Adolescents with a childhood experience of parental divorce: a longitudinal study of mental health and adjustment

Ingunn Størksen\textsuperscript{a,*}, Espen Røysamb\textsuperscript{a,b}, Torbjørn Moum\textsuperscript{c}, Kristian Tambs\textsuperscript{a}

\textsuperscript{a}Division of Epidemiology, National Institute of Public Health, P.B. 4404 Nydalen, 0403 Oslo, Norway
\textsuperscript{b}Department of Psychology, University of Oslo, P.B. 1094 Blindern, Oslo, Norway
\textsuperscript{c}Department of Behavioural Sciences in Medicine, University of Oslo, P.B. 1111 Blindern, 0317 Oslo, Norway

Abstract

This is a prospective Norwegian study of a group of adolescents with an experience of parental divorce or separation ($n=413$) and a comparison group without this experience ($n=1758$). Mean age at T1 was 14.4 years and mean age at T2 was 18.4 years. Parental divorce was prospectively associated with a relative change in anxiety and depression, subjective well-being, self-esteem, and school problems. Considering boys separately, parental divorce was prospectively associated only with school problems. Among the girls, divorce was prospectively associated with all variables. The effect of divorce on relative change was partially mediated by paternal absence.

\textcopyright 2005 The Association for Professionals in Services for Adolescents. Published by Elsevier Ltd. All rights reserved.

Introduction

Children of divorce

Despite all the practical and emotional challenges associated with parental separation and divorce, the long-term effects on the children have proved to be small. Most of these children live...
good lives and manage well (Emery & Forehand, 1994). Still, it is well documented that children of divorce are at an increased risk of various adjustment problems in both childhood and adolescence, and even in adult life. The range of problems include withdrawal, anxiety and depression, social problems, thought problems, attention problems, delinquent behaviour and aggressive behaviour (Liu et al., 2000; Harland, Reijneveld, Brugman, Verloove-Vanhorick, & Verhulst, 2002). As a group, children of divorced parents have lower levels of self-efficacy, self-esteem, and social support and less efficient coping styles (Kurtz, 1994). Follow-up studies show that children of divorce still display more adjustment problems such as anxiety and depression, low well-being, and school problems in early (Hetherington, 1993) and mid-adolescence (Størksen, Røysamb, Holmen, & Tambs, n.d., 2004). Other researcher have found a lower self-esteem (Bynum & Durm, 1996), a poorer self-concept (Studer, 1993), and a risk of conduct disorder, mood disorder and substance abuse disorders in adolescent offspring of divorced couples (Fergusson, Horwood, & Lysnkey, 1994). A longitudinal study found elevated levels of depression in women with divorced parents, and, in both genders an increased risk of frequent job-changing, premarital parenting and marital breakdown in adults of divorced parents (Rodgers, 1994).

Parallel to the general finding of small to moderate group differences, there has also been found greater variability in adjustment among children with divorced parents than among children from non-divorced families (Hetherington, 1993; Størksen et al., 2004). This probably reflects the diversity of outcomes after parental divorce (Amato, 2001). There might also be reason to expect different reactions to divorce in the same individuals over time. Hetherington (1993) demonstrated that 6-year-old girls appearing to have a good adaptation to divorce displayed delayed effects in early adolescence. There has also been found an emerging gender difference during adolescence in the relationship between internalizing symptoms and parental distress and discord. Among early adolescents there were no gender differences in the association between internalizing symptoms and parental distress and discord. By mid-adolescence, though, parental distress and discord became significantly associated with internalizing symptoms among girls, but this association was not seen among boys (Crawford, Cohen, Midlarsky, & Brook, 2001). Cherlin, Chase-Lansdale, and McRae (1998) found that—even after adjusting for initial levels of emotional problems—a parental divorce occurring when the child was between 7 and 22 years old had a negative effect when the subjects were in their 20s and early 30s. These results indicate a growing gap over the years between children of divorce and other children. To the best of our knowledge, no studies have been conducted that focus on children of divorce and relative change in various domains of adjustment during mid-adolescence.

The Norwegian culture: welfare system and divorce rates

In 2004, the Human Development Report, which is published annually by the United Nations, ranked Norway as the best place in the world to live. A high percent of women are in work—almost 70% of all Norwegian women—partly because of good social systems (Statistics Norway, 2004). When a women gives birth to a child, she is permitted a one-year leave from work with close to full payment.

The Norwegian Government has provided special laws and regulations as an effort to counteract the negative effects of divorce on children. Newly separated couples are offered family
counseling. Single parents have priority when it comes to day-care arrangements for small children. If a single parent is not able to work, he or she receives financial support. In addition to this the non-resident parent is obliged by law to contribute financially to the daily costs of raising his or her children. If the non-resident parent does not fulfill his or her duty, the Norwegian welfare system steps in with financial support. In this way children of divorced or single parents in Norway are not financially deprived, although in most cases the economy of single-headed families is not as good as the economy of two-parent families. The most common living arrangement among divorced families in Norway lets the child visit the non-resident parent—usually father—one afternoon every week in addition to a weekend every second week.

Recent statistics from Norway imply that almost every second marriage (47.8%) will end in divorce (Statistics Norway, 2002). These rates are typical for many countries, for example the USA (Cherlin, 1992). The social welfare system makes it especially interesting to study possible effects of parental divorce in Norway.

**Gender**

Gender has been a theme in research focusing on children of divorce. Two meta-studies (Amato & Keith, 1991; Amato, 2001) show that there is modest support for larger effects of divorce among boys than among girls, at least in some areas of adjustment. Still, the main conclusion is that divorce is associated with adjustment problems irrespective of gender. Hetherington (1993) found that while there were marked gender differences in the response of preadolescent children to divorce—with a preponderance of negative effects among boys—this gender difference was more rarely found among children in their early adolescence. Among slightly older adolescents (mean age 16 years), Størksen et al. (2004) found a significant gender by divorce interaction effect, with girls showing more enduring symptoms of anxiety and depression as a reaction to divorce than did the boys. In the present study we ask whether gender differences are stabilized during adolescence, or whether the female preponderance in adjustment problems associated with divorce grows even larger in this particular developmental stage.

**Children in single-headed families and children with step-parents**

A report from Statistics Norway (2002) revealed that 21% of all Norwegian children less than 18 years old did not live with their biological father (regardless of divorce or no divorce), and 4% did not live with their biological mother. Recent research has demonstrated that children living with a single parent are at increased risk of mortality, severe morbidity, and injury (Weitoft, Hjern, Haglund, & Rosén, 2003). Amato and Keith (1991) found some support for the “parental absence perspective” in explaining reduced adjustment and well-being among children of divorce, although there was strongest support for the “conflict perspective”, meaning that conflict in the home was the factor explaining most of the negative effects of divorce. Another study found that low self-esteem and lack of closeness to father mediated depression among girls of divorce (Palosaari, Aro, & Laippala, 1996). Similarly, Amato and Gilbreth (1999) found a feeling of closeness to father and paternal authoritative parenting to be positively associated with academic success and negatively associated with externalizing and internalizing problems in children with
non-resident fathers. Many studies indicate that the long-term consequences for adult children of divorce are partly mediated by different aspects of the parent-child contact (O’Connor, Thorpe, Dunn, & Golding, 1999; Laumann-Billings & Emery, 2000). Thus, there is reason to believe that the absence of a parent, and not only the mere experience of divorce, might explain some of the effects of divorce on adolescent development.

Remarriage of one’s divorced parents might also be a challenging experience. In a review study with a comparison of different studies of divorce and remarriage, Amato (1993) found that although some studies supported the hypothesis that remarriage of the custodial parent is beneficial for the child, the majority of studies either failed to support or were contradictory to the hypothesis. More studies of children of divorce and step-parents might give a clearer picture of the impact of having a step-parent in different developmental stages.

General development of adolescent adjustment and well-being

In general, depressive symptoms increase with age during adolescence (Schraedley, Gotlib, & Hayward, 1999), in particular among girls (Wichstrøm, 1999). Suggested explanations for this female preponderance has been pubertal timing (Petersen, Sarigiani, & Kennedy, 1991), dissatisfaction with weight and appearance, low global self-worth, and an increased importance of feminine sex-role identification (Wichstrom, 1999). Others have proposed stress and lack of social support (Schraedley et al., 1999), and low self-competence (Ohannessian, Lerner, Lerner, & Von Eye, 1999) as reasons for depression in adolescent girls. In a recent research (Kessler, 2003), it is concluded that the higher prevalence of depression among women than men is due to higher risk of first onset, and cannot be explained by higher persistence or higher rates of reoccurrence. Epidemiological research that focuses on first onset is requested.

Størksen et al. (2004) found a general decrease of subjective well-being with age, and a general increase of academic problems with age in adolescents of both genders. Block and Robins (1993) found that males tended to increase and females tended to decrease in self-esteem during a period from early adolescence to young adulthood (14–23 years).

General development and relative change

Thus, on the one hand, there is a general effect of age in adolescence on psychological adjustment and well-being. On the other hand, we know that children and adolescents of divorce generally display poorer adjustment compared to their counterparts in non-divorced families. Our focus in this paper is on relative change, that is change over time that is over and above what we would expect from the general trend in a certain developmental period. More specifically, we are interested in whether adolescents with a childhood—or more recent—experience of parental divorce have a similar or different developmental curve of psychological adjustment and well-being compared to other adolescents. We ask whether adolescents of divorce increase in level of psychological distress in a parallel manner when compared to other adolescents, or whether the gap between the two groups grows larger during a four-year period of mid-adolescence. Our outcome measures include symptoms of anxiety and depression, subjective well-being, self-esteem and school problems.
Aims

In the following we will address three research questions. (a) Is the development of psychological adjustment and well-being of the adolescents of divorce different compared to the development of other adolescents during a four-year period? (b) Does gender interact with divorce in affecting this development? (c) Does the absence of a biological parent or remarriage of one’s biological parents account for some of the effects of divorce on adolescent development?

Method

The present paper is based on data from a major Norwegian health study named The Nord-Trøndelag Health study (HUNT). Young-HUNT I (T1) was conducted in 1995–97, with participants in 8th through 13th grade. Acquisition of the data was mainly organized through the local junior high schools and senior high schools. Mean age was 16 years. A total of 8984 adolescents (88.1% of all invited), 4519 boys and 4465 girls participated. During the spring and autumn terms of 2000 and the spring term of 2001 adolescents from Young-HUNT I still in 12th or 13th grade were invited to participate in Young-HUNT II (T2). Because the acquisition of data was based on school classes—and not on participating subjects—some additional adolescents were invited. Also, because of drop-out and change of schools and classes, it was not possible to invite all adolescents in the target age group from Young HUNT I. Thus, a total of 2714 adolescents completed questionnaires in Young-HUNT II, 84% of all invited. A total of 2401 adolescents participated in both of the health studies, 1116 boys and 1285 girls. Mean age among these adolescents was 14.4 (S.D. = .89) at T1 and 18.4 (S.D. = .80) at T2. Content and design of the questionnaire were close to identical at T1 and at both time points the adolescents signed a written consent to participate. In cases where the student was younger than 16 years of age, the parents also gave their written consent. The students were instructed to fill in the questionnaires individually. The questionnaire was only identifiable by a bar code of the 11-digit personal number, which derives from the Norwegian Birth Registry. Statistics Norway re-coded these personal numbers to encrypted ID codes to secure anonymity. The ID codes made it possible to link data from T1 with data from T2. Further description of the data material can be read elsewhere (Holmen, 2000).

The adolescents of divorce

Because we were mainly interested in the experience of the split-up or divorce of biological parents, the definition of the groups was based on a question about parental divorce or separation. Only cases where this question was completed at both time points were included in the further analysis (n = 2270). The question was phrased as follows: “Have your parents separated or divorced, or have they ever moved apart for more than one year?”. Adolescents answering “Yes” to this question at T1 were included in the “Divorce” group, and those answering “No” were included in the “No Divorce” group. Since we were interested in following these two groups over time, the 99 cases that reported parental divorce between the two time points (no report of divorce at T1, but positive report of divorce at T2) were excluded. The Divorce group (n = 413)
consisted of 180 boys and 233 girls, and the No Divorce group \((n = 1758)\) consisted of 820 boys and 938 girls. Parental divorce was equally prevalent among boys and girls in this study. Mean age at time point one was 14.5 and 14.4 in the two groups, respectively, and not significantly different. Time span between completion of the first and the second questionnaire varied somewhat in the different schools in the county, and was significantly different in the groups (3.89 and 3.94, respectively, \(p < .05\)). This was therefore controlled for in the regression analysis. Mean age at parental separation or divorce was 7.8 years (S.D. = 4.7).

### Questions and scales

Symptoms of anxiety and depression were measured by SCL-5. This is a five-item scale based on SCL-25, which has been proven reliable in earlier studies (Tambs & Moum, 1993). A comparison study of several instruments concluded that the reliability of this short version was acceptable (Strand, Dalgard, Tambs, & Rognerud, 2003). In the present study the SCL-5 reached a Cronbach alpha of .77 at the first time point and .82 at the second time point. Answers are scored according to a scale ranging from “not at all” [1] to “extremely” [4]. Sample items are “Worried too much about things” and “Felt sad or depressed”. The distribution of SCL-scores is quite skewed, and the mean score index was subjected to a logarithmic transformation in order to counteract skewing when the variable was used in the regression analyses. A cutoff point at 2.0 has been suggested for this short-version to determine whether the adolescents are troubled with symptoms of anxiety and depression in their daily lives (Strand et al.).

The Subjective Well-being (SWB) scale consisted of three questions. The questions were also included in HUNT I and HUNT II, and they have a linguistic form that is typical for well-being scales (Andrews & Robinson, 1988). An example of a question is “When you think about the way your life is going at present, would you say that you are by and large satisfied with life or are you mostly dissatisfied?” Answers were categorized into a 7-point scale ranging from “very satisfied” [1] to “very dissatisfied” [7]. The questions have been shown valid in several analyses of data from HUNT I (Moum, Næss, Sorensen, Tambs, & Holmen 1990a,b). In the present study, the three items reached a Cronbachs Alpha of .74 at T1 and .78 at T2.

Self-esteem was measured by a short version of the Rosenberg’s Self-Esteem scale (Rosenberg, 1965), consisting of four statements. A typical statement was phrased as follows: “I feel I do not have much to be proud of”. Answers were categorized into a 4-point scale ranging from “I totally agree” [1] to “I totally disagree” [4]. Analyses from another data material showed that a scale including the four items correlated .95 with the original scale (Ystgård, 1993). In the present study the four items reached a Cronbachs Alpha of .74 at T1 and .76 at T2.

The adolescents were asked to consider 14 statements concerning school functioning. Evaluations of the statements were given on a 4-point scale ranging from “never” [1] to “very often” [4]. Main themes for the 14 items are academic problems, conduct problems, and lack of joy in school. Examples of statements are “I am satisfied with results from tests” and “I have problems being quiet in class”. The school functioning statements were composed at the Norwegian Institute of Public Health, and were also included in an earlier study, at the same institute, of childhood abuse (Tambs, 1994). Cronbach’s Alpha for the 14 statements was .73 at T1, and .75 at T2. For all scales a high score indicates high levels of problems or adjustment according to the scales name, and some of the items therefore had to be turned.
We utilized registry data deriving from Statistics Norway for parental income and education. Education was divided into 10 categories according to length of education. Mean scores of the biological parents’ education and income were utilized as control variables and were given the titles Parental Income and Parental Education.

Statistical analyses and coding

In order to evade the problem of “regression towards the mean”, the analyses for relative change are based on regression residuals. We created variables representing residualized changes in SCL-5, SWB, Self-esteem, and School Problems by regressing the outcome variables at T2 onto the corresponding T1 measures, and then, in a separate regression analysis, these change scores were utilized as outcome variables serving as measures of relative change. The No Divorce group was scored zero, and the Divorce group was scored one. In the same way dummy variables for living with biological mother and father and for remarriage were constructed with values zero and one.

Results

Table 1 displays the mean values of SCL-5, SWB, Self-esteem, and School Problems in the two groups—Divorce and No Divorce—at both data-collection points. As can be seen, the adolescents had a significant change in adjustment between T1 and T2. The general trend was towards more adjustment problems and (despite this) a slight increase in Self-esteem. All changes were significant, except the increase in Self-esteem between T1 and T2 for the divorce group. Results further show that there were significant differences between the two groups on all variables at both time points, with the divorce group exhibiting poorer outcomes. This result was also true when we looked at boys and girls separately. The only exception was for SWB in boys at T2, where the divorce group and the no divorce group did not differ significantly.

We wanted to determine whether the effect of divorce was significantly different at T2 compared to the effect of divorce at T1. This was achieved by testing two alternative models in EQS, one in which divorce was constrained to have equal effects at T1 and T2, and one in which divorce was allowed to have different effects at T1 and T2. Before analyses, the outcome variables were adjusted for age and SES (a mean score of parental education and income). The first model yielded significantly worse fit than the second model only for SCL-5 for the total group ($\chi^2$ difference $= 5.52$, $df = 1$, $p = .02$), implying evidence for variant effects of divorce at the two time points. When we tested the models for boys and girls separately, results implied that divorce had variant effects at the two time points only for girls. For girls there was a significantly stronger effect of divorce at T2 compared to T1 for SCL-5 ($\chi^2$ difference $= 9.75$, $df = 1$, $p = .002$), for SWB ($\chi^2$ difference $= 4.65$, $df = 1$, $p = .03$), and for School Problems ($\chi^2$ difference $= 4.24$, $df = 1$, $p = .04$).

The predictive value of divorce is presented in Table 2. In the first line of Table 2, T2 values for the total group, and for boys and girls separately, are regressed on the respective T1 values. These figures represent relative stability. In steps 1–4 Regression Residuals from the first analysis are applied as outcome variables, and the reported figures represent the predictors’ relation to relative
change in the respective variables. As can be expected, the relationship between T1 and T2 scores was strong and highly significant. The variable showing largest stability between T1 and T2 was School Problems. Results in step 1 of the table indicate that the adolescents in the Divorce group generally had a negative change compared to the adolescents in the No Divorce group between T1 and T2. The Divorce group increased more on symptoms of anxiety and depression (SCL-5), and School Problems compared to the No Divorce group. Furthermore, the Divorce group had a larger decrease in Subjective Well-being (SWB), and a lower increase in Self-esteem compared to the general trend in the No Divorce group. Age was related to relative change in all outcome variables, but the introduction of this predictor did not reduce the effect of divorce. Parental Income was not related to change in any variables, and is therefore not reported. Parental Education was related to relative change in Self-esteem and School Problems, and the introduction of this variable only slightly reduced the effect of divorce on relative change in School Problems.

An additional aim was to focus on boys and girls separately. The boys in the Divorce group had a significant increase in School Problems compared to the boys in the No Divorce group. The girls in the Divorce group had a significant negative relative change in all variables compared to the girls in the No Divorce group. In order to test a possible interaction effect we constructed a variable where the dummy variable for divorce was multiplied with gender. This variable was

<table>
<thead>
<tr>
<th></th>
<th>No divorce</th>
<th>Divorce</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1 M(SD)</td>
<td>T2 M(SD)</td>
</tr>
<tr>
<td><strong>Total group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCL-5</td>
<td>1.35 (.41)</td>
<td>1.50+ (.52)</td>
</tr>
<tr>
<td>SWB</td>
<td>5.55 (.84)</td>
<td>5.22+ (.93)</td>
</tr>
<tr>
<td>Rosenberg Self-esteem</td>
<td>3.08 (.50)</td>
<td>3.14+ (.52)</td>
</tr>
<tr>
<td>School Problems</td>
<td>1.75 (.29)</td>
<td>1.84+ (.31)</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCL-5</td>
<td>1.26 (.37)</td>
<td>1.36+ (.45)</td>
</tr>
<tr>
<td>SWB</td>
<td>5.65 (.84)</td>
<td>5.37+ (.93)</td>
</tr>
<tr>
<td>Rosenberg Self-esteem</td>
<td>3.22 (.47)</td>
<td>3.29+ (.50)</td>
</tr>
<tr>
<td>School Problems</td>
<td>1.76 (.31)</td>
<td>1.85+ (.33)</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCL-5</td>
<td>1.42 (.44)</td>
<td>1.61+ (.54)</td>
</tr>
<tr>
<td>SWB</td>
<td>5.43 (.83)</td>
<td>5.09+ (.91)</td>
</tr>
<tr>
<td>Rosenberg Self-esteem</td>
<td>2.95 (.49)</td>
<td>3.01+ (.50)</td>
</tr>
<tr>
<td>School Problems</td>
<td>1.75 (.27)</td>
<td>1.82+ (.30)</td>
</tr>
</tbody>
</table>

*Significance of differences between the groups Divorce and No divorce at each time point separately. Independent samples T-tests were applied, p < .05.
+Significance of differences between T1 and T2 in the two groups. Paired sample T-tests were applied, p < .05.

**Note:** SCL-5 = symptoms of anxiety and depression; SWB = subjective well-being.
Table 2
Development of adolescent adjustment as predicted by divorce, controlling for age, parental education and father absent

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SCL-5</td>
<td>SWB</td>
<td>Rosenberg</td>
</tr>
<tr>
<td>SCL-5</td>
<td>.42***</td>
<td>.38***</td>
<td>.41***</td>
</tr>
<tr>
<td>SWB</td>
<td>.45***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosenberg Self-esteem</td>
<td>.41***</td>
<td>.37***</td>
<td>.34***</td>
</tr>
<tr>
<td>School Problems</td>
<td>.46***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1 scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorce</td>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.11***</td>
<td>.09***</td>
<td>.07**</td>
<td>.06</td>
</tr>
<tr>
<td>.12***</td>
<td>.02</td>
<td>.04</td>
<td>.10**</td>
</tr>
<tr>
<td>Divorce</td>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.11***</td>
<td>.09***</td>
<td>.07**</td>
<td>.06</td>
</tr>
<tr>
<td>.12***</td>
<td>.02</td>
<td>.04</td>
<td>.10**</td>
</tr>
<tr>
<td>Divorce</td>
<td>Step 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.11***</td>
<td>.09***</td>
<td>.07**</td>
<td>.06</td>
</tr>
<tr>
<td>.11***</td>
<td>.02</td>
<td>.04</td>
<td>.10**</td>
</tr>
<tr>
<td>Divorce</td>
<td>Step 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.11***</td>
<td>.09***</td>
<td>.07**</td>
<td>.06</td>
</tr>
<tr>
<td>Divorce</td>
<td>Step 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.11***</td>
<td>.09***</td>
<td>.07**</td>
<td>.06</td>
</tr>
<tr>
<td>Divorce</td>
<td>Step 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.11***</td>
<td>.09***</td>
<td>.07**</td>
<td>.06</td>
</tr>
<tr>
<td>Divorce</td>
<td>Step 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.11***</td>
<td>.09***</td>
<td>.07**</td>
<td>.06</td>
</tr>
<tr>
<td>Divorce</td>
<td>Step 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.11***</td>
<td>.09***</td>
<td>.07**</td>
<td>.06</td>
</tr>
</tbody>
</table>

Note: SCL-5 = Symptoms of anxiety and depression; SWB = subjective well-being; T1 scores = the respective variables’ values at T1.
Parental income and time span between T1 and T2 was controlled for, but this is not reported because effects were insignificant in all cases except for the effect of time span on girls’ School Problems, $\beta = .08^*$. $^*p < .05, ^*^p < .01, ^*^*^p < .001$.

In the first analysis T2 values are regressed on the respective T1 values (relative stability). In steps 1–4 regression residuals from the first analysis (relative change) are applied as outcome variables. Reported figures are standardized beta coefficients from regression analysis.
significantly related to the change scores of SCL-5 \( (p<.05) \), and to the change scores of SWB \( (p<.01) \). This means that the stronger negative development among adolescents in the divorce group in SCL-5 and SWB is more pronounced among girls than among boys.

Among the adolescents in the Divorce group, 72.4% reported not living with their biological father, and 24.7% reported not living with their biological mother. The rest of the adolescents in the divorce group had some kind of shared living arrangement. In total, 43.1% reported living partially or permanently with at least one step-parent. The entering of the dummy variables Mother Absent and Step-parent in step 4 (Table 2) did not result in significant effects, and the effect of divorce remained significant for all outcome variables. Dividing the group by gender and entering the dummy variable for Mother Absent also did not result in significant effects. In cases where the effect of divorce was significant, this effect was still significant after a control for Mother Absent. When we divided the group by gender and looked at Stepfather and Stepmother separately, though, there was a significant relationship between Stepfather and relative change in SCL-5 in boys \( (p<.05) \), but the effect was not significant when we included the variable Father Absent. Therefore, only Father Absent was included in Table 2. The results show that the entering of the variable Father Absent reduced the effect of divorce on relative change in all variables, and only the effect of divorce on relative change in School Problems remained significant. Father Absent was significantly related to relative change in SCL-5 and SWB. For boys the effect of divorce on relative change in School Problems was reduced to non-significance with the entering of Father Absent, and Father Absent also had a unique effect on relative change in SCL-5. For girls the effect of divorce on relative change in SCL-5, SWB and School Problems was reduced, but remained significant when we entered Father Absent in the equation. When we entered Father Absent in the equation, the effect of divorce on relative change in Self-esteem for the girls was reduced to being non-significant. Father Absent did not have a significant unique effect on relative change in any of the variables for the girls.

The prevalence of adolescents experiencing daily distress caused by anxiety and depression was estimated by applying 2.0 as a cutoff point for SCL-5. Fig. 1 presents the results for the four subgroups. The figure demonstrates the girl/boy, divorce/no-divorce, and T2/T1 prevalence preponderance. An ANOVA showed that in addition to main effects of gender and divorce and T1 prevalence \( (p<.001 \) for all), there was a significant interaction effect of gender and divorce \( (p<.01) \) on T2 prevalence.

**Discussion**

**Adolescents of divorce and relative change**

Not only did divorce have an influence on the adolescents when they were on average 14 years at T1: the present study also shows that the adolescents with a childhood experience (mean age 7.8 years) of parental divorce had a negative development in anxiety and depression, subjective well-being, self-esteem and school problems beyond the general trend among the adolescents without this childhood experience during the following four-year period. As noted in the Introduction, there is a general trend towards more psychological distress (Schraedley, et al., 1999), more academic problems, and a decrease in well-being (Storksen et al., 2004) with age during
adolescence. Still, the present results indicate that adolescents of divorce are at risk of an even more negative development compared to others in this period. Parental divorce seems to continue to affect the children even years after its occurrence. The results are in accordance with other studies that indicate an increase in the effect of divorce with time (Chase-Lansdale, Cherlin, & Kiernan, 1995; Cherlin et al., 1998), but here we also pinpoint a certain developmental period where the increase occurs. It is noteworthy that these results occur in a data-material from the Norwegian society, where the social welfare system is meant to compensate for some of the negative effects of parental divorce.

**Gender differences**

For the boys of divorce compared to other boys, results showed a negative change only in school problems in this four-year period. Parental income or education could not explain the relative change in school problems among the boys of divorce. Among girls, divorce had a significantly stronger effect on symptoms of anxiety and depression, subjective well-being and school problems at T2 compared to the effect at T1. When we looked at relative change among the girls, divorce was prospectively related to all outcome variables. The development of the girls of divorce in this particular period was towards more anxiety and depression, a greater decrease in subjective well-being, a lower increase in self-esteem and a higher increase in school problems compared to other girls.

Results showed a divorce by gender interaction effect for relative change in symptoms of anxiety and depression and subjective well-being, with the girls of divorce showing a stronger negative trend for both scales. It has been described how girls experience more of and/or react more upon life events and stress in adolescence than boys (Petersen et al., 1991; Schraedley et al.,

![Fig. 1. Percentage above the SCL-5 cutoff point at T1 and at T2 by gender and parental divorce/no divorce.](image-url)
The present study proves that also a life event such as divorce, that in most cases occurred years before, may continue to affect development of psychological distress in adolescent girls. The girls with divorced parents had an extremely high prevalence of 40.8% above the suggested cutoff for SCL-5 at T2, indicating that a large number of these girls are troubled on a daily basis by symptoms of anxiety and depression. Adding to the literature describing the development of a gender difference in depression emerging in adolescence, girls of divorce in late adolescence should be defined as a group at very high risk of such symptoms.

As discussed earlier, there have been found elevated levels of depression in women of divorced parents, but not in men (Rodgers, 1994). Studies of children of divorce have found more adverse effects of divorce among boys compared to girls in some areas of adjustment (Amato & Keith, 1991; Hetherington, 1993; Amato, 2001). The present results center on an intermediate developmental period in which girls on average seem to become more affected by parental divorce.

**Paternal absence**

Paternal absence seems to have a unique effect on relative change in symptoms of anxiety and depression and well-being, and can be seen as a mediating factor between divorce and relative change in these areas. The importance of maintaining contact with father has been demonstrated in other studies (Palosaari et al., 1996; Amato & Gilbreth, 1999). Theoretically, it does not seem unlikely that the long-term effects of divorce can partly be explained by the father’s absence. Many of the adolescents might see the divorce as a life-event of childhood that “belongs to the past”, but the father-absent home situation is a part of their daily lives. Adolescence might also be an age in which it can prove hard to maintain contact with non-resident fathers. Sporadic contact is meant to compensate for the regular appointments of childhood, and it may be unclear who is responsible for maintaining contact.

We did not find that mother’s absence was related to relative change in the adolescents in the divorce group. Other studies have found that non-resident mothers and their children manage to maintain contact to a larger extent than do non-resident fathers and their children. In a study of the post-divorce roles of mothers and fathers, it was found that children living with their mothers reduced the number of visitations to their non-resident fathers over a three-year period. For children living with their fathers, the number of visitations to their non-resident mother increased during the same period (Maccoby, Buchanan, Mnookin, & Dornbusch, 1993). A review study of marriage problems concluded that marital status (divorce) affects fathering more than it does mothering (Coiro & Emery, 1998).

Results indicate that father’s absence can be more important in affecting relative change in psychological adjustment among boys than among girls in this four-year period. It seems likely that boys are in special need of a male role model during adolescence. At the same time boys, compared to girls, may have a harder time initiating and maintaining close relations.

**Limitations and strengths**

Because this health study was organized through the local school system, we were not able to invite all target subjects to participate in Young-HUNT II. The population of students dropping
out of school and changing school may represent more adjustment problems compared to other students. We still believe that an inclusion of these students would only strengthen our main finding of a growing gap between adolescents of divorce and other adolescents over time. Since few studies have been carried out in this area, more research is needed on the development of adjustment problems among adolescents of divorce. Also, we would like to mention that although the utilized short version scales have an acceptable reliability and validity, there certainly exist more time-consuming and precise measures. Results regarding symptoms of anxiety and depression should not be confused with depressive disorders identified by means of other scales, DSM criteria, or clinical diagnosis. Finally, the number of subjects in a study can always represent a problem. Still, in the present study, more than 400 adolescents with divorced parents and more than 1700 controls have participated at two time points and this should enable us to detect group differences of importance.

Conclusion

The children of divorce had a negative relative change in symptoms of anxiety and depression, subjective well-being, self-esteem and school problems during a four-year period of mid-adolescence. This implies that the development of psychological distress and adjustment problems during adolescence differs between those with a childhood experience of divorce and those with no such experience. The results also showed that the effect of divorce on symptoms of anxiety and depression and subjective well-being was partially mediated by father’s absence. Thus, not only the childhood experience of divorce affects adolescent development: being deprived from daily contact with father—because of the present living arrangement—may also have a negative effect on the adolescent development, and can partially explain the general effect of divorce. As many other studies have concluded, the parent–adolescent relationship is important for the adolescent development!

Whereas divorce was only related to a relative increase in school problems among boys, divorce was prospectively related to a negative change in all outcome variables among the girls. In fact, the girls of divorce were extremely prone to develop symptoms of anxiety and depression during adolescence, possibly because of new challenges of intimacy and trust in this period. On the other hand, father’s absence (or not living with the father) was strongly related to the development of distress among boys, but did not seem to be of importance to the development of distress among girls. A possible explanation for this could be that boys are in special need of daily contact with a male role model during adolescence. For the girls a close relationship with father might not dependent on the fathers’ residence.

We are often led to believe that only friends and trends in the adolescent culture have an influence on young peoples’ behaviour and adjustment. The present study reminds us of the important impact various family factors may have on the adolescent development.

Acknowledgements

The Nord-Trøndelag Health Study (The HUNT study), from which the data were made available, is a collaboration between HUNT Research Centre, Faculty of Medicine, Norwegian
University of Science and Technology (NTNU, Verdal), Norwegian Institute of Public Health, and Nord-Trøndelag County Council. The Research Council of Norway supported this study through Grant Number 139352/300.

References


