

Adolescents from divorced families: Contact and relationship with nonresident father and physical health

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INTRODUCTION AND AIM OF THE STUDY

Several studies have shown that ongoing contact with both parents on a regular basis is essential for the child's emotional stability and the future psycho-social development. (Hetherington & Kelly, 2002; Napp-Peters, 1995; Staub, 2001). Children generally experience a decrease in contact with both parents following the divorce, and many experience minimal or no contact with the nonresident parent (Seltzer, 1991; Amendt, 2004). Moreover, parental divorce has been shown to be associated in the long-term with lower quality of parent-child relationships (Zill, Morrison & Coiro, 1993; Amato & Booth, 1991). The role of quantity of the post-divorce contact with father seems unclear (Amato & Gilbreth, 1999). Nevertheless, the adolescent's report of the quality of the father-relationship is assumed to depend on his previous interactions with the father. So, we expect quality to be generated by quantity when investigating the role of the father for the development of a vulnerability for health related problems, independent of or in conjunction with parental conflict.

Divorce experience and physical health

Various types of health models have been adopted by clinical, social, and medical researchers. Most of these models assume that psychosocial stressors adversely affect physical health as well as psychological well-being. In recent years, researchers have studied a number of hypothesized precursors of health, including major life changes (e.g. Schroeder & Costa, 1984). The underlying theory is, that unnecessary and noxious levels of stress - such as a sense of lack of control over life's events, unsatisfied needs, unfulfilled expectations, - may not only produce varying degrees of dysphoric emotional reactions and behavioral changes but also physiological responses like increased muscle tension, rapid heart rate or indigestion as a result of the automatic arousal.

Somatic symptoms, (e.g. physical pain as a result of increased muscle tension, dizziness or indigestion) can be related to physiological stress reactivity whereas rapid heart rate can be provoked by stress-related hostility. It could be shown that hostility is related to sympathetic arousal during interpersonal circumstances and that cognitive aspects of hostility predicted all cause mortality and coronary heart disease Miller et al. (1996). Jorgensen et al. (1996) reported that lower affect expression and more negative affectivity and defensiveness were associated with the development of hypertension.

Critical life changes are undoubtedly important potential stressors for cardiovascular disorders for which they seem to have specific and nonspecific importance (Theorell, 1995). However the relationship between divorce experience as a major life event and stress-related somatic complaints is not clear and the literature on the long-term physical health correlates of parental divorce is sparse.

Higher levels of somatic symptoms have been reported in adolescents from divorced relative to non-divorced families (Borkhuis & Patalano, 1997; Hanninen & Paronen, 1989). Maier and Lachman (2000) reported significantly higher levels of acute and chronic health problems in

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middle-aged adults as a function of early parental divorce, an effect that was mediated by current income, education, drug use. Troxel and Mathews (2004) proposed a life-span model whereby parent conflict and divorce affect children's long-term physical health. In their model, both distress and time with father play roles.

In the past, studies focusing on the adolescent's perception of their experience with parental divorce have been carried out with undergraduate or graduate students, the so called "survivors" of divorce. Given that individuals from divorced families are more likely to complete less formal education than those from intact families (Amato and Gilbreth, 1999; McLanahan, 1988) we choose to investigate a non-academic population.

HYPOTHESES

Quantity versus quality of father-child-relationship

H1a

There is a positive correlation between quantity of contact to the nonresident-father and quality of the relationship with the father.

This hypothesis was based on research documenting that the more frequent and regular physical or medial contact (e.g. phone calls) was associated with closer and more supportive relationships with nonresident fathers (Smith, 2004) and fewer adjustment problems in the children (Dunn, Cheng et al., 2004).

H1b

Compared to adolescents from intact families, adolescents from divorced families are expected to report significantly more dissatisfaction in their relationship with both parents.

This hypothesis was based on research documenting negative effects of divorce on adult children's relationships with both parents (Amato & Booth, 1991, 1997; Kaufman & Uhlenberg, 1998; Zill, Morrison, & Coiro, 1993).

H1c

There is a positive correlation between the child's age at the time of divorce and father contact.

This hypothesis was based on research documenting that the rate of visits depend on the child's age at the time of parental separation and on the remarriage of one or both parents, so that the younger the child at the time of parental separation the less father contact in the future (Struss et al., 2001; Stephen, Freedmann & Hess, 1993; Amendt, 2004).

Stress-related symptoms and father-child-relationship

In order to examine associations between adolescent's vulnerability for physical health problems, we replicated the analyses by Luecken and Fabricius (2003) who found no difference between adolescent's from divorced and non-divorced families in terms of health-related measures. According to our previous findings (Staub, 2001) and according to Goede and Spruijt (1996) who found poorer health in 18–24-year-old females from divorced families relative to intact families - but not in males - we expected participant's health-related outcomes to be associated with gender and family structure (divorce vs. non-divorce).

H2a

We expect an overall difference between adolescents from divorced and non-divorced families in terms of health-related measures, that is, adolescents from divorced families are expected to report more problems.

H2b

The vulnerability for physical health problems is expected to correlate with the father-relationship, that is, within both divorced and non-divorced groups, adolescents reporting lower on father-relationship are expected to report more somatic symptoms, more days of sick, more doctor visits and are expected to score higher on hostility. In the divorce group these associations are expected to be more stronger for females than for males.

H2c

Relationship with father is expected to be a stronger predictor for physical health vulnerability than the perceived stress caused by parental conflict or other predictors (e.g. relationship to mother, age at the time of divorce, financial situation of the family) That is, adolescents who report more satisfaction in their relationship with the nonresident father score lower on somatic complaints, illness reports and hostility, independent of parental conflict.

It is suggested that the somatic symptom's underlying chronic stress is caused by interfamilial conflict, poor child-parent-relationship, poor financial situation. In a previous study (Staub, 2001) children of divorce reported more somatic symptoms than children from functional intact families, but did not differ from children from dysfunctional core-families (low cohesion, low emotionality, high conflict). At first sight, interfamilial conflict might be expected as the mediating variable in terms of the development of stress-related physical reactions. But the negative outcome of the children from dysfunctional core-families could be caused by poor cohesion and unfortunate parent-child-relationship, as well. That is, the parent-child-relationship might even play a more prevalent role than the parental conflict per se. According to the very recent findings by Fabricius & Sokol (in press) time with the absent father did not directly predict outcomes like physical health, but it strongly predicted the child's relationship with the father. Relationship with father was predicted independently and additively by parent conflict and time with father; e.g., more time was a protective factor in terms of stress-related outcomes, in both high- and low-conflict families.

METHOD

Sample

The sample consisted of 1372 adolescents from non-divorced families (862 males and 505 females), and 478 adolescents from divorced families (293 males and 185 females), with ages ranging from 15 to 25 years (mean = 17,5 years, median = 17, sd = 1.64).

Participants were students from a vocational school at Berne. Given that the majority of the Swiss adolescents pass through vocational school after compulsory school, this sample represented the average educational level of Swiss adolescents. 74 % of participants from divorced families reported to be raised by mother, 10 % by fathers, 15 % by both parents and 1 % by neither parent. 169 individuals (35.4%) reported to have co-resided with a stepfather, and 60 individuals (12.6 %) reported to have co-resided with a stepmother.

Instrumentation and measures

Participants completed a comprehensive questionnaire consisting of standardized scales and single questions on the adolescent's experiences in their family. The interview (paper-and-pencil) took place within the regular classes. The questionnaires for adolescents of divorced families and for those of non-divorced families differed in so far that the divorce group was asked to report on the experiences before or during the divorce process (time 1), two years later (time 2) and in the present (time 3). Also, additional scales and questions on stepparents and divorce related experiences were included.

a) Quantity and quality of father-relationship

- *Contact with nonresident father*

The obtained information on father contact related to visitation frequency (how many direct contact per month) regularity (1=yes, 2=no) and amount of telephone calls per month) at time 1, 2 and 3.

- *Attitude towards contacts and living arrangements*

Participants were asked to report whether they have been looking forward to the father-contacts over time on a 5-point scale (1=very much to 5=not at all), and what amount of contact they had wanted over time (1= more, 2= just right, 3= less, 0= don't know).

- *Relationship with father and mother*

A short version of the parental attachment questionnaire (PAQ, Kenny, 1987) was used to measure affective quality, facilitated independence and emotional support in the dyadic relationship to the father, mother and stepparents (e.g. "mother understands my problems and concerns" using a 3-point scale (1= rather yes, 2=rather no, 0=don't know)

b) Stress-induced parental conflict

According to an instrument developed and used by Ahrons (1981), a 9 items-scale was designed for the present study. The participants were asked to evaluate the manifestation and the perceived stress by specific topics and types of conflict ex-spouses could conceivably discuss (e.g. children issues, finances, visitation arrangements, violence) on a 5-point Likert-Scale (1=never occurred, 1= occurred, no stress 2= occurred, a little stress, 3=occurred, moderate stress, to 5=occurred, very much stress). Participants from non-divorced families were instructed to assess the perceived stress induced by corresponding conflict contents.

c) Financial situation

The financial situation of the family was asked by two single questions: "How is your estimated financial situation?" Had your family been able to afford as much as others?" Questions related time 1 (before divorce), time 2 (two years after divorce and time 3 (present-day) ranging from 3= good/yes, 2= medium/sometimes 1= bad/no. Adolescents from non-divorced families reported on the financial situation in the present.

For further analyses, an additional variable "Change of financial situation" was created. We selected three groups, consisted of participants who did report no change in terms of financial situation, a change for the better and a change for the worse.

d) Vulnerability to stress-related illnesses

- *Somatic complaints*

Somatic symptom levels were assessed by the somatization scale of the SCL-90R (Derogatis, 1994). The scale asks participants to report how often in the past week they have experienced each of the 12 symptoms (e.g. headaches, dizziness, chest or back pains).

- *Hostility*

Hostility was assessed by the State-Trait-Anger-Inventory STAXI (Spielberger, 1988). This instrument measures the experience, expression, and control of anger in adults and adolescents. It is used to evaluate anger's contribution to the etiology and progression of various medical conditions, including hypertension and coronary heart disease.

- *Doctor visits and illness reports*

According to Watson and Pennebaker (1989) who found, that although negative affectivity is correlated with health complaint scales, it is not strongly or consistently related to actual long-term health status, we included questions about days sick and doctor visits in our questionnaire. Participants were asked to report the total of days sick within the last 6 month and the number of doctor visits within the last 12 month.

RESULTS

Attitude toward father-contact

Visitation patterns were found to be very stable. The medium contact rate per month (of adolescents with mother custody) was 4.06 at time 1, 4.11 at time 2 and 3.89 at time 3. The medium rate of phone calls was 5.29 at time 1, 4.89 at time 2 and 5.39 at time 3. Comparisons of repeated measures were not significant. However, the standard deviation for these contact variables was rather high (sd for contact rate \approx 6, sd for phone calls \approx 8).

The adolescents were generally very positive about contact. Almost half of the adolescents, 44 % at time 1, (43 % at time 2 and 44 % at time 3, respectively) thought the amount of contact just about right, 24 % (22 % and 17 % respectively) stated a desire for more contact and 7 % (7 % and 9 % respectively) wanted less contact. The reported anticipation to visits was generally very positive, too. About half of the adolescents 48 % (48 % and 45 % respectively) reported to have been looking forward to the visits very much, 22 % (25 % and 23 % respectively) a little, 5 % (5 % and 4 %, respectively) rather not and 5 % (5 % and 7 %, respectively) not at all. 20 % (17 % and 21 %, respectively) gave it a neutral rating.

Associations between father-relationship and contact

For these analyses we excluded the reports of the 49 adolescents with paternal custody. Hypothesis 1a which predicted a positive correlation between relationship quality and contact with nonresident father was supported: All contacts reports (physical contact, phone calls and anticipations of visits) at all 3 time points correlated significantly with the reported father-adolescent-relationship (r s ranging from .25 to 0.60, all p s $<$.01), that is, the more contact and the more anticipations to visits the better the father-relationship was reported.

T-test-comparisons between the 2 family types in terms of relationships with father and mother. proved significant results: Compared to adolescents from non-divorced families adolescents from divorced families reported less satisfaction in the relationship with their fathers [$T(1798)=10.364^{***}$, $\eta^2=0.51$] as well with their mothers [$T(1829)=2.816^{***}$, $\eta^2=0.14$]

Multivariate tests indicated three main effects of type of family in terms of relationship with mother [$F(1,1826)=6.489^{***}$], of relationship with father [$F(1,1796)=111.041^{**}$], of gender, that is males report better relationship with fathers than females [$F(1,1796)=15.436^{***}$] and a significant interaction between gender and type of family [$F(1, 1796)=8.054^{***}$]. Univariate tests revealed significant differences between males and females in both families in terms of relationship with fathers. Female adolescents from divorced family ($N=179$, $m=1.39$ $sd=0.34$) reported a significant poorer relationship with their fathers than female adolescents from non-divorced families ($N=494$, $m=1.21$, $sd=0.24$) [$F(1,672)=59.659^{***}$, $\eta^2=0.61$]. Male adolescents from divorced families ($N=270$, $m=1.30$, $sd=0.28$) vs. male adolescents from non-divorced families ($N=853$, $m=1.19$, $sd=0.20$) [$F(1,1122)=46.274^{***}$, $\eta^2=0.43$]

Age at the time of divorce in relation to contact and relationship with father

Table 1 shows information on the adolescent's age at the time of divorce, compared with adolescents of divorce who were investigated in our previous questionnaire study (Struss et al., 2001). The average age at parental divorce was 9 years ($sd=5.2$). Descriptive analyses showed frequency peaks at the ages of 3 (7.1 %, 34 participants), 6 (6.9 %, 33 participants), 12 (8.2 %, 39 participants) and 15 years (6.9 %, 33 participants).

According to H1c, correlation analyses (Table 2) revealed significant correlations between the adolescent's age at the time of divorce and physical contact with father at time 3 ($r=.259^{**}$), between the age at the time of divorce and telephone contact at time 3 ($r=.208^{**}$) and the reported father relationship ($r=-.270^{**}$). That is, the younger the child at the time of parental divorce the less present-day contact and the poorer the relationship with the father.

Table 1: Age at the time of divorce

	WAVE 2001:		WAVE 2005:	
	N	%	N	%
0-4 years old	39	21.5	108	24.2
5-9 years old	57	31.5	129	28.9
10-14 years old	54	29.8	130	29.1
15-19 Years old	31	17.2	80	17.9
Total	181	100		100

Table 2: Bivariate correlations with age at the time of divorce

	1	2	3
1. Age at time of div.			
2. physical contact (time 3)	.259**		
3. phone calls (time 3)	.208**	.555**	
4. relationship with father	-.270**	-.293**	-.308**

p < .05; **p < .01; ***p < .001

Table 3: Correlation between relationships to father, mother and stepparents

	N	1	2	3
1. Relationship with father	449			
2. Relationship with mother	442	-.012		
3. Relationship with stepmother	127	.504**	-.159	
4. Relationship with stepfather	194	.104	.296**	-.009

p < .05; **p < .01; ***p < .001

Finally, a stepwise multiple regression procedure was used to determine which of the family background variables predict the adolescent's relationship to father. Since there were significant positive correlations between relationships with fathers and stepmothers and between relationships with mothers and stepfathers (see Table 3) stepwise regression analyses were conducted separately for adolescents with stepmothers, with stepfathers and adolescents without stepparents. Analyses were conducted with father-relationship (dependent variable) and 9 potential predictors of strength, that is: stress-induced parental conflict (time 1 to 3) the financial situation of the family (time 1 to 3), relationship with mother, age at the time of divorce. The same analyses were conducted for adolescents with a stepmother and with a stepfather, respectively, although with the additional potential predictor of strength "relationship with stepmother" and "relationship with stepfather", respectively.

The final model predicting father relationship for adolescents with a stepmother (N=110) selected stepmother, ($R^2=.251$ $p<.000$ $\beta=.444$ $t= 5.486^{***}$) and the age at the time of divorce ($R^2=.251$ $p<.000$ $\beta=-.217$ $t= -2.605^{***}$).

The final model predicting father-relationship for adolescents with a stepfather (N=159) selected financial situation before divorce, that is the better the pre-divorce financial situation the better the later relationship ($R^2=.115$ $p<.000$ $\beta=-.292$ $t= -3.890$) and stress-induced conflict before divorce, that is the more pre-divorce conflict the more dissatisfaction in father-relationship ($R^2=.115$ $p<.018$ $\beta=.179$ $t= 2.387$).

The final model predicting father relationship for adolescents without stepparents (N=150) selected age at the time of divorce ($R^2=.152$ $p<.000$ $\beta=-.340$ $t=-4.484$) and stress-induced conflict before divorce ($R^2=.152$ $p<.001$ $\beta=.260$ $t=3.427$). However, it has to be noted, that reports on stress-induced parental conflict before divorce might not be very reliable given the fact that 14.7 % (N=60) participants who answered at least one question of this scale were between 0 and 3 years old at the time of divorce. The recollection of the reaction on parental conflict before the age of 3 is very likely to be influenced by parent's narratives.

Health vulnerability

As shown in Table 4 and in support of H2b correlation analyses within the divorce group and non-divorce group indicated significant correlations between physical health measures, (r s ranging from .16 to .38, all p s $<.01$) between health measures and stress-induced parental conflict (r s ranging from .072 to .312, all p s $<.05$) and between somatic symptoms, hostility and father-relationship (r s ranging from .181 to .252, all p s $<.01$)

Days sick did not correlate with father-relationship in both groups. And doctor visits did not correlate with father-relationship in the divorce group. Data on "days sick" and "doctor visits" represent absolute values, therefore the high standard deviation.

Table 4: Correlations between variables within divorce group and non-divorce group

		mean	SD	N	1	2	3	4	5	6
1. Somatic symptoms	non-div.	1.812	.500	1371	1	.266**	.162**	.173**	.297**	.216**
	divorce	1.902	.586	471	1	.379**	.318**	.338**	.312*	.252**
2. Hostility	non-div.	1.934	.519	1368			.162**	.101**	.198**	.219**
	divorce	2.023	.581	475			.198**	.249*	.173**	.181**
3. Days sick	non-div.	3.4	7.4	1334				.379**	.072**	.004
	divorce	5.3	11.1	452				.677**	.133**	.023
4. Doctor visits	non-div.	3.6	6.6	1340					.101**	.060*
	divorce	4.7	10	459					.235**	.023
5. Parental conflict #	non-div.	1.860	.768	1359						.308**
	divorce	1.780	.850	433						.126*
6. Rel. father	non-div.	1.120	.214	1351						1
	divorce	1.336	.310	449						

* $p <.05$; ** $p <.01$; *** $p <.001$; # for divorce group: parental conflict at time 3

The overall MANOVA was significant for family structure in terms of somatic symptoms [$F(1, 1680)=5.310^{**}$] days sick [$F(1,1680)=26.693^{***}$], doctor visits [$F(1, 1680)=6.501^{**}$] and hostility [$F(1,1680)=12.256^{***}$]; gender in terms of somatic symptoms [$F(1, 1689)=81.455^{***}$] and days sick [$F(1, 1789)=6.073^{**}$]. The MANOVA revealed no significant interactions. In support of H2a adolescents from divorced families were found to be more vulnerable for physical health problems than adolescents from non-divorced families. Although, the effect sizes were very small, between .003 and 0.057.

Univariate tests indicated that adolescents from divorced families reported significant more somatic complaints [($F(1,1842)=10.305^{**}$, $\eta^2=0.16$), more days of sick [$F(1,1779)=20.215^{***}$, $\eta^2=0.21$], more doctor visits [$F(1,1799)=6.786^{**}$, $\eta^2=0.12$] and higher hostility [($F(1,1843)=10.026^{**}$, $\eta^2=0.16$)] compared to adolescents in the non-divorce group. Separate comparisons between males and females in the corresponding groups are shown in Table 5.

Table 5: ANOVA with adolescents from divorced families and adolescents from non-divorced families in terms of physical health measures, stress-induced parental conflict and father-relationship

			N	Mean	SD	eta-sq	F
HOSTILITY	<i>males</i>	<i>divorce</i>	291	2.015	.573	0.11	F(1,1147) = 2.786 n.s.
		<i>non-div.</i>	858	1.953	.536		
	<i>females</i>	<i>divorce</i>	184	2.038	.595	0.26	F(1,678) = 9.818**
		<i>non-div.</i>	505	1.898	.485		
SOMATIC COMPL.	<i>males</i>	<i>divorce</i>	288	1.783	.543	0.15	F(1,1147) = 4.935*
		<i>non-div.</i>	861	1.710	.460		
	<i>females</i>	<i>divorce</i>	183	2.090	.607	0.18	F(1,686) = 5.017*
		<i>non-div.</i>	505	1.987	.513		
DAYS SICK	<i>males</i>	<i>divorce</i>	278	4.26	7.62	0.20	F(1,1116) = 9.498**
		<i>non-div.</i>	840	2.93	5.75		
	<i>females</i>	<i>divorce</i>	171	5.46	9.88	0.26	F(1,656) = 11.688**
		<i>non-div.</i>	487	3.43	5.08		
DOCTOR VISITS	<i>males</i>	<i>divorce</i>	281	4.43	11.3	0.09	F(1,1127) = 2.146 n.s
		<i>non-div.</i>	848	3.59	7.08		
	<i>females</i>	<i>divorce</i>	178	5.02	7.39	0.22	F(1,1664) = 7.215**
		<i>non-div.</i>	488	3.58	5.62		
CONFLICT (T3)	<i>males</i>	<i>divorce</i>	270	1.690	.812	0.09	F(1,1124) = 1.643 n.s.
		<i>non-div.</i>	856	1.756	.710		
	<i>females</i>	<i>divorce</i>	163	1.93	.891	0.13	F(1,661) = 1.883 n.s.
		<i>non-div.</i>	499	2.04	0.83		
REL. FATHER	<i>males</i>	<i>divorce</i>	270	1.301	.282	0.43	F(1,1121) = 46.274***
		<i>non-div.</i>	853	1.195	.199		
	<i>females</i>	<i>divorce</i>	179	1.39	.342	0.61	F(1,671) = 59.659***
		<i>non-div.</i>	494	1.210	.238		

p < .05; **p < .01; ***p < .001

Because of the statistically significant correlations between health measures, father-relationship and parental conflict (see Table 4) we conducted multivariate analyses of covariance. In order to do so, participants of both, divorced and non-divorced families were divided in three groups according to their reports on father-relationship (good, medium and poor relationship). Conflict at time 1-3 was used as covariates in order to examine as clearly as possible direct effects of the father-relationship on health measures. Non-divorce group: Consistent with H2b, relationship with father kept to be significant, independent of stress-induced parental conflict in terms of a) somatic complaints [F(2, 1344)=11219***, eta-sq=0.016] and b) hostility [F(2,1344)=25.961***, eta-sq= 0.037].

The same was true for the divorce group, although the effect sizes for somatic complaints were slightly stronger: The father-relationship kept to be significant, independent of stress-induced parental conflict at time 3 in terms of a) somatic complaints [$F(2, 396)=14.660^{***}$, $\eta^2=0.069$] and b) hostility [$F(2,396)=7.800^{**}$, $\eta^2= 0.038$]. Results were also significant when controlling for conflict t1 and t2 although the effect sizes for somatic complaints were even smaller. Days sick and doctor visits were not significantly associated with father-relationship whether by controlling for conflict or not. Hypothesis 2b, which expected the effects to be stronger for females than for males was only partially supported. For females the only significant effect related to the influence of the father-relationship on somatic complaints, independent of the conflict reports on t3 [$F(2,137)=4.212^*$, $\eta^2= 0.06$]. The significant effects for the influence of the male's father-relationship on physical health measures related to somatic complaints [$F(2, 231)=5.445^{**}$ $\eta^2= 0.046$] and hostility [$F(2, 231)=6.791^{**}$ $\eta^2=0.057$], independent of reported conflict at t3. Consistent with recent findings (Fabricius and Sokol, in press) the relationship with the nonresident father seems to play an important role for the physical health well-being of male and female adolescents and young adults of divorce, independently of parental conflict.

Finally a stepwise multiple regression procedure was used to determine potential predictors for the adolescent's vulnerability for physical health problems. Separate analyses were performed for adolescents from divorced and non-divorced families. As the regression analyses revealed unequal results for males and females, results are documented separately for males and females:

Regression analyses with adolescents from non-divorced families were conducted for hostility and somatic symptoms with father-relationship, mother-relationship, stress-induced parental conflict and financial situation in the present. The final model predicting female adolescent's hostility (N= 490) selected relationship with mother ($R^2=.060$. $p<.000$ $\beta=.188$ $t= 4.104$) stress-induced parental conflict ($R^2=.088$ $p<.000$ $\beta=.183$ $t= 4.006$) and relationship with father ($R^2=.099$ $p<.009$ $\beta=.128$ $t=2.607$). Female adolescent's somatic complaints (N=490) were predicted by stress-induced parental conflict ($R^2=.086$ $p<.000$ $\beta=.297$ $t=6.869$) and relationship with father ($R^2=.098$ $p<.006$ $\beta=.125$ $t= 2.738$).

The final model predicting male adolescent's hostility (N=841) selected relationship with father ($R^2=.041$ $p<.000$ $\beta=. 205$ $t=6.053$) and stress-induced parental conflict ($R^2=.058$ $p<.000$ $\beta=.142$ $t=4.087$). Male adolescent's somatic complaints (N=842) were predicted by conflict ($R^2=.069$ $p<.000$ $\beta=. 264$ $t= 7.941$) and relationship with father ($R^2=.003$ $p<.000$ $\beta=.165$ $t= 4.844$).

In support of H2c, the analyses with female adolescents from divorced families (Table 6) detected the father-relationship as the strongest predictor for somatic complaints and hostility. This was different for males: Somatic complaints and hostility were mainly predicted by parental conflict before divorce and the relationship with the mother and father.

In terms of the other health measures, days sick and doctor visits, the current stress caused by parental conflict turned out to be a stronger predictor than the relationship with the parents. The perceived stress caused by present-day conflict was the strongest predictor for both genders in terms of doctor visits.

Table 6: Stepwise multiple regression results for divorce group°

		<u>male adolescents of divorce N</u>			<u>female adolescents of divorce</u>				
		variables entered	R²	β	t	variables entered	R²	β	t
SOMATIC COMPLAINTS m/N=210 f/N=127	Model 1	conflict t1	.070	.273	4.094***	rel. father	.100	.328	3.880***
	Model 2	conflict t1	.117	.252	3.864***	rel. father	.206	.352	4.428***
		rel. mother		.226	3.469***	rel. mother		.334	4.195***
Model 3	conflict t1	.137	.225	3.425***	rel. father	.232	.334	4.242***	
	rel. mother		.221	3.425***	rel. mother		.318	4.053***	
	rel. father		.157	2.398*	financial sit. t3		-.180	-2.291*	
DAYS SICK m/N=204 f/N=119	Model 1	conflict t3	.028	.182	2.635**	---			
DOCTOR VISITS m/N=206 f/N=123	Model 1	conflict t3	.037	.205	2.989**	conflict t3	.157	.397	4.756***
	Model 2					conflict t3	.188	.377	4.550***
						rel. mother		.176	2.123*
HOSTILITY m/N=212 f/N=128	Model 1	conflict t1	.123	.356	5.523***	rel. father	0.049	.238	2.750**
	Model 2	conflict t1	.170	.317	4.982***	---			
		rel. father		.230	3.611***				
	Model 3	conflict t1	.192	.303	4.814***	---			
		rel. father		.225	3.584***				
		rel. mother		.161	2.586**				

adjusted R² and standardized β reported.

° Variables available for selection in models included age at time of divorce, financial situation before divorce, after and in the present, change of the financial situation, stress-induced parental conflict before divorce, after and in the present, relationship with mother, relationship with father

*** p<.001 **p<.01 *p<.05

DISCUSSION

As it is well documented, that divorce affects the offspring's academic performance (Amato and Keith, 1991) and given that most of the available questionnaire studies are based on reports from the "survivors", that is, college or graduate students, the strength of this

questionnaire study is the non-academic sample, that is 1372 adolescents and young adults from non-divorced families and 478 adolescents and young adults from divorced families. The aim of this study was to explore characteristics and consequences of divorce related father absence. In a first step, aspects were investigated by which the reported father-relationship is determined. Additionally we were interested in the adolescent's opinion on contact variables. Second, we have replicated previous research showing that divorce appears to weaken children's ties with both parents. Finally, we investigated associations between divorce and vulnerability to physical health problems in general and the role of the father for physical health outcome in special.

Quality and quantity of the adolescent's father-relationship

The age at the time of divorce seems to be an important predictor for future contacts and quality of the relationship with the father. That is, the younger the child at the time of parental divorce the less contact and the poorer relationship with the father in the future. In terms of the quality of the father-relationships, our results suggest a strong association between frequency of post-divorce contact in the past and quality of the father-adolescent relationship in the present. These results are consistent with previous findings (e.g. Smith, 2004; Dunn, Cheng et al., 2004; Fabricius & Sokol, in press). However, it should be noted that these results are not necessarily causal, and if there is a causal link the direction can not be fully determined. But since there was no significant correlation between conflict measures over time and frequency of contact or number of phone-calls over time it is more likely that the fathers with more than the regular, court-ordered contacts wanted to be kept involved in their children's lives as a consequence of the previous relationship or in order to keep identification with the father-role.

The adolescents were generally very positive about contact and consistent with previous findings (Seltzer, 1992; Wolchik, Fenaughty and Braver, 1996) visitation patterns were found to be very stable. In contrast to previous reports from college students who stated an overall desire for more contact with the father (Fabricius & Hall, 2000) about half of the adolescents in our study thought the amount of visits just right. At the time of the survey only 17 % stated a desire for more contact.

But divorce seems to weaken ties with both parents: Consistent with earlier findings (Amato & Booth, 1991, 1997; Kaufman & Uhlenberg, 1998; Zill, Morrison, & Coiro, 1993,) parental divorce was found to be associated with lower affective quality and emotional support in relationships with both parents. These findings are in contrast to recent results by Riggio (2004) who found that in comparison to those from intact families, young adults in divorced families experienced particularly close and satisfying relationships with their mothers. The strongest negative effect in our between-group-comparisons was found for female adolescents of divorce in terms of their relationships with their fathers.

The younger the child at the time of divorce the higher the probability that the child loses contact to his father and will therefore not be able to establish a satisfying relationship. These results are consistent with our previous findings (Struss et al., 2001). Other significant predictors for the relationship with father seem to depend on the availability of stepparents: Adolescents relationship with an available stepmother predicted most variance in their father-relationship followed by the age at the time of divorce. Father-relationship with adolescents with an available stepfather was predicted by the financial situation and amount of stress caused by conflict pre-divorce. Age at the time of divorce and amount of stress caused by conflict pre-divorce were the strongest predictors for the father-relationship of adolescents without stepparents. These findings are not only consistent with previous findings (Struss et al., 2001; Stephen, Freedmann & Hess, 1993; Amendt, 2004) but also with our clinical experience. The amount of post-divorce father-involvement seems to depend a great deal on his new partner's willingness to support this relationship. These findings have practical implications: practitioners and parents need to recognize the importance of including the father's new partner when it comes to problems with post-divorce father-child contact.

Father-relationship and vulnerability for physical health problems

Various types of health models have been adopted by clinical, social and medical research. Most of these models assume that psychosocial stressors adversely affect physical health as well as psychological well-being. Unlike Luecken and Fabricius (2003) we found adolescents of divorce to be more vulnerable for physical health problems than adolescents from non-divorced families. However, the effect sizes were very small. The association between negative affectivity like e.g hostility and reported physical health problems is well documented and was supported in our study, too. Correlations between hostility and all health measures turned out to be significant in both, the divorce and non-divorce group. Females from divorced families reported significant higher on all health measures including hostility compared to females from non-divorced families. For males, the pattern was slightly different: Males from divorced and non-divorced families did not differ in their reports on hostility and doctor visits. Hostility and its corresponding risk for high blood pressure seems to be an indicator for stress in all males but only in females from divorced families, most probably due to a poor relationship with the nonresident father. Indeed, we found female's hostility to be predicted mainly by a the father-relationship, that is, the poorer the relationship the higher females score on the hostility scale. The same was true for somatic complaints: The poorer the relationship with the father the more somatic complaints were reported. The predictors for physical health outcome in males was different. Male adolescents reports on hostility and somatic complaints seem mainly to be predicted by the perceived stress-induced parental conflict at the time before the parental separation while the number days sick and doctor visits were predicted by stress-induced parental conflict in the present. Given the fact that the conflict scales in our study related not only to the incidence and amount of parental conflict but to the perceived stress caused by parental conflict these gender differences are especially striking. Apparently, girls are more distressed and rattled by dissatisfaction in their close relationships than by conflictual disharmonies outside of their person while boys and men are more likely to present stress reactions when they are exposed to conflict. These findings might to relate to recent findings on the gender response on conflict by (Taylor et. al, 2000). Taylor and coworkers found that although both men and women have a physiological response to relationship conflict, the response is much more pronounced in men than in women and involves different attachment factors. They found that men often react to stress with a "fight-or-flight" response, but women are more likely to manage their stress with a "tend-and-befriend" response. Taylor points out that this stress response is seen in many species. Females respond to stressful conditions by protecting and nurturing their young (the "tend" response), and by seeking social contact and support from others – especially other females (the "befriend" response).

CONCLUSION

After 25 years of research on children of divorce we know that children of divorce are a high risk population concerning various problems of adjustment and development. So why ongoing research? Cherlin, Chase-Lansdale and McRae (1998) found, that the gap in psychological well-being between offspring with divorced and non-divorced parents increased between adolescence and young adulthood. Adolescence is well known as a vulnerable phase generating normative adjustment problems. It seems, that parental divorce per se produces additional, more subtle adjustment problems that are not detected in younger children of divorce. Our study represents a contribution to a new generation of research on divorce: The investigation of the divorce effects on the health-care system in general and on the corresponding costs for the society. Given the fact that the father-girl-relationship is at high risk to deteriorate after divorce and considering our findings that a poor relationship with the father is the strongest predictor for vulnerability for physical health problems in girls, there is a special need to support fathers in keeping their role as a close and supporting primary caregiver in their girl's live after divorce. The effect sizes of the significant results presented in this study are very small and the influence of the relationship

with the nonresident father on physical health outcome needs further investigation. Nevertheless, our findings underline how important it is to consider the links between more subtle, but long-term adjustment problems in divorce offspring and the relationships with the nonresident fathers within the framework of the larger family system.

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