterken ons, maar kunnen ons ook schade berokkenen. De belangrijkste partijen in de symfonie tijdens de adolescentie en jong volwassenheid worden gespeeld door onze ouders en leeftijdgenoten, maar de dynamiek in deze partijen verandert over de tijd heen. Tegen de achtergrond van deze veranderende relaties met ouders en leeftijdgenoten, richtte dit proefschrift zich op de ontwikkeling van probleemgedrag - zowel in termen van psychosociale problematiek als psychiatrische stoornissen. In het bijzonder richtte dit onderzoek zich op twee hoofdvragen: (1) wat is de prevalentie, het beloop, en de comorbiditeit van probleemgedrag in de adolescentie en jong volwassenheid?, en (2) welke rol spelen sociale contexten in de ontwikkeling van dit probleemgedrag onder jongeren en jong volwassenen? Met betrekking tot de eerste vraag, richtten we ons met name op de mate waarin er sprake was van een co-occurrence tussen internaliserend en externaliserend probleemgedrag. Met betrekking tot de tweede vraag, was ons hoofddoel te onderzoeken in welke mate de kwaliteit van de affectieve band van adolescenten en jong volwassenen met hun ouders en partners longitudinaal samen zou hangen met een ontwikkeling in probleemgedrag, en of leeftijdsgerelateerde transities in de relaties met ouders en partners samen zouden hangen met ontwikkelingen in probleemgedrag.

In hoofdstuk 2 werd een longitudinale studie gepresenteerd over 3 meetmomenten met een 6-jaars looptijd (1991-1997) over het beloop, de co-occurrence, en de longitudinale verbanden van emotionele problemen en delinquent gedrag onder 1,302 jongeren en jong volwassenen in de leeftijd van 12 tot en met 24 jaar. In deze studie werd tevens onderzocht of (en zo ja, in welke mate) emotionele problematiek en delinquentie risicofactoren zouden vormen in elkaars ontwikkeling. Alhoewel in deze algemene bevolkingssteekproef wel significante, positieve samenhangen werden gevonden tussen emotionele problemen en delinquent gedrag, was de samenhang vrij zwak. Multigroep LISREL analyses maakten daarnaast duidelijk dat een stabiliteitsmodel, waarin géén voorspellende longitudinale verbanden tussen emotionele problemen en delinquentie werden verondersteld aanwezig te zijn, de beste afspiegeling was van de gegevens voor verschillende leeftijds- en gendergroepen. De resultaten wijzen in de richting van het bestaan van zich onafhankelijk van elkaar ontwikkelende syndromen van internaliserend en externaliserend probleemgedrag, waarbij geen sprake is van een zich versterkende reciprociteit tussen beide typen probleemgedrag - althans niet tijdens de adolescentie en jong volwassenheid. De hoge mate van stabiliteit in probleemgedrag in deze resultaten liggen in de lijn van eerdere bevindingen van Krueger et al. (1998), ten aanzien van 'psychopathologische kern-processen'. Hoogstwaarschijnlijk internaliseren of externaliseren adolescenten en jong volwassenen hun basisgevoelens van stress in verschillende mate, en behouden zij die 'persoonlijke' mate van internaliserend en externaliserend gedrag ten opzichte van hun leeftijdgenoten over de levensloop. Een verklaring voor de afwezigheid van een sterk verband tussen delinquent gedrag en emotionele problematiek is verder, dat delinquentie in de meeste gevallen ontwikkelingsadequaat gedrag betreft, gericht op het exploreren van persoonlijke en maatschappelijke grenzen, en - als zodanig - geen of weinig samenhang heeft met emotionele problematiek.

In hoofdstuk 3 werd dieper ingegaan op een longitudinale studie onder 568 jongeren in de leeftijd van 15 tot en met 19 jaar over twee meetmomenten (1994 en 1997). We onderzochten in welke mate ingrijpende, negatieve levensgebeurtenissen en de door adolescenten ervaren warmte en overbescherming van ouders latere niveau's van delinquent gedrag zouden voorspellen. Meer specifiek toetsten we of deze verbanden zouden lopen via de ontwikkeling van emotionele problemen, die zouden kunnen ontstaan als gevolg van de negatieve ervaringen in de relatie met ouders en eventuele ingrijpend-negatieve levensgebeurtenissen. LISREL analyses maakten duidelijk dat het meemaken van ingrijpende, negatieve levensgebeurtenissen en een door jongeren ervaren ouderlijke overbescherming en gebrek aan warmte beiden voorspellend waren voor een hogere mate van emotionele problematiek, die op haar beurt

weer voorspellend was voor later delinquent gedrag. Verder bleek het belang van ouderlijke warmte en bescherming uit het feit dat effecten van ingrijpende negatieve levensgebeurtenissen op emotionele problematiek door deze variabelen werden gebufferd. Een verklaring voor het mediatie-effect van emotionele problemen op later delinquent gedrag kan worden gevonden in de aanname dat gevoelens van depressiviteit en somberheid de ongevoeligheid voor sociale 'cues' doet toenemen, en adolescenten daarmee ook minder vatbaar maakt voor de gedragsregulerende effecten van sociale controle. Bezien vanuit een zelfversterking-perspectief, kan het tevens zo zijn dat negatieve emoties, gekoppeld aan bepaalde sociale contexten of interacties, de neiging vergroten deze contexten en/of interacties (bijvoorbeeld in het gezin) in de toekomst te mijden ten faveure van contacten met deviante leeftijdgenoten.

Hoofdstuk 4 beschreef een onderzoek naar het verband tussen de door adolescenten ervaren ouderlijke warmte en overbescherming, huidige partnerrelaties, en emotionele problemen. Ook deze studie werd gekenmerkt door een longitudinaal design met 2 meetmomenten (1994 en 1997) en werd, net als de studie in hoofdstuk 3, uitgevoerd onder een steekproef van 568 laat-adolescenten in de leeftijd van 15 tot en met 19 jaar. In het bijzonder richtten we ons op de hypothese dat ouders minder invloedrijk zouden worden in de ontwikkeling van emotionele problematiek als jongeren intieme partner relaties zouden aangaan. Daarnaast onderzochten wij of, en zo ja in welke mate, de kwaliteit en duur van partner relaties gerelateerd zouden zijn aan de ontwikkeling van emotionele problemen. Cross-sectionele analyses lieten zien dat er matig sterke, significante verbanden waren tussen de door jongeren ervaren ouderlijke warmte en overbescherming en emotionele problematiek. Er waren echter geen systematische longitudinale verbanden aanwezig. Alleen de ervaren warmte van vader hing longitudinaal samen met depressieve stemmingen en een lagere levenssatisfactie. Ook de centrale hypothese werd alleen in de cross-sectionele analyses bevestigd. Het bleek dat het verband tussen de ouderlijke warmte en overbescherming en emotionele problemen sterker was voor jongeren die wél een partnerrelatie hadden in vergelijking met jongeren die 'single' waren. De kwaliteit noch de duur van de partner relaties was gerelateerd aan de ontwikkeling van emotionele problemen tijdens de late adolescentie. Een verklaring voor de niet-overtuigende longitudinale verbanden tussen ouderlijke warmte en bescherming en emotionele problematiek kan zijn dat de late adolescentie een 'sensitieve periode' is, waarin de eerdere representatie van intieme relaties en interacties in sterke mate wordt aangepast aan de recente ervaringen in de context van romantische partner relaties. In zo'n geval is de kans ook groot dat de eerdere percepties van de band met ouders meeveranderen, en daarmee niet langer relevant zijn voor het emotionele welbevinden van een individu.

In hoofdstuk 5 richtten we ons op de vraag of oudelijke warmte en overbescherming in de eerste 16 levensjaren gerelateerd zouden zijn aan de latere prevalentie van psychiatrische stoornissen in de jong volwassenheid. Daarnaast onderzochten we of (en zo ja, in welke mate) de recente ervaringen van jong volwassenen in partner relaties het longitudinale verband tussen ouderlijke warmte en overbescherming en de prevalentie van psychiatrische stoornissen zou mediëren. Om deze vraagstellingen te onderzoeken werd gebruik gemaakt van de data van 1,581 jong volwassenen in de leeftijd van 18-34 jaar, die op 3 meetmomenten waren geïnterviewd (1996, 1997, en 1999) in het kader van de grootschalige, longitudinaal-epidemiologische NEMESIS studie. De multivariate LISREL analyses maakten duidelijk dat de kwaliteit van huidige partner relaties niet het verband medieerde tussen de band met ouders en de latere prevalentie van stoornissen. Wél lieten de analyses zien dat er significant negatieve verbanden waren tussen de ouderlijke warmte en overbescherming en de kwaliteit van partner relaties enerzijds, en de prevalentie van stemmings- en angststoornissen anderzijds. Deze resultaten komen overeen met recente bevindingen uit een ander grootschalig epidemiologisch onderzoek (de 'National Comorbidity Survey'; Enns et al., 2002), die eveneens aantonen dat er relatief zwakke, maar wel significante verbanden zijn tussen ouderlijke warmte en overbescherming in de eerste 16 levensjaren en psychiatrische stoornissen onder volwassenen. Een mogelijke verklaring voor het feit dat wij geen verband vonden tussen de band met ouders en de ontwikkeling van alcohol- of drugsmisbruik en verslavingen, kan zijn dat deze problemen voornamelijk onstaan als gevolg van de relatief ongebonden levenspositie van jong volwassenen - en het grotere aantal gelegeheden tot alcohol of drugsgebruik wat samen kan gaan met zo'n ongebonden status.

Uit hoofdstuk 6 bleek het belang van enkele leeftijdsgerelateerde transities in partnerrelaties en het verwerven van de ouderrol voor ontwikkelingen in probleemgedrag van jong volwassenen. Hierin werd een longitudinaal-prospectieve studie beschreven onder eenzelfde sample als beschreven in het voorgaande hoofdstuk: 1,581 jong volwassenen in de leeftijd van 18-34 jaar, die waren geïnterviewd op 3 meetmomenten (1996, 1997, 1999). Uit deze studie bleek dat de incidentie (de eerste keer dat een stoornis zich voordoet) van stemmings- en middelenstoornissen over een 3-jaarsperiode samenhingen met relationele stabiliteit en verandering (single blijven; samenwoonrelatie verbreken of gaan scheiden; geen ouder worden) tijdens dezelfde 3-jaars periode. Uit een rigoreuzere, prospectieve analyse bleek echter dat alléén de incidentie van middelenstoornissen kon worden voorspeld uit eerdere relationele stabiliteit en verandering. Over het algemeen laten de analyses in dit hoofdstuk zien dat naast het verbreken van een samenwoonrelatie of huwelijk, de relatief ongebonden status van jong

volwassenen (nog geen vaste partner hebben, nog geen kinderen hebben) een belangrijke verklarende factor kan zijn in het voorspellen van de incidentie van middelenstoornissen. Een andere belangrijke conclusie is daarnaast, dat jong volwassenen die eerder in hun leven ooit al eens een stemmingsstoornis hadden meer kans hadden om een intieme partnerrelatie, samenwoonrelatie, of huwelijk te verbreken, en tevens minder kans hadden om de ouderrol te verwerven tijdens de jong volwassenheid.

Tenslotte werden in hoofdstuk 7 de resultaten van de afzonderlijke studies afgezet tegen de uitkomsten van eerder onderzoek. De hoofdconlusies werden geïnterpreteerd in het licht van de methodologische beperkingen van het onderzoek. Ten eerste, omdat de huidige resultaten steeds zijn gebaseerd op data van één informant (de adolescent of jong volwassene zelf) kan de sterkte van de verbanden ietwat zijn overschat door een 'unirater-bias'. Voorts is voorzichtigheid geboden bij het interpreteren van de resultaten op basis van de Parental Bonding Instrument, aangezien het mogelijk is dat de percepties van ouderlijke warmte en overbescherming beïnvloed worden door het recente emotioneel functioneren of huidige relationele ervaringen. Tenslotte moet bij de interpretatie van de resultaten per deelstudie niet gemakkelijk worden gegeneraliseerd over leeftijd of soort problematiek, vanwege het feit dat voor de verschillende deelstudies ook verschillende leeftijdsgroepen zijn onderzocht, en verschillende instrumenten zijn gebruikt om probleemgedrag te operationaliseren. Op basis van deze beperkingen werden vervolgens enkele inhoudelijke perspectieven verder uitgewerkt.

In een poging om de lage mate van co-occurrence tussen internaliserend en externaliserend probleemgedrag in dit proefschrift te integreren met de vaak hoge percentages die werden gevonden tussen psychiatrische stoornissen in klinische samples, wordt een 'drempel principe' aangedragen. Jongeren of jong volwassenen voor wie het internaliserend of externaliserend probleemgedrag een intensiteitsdrempel overstijgt, lopen meer risico om in meerdere sociale contexten problemen te ontwikkelen en, tengevolge daarvan, ook meerdere vormen van probleemgedrag te ontwikkelen. Wellicht daarom, is er slechts bij een hogere intensiteit van problematiek (zoals bijvoorbeeld bij psychiatrische stoornissen) veel comorbiditeit, terwijl onder de algemene bevolking psychosociale problemen niet of nauwelijks samengaan. Met betrekking tot de longitudinale verbanden tussen ouderlijke warmte en overbescherming, partner relaties, en de ontwikkeling van probleemgedrag concluderen we dat er een zekere mate van discontinuïteit is tussen de globale percepties van affectieve kwaliteit over de verschillende intieme relaties met ouders en partners, en dat ook het verband tussen ouderlijke warmte en overbescherming en later probleemgedrag relatief zwak is. Alhoewel deze laatste bevinding niet direct indruist tegen de stelling dat de band met ouders belangrijk blijft voor de

latere sociaal-emotionele ontwikkeling in de (jong) volwassenheid, laat ze wel zien dat het belang van deze relaties relatief beperkt is. Het is echter ingewikkeld precieze uitspraken te doen over het belang van de ouder-kind relatie voor latere ontwikkelingsprocessen, aangezien het huidige onderzoek zich alleen richtte op ouder-kind dyades, en niet op de dynamiek in of inhoud van interacties tussen verschillende gezinsleden in een bredere familiecontext. Daarnaast moet ook de mogelijkheid niet uitgesloten worden, dat een genetische factor - gedeeltelijk - het verband tussen een problematische ouder-kind relatie en de ontwikkeling van probleemgedrag bij adolescenten en jong volwassenen verklaard.

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CURRICULUM VITAE

Geertjan Overbeek was born on 27 July, 1975, in Schoonhoven. He graduated from high school (VWO) in 1993, after which he moved to Utrecht in order to study psychology - specializing in research on 'Youth, Family, and the Life Course'. During this time he co-organized symposia and discussion meetings on various adolescence-related topics with other students. Before entering the PhD-program at the department of Child and Adolescent Studies of the Utrecht University in 1999, he held a variety of jobs such as garbage collector, side-chef in a restaurant kitchen, and interviewer of 'gabbers' at raves. From 1999 to 2003, he worked on his dissertation, studying the development of internalizing and externalizing problem behaviors in adolescence and young adulthood. During this period he also stayed abroad for three months at the Center for Developmental Research (Örebro, Sweden). Currently, he is employed as an assistant professor at the Institute of Family and Child Care Studies of Nijmegen University.