J Youth Adolescence (2007) 36:89–100
DOI 10.1007/s10964-006-9145-3

ORIGINAL PAPER

Psychosocial Factors in Adolescent and Young Adult Self-Reported Depressive Symptoms: Causal or Correlational Associations?

Hans-Christoph Steinhausen · Claudia Haslimeier · Christa Winkler Metzke

Received: 23 September 2005 / Accepted: 18 December 2005 / Published online: 17 November 2006
© Springer Science+Business Media, LLC 2006

Abstract Using a large longitudinal representative community sample, this study identified three groups of subjects who were depressed either in pre-adolescence, late adolescence or early adulthood, and matched by age and gender to controls without depression. The 90th percentile on one or two self-reported symptom scales [i. e. the Center for Epidemilogical Studies Depression Scale (CES-D) or the subscale Anxious / Depressed subscale on either the Youth Self Report (YSR) or the Young Adult Self Report (YASR)] served as the cut-off for the depression groups. Psychosocial variables under study included life events and life events impact, coping, self-related cognitions, perceived parental rearing style, family relations, perceived school environment, and the internalizing (except anxious/depressed) and externalizing problem scale of the YSR/YASR. The study found a large number of time-related correlations between psychosocial factors and depression. Evidence for causal effect (either antecedent or consequent) was obtained only for self-esteem, perceived maternal rejection, and internalizing problems.

Keywords Depression · Adolescence · Young adulthood · Longitudinal study · Causality

Depressive symptoms and disorders are quite common in adolescence. Recent epidemiological studies have obtained point prevalence figures for affective disorders ranging from 1.8. to 5.1 per cent (Fleming and Offord, 1989; Lewinsohn and Hops, 1993; McGee and Feehan, 1992; Roberts *et al*., 2000; Steinhausen and Winkler Metzke, 2003; Verhulst and van der Ende, 1997) Although a large proportion of depressive disorders originate in adolescence there is only a small number of longitudinal studies assessing the course and outcome of these disorders. Most notably, the Oregon Adolescent Depression Project (OADP) has contributed various important insights into the prevalence, age at onset and duration of adolescent depressive disorders (Lewinsohn *et al*., 1994; Lewinsohn *et al*., 1993). Other studies have pointed to the persistence of child and adolescent depressive symptoms (Garber *et al*., 1988; Nolen-Hoeksema *et al*., 1992) and their predictive power for adult depression (Aalto-Setälä *et al*., 2002). The high rate of recurrence of depression in children and adolescents has been repeatedly observed (Emslie and Rush, 1997; Lewinsohn and Clerke *et al*., 1994) and the increased suicidality in young adulthood has been outlined (Weissman and Wolk, 1999).

Various studies have addressed the issue of psychosocial correlates and risk factors of adolescent depression. The most frequently studied domains have been the impact of life events, coping capacities, cognitive styles, and the quality of relationships with the family and the social environment. In the Zurich Adolescent Psychiatry and Psychopathology study (ZAPPS) we have observed that a group of adolescents with high self-rated depressive symptoms in contrast to normal controls were characterised by significantly more negative life events impact (Steinhausen and Winkler Metzke, 2000) matching the OADP findings (Monroe *et al*., 1999) and those of other studies (Adams and Adams, 1991; Ge *et al*., 1994; Goodyer *et al*., 1997; Williamson *et al*., 1995). The findings in the studies by Ge *et al*. (1994) and Monroe *et al*. (1999) imply a causal impact of life events on depressive symptoms.

Other correlates have been identified as well. Another frequent correlate of adolescent depression is deficient

H.-C. Steinhausen (✉) · C. Haslimeier · C. W. Metzke
Department of Child and Adolescent Psychiatry, University of Zurich Neumünsterallee 9,
Postfach CH-8032, Zurich
e-mail: steinh@kjpd.unizh.ch

active coping capacity as indicated by both the OAPD (Lewinsohn *et al*., 1994) and the ZAPPS (Steinhausen and Winkler Metzke, 2000). Further studies even point to causal relations (Herman-Stahl *et al*., 1995; Muris *et al*., 2001; Seiffge-Krenke and Klessinger, 2000; Seiffge-Krenke and Stemmler, 2002). Similarly, various studies point to a strong association between negative self-related cognitions and attribution styles including low self-esteem, low self-consciousness and helplessness in depressive adolescents (Harter and Jackson, 1993; 1994; Muris *et al*., 2001; Steinhausen and Winkler Metzke, 2000 with some indicating a causal impact of negative self-related cognitions (Hankin and Abramson, 2002; Lewinsohn *et al*., 1994; Robinson *et al*., 1995). Parental rejection, lack of parental warmth and support, and disturbed parent-child relationships have been frequently identified as another strong correlate and risk factor for adolescent depression (Barrera and Garrison-Jones, 1992; Beam *et al*., 2002; Feindrich *et al*., 1990; Ge *et al*., 1994; Hops *et al*., 1990; Rueter *et al*., 1999; Stark *et al*., 1990; Steinhausen and Winkler Metzke, 2000). High family cohesion and adaptability does also seem to protect against adolescent depression (Cumsille and Epstein, 1994; Farrell and Barnes, 1993; Reinerz *et al*., 1989). Among further social factors the quality of peer relationships and of the school environment have been addressed in a few studies. According to Vernberg (1990) low peer contact and peer rejection show a reciprocal relation to adolescent depression. Similarly, Laible and Carlo (2000) pointed to the association between depression and low peer support. A strongly controlling, highly competitive, less participation-oriented and low accepting school-environment has been identified as significant correlates of depression in the ZAPPS by the authors (Steinhausen and Winkler Metzke, 2000).

The present study

We analyze the course of three groups of subjects who had been defined by high scores of self-reported depressive symptoms at a mean age of 13 years (preadolescence), 16 years (late adolescence), and 20 years (young adulthood). Based on a longitudinal and matched control design and the study of a large numbers of moderating psychosocial variables the aim is to disentangle risk factors from correlates. Thus, the hypothesis is tested whether or not these cross-sectionally identified moderating psychosocial variables have a causal impact on depressive symptoms.

Method

Subjects

The Zurich Epidemiological Study of Child and Adolescent Psychopathology (ZESCAP) is based on a sample of 1,964 pupils aged 6 to 17 who were living in the Canton of Zurich, Switzerland in 1994. The cohort was a stratified randomized sample representing the 12 countries of the canton, the school grades, and the types of school. A full description of details of the sampling procedure was given in a previous article (Steinhausen and Winkler Metzke, 1998). The preadolescents and adolescents (aged 11–17 years) of the ZESCAP sample ($N = 1100$) provided the basic cohort of the longitudinal Zurich Adolescent Psychology and Psychopathology Study (ZAPPS). From this cohort a total of $N = 593$ subjects remained in the longitudinal project over three waves of assessment in 1994 (time 1), 1997 (time 2) and 2001 (time 3) and provided information on suicidal behaviour. The sample was composed of 284 (47.9%) males and 309 (52.1%) females. These 593 subjects were representative for the census population with regard to gender ($\text{Chi}^2 = 2.14$, df $= 1$, $p =$ n.s.) and biannual age distribution of 17–22 years olds ($\text{Chi}^2 = 2.67$, df $= 2$, $p =$ n.s.). Furthermore, the 593 participants did not differ significantly from the rest of the basic cohort of 1100 subjects by suicidal risk ($\text{Chi}^2 = .72$, df $= 1$, $p =$ n.s.)

In order to use only data from subjects who score in the clinical range depression was defined as a score above the 90th percentile on the Center for Epidemiological Studies Depression Scale (CES-D, see below) or on the Anxious/depressed Scale of either the Youth Self Report (YSR, see below) for adolescents, or the Young Adult Self Report (YASR, see below) for young adults. Based on this cut-off score three depressed index groups were formed at the three times of assessment and compared to three randomly selected controls without depression (i. e. below the cut-off score) at the same time of assessment and matched exactly by age and gender. Sample characteristics are shown in Table 1. The depression scores for the three risk groups and the three control groups across time are provided in Table 2.

Measures

The ZAPPS is based on a theoretical model in order to study those conditions and processes that are essential to the mental health of growing young people as well as those, that contribute to the development of mental problems. A broadband questionnaire was chosen in order to obtain information on relevant behavioural and emotional problems of adolescents. In order to analyze potential risk, compensatory, vulnerability, and protective factors (Steinhausen and Winkler Metzke, 2001), life events were hypothetically seen as stressors, and various psychosocial variables including coping, self-related cognitions, and features of the social network were regarded as moderating factors with regard to behavioural and emotional problems.

Questionnaires were filled out confidentially by the subjects during school hours in 1994 and had to be mailed in

Table 1 Sample characteristics

	Age		Gender (%)	
	Mean	SD	Males	Females
High risk group only at time 1 ($N = 38$)	13.5	1.4	37	63
Controls at time 1 ($N = 40$)	13.7	1.6	35	65
Highrisk group only at time 2 ($N = 40$)	16.5	1.7	35	65
Controls at time 2 ($N = 40$)	16.7	1.5	35	65
High risk group only at time 3 ($N = 33$)	20.0	1.7	39	61
Controls at time 3 ($N = 40$)	20.3	1.6	35	65

1997 and 2001. All questionnaires reflect raw scores and are positively keyed, i.e. high scores represent high expression of the content of the scale. All scales showed good to excellent reliability. Alpha coefficients were calculated for all three times of assessment.

Center for Epidemiological Studies Depression Scale (CES-D)

The German version (Hautzinger and Bailer, 1993) of the CES-D (Radloff, 1977) served for the measurement of adolescent depression. The time frame for reporting symptoms according to the instructions of the CES-D was the week prior to filling out the questionnaire. A total score was calculated. Alpha coefficients ranged between .86 and .90.

Youth Self Report (YSR)

The problem behaviour section of the YSR (Achenbach, 1991) and its Swiss adaptation (Steinhausen *et al.*, 1998) consists of the following primary subscales: social withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour, and aggressive behaviour. Two second-order scales reflecting internalizing and externalizing can be calculated. Alpha coefficients for the latter two scales ranged between .81 and 87.

Young Adult Self Report (YASR)

With the exception of the subscale measuring social problems and the inclusion of the subscale measuring intrusiveness the YASR (Achenbach, 1991) consists of the same primary and secondary dimension as the YSR. Alpha coefficients for the two second-order dimensions ranged between .80 and .89.

Table 2 Depression scores across time

	High risk group		Controls	
	M	SD	M	SD
Time 1 subjects	19.13	9.01	7.50	3.31
Time 2 subjects	25.53	8.10	9.65	5.89
Time 3 suject	26.13	7.53	9.12	5.69

Life Event Scale (LES)

A total of 36 items were chosen from pre-existing questionnaires on life events (Compas and Malcarne, 1988; Goodyer, 1990; Wittchen and Pfister, 1997). The time frame was defined as the twelve months prior to filling out the questionnaire. Beside frequencies of life events, a total impact score was calculated. This was based on a scale attached to each item ranging from -2 to $+2$ and indicating how unpleasant or pleasant the respective event was. Alpha coefficients for the two scores ranged between .71 and .84.

Coping Capacities (CC)

Our modified version of the German Coping Across Situations Questionnaire (Seiffge-Krenke, 1989) addresses coping in four problem areas with school, parents, peers, and the opposite sex. Factor analysis resulted in two scales measuring active coping and avoidant behaviour with alpha coefficients between .56 and .70.

Self–Related Cognitions (SRC)

The ten-item scale for the measurement of self-esteem by Rosenberg (1965) and items from a German questionnaire assessing self-awareness (Filipp and Freudenberg, 1989) were further included into the questionnaire. The latter scale assesses introspective capacities for one's feelings, actions, and past. Alpha coefficients for the two scales ranged between .77 and .91.

Social Network (SN)

These newly developed scales cover six situations in which emotional or instrumental support is required. For each situation, the questionnaire asks whether or not 9 close individuals (family members, relatives, friends, and teachers) provide support. In addition, the efficiency of each of these individuals is also rated. Factor analyses across situations revealed 2 stable dimensions, namely size and efficiency of the social

network. Alpha coefficients for the two dimensions ranged between .70 and .91.

Perceived Parental Behavior (PPB)

Based on Items of the Child's Report of Parental Behavior Inventory (Schaefer, 1965; Schludermann and Schludermann, 1970) and Bronfenbrenner's questionnaire of perceived parental behavior (Siegelman, 1965), we developed an inventory that consisted of 32 items. Factor analysis resulted in 3 factors explaining 34% of the variance for mothers and 35% of the variance for the fathers. Alpha co-efficients of internal consistency ranged between .68 and .89.

Family Adaptability and Cohesion Scales (FACES)

The two main factors of adaptability and cohesion (Olson and Portner, 1985) were well replicated in our own factor analyses based on the entire sample of wave 2 data. Reliability coefficients alpha ranged between .61 and .88. The internal consistency for the adaptability subscale is lower than in the original version. Given the fact that the scale has been used in a large number of studies and that group rather than individual effects were analyzed in the present study, it was decided not to change the composition of the scale.

Perceived School Environment (PSES)

These scales were derived from a German project on development in adolescence (Fend and Prester, 1986) and consist of 32 items that deal with the perceived psychosocial qualities of the school environment. Our own factorial analyses reidentified the 5 factors and the resulting scales had Alpha coefficients between .65 and .79. The 5 scales are labelled "competition among pupils" (e. g. "in our class, each student tries to be more successful than the other"), "control by the teacher" (e. g. "many of our teachers treat us like small children"), "performance stress" (e. g. "we hardly manage our homework"), "possiblity to participate " (e. g. "our teachers ask for our opinion before deciding"), and "peer acceptance" (e. g. "I consider myself to be one of the most accepted students in our class").

Results

A comparison of the time 1 (1994) high-risk group and matched controls across the three times is made in Table 3. There are significant group, time, and interaction effects. Among these effects the interactions are most important. In order to ease understanding, the significant interactions are graphically shown in Figure 1. The depressed group of subjects reported by trend a significantly higher number of live events and more negative impact of live events and significantly lower self esteem, higher self-awareness, more parental rejection, less acceptance by peers and higher internalizing and externalizing problems scores at time 1. Except for peer acceptance and internalizing problems these concomitant abnormalities were not apparent at later times. The risk group still showed significantly higher scores on these two variables than the control group in 1997 (peer acceptance: Wilks $\lambda = .73$, $F = 13.3$, df $= 2/72$, $p < .001$; internalizing problems: Wilks $\lambda = .37$, $F = 41.7$, df $= 3/74$, $p < .001$). There were additional significant group differences indicating the experience of higher competition at school, more control by teacher and more pressure for achievement among the depressed group as compared to controls. Both groups experienced significantly less maternal control and paternal control, and more pressure for achievement across time.

The same comparison is shown for the two time 2 (1997) groups in Table 4 with the significant interactions graphically represented in Figure 2. The significant group by time interactions show that at time 2, i. e. concomitantly to depression there is a significant increase of number of live events (by trend), decrease of self-esteem, lack of perceived maternal acceptance, increase of perceived maternal and paternal rejection, and both internalizing and externalizing problems in the depressed group as compared to controls. Furthermore there were antecedent and consequent effects. Both in 1994 and 2001 the depressed group had significantly lower scores on self-esteem (Wilks $\lambda = .53$, $F = 22.2$, df $= 3/76$, $p < .001$) and higher scores on maternal rejection (Wilks $\lambda = .73$, $F = 9.0$, df $= 3/73$, $p < .001$) and internalizing problems (Wilks $\lambda = .55$, $F = 20.9$, df $= 3/76$, $p < .001$). Significant group effects show that the depressed group experienced more negative life events impact, less active coping, more avoidant coping, higher self-awareness, a smaller size of the social network, less paternal acceptance, less family cohesion and adaptability, more competition at school and less acceptance by peers. For both groups there were significant time trends with negative life event impact peakin at time 2, active coping at time 3, self-awareness at time 2, size and efficiency of the social network at time 3, pressure for achievement at school at time 2, and experienced maternal control, acceptance and control by the father scoring each lowest at time 3.

Finally, data from group comparisons dealing with the time 3 (2001) samples are shown in Table 5 with additional graphs of interacting effects in Figure 3. Because of the advanced age no school-related variables were assessed at this time anymore. The significant group by time interactions indicate that at time 3, i. e. concomittantly to depression the depressive group experienced more life events and negative life events impact, less self esteem, higher self awareness, less maternal acceptance (by tendency), more maternal

Table 3 Course of the psychosocial variables across three times in subjects with depression only at time 1 (1994) and controls

	1994				1997				2001				*F* univariate	Wilks' λ	Wilks' λ
	Depressed		Controls		Depressed		Controls		Depressed		Controls		group (G)	time (T)	interaction
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	df = 1		
Number of Life Events	6.72	3.05	4.53	3.42	5.89	3.26	5.80	3.10	5.32	3.05	4.71	2.42	3.55	.94	.93 (+)
Life Events Impact	−7.54	5.81	−3.92	4.17	−7.00	4.42	−6.70	4.78	−6.34	4.32	−4.89	3.08	5.53*	.94	.92 (+)
Avoidant Coping	2.81	1.61	2.70	1.41	2.46	1.49	2.51	1.65	2.47	1.01	2.68	1.12	.04	.98	.99
Active Coping	5.18	1.08	5.49	1.14	4.99	1.27	5.33	0.92	5.33	1.07	5.52	1.06	2.29	.95	1.00
Self-Esteem	21.38	5.96	28.65	4.15	27.93	4.15	29.71	4.81	26.68	3.94	27.69	3.90	16.53***	.62***	.71***
Self-Awareness	23.57	6.19	18.90	7.11	21.45	5.86	20.60	5.30	19.92	5.89	18.08	4.54	4.91*	.84**	.90*
Size of the social network	20.37	5.56	21.61	5.97	21.60	7.13	21.79	5.36	19.87	6.82	23.74	5.60	2.41	.98	.92
Efficiency of the social network	23.24	2.69	23.36	3.09	22.10	3.21	22.69	3.40	22.10	3.02	23.48	3.12	1.39	.94	.97
Maternal acceptance	28.17	6.03	29.78	3.55	28.68	4.59	29.42	4.21	29.96	5.04	29.60	5.16	.58	.97	.97
Maternal rejection	9.25	5.40	5.47	3.88	5.34	3.75	4.32	3.47	3.67	3.19	2.74	2.05	8.42**	.56***	.90*
Maternal control	12.14	3.77	11.06	3.11	10.48	4.25	9.91	3.13	9.00	4.39	8.14	3.39	1.16	.65***	.99
Paternal acceptance	24.72	7.95	28.86	4.50	25.00	8.25	26.79	5.93	25.75	8.06	26.24	7.04	2.35	.97	.94
Paternal rejection	9.47	5.51	5.59	3.94	6.26	4.21	4.76	3.43	4.51	3.43	4.42	4.85	6.32*	.77***	.90*
Paternal control	10.78	4.03	10.37	3.25	9.57	3.80	10.00	3.28	7.70	3.84	7.94	3.51	.02	.66***	.99
Cohesion	—	—	—	—	24.54	7.14	25.01	6.86	24.85	7.58	24.14	6.92	.01	1.00	.99
Adaptability	—	—	—	—	19.62	5.80	20.82	4.68	20.18	5.22	21.47	5.31	1.39	.99	1.00
Comptetition at school	11.66	5.88	7.95	4.54	9.34	4.60	6.90	4.48	—	—	—	—	12.97**	.93*	.99
Controlling teachers	17.95	6.98	13.84	6.98	15.49	6.44	13.20	5.75	—	—	—	—	6.54*	.96	.99
Possibilities to participate	15.83	4.50	16.56	3.83	15.66	3.89	16.78	3.79	—	—	—	—	1.60	1.00	1.00
Performance stress	8.14	4.22	6.19	3.93	10.57	3.58	8.18	3.95	—	—	—	—	10.03**	.84***	1.00
Peer acceptance	11.37	4.17	15.43	2.83	14.14	2.93	16.05	2.68	—	—	—	—	25.23***	.83***	.92*
Internalizing problems	18.60	4.98	6.98	4.76	11.05	5.58	8.04	5.16	8.59	4.44	6.72	4.83	38.04***	.53***	.51***
Externalizing problems	14.18	7.10	10.16	6.53	10.58	5.55	10.49	6.14	6.53	4.96	7.79	5.51	.70	.60***	.85**

Anmerkungen:

*$p \leq .05$.

**$p \leq .01$.

***$p \leq .001$.

(+)$p < .10$.

df multivariate: Life events df = 2/72, Life events impact df = 2/73: Avoidant Coping, Active Coping df = 2/71; Self-Esteem, Self-Awareness df = 2/74; Size of the social network, Effiency of the social network df = 2/65; Maternal acceptance, Maternal rejection, Maternal control 2/72; Paternal acceptance, Paternal rejection, Paternal control df = 2/64; Cohesion, Adaptibility df = 1/75; Competition at school, Controlling teachers, Possibilities to participate, Performance stress, Peer acceptance df = 1/73; Internalizing problems df = 2/74, Externalizing problems df = 2/74.

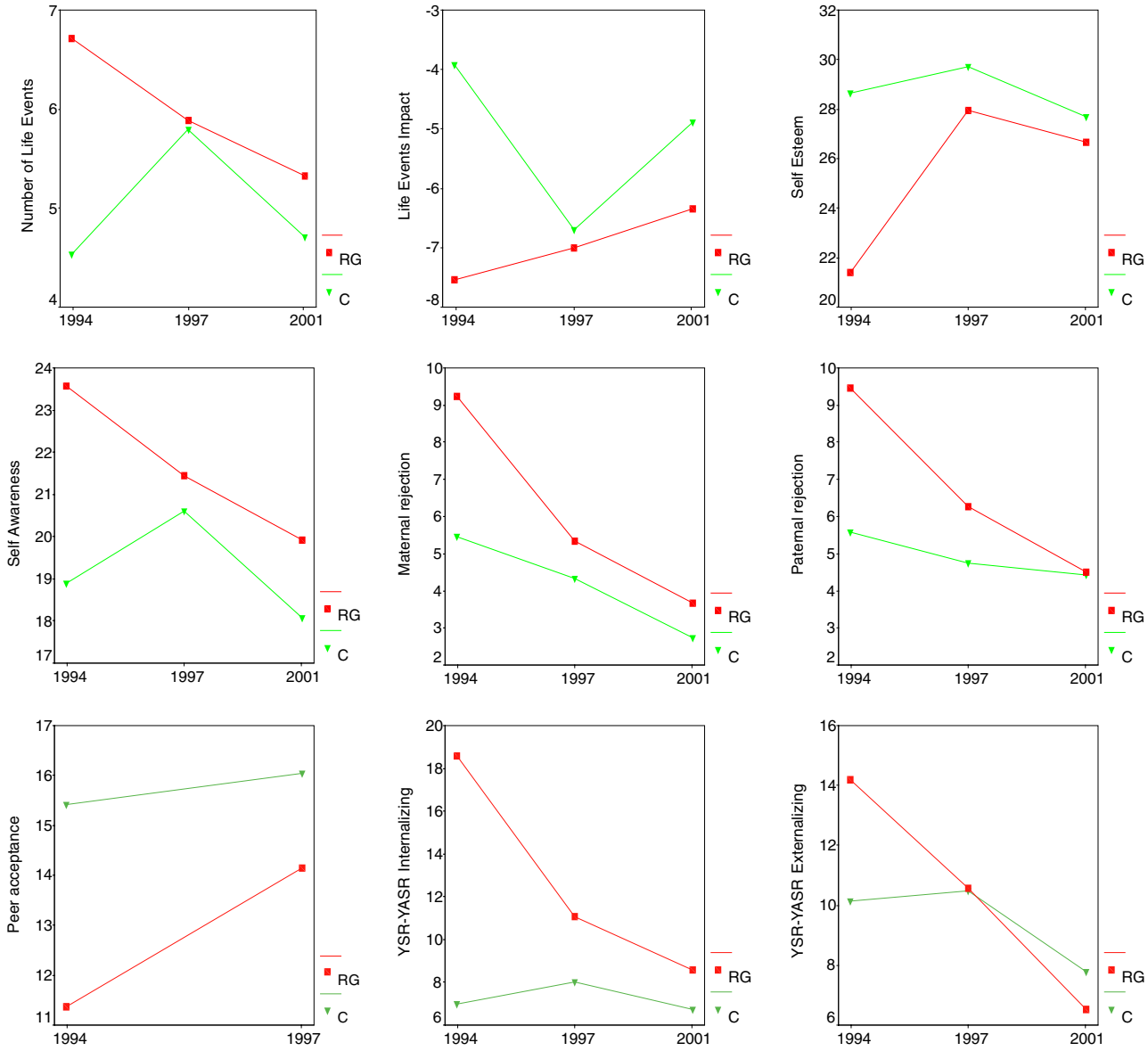

Fig. 1 Comparison of risk group and controls across psychosocial variables at time 1 (1994)

rejection, and more internalizing problems than controls. The depressive group already scored significantly higher in 1997 for self-esteem (Wilks $\lambda = .63, F = 13.1$, df $= 3/67$, $p < .001$), maternal rejection (Wilks $\lambda = .74$, $F = 7.5$, df $= 3/65$, $p < .001$), and internalizing problems (Wilks $\lambda = .63, F = 13.7$, df $= 3/69, p < .001$). For externalizing problems the depressed young adults displayed significantly lower scores (Wilks $\lambda = .88, F = 3.2$, df $= 3/69, p < .05$) at time 1. In addition, the depressive group showed significantly less active coping capacity, a smaller size of the social network, felt less accepted by the mother, and experienced lower family adaptability than controls at all times of the assessment. Significant time effects indicated that perceived maternal control, paternal acceptance, and paternal control declined across time for both groups.

Discussion

This longitudinal and controlled study with the identification of three groups of subjects scoring high for depression each at a single time, namely, at a mean age of 13, 16 and 20 years allowed us to the test of the causal relevance of various psychosocial variables. In the first set of comparisons between depressive and controls at a mean age in preadolescence, it was only possible to analyse the data for concomitant and consequent but not for antecedent effects. In this set of data

Table 4 Course of the psychosocial variables across three times in subjects with depression only at time 2 (1997) and controls

	1994				1997				2001							
	Depressed		Controls		Depressed		Controls		Depressed		Controls		*F* univariate group (G) df = 1	Wilks' λ time (T)		Wilks' λ interaction (G/T)
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*				
Number of Life Events	5.06	2.63	4.53	3.42	7.75	2.80	5.80	3.10	5.22	2.72	4.71	2.42	4.88*	.67***		.94(+)
Life Events Impact	−5.75	3.82	−3.92	4.17	−8.96	3.24	−6.70	4.78	−5.98	4.69	−4.89	3.08	7.31**	.69***	$t_2\uparrow$	.99
Avoidant Coping	3.07	2.60	2.70	1.41	3.28	1.33	2.51	1.65	3.25	1.20	2.68	1.12	4.88*	1.00		.99
Active Coping	4.78	2.75	5.49	1.14	4.45	1.47	5.33	0.92	5.13	0.97	5.52	1.06	8.58**	.88*	$t_3\uparrow$	.96
Self-Esteem	24.15	5.71	28.65	4.15	19.91	5.78	29.71	4.81	24.44	5.03	27.69	3.90	46.24***	.90*	—	.68***
Self-Awareness	21.26	6.06	18.90	7.11	23.47	4.42	20.60	5.30	20.05	4.27	18.08	4.54	6.36*	.72***	$t_2\uparrow$	1.00
Size of the social network	19.20	6.22	21.61	5.97	18.90	5.77	21.79	5.36	21.30	5.95	23.74	5.60	5.07*	.85**	$t_3\uparrow$	.99
Efficiency of the social network	22.15	4.00	23.36	3.09	21.45	3.16	22.69	3.40	22.97	2.49	23.48	3.12	2.42	.85**		.98
Maternal acceptance	29.24	4.65	29.78	3.55	25.46	6.89	29.42	4.21	28.64	5.08	29.60	5.16	4.25*	.87**		.90*
Maternal rejection	7.26	4.54	5.47	3.88	9.55	5.29	4.32	3.47	5.45	4.30	2.74	2.05	21.90***	.62***		.88**
Maternal control	10.19	3.04	11.06	3.11	10.33	4.12	9.91	3.13	8.51	3.35	8.14	3.39	.04	.72***	$t_3\downarrow$	.97
Paternal acceptance	26.63	5.28	28.86	4.50	22.14	7.39	26.79	5.93	24.13	5.78	26.24	7.04	7.76**	.75***	$t_3\downarrow$	.95
Paternal rejection	6.68	4.55	5.59	3.94	9.41	5.16	4.76	3.43	5.39	4.59	4.42	4.85	9.62**	.86**		.83**
Paternal control	9.02	3.91	10.37	3.25	9.56	4.85	10.00	3.28	7.00	3.77	7.94	3.51	1.61	.68***	$t_3\downarrow$	.99
Cohesion	—	—	—	—	19.49	7.99	25.01	6.86	21.24	7.05	24.14	6.92	8.44**	1.00		.96
Adaptability	—	—	—	—	17.66	6.22	20.82	4.68	19.48	5.00	21.47	5.31	6.58*	.96		.99
Competition at school	9.48	4.66	7.95	4.54	9.71	4.90	6.90	4.48	—	—	—	—	7.75**	1.00		.99
Controlling teachers	14.98	5.13	13.84	6.98	15.13	6.49	13.20	5.75	—	—	—	—	2.17	1.00	1.00	
Possibilities to participate	15.39	5.05	16.56	3.83	15.68	3.95	16.78	3.79	—	—	—	—	2.57	1.00	1.00	
Performance stress	6.78	3.98	6.19	3.93	9.51	3.79	8.18	3.95	—	—	—	—	2.21	.83***	$t_2\uparrow$	1.00
Peer acceptance	13.05	3.72	15.43	2.83	13.76	3.56	16.05	2.68	—	—	—	—	14.62***	.97		1.00
Internalizing problems	9.87	3.95	6.98	4.76	18.79	6.25	8.04	5.16	10.46	4.69	6.72	4.83	43.47***	.48***	—	.61***
Externalizing problems	11.93	5.66	10.16	6.53	14.55	6.65	10.49	6.14	7.17	5.70	7.79	5.51	2.35	.44***	—	.79***

Anmerkungen:

*$p \leq .05$.

**$p \leq .01$.

***$p \leq .001$.

(+)p < .10.

df multivariate: Life Events, Life Events Impact df = 2/75: Avoidant Coping, Active Coping df = 2/68; Self-Esteem, Self-Awareness df = 2/77; Size of the social network, Efficiency of the social network df = 2/65; Maternal acceptance, Maternal rejection, Maternal control 2,/74; Paternal acceptance, Paternal rejection, Paternal control df = 2/70; Cohesion, Adaptability df = 1, 77; Competition at school, Controlling teachers, Possibilities to participate, Performance stress, Peer acceptance df = 1, 76; Internalizing problems df = 2, 73, Externalizing problems df = 2, 73.

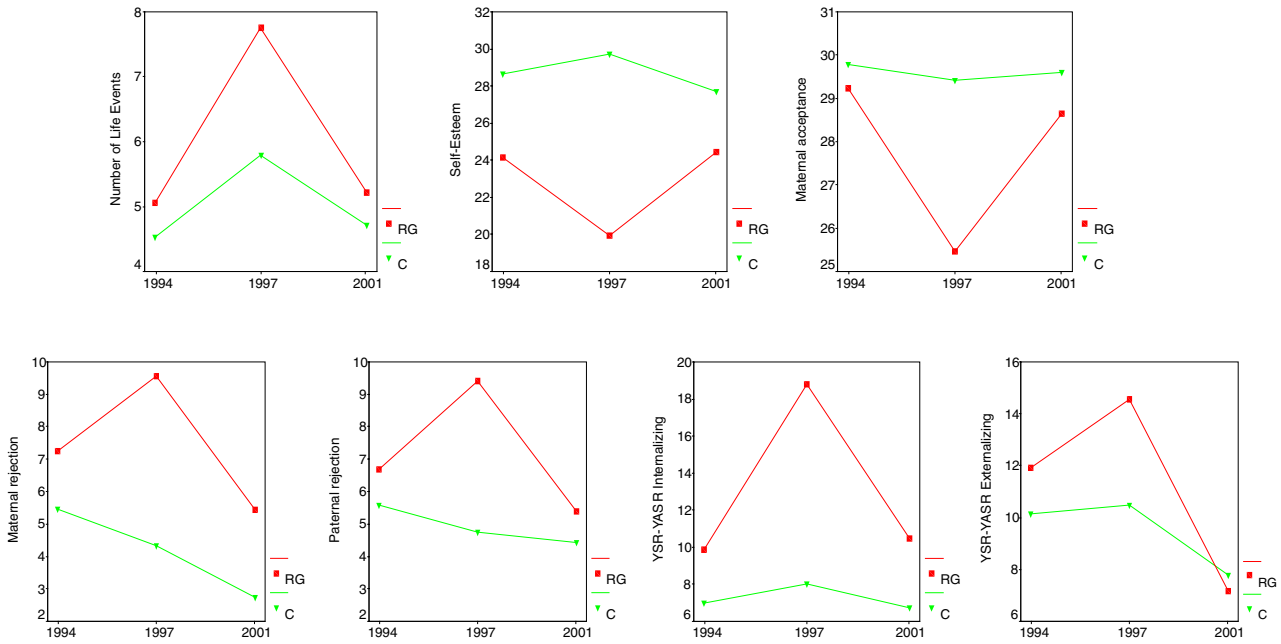

Fig. 2 Comparison of risk group and controls across psychosocial variables at time 2 (1997)

there were strong group by time interactions reflecting concomitant and two consequent effects. In other words, the depressive state was accompanied by a large number of abnormal psychosocial variables. However, three years later peer acceptance was still lower and internalizing problems were still more expressed.

The second set of data with the comparison of depressive subjects and controls at a mean age in late adolescence allowed the analysis of antecedent, concomitant, and consequent effects of depression on various psychosocial variables. Various significant group by time interactions clearly indicated concomitant effects as well as three antecedent and three consequent effects. The pattern of concomitant associations was very similar to the pattern at time 1. Furthermore, the depressed group already showed a decreased self-esteem, more maternal rejection and a higher internalizing problems score three years before, and the same consequent differences three years later.

In the third set of data with data from young adult depressive and controls, it was possible to compare two antecedent effects originating from time 1 and time 2, and concomitant effects on psychosocial variables of interest. The findings of concomittant effects were matching those from the two previous analyses. The antecedent effects indicated that the depressed group showed a decreased self-esteem, more maternal rejection and a higher internalizing problems score already at time 2 in 1997, and a marginal and transient low externalizing score in preadolescence that was not existing any more in late adolescence.

From these longitudinal data analyses with three times of assessment it has to be concluded that three out of a large list of psychosocial variables showed some causal effects: namely, self-esteem, maternal rejection, and internalizing problems. Evidence was provided that risk subjects had been more abnormal on these three variables at two different times of the longitudinal study, namely, both before and after manifestation of high risk status. Thus, high scores on these variables served both as antecedents and consequences of the depressive state. These findings point to bidirectional interactions between self-esteem, self-reported material rejection, and internalizing problems on the one hand and depression on the other hand across the life-span from preadolescence to young adulthood.

In the present study, all variables had been carefully selected on theoretical and empirical grounds because various studies had been showing that live-events, coping capacities, cognitive styles, perceived parental rearing style, peer relationships, and school environment characteristics have strong associations with depression in adolescence. However, in the literature only a minority of studies had been able to clearly identify causal risk factors rather than correlates of depression. For instance, D.E. Williamson *et al.* (1998) found correlations of $r = .30$ on average between life events and depression in various cross-sectional studies that do not allow any causal inferences. In their own study the authors obtained a higher probability of serious life events among depressed adolescents in comparison to controls. However, the difference between 46 and 20 per cent was statistically not significant. In their longitudinal study Ge *et al.* (1994) were able to identify a causal relation between negative and uncontrollable life events in the year preceding the assessment and Monroe *et al.* (1999) showed that the termination

Table 5 Course of the psychosocial variables across three times in subjects with depression only at time 3 (2001) and controls

	1994				1997				2001				*F* univariat	Wilks' λ	Wilks' λ
	Depressed		Controls		Depressed		Controls		Depressed		Controls		group (G)	time (Z)	interaction
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	df = 1		(G/T)
Number of Life Events	3.44	2.74	4.53	3.42	5.07	3.60	5.80	3.10	6.52	4.12	4.71	2.42	.00	.84**	.86**
Life Events Impact	−3.42	3.64	−3.92	4.17	−6.03	5.34	−6.70	4.78	−8.27	6.03	−4.89	3.08	.76	.70	.83**
Avoidant Coping	2.31	2.70	2.70	1.41	2.64	1.61	2.51	1.65	2.55	1.11	2.68	1.12	.21	1.00	.99
Active Coping	4.28	3.14	5.49	1.14	4.91	1.16	5.33	0.92	5.12	1.19	5.52	1.06	8.27**	.96	.97
Self-Esteem	27.06	4.44	28.65	4.15	25.68	5.83	29.71	4.81	19.31	7.08	27.69	3.90	24.97***	.59***	.77***
Self-Awareness	16.71	4.45	18.90	7.11	21.65	4.52	20.60	5.30	21.68	4.01	18.08	4.54	.75	.74***	.83**
Size of the social network	19.00	5.82	21.61	5.97	20.80	5.28	21.79	5.36	18.80	6.26	23.74	5.60	6.62*	.97	.92
Efficiency of the social network	22.07	3.19	23.36	3.09	21.70	2.77	22.69	3.40	21.98	4.38	23.48	3.12	3.70	.98	1.00
Maternal acceptance	28.78	4.09	29.78	3.55	26.01	4.79	29.42	4.21	25.41	6.11	29.60	5.16	12.25**	.89∗	.92 (+)
Maternal rejection	6.73	3.61	5.47	3.88	6.78	4.40	4.32	3.47	7.04	5.17	2.74	2.05	15.54***	.94	.91*
Maternal control	10.67	3.81	11.06	3.11	10.73	4.48	9.91	3.13	9.34	4.59	8.14	3.39	.41	.81**	.97
Paternal acceptance	27.71	5.60	28.86	4.50	25.14	5.32	26.79	5.93	23.36	6.42	26.24	7.04	2.68	.77***	.99
Paternal rejection	6.11	3.68	5.59	3.94	5.82	3.64	4.76	3.43	5.41	4.68	4.42	4.85	1.63	.97	1.00
Paternal control	10.15	3.83	10.37	3.25	10.00	3.79	10.00	3.28	7.60	4.30	7.94	3.51	.07	.70***	1.00
Cohesion	—	—	—	—	23.06	5.99	25.01	6.86	20.94	7.05	24.14	6.92	3.65	.96	.99
Adaptability	—	—	—	—	19.11	5.07	20.82	4.68	18.29	4.96	21.47	5.31	6.16*	1.00	.98
Competition at school	6.45	3.72	7.95	4.54	8.33	4.68	6.90	4.48	—	—	—	—	.00	.99	.93*
Controlling teachers	12.88	5.66	13.84	6.98	14.97	6.96	13.20	5.75	—	—	—	—	.10	.99	.96
Possibilities to participate	15.35	4.95	16.56	3.83	14.64	4.68	16.78	3.79	—	—	—	—	4.13*	1.00	.99
Performance stress	6.36	3.77	6.19	3.93	8.94	3.16	8.18	3.95	—	—	—	—	.47	.80***	1.00
Peer acceptance	14.21	3.32	15.43	2.83	14.67	3.63	16.05	2.68	—	—	—	—	4.63*	.98	1.00
Internalizing problems	7.60	4.38	6.98	4.76	11.66	5.13	8.04	5.16	17.53	8.50	6.72	4.83	25.69***	.70***	.68***
Externalizing problems	7.35	3.54	10.16	6.53	11.13	6.06	10.49	6.14	8.79	5.13	7.79	5.51	.13	.74***	.91*

Anmerkungen:

*$p \leq .05$.

**$p \leq .01$.

***$p \leq .001$.

p < .10.

df multivariate: Life Events, Life Events Impact. df = 2, 68: Avoidant Coping, Active Coping df = 2, 61; Self-Esteem, Self-Awareness df = 2, 68; Size of the social network, Efficiency of the social network df = 2, 60; Maternal acceptance, Maternal rejection, Maternal control 2, 66; Paternal acceptance, Paternal rejection, Paternal control df = 2, 60; Cohesion, Adaptibility df = 1, 70; Competition at school, Controlling teachers, Possibilities to participate, Performance stress, Peer acceptance df = 1, 71; Internalizing problems df = 2, 68, Externalizing problems df = 2, 68.

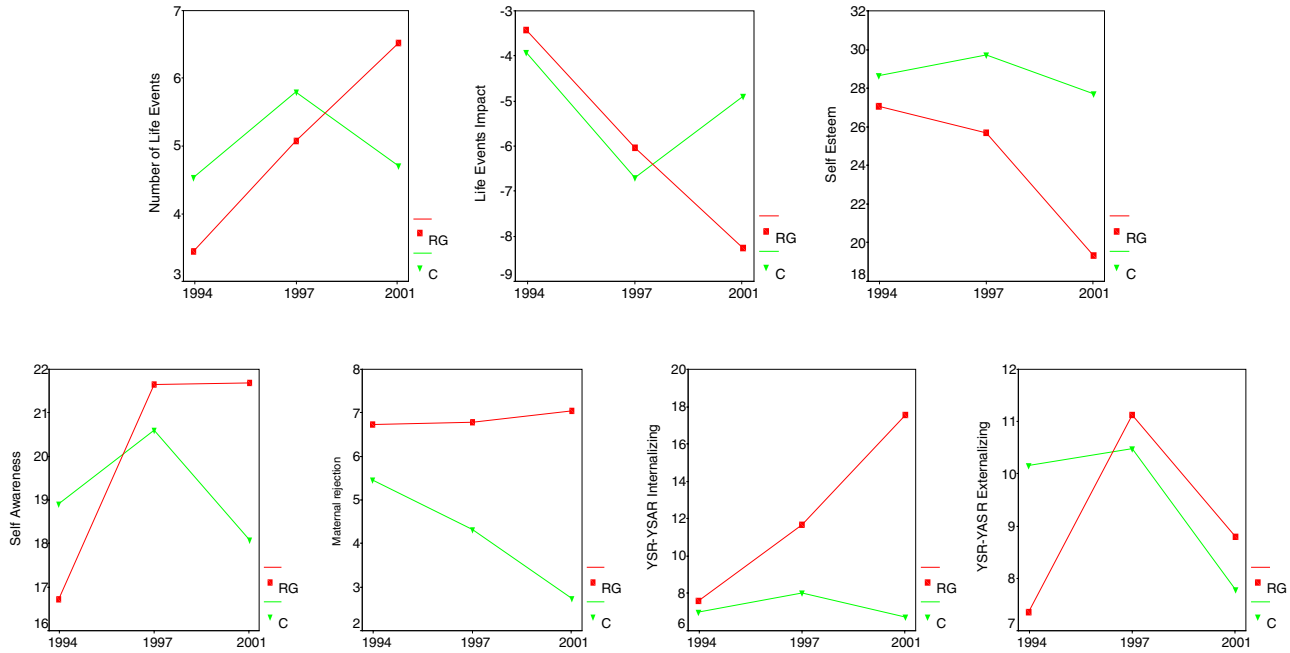

Fig. 3 Comparison of riks group and controls across psychosocial variables at time 3 (2001)

of a romantic relationship is a significant risk factor for major depression but not a recurrent episode. In the present study, these causal associations were not replicated. Furthermore, a few longitudinal studies showed that deficient coping is causal to or antecedent of adolescent depression (Herman-Stahl *et al*., 1995; Seiffge-Krenke and Stemmler, 2002). Again, the present study did not replicate these findings. In contrast, the causal relations between negatative self-related cognitions and depression (Hankin and Abramson, 2002; Lewinsohn *et al*., 1994; Robinson *et al*., 1995) and the causal effects of deficits in parental rearing style (Ge *et al*., 1994) or lack of family cohesion (Reinerz *et al*., 1989) on depression were replicated in the present study.

Thus, there are both convergent and divergent findings in the present study as compared to previous studies. The divergent findings may be due to different designs and methods. The time frame may be most important. In the present study, three developmentally important periods with mean ages in pre-adolescence, late adolescence, and young adulthood and, perhaps more importantly, relatively long intervals were chosen. It may well be, that the causal impact of negative and uncontrollable life events, deficits in active coping, perceived disturbed peer relationships, and perceived stressors from the school environment may all rest on rather proximal time relations in contrast to the more distant time relations that were analyzed in the present study. It is less likely that the difference in the construct of depression in terms of categorial (i. e. clinical diagnoses) vs. dimensional (i. e. self-reported questionnaire scores) may strongly or predominantly contribute to the difference in findings because the literature has been based on both approaches.

The absence of causal and long-lasting effects of some psychosocial variables on three developmentally different episodes of depression and the strong correlational nature of the time-restricted associations between these psychosocial variables and depression across time in the present study has various implications. First, both the present longitudinal and previous cross-sectional studies point to the fact that due to their perceptual bias depressives are more prone to experience themselves and their psychosocial relationships in a negative way. Secondly, the differentiation between more proximal and more distal time relationships may more clearly show when psychosocial variables are precisely exerting their influence. The present study was not in a position to test for this hypothesis because of the relatively large time intervals. Future studies may address this issue by looking at more narrow assessment intervals. Thirdly, it may be important to take the duration of the depressive episode into account. In the present study, by definition the samples displayed only depression at a single time whereas the duration was unknown. Fourthly, it may be also worth to analyse whether or not the causal and / or correlational patterns between psychosocial variables and depression are different in community and clinical samples and differ with the construct used (i. e. categorial vs. dimensional). Finally, it needs to be taken into consideration that besides psychosocial factors also biological factors and their interaction are strong contributors to the course of depression across time.

References

Aalto-Setälä T, Marttunen M, Tuulio-Henriksson A, Poikolainen K, Löonqvist J (2002) Depressive symptoms in adolescence as predictors of early adulthood depressive disorders and maladjustment. Am J Psychiatry 159(7):1235–1237

Achenbach TM (1991) *Manual for the Youth Self-Report and 1991 profile*. Burlington, Vermont: University of Vermont Department of Psychiatry

Adams J, Adams M (1991) Life events, depression, and perceived problem solving alternatives in adolescents. J Child Psychol Psychiatry 32:(811–820)

Barrera MJ, Garrison-Jones C (1992) Family and peer social support as specific correlates of adolescent depressive symptoms. J Abnorm Child Psychol 20:1–16

Beam MR, Gil-Riva V, Greensberger E, Chen C (2002) Adolescent problem behavior and depressed mood: Risk and protection within and across social contexts. J Youth Adolesc 31(5):343–357

Compas BE, Malcarne VL, Fondacaro KM (1988) Coping with stressful events in older children and young adolescents. J Consult Clin Psychol 56:405–411

Cumsille PE, Epstein N (1994) Family cohesion, family adaptability, social support, and adolescent depressive symptoms in outpatient clinic families. J Fam Psychol 202–214

Emslie GJ, Rush J, Weinberg WA, Gullion CM, Rintelmann J, Hughes CW (1997) Recurrence of major depressive disorder in hospitalized children and adolescents. J Acad Child Adolesc Psychiatry 367:785–792

Farrell MP, Barnes GM (1993) Family systems and social support: A test of the effects of cohesion and adaptability on the functioning of parents and adolescents. J Marriage Fam 55:119–132

Feindrich M, Warner V, Weissmann MM (1990) Family risk factors, parental depression, and psychopathology in offspring. Dev Psychol 26:40–50

Fend H, Prester H-G (1986) *Bericht aus dem Projekt "Entwicklung im Jugendalter" [Report from the project 'Development in adolescence'] (in German)*. Konstanz: Faculty of Social Sciences, University of Constance, Germany

Fleming JE, Offord DR (1989) Prevalence of childhood and adolescent depression in the community—Ontario Child Health Study. Br. J Psychiatry 155:647–654

Garber J, Kriss MR, Koch M, Lindholm L (1988) Recurrent depression in adolescent: A follow-up study. J Am Acad Child Adolesc Psychiatry 27:49–54

Ge X, Lorenz FO, Conger RD, Elder GH, Jr., Simons RL (1994) Trajectories of stressful life events and depressive symptoms during adolescence. Dev Psychol 30:467–483

Goodyer IM, Herbert J, Tamplin A, Secher SM, Pearson J (1997) Short term outcome of major depression: II. Life events, family dysfunction, and friendship difficulties as predictors of persitant disorder. J Am Acad Child Psychiatry 36:474–480

Goodyer IM (1990) *Life experiences, development and childhood psychopathology*. Chichester: Wiley

Hankin BL, Abramson LY (2002) Measuring cognitive vulnerability to depression in adolescence: Reliability, validity, and gender differences. J Clin Child Adoles Psychol 31(4):491–504

Harter S, Jackson BK (1993) Young adolescents' perceptions of the link between low self-worth and depressed affect. J Early Adolesc 13(13):383–407

Hautzinger M, Bailer M (1993) *Allgemeine Depressions-Skala (ADS) [German version of the Center for Epidemiological Studies Depression Scale (CES-D)] (in German)*. Weinheim: Beltz

Herman-Stahl M, Stemmler M, Petersen AC (1995) Approach and avoidant coping: Implications for adolescent health. J Youth Adolesc 24:649–665

Hops H, Lewinsohn PM, Andrews JA, Roberts RE (1990) Psychosocial correlates of depressive symptomatology among high school students. J Clin Child Adol Psychol 3:211–220

Laible DJ, Carlo G, Raffaelli M (2000) The differential relations of parent and peer attachment to adolescent adjustment. J Youth Adolesc 29:45–59

Lewinsohn PM, Clerke GN, Seeley JR, Rohde P (1994) Major depression in community adolescents: Age of onset, episode duration, and time of recurrence. J Am Acad Child Adolesc Psychiatry 33:809–819

Lewinsohn PM, Hops H, Roberts RE, Seeley JR, Andrews JA (1993) Adolescent psychopathology: I. Prevalence and incidence of depression and other DSM-III-R disorders in high school students. J Abnorm Child Psychol 102:133–144

Lewinsohn PM, Roberts RE, Seeley JR, Rohde P, Gottlib IH, Hops H (1994) Adolescent psychopathology: II. Psychosocial risk factors for depression. J Abnorm Psychol 103:302–315

McGee R, Feehan M, Williams S, Anderson J (1992) DSM–III disorders from age 11 to age 15 years. J Am Acad Child Adolesc Psychiatry 31:50–59

Monroe SM, Rohde P, Seeley JR, Lewinsohn PM (1999) Life events and depression in adolescence: Relationship loss as a prospective risk factor for first onset of major depressive disorder. J Abnorm Psychol 108:606–614

Muris P, Schmidt H, Lambrichs R, Meesters C (2001) Protective and vulnerability factors of depression in normal adolescents. Behav Res Ther 39:555–565

Nolen-Hoeksema S, Girgus JS, Seligman ME (1992) Predictors and consequences of child and depressive symptoms: a 5-year longitudinal study. J Abnorm Psychol 101:405–422

Olson DH, Portner J, Lavee Y (1985) FACES III. *Familiy adaptability and cohesion evaluation scales*

Radloff LS (1977) The CES–D Scale: A self–report depression scale for research in the general population. Appl Psychol Measure 1:385–401

Reinerz HZ, Stewart-Berghauser G, Pakiz B, Frost AK, Moeykens BA, Homes WM (1989) The relatonship of early risk and current mediators to depressive symptomatology in adolescence. J Am Acad Child Adolesc Psychiatry 29:942–947

Roberts RE, Roberts CR, Chen IG (2000) Fatalism and risk of adolescent depression. J Psych 63(3):239–252

Robinson NS, Garber J, Hilsman R (1995) Cognitions and stress: Direct and moderating effects on depressive versus externalising symptoms during the junior high school transition. J Abnorm Psychol 104:453–463

Schaefer ES (1965) Children's reports of parental behavior: An inventory. Child Dev 36:417–424

Schludermann E, Schludermann S (1970) Replicability of factors in children's report of parent behavior (CRPBI). J Psychol 76:239–249

Seiffge-Krenke I, Klessinger N (2000) Long-term effects of avoidant coping on adolescents' depressive symptoms. J Youth Adolesc 29(6):617–630

Seiffge-Krenke I, Stemmler M (2002) Factors contributing to gender differences in depressive symptoms: A test of three developmental models. J Youth Adolesc 31(6)

Siegelman M (1965) Evaluation of Bronfenbrenner's questionnaire for children concerning parental behavior. Child Dev 36:163–174

Stark KD, Humphrey LL, Crook K, Lewis K (1990) Perceived family environments of depressed and anxious children: Child's and maternal figures' perspectives. J Abnorm Child Psychol 18:527–547

Steinhausen H-C, Winkler Metzke C (2000) Adolescent self-rated depressive symptoms in a Swiss epidemiological study. J Youth Adolesc 29:427–440

Steinhausen H-C, Winkler Metzke C (2001) Global measures of impairment in children and adolescents: results from a Swiss community survey. Aust N Z J Psychiatry 35:282–286

Steinhausen H-C, Winkler Metzke C (2003) Prevalence of affective disorders in children and adolescents: findings from the Zurich Epidemiological Studies. Acta Psychiatr Scand 108(Suppl. 418):20–23

Steinhausen H-C, Winkler Metzke C, Kannenberg R, Meier M (1998) Zurich epidemiological study of child and adolescent psychopathology. Acta Psychiatr Scand 98:262–271

Verhulst FC, Van Der Ende J, Ferdinand RF, Kasius MC (1997) The prevalence of DSM-III-R diagnoses in a national sample of Dutch adolescents. Arch Gen Psychiatry 54:329–336

Vernberg EM (1990) Psychological adjustment and experiences with peers during early adolescence: Reciprocal, incidental, or unidirectional relationships? J Abnorm Child Psychol 18:187–198

Weissman MM, Wolk S, Goldstein RB, Moreau D, Adams P, Greenwald S, Klier CM, Ryan ND, Dahl RE, Wickramaratne P (1999) Depressed adolescents grown up. JAMA 281(18):1707–1713

Williamson DE, Birmaher B, Anderson BP, Al-Shabbout M, Ryan ND (1995) Stressful life events in depressed adolescents: The role of dependent events during the depressive episode. J Am Acad Child Adolesc Psychiatry 34:591–598

Williamson DE, Birmaher B, Frank E, Anderson BP, Matty MK, Kupfer DJ (1998) Nature of live events and difficulties in depressed adolescents. J Am Acad Child Adolesc Psychiatry 37(10):1049–1057

Wittchen HU, Pfister H (1997) *DIA-X Manual: Instruktionsmanual zur Durchführung von DIA-X (M-CIDI) Interviews*. Frankfurt: Swets & Zeitlinger