

Author's Accepted Manuscript

Parental separation in childhood and self-reported psychological health: A population-based study

Martin Lindström, Maria Rosvall



PII: S0165-1781(16)30310-9
DOI: <http://dx.doi.org/10.1016/j.psychres.2016.10.049>
Reference: PSY10046

To appear in: *Psychiatry Research*

Received date: 18 February 2016

Accepted date: 23 October 2016

Cite this article as: Martin Lindström and Maria Rosvall, Parental separation in childhood and self-reported psychological health: A population-based study *Psychiatry Research*, <http://dx.doi.org/10.1016/j.psychres.2016.10.049>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Parental separation in childhood and self-reported psychological health: A population-based study

Martin Lindström^{1,2}, MD, PhD, Maria Rosvall^{1,2}, MD, PhD

¹Social Medicine and Health Policy, Department of Clinical Sciences, Malmö University Hospital, Lund University, S-205 02 Malmö, Sweden

²Centre for Economic Demography, Lund University

Abstract

The aim of the present study is to investigate associations between parental separation/divorce during childhood, and self-reported psychological health, adjusting for social capital, social support, civil status and economic stress in childhood. A cross-sectional public health survey was conducted in the autumn of 2012 in Scania, southern Sweden, with a postal questionnaire with 28,029 participants aged 18–80. Associations between parental separation/divorce during childhood and self-reported psychological health (GHQ12) were investigated using logistic regressions. A 16.1% proportion of all men 22.4% of all women reported poor psychological health. Among men, 20.4% had experienced parental separation during childhood until age 18 years, the corresponding prevalence among women was 22.3%. Parental separation/divorce in childhood was significantly associated with poor self-rated psychological health among men who had experienced parental separation/divorce at ages 0–4, and among women with this experience at ages 0–4, 10–14 and 15–18. These significant associations remained throughout the multiple analyses. The results support the notion that the experience of parental separation/divorce in childhood may influence psychological health in adulthood, particularly if it is experienced in the age interval 0–4 years.

Key words: Parental separation, divorce, psychological health, mental health, social support, social capital, Sweden.

1.Introduction

Poor mental health counts among the most prevalent health problems in Sweden as well as internationally. In Sweden approximately 40% of all new sickness benefits for men and women concerned psychiatric diagnoses in 2006 (Danielsson, 2009). In the Swedish national surveys concerning living conditions and health 25% of adult women in Sweden reported anxiety and 31% sleeping problems in 2010-2011, while 14% of the men reported anxiety and 22 sleeping problems (Heimerson and Nordberg, 2013).

Adult health status in general as well as psychological health status in particular are not only influenced by adult risk factors such as for instance current SES, aspects of social support and social capital (Lindström, 2004). They are also influenced by early life risk exposures. Recent decades have seen a growing interest in a life course approach to epidemiology and the effects of risk factors in early life on differing aspects of health in adulthood and later life (Kuh and Ben-Schlomo, 2004). This life course research has been inspired by Barker who postulated that growth inhibition during the third trimester in utero constitutes a crucial “critical period”, i.e. a defined crucial time period early in life when risk exposure will lead to disease later in life, for the development of the metabolic syndrome and cardiovascular diseases in adult life (Barker, 1995, 1998). The critical period hypothesis has also been investigated regarding other disease mechanisms than the Barker hypothesis (Sahade et al., 2011) including hypotheses derived from life course epidemiology in psychiatry (Lindström et al., 2014).

A topic of high importance in psychiatric life course epidemiology concerns the association between the experience of parental separation/divorce in childhood and psychological health in adulthood. In Sweden roughly 50,000 children in the age interval 0-17 experienced parental separation/divorce during 2012, and the numbers of parental separations and divorces have been comparatively stable since the 1970s (Tollebrant, 2013). The life course links between the experience of parental divorce in childhood and increased risk of mental health problems in adulthood are outlined in several international studies. Children with divorced parents have higher risks of problematic behaviours and adjustment problems than children of non-divorced parents (Amato and Keith, 1991a). Higher rates of internalizing and externalizing disorders and substance abuse disorders are seen in children and adolescents of divorced

parents (Barrett and Turner, 2006; Lansford et al., 2006). The experience of divorce in childhood is also associated with increased risk of experience of child abuse or experience of spousal abuse (Dong et al., 2004; Oliver et al., 2006). Path analyses have also suggested that negative effects of experience of divorce in childhood on adult mental health in a cohort followed from birth to age 23 operated indirectly by ways of emotional problems, lower levels of school achievement and family economic status at age 16 (Chase-Lansdale et al., 1995). Longitudinal studies have shown that parental divorce was a major risk factor for mental disorders in Finnish children who were followed until adult age 21 (Paananen et al., 2013), but the links between experience of parental separation/divorce go much further into adulthood. Some cross-sectional studies have found an association between experience of parental divorce and increased psychological distress in adulthood (Rodgers et al., 1997; Storksen et al., 2007). Long-term follow-up studies suggest a connection between psychological disorders in childhood and later adjustment problems, anxiety and depression in adulthood (Rutter et al., 2006; Richards et al., 1997).

A less investigated research question concerns the relationship between the timing of the experience of parental separation/divorce in childhood and the risk of poor psychological health in adulthood. While some studies have proposed that the effects of parental divorce may have more profound effects on younger children (Hetherington, 1999), other studies have suggested no such age differentiation in the psychological effects of parental divorce (Storksen et al., 2006; Amato and Keith, 1991a; Rodgers, 1994; Chase-Lansdale et al., 1995). Longitudinal studies have demonstrated that parental divorce before age 7 increases the long-term risk of major depression (Gilman et al., 2003). Recently, sensitive periods, a sensitive period is a concept which in contrast to the concept critical period permits several different sensitive periods (Ben-Schlomo and Kuh, 2002), were demonstrated for the association between parental separation/divorce and suicide thoughts and suicide attempts. Parental separation/divorce at any age 0-18 years among women but at 0-4 years and 15-18 years among men was significantly associated with suicide attempts in adulthood (Lindström and Rosvall, 2015). To specify the time of parental separation/divorce in childhood makes it possible to specify critical periods, i.e. periods when “an exposure acting during a specific period has lasting or lifelong effects on the structure or function of organs, tissues, and body systems that are not modified in any dramatic way by later experience” (Kuh and Ben-Schlomo, 2004). In the present study the experience of parental separation/divorce in childhood is specified to the age intervals 0-4, 5-9, 10-14 or 15-18 years. The hypothesis is

that experience of parental separation/divorce earlier in childhood leads to a higher risk of poor psychological health in adulthood.

Previous results indicate that age, country of birth, socioeconomic status (SES), civil (marital) status, aspects of social support such as emotional and instrumental support, and generalized trust in other people (an aspect of social capital) are associated with psychological health (Lindström et al., 2012; Lindström and Rosvall, 2012; Lindström et al., 2014; Lindström and Rosvall, 2015), which is why these variables are included in the analyses. Self-reported economic stress in childhood has been shown to be associated with poor mental health in adulthood (Lindström et al., 2014), and is thus also included in the analyses.

The aim of this study is to analyze the association between parental separation/divorce during the childhood of the adult respondent and poor psychological health in adulthood, including socioeconomic status, different aspects of social support, generalized trust in other people and economic stress in childhood in the multiple analyses.

2. Methods

2.1 Study population

The public health survey in Scania in the southernmost part of Sweden was conducted in the autumn of 2012. It is a cross-sectional study based on a stratified random (weighted) sample of people in Scania from official residential population register. A total of 28,029 persons responded by returning the questionnaire with a 51.7% response rate. Three letters of reminder with new questionnaires were sent to the initial non-respondents. Ethical permission for the present study was granted by the Ethical Committee at Lund University, southern Sweden.

2.2 Dependent variables

Self-reported psychological health (GHQ12) includes twelve items which reflect different aspects of psychological health. The items in the GHQ12 are "Have You been able to concentrate on what You have been doing during the past weeks?", "Have You had problems with Your sleep during the past weeks?", "Do You feel that You have been useful during the

past weeks?", "Have You been able to make decisions in different areas during the past weeks?", "Have You felt tense during the past weeks?", "Have You during the past weeks been able to appreciate what You have been doing during the days?", "Have You been able to deal with Your problems during the past weeks?", "Generally speaking, have You felt happy during the past weeks?". These eight items had four alternative answers: "More/better than usually", "As usual", "Less than usual" and "Much less than usual". The items were dichotomised with two alternatives that denote "good" psychological health and two alternatives denoting "poor" psychological health. The other four items had to some extent different alternative answers: "Have You felt unable to deal with Your own personal problems during the past weeks?", "Have You felt unhappy and depressed during the past weeks?", "Have You lost faith in Yourself during the past weeks?" and "Have You felt worthless during the past weeks?". The four alternative responses to these four items were: "Not at all", "No more than usually", "More than usually" and "Much more than usually". The answers to these items were also dichotomised to indicate "poor" psychological health or "good" psychological health. If three or more of all the twelve items denoted "poor" psychological health, general psychological health (GHQ12) was denoted as "poor". This instrument for the measurement of psychological health is the shortest (other GHQ measures contain for instance 28 or 60 items) but has been demonstrated to be a robust measure of psychological/mental health (Goldberg et al., 1997).

2.3 Independent variables

Parental separation/divorce was assessed with the item "Did your parents divorce or separate at any time during your childhood and adolescence before you became 18 years old?" with the alternative answers "Yes" and "No".

Age at parental divorce/separation was assessed with the item "How old were you when your parents divorced/separated?" with the alternative answers 0-4, 5-9, 10-14 and 15-18 years. The two items parental separation/divorce and age at parental separation/divorce were collapsed into an item with five alternatives.

Age was stratified into the age strata 18-24, 25-34, 35-44, 45-54, 55-64 and 65-80 years.

Sex was stratified throughout the analyses.

Born in Sweden/born in other country than Sweden. Participants in other countries than Sweden were collapsed into one group that was compared to those born in Sweden.

Socioeconomic status (SES) (by occupation) was divided into the categories employed on the labour market as non-manual employees in higher, medium and lower positions, skilled manual workers, unskilled manual workers and self-employed/farmers. The groups outside the workforce (without current occupation) consists of long-term sick-leave, unemployed, students, pensioners and unclassified.

Civil status was assessed with the alternative answers married/registered partnership/co-habitant, unmarried, divorced and widow/widower.

Emotional support was assessed with the question “Do you feel that you have someone or some persons who can give you proper personal support to cope with the stress and problems of life?” with four alternative answers: “Yes, I am absolutely certain to get such support”, “Yes, possibly”, “Not certain”, and “No”. The first alternative indicated high emotional support, and the three latter were collapsed as low emotional support.

Instrumental support was assessed with the item “Can you get help by some or several persons in case of illness or practical problems (borrow minor items, help with reparation, help to write a letter, getting advice or information)?” which included the same alternative answers as the emotional support item, and was dichotomized in the same way.

Generalized trust in other people measured the individual’s level of generalized trust in other people. It was assessed with the question “Generally, you can trust other people” which entails the four answer alternative: “Do not agree at all”, “Do not agree”, “Agree”, and “Completely agree”. These alternatives were dichotomized with the two first alternatives as low trust and the two latter as high.

Economic stress in childhood was appraised with the item “Did your family experience economic hardship during your childhood” with the three alternatives “No, no significant problems”, “Yes, less severe problems and/or problems during short time periods” and “Yes, severe problems and/or problems during long time periods”.

2.4 Statistics

Prevalences (%) of poor psychological health, parental separation/divorce before age 18, age, birth country, SES, civil status, emotional support, instrumental support, trust, and economic stress in childhood, stratified by sex were assessed (table 1). Prevalences (%) (within strata of each variable) and odds ratios with 95% confidence intervals (OR:s, 95% CI) of poor psychological health were calculated according to parental divorce/separation until age 18, age, birth country, civil status, SES, emotional support, instrumental support, trust and economic stress in childhood (table 2). Age-adjusted and multiple adjusted odds ratios and 95% confidence intervals of poor psychological health were calculated according to parental separation/divorce until age 18 (table 3). All calculations were stratified by sex. The statistical analyses were conducted with the SPSS software package version 22.0.

3. Results

Table 1 shows that 16.1% of the men and 22.4% of the women reported poor psychological health. The prevalences of all the other variables in this study have been shown in table 1 of a previous study on the same public health survey population. Among men, 79.6% had not experienced parental separation/divorce during childhood until the age 18, while 5.9% had had this experience when 0-4 years old, 5.6% when 5-9 years old, 5.0% when 10-14 years old and 3.9% when 15-18 years old. Among women, 77.7% had not experienced parental separation/divorce in childhood until the age 18. In contrast, 6.7% had experienced parental separation/divorce when 0-4 years old, 5.9% when 5-9 years old, 5.9% when 10-14 years old and 3.8% when 15-18 years old. The age distribution across age strata was rather even in the weighted data. A 20.9% of all men and 22.2% of all women were born abroad. The prevalences of higher non-manual employees were 11.7% among men and 9.6% among women, of medium level non-manual employees 9.8% among men and 12.9% among women, low level non-manual employees 5.7% among men and 10.2% among women, skilled blue collar workers 14.2% among men and 13.1% among women, unskilled bluecollar workers 14.1% among men and 12.8% among women, and self-employed 9.8% among men and 4.8% among women. Respondents on sick leave/long-term sick leave constituted 2.5% of all men and 4.0% of all women, the unemployed 5.7% of men and 4.7% of women, students 6.2% of

men and 8.4% of women, pensioners 20.4% of men and 18.8% of women, and SES not available 0.2% of men and 0.8% of women. The prevalences of being married were 65.5% among men and 62.5% among women, being unmarried 25.6% among men and 22.7% among women, being divorced 7.0% among men and 9.5% among women, and being widower/widow 1.9% among men and 5.4% among women. The prevalences of low emotional support were 38.8% among men and 31.6% among women, low instrumental support 28.6% among men and 23.4% among women, low generalized trust in other people 37.1% among men and 37.3% among women, less severe and/or shorter period of 24.3% among both men and women, and more severe and/or longer period of economic stress in childhood 8.1% among men and 8.5% among women (Lindström and Rosvall, 2015).

Table 2 shows that the odds ratios and prevalence (%) in bivariate analyses of poor psychological health were significantly higher among those who had experienced parental separation/divorce in childhood (with the exception of men who had had this experience at age 5-9 years), among the youngest adults (age group 18-24 years) than among those aged 35 and above among men and among those 25 and above among women, among those born abroad, among the unskilled blue collar workers (only among women), those on long term sick leave, the unemployed, the students, those without SES information, the unmarried, the divorced, those with low emotional support, low instrumental support, low trust and those who had experienced less severe and severe economic stress in childhood among both men and women. In contrast, male and female pensioners and widows reported poor psychological health to a significantly lower extent than higher non-manual employees and married, respectively. Widowers did not significantly differ from the reference group married men.

Table 3 shows that the odds ratios of poor psychological health were higher among men who had experienced parental separation/divorce when they were 0-4 years old, compared to those men who had not experienced parental separation/divorce during their childhood. This association remained statistically significant throughout the multiple analyses with an attenuation from OR 1.70 (1.42-2.03) in the age-adjusted model to OR 1.33 (1.08-1.62) in the full multiple adjusted model including all variables. The odds ratios of poor psychological health among men who had experienced parental separation/divorce at the ages 5-9, 10-14 and 15-18 did not significantly differ from the reference group men who had not experienced parental separation/divorce during their childhood. Among women the odds ratios of poor psychological health were higher for the groups who had experienced parental

separation/divorce when they were 0-4, 10-14 and 15-18 years old, compared to those who had not experienced parental/separation divorce during their childhood. These associations remained statistically significant in the age-adjusted and the multiple analyses with some attenuation from OR 1.61 (1.38-1.68) in the age-adjusted model to OR 1.31 (1.11-1.55) in the full model for those women who experienced parental separation/divorce at age 0-4, but no attenuation of the statistically significant odds ratios for those women who experienced parental separation/divorce at the ages 10-14, OR 1.39 (1.16-1.67) in the full model, and 15-18, OR 1.52 (1.22-1.89) in the full model. In contrast, for women who had experienced parental separation/divorce at age 5-9 the odds ratios of poor psychological health remained statistically not significant throughout the analyses, compared to the reference group women who had not experienced parental separation/divorce during their childhood.

4. Discussion

Parental separation/divorce in childhood was significantly associated with poor self-reported psychological health among men who had experienced parental separation/divorce at ages 0-4, and among women who had experienced parental separation/divorce at ages 0-4, 10-14 and 15-18. These significant associations with high odds ratios (effect measures) remained throughout the multiple logistic regression analyses. The results support the notion that the experience of parental separation/divorce in childhood may influence psychological health in adulthood, particularly if it is experienced in the age interval 0-4 years.

The results indicate that among men the experience of parental separation/divorce in the age interval 0-4 may be a critical period for poor psychological health in adulthood. Among women the age intervals 0-4, 10-14 and 15-18 may constitute sensitive periods, because in contrast to the concept of “critical period” the concept “sensitive period” permits several different sensitive periods (Ben-Schlomo and Kuh, 2002). The findings are supported by differing parts of the literature which indicate higher risk of poor psychological health in adulthood for younger children who experience parental separation/divorce (Hetherington, 1999), while other parts of the literature suggest no such age differences for children who experience parental separation/divorce (Storksen et al., 2006; Amato and Keith, 1991a; Rodgers, 1994; Chase-Lansdale et al., 1995). Our study is a population-based study with a very high number of participants, which may be regarded as an important strength. The results

are also in accordance with a previous study concerning the associations between parental separation/divorce in childhood and suicide thoughts and suicide attempts and their age patterns in the age strata 0-4, 5-9, 10-14 and 15-18 years (Lindström and Rosvall, 2015).

The SES patterns accord well with findings from previous public health surveys in Scania, the southernmost part of Sweden, because the SES differences in psychological health are comparatively small in the working population, e.g. between non-manual employees in higher positions as opposed to skilled and unskilled manual workers. In contrast, poor psychological health is much more prevalent in substantial SES groups outside the working population such as the unemployed, early retired, sick leave pensioners and students (Lindström et al., 2012; Lindström et al., 2014).

Some studies have suggested the psychological effects of parental divorce in childhood to be more severe on adult women than men (Rodgers, 1994), while other studies have found no or small sex differences (Amato and Keith, 1991b; Jonsson et al., 2000). The results of the present study partly confirm this notion to some extent, because parental separation/divorce in childhood was only significantly associated with poor self-reported psychological health among men who had experienced parental separation/divorce at ages 0-4 but among women who had experienced parental separation/divorce at ages 0-4, 10-14 and 15-18.

The experience of economic stress in childhood is statistically associated with poor psychological health in adulthood (Lindström et al., 2014). Still, the inclusion of economic stress in childhood in the multiple logistic regression models did not attenuate the associations between parental separation/divorce in childhood and poor psychological health in adulthood to any important extent.

Social capital is often partly defined as generalized trust in others (Coleman, 1990; Putnam, 2000). Generalized trust in other people (sometimes referred to as horizontal trust) is associated with mental health. The results indicate that social capital measured as generalized trust in other people is significantly associated with poor self-reported psychological health (Lindström, 2004). Still, generalized trust in other people did not to any important extent attenuate the association between parental separation in childhood and poor psychological health in adulthood in any of the four childhood age strata.

The results are important for clinical practice because parental separation/divorce in childhood is prevalent in Sweden. The results also call for further investigation of pathways and links between parental separation/divorce in childhood and poor psychological health in adulthood, building on already existing studies of such links.

4.1 Strengths and limitations

The 51.7% response rate may be regarded as a limitation. A previous postal questionnaire study in Scania in 2008 with approximately the same participation rate showed acceptable correspondence between age, sex, country of birth and education in register data and among the participants in this previous survey, but in the new public health survey in Scania 2012 older people, women and people with higher education are somewhat more over-represented than in the 2008 survey. The risk of selection bias is still comparatively small, because all associations of variables in the present study show the same strength (effect measures) and directions as those in the 2008 study (Lindström et al., 2014). The GHQ12 item is regarded as a valid indicator of psychological health (Goldberg et al., 1997). Information concerning parental separation/divorce in childhood, particularly when it is stratified by age at parental separation/divorce in childhood, is very scarce, at least in public health surveys and other surveys. In fact, we have not encountered such items in the previous literature. Information on economic stress in childhood is not common in public health surveys or other data sources. The access to this item may thus be regarded as a strength. In contrast, the fact that these items are self-reported may be regarded as a limitation.

Confounders and covariates were adjusted for in the multiple logistic regression analyses. Sex stratification was conducted because of the well known sex differences in psychological and mental health. The proportions of internally missing were one up to eight per cent (a total approximately ten per cent missing for the items in the study combined) for the items included in the study.

The cross-sectional study design severely decreases the possibility to draw causal inference. However, the item concerning parental separation/divorce defines stratified age intervals for the 0-18 years of age childhood period for the respondents' childhood, and also precedes the age interval 18-80 years when participants responded to the questionnaire items (Lindström and Rosvall, 2015).

5. Conclusions

Parental separation/divorce in childhood was significantly associated with poor self-reported psychological health among men who had experienced parental separation/divorce at ages 0-4, and among women at ages 0-4, 10-14 and 15-18 with the same experience. These significant associations remained throughout the multiple analyses. The results support the notion that the experience of parental separation/divorce in childhood may influence psychological health in adulthood, particularly if it is experienced in the age interval 0-4 years.

Acknowledgements

This study was supported by the Swedish Research Council Linnaeus Centre for Economic Demography (VR 79), the Swedish Research Council grant K2014-69X-22427-01-4, the Swedish ALF Government Grant Dnr M 2014/354, and the Research Funds of the University Hospital in southern Sweden (SUS).

References

- Amato, P.R., Keith, B., 1991a. Parental divorce and the well-being of children: A meta-analysis. *Psychological Bulletin* 110, 26-46.
- Amato, P.R., Keith, B., 1991b. Parental divorce and adult well-being: A meta-analysis. *Journal of Marriage and Family* 53, 43-58.
- Jonsson, F.H., Njardvik, U., Olafsdottir, G., Gretarsson, S.J., 2000. Parental divorce: long-term effects on mental health, family relations and adult sexual behavior. *Scandinavian Journal of Psychology* 41, 101-105.
- Barker, D.J.P., 1995. Fetal origins of coronary heart disease. *British Medical Journal* 311, 171-174.
- Barker, D.J.P., 1998. *Mothers, Babies and Health in Later Life*. Churchill Livingstone, Edinburgh.

Barrett, A.E., Turner, R.J., 2006. Family structure and substance use problems in adolescence and early adulthood: Examining explanations for the relationship. *Addiction* 101, 109-120.

Ben-Schlomo, Y., Kuh, D., 2002. A life course approach to chronic disease epidemiology: conceptual models, empirical challenges and interdisciplinary perspectives. *International Journal of Epidemiology* 31, 285-293.

Chase-Lansdale, P.L., Cherlin, A.J., Kiernan, K.E., 1995. The long-term effects of parental divorce on the mental health of young adults: a developmental perspective. *Child Development* 66(6), 1614-1634.

Coleman, J.S., 1990. *Foundations of Social Theory*. Harvard University Press, Cambridge, Mass., and London.

Danielsson, M., 2009. *Public Health Report 2009*. The National Board on Health and Welfare, Stockholm.

Dong, M., Anda, R.F., Felitti, V.J., Dube, S.R., Williamson, D.F., Thompson, T.J., Loo, C.M., Giles, W.H., 2004. The interrelatedness of multiple forms of childhood abuse, neglect, and household dysfunction. *Child Abuse and Neglect* 28, 771-784.

Gilman, S.E., Kawachi, I., Fitzmaurice, G.M., Buka, S.L., 2003. Family disruption in childhood and risk of adult depression. *American Journal of Psychiatry* 160(5), 939-946.

Goldberg, D.P., Gater, R., Sartorius, N., Ustun, T.B., Piccinelli, M., Gureje, O., Rutter, C., 1997. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychology in Medicine*, 27(1), 191-197.

Heimerson, I., Nordberg, M., 2013. *The Public Health in Sweden. Year Report 2013*. The National Board on Health and Welfare, Public Health Agency of Sweden, Stockholm.

Hetherington, E.M., 1999. The adjustment of children with divorced parents: A risk and resiliency perspective. *Journal of Child Psychology and Psychiatry* 40, 129-140.

Kuh, D., Ben-Schlomo, Y., 2004. *A Life Course Approach to Chronic Disease Epidemiology*. Oxford University Press, Oxford.

Lansford, J.E., Malone, P.S., Castellino, D.R., Dodge, K.A., Pettit, G.S., Bates, J.E., 2006. Trajectories of internalizing, externalizing, and grades for children who have not experienced their parents' divorce or separation. *Journal of Family Psychology* 20, 292-301.

Lindström, M., 2004. Social capital, the miniaturization of community and self-reported global and psychological health. *Social Science and Medicine* 59(3), 595-607.

Lindström, M., Ali, S.M., Rosvall, M., 2012. Socioeconomic status, labour market connection, and self-rated psychological health: the role of social capital and economic stress. *Scandinavian Journal of Public Health* 40(1), 51-60.

Lindström, M., Rosvall, M., 2012. Marital status, social capital, economic stress, and mental health: A population-based study. *The Social Science Journal* 49, 339-342.

Lindström, M., Fridh, M., Rosvall, M., 2014. Economic stress in childhood and adulthood, and poor psychological health: Three life course hypotheses. *Psychiatry Research* 215, 386-393.

Lindström, M., Rosvall, M., 2015. Parental separation in childhood, social capital, and suicide thoughts and suicide attempts: A population-based study. *Psychiatry Research* 229, 206-213.

Oliver, W.J., Kuhns, L.R., Pomerantz, E.S., 2006. Family structure and child abuse. *Clinical Pediatrics* 45, 111-118.

Paananen R., Ristiken, T., Merikukka, M., Gissler, M., 2013. Social determinants of mental health: a Finnish nationwide follow-up study on mental disorders. *Journal of Epidemiology and Community Health* 67(12), 1025-1031.

Putnam, R.D., 2000. *Bowling Alone. The Collapse and Revival of American Community*. Simon and Schuster, New York and London.

Richards, M., Hardy, R., Wadsworth, M., 1997. The effects of divorce and separation on mental health in a national UK birth cohort. *Psychological Medicine* 27(5), 1121-1128.

Rodgers, B., 1994. Pathways between parental divorce and adult depression. *Journal of Child Psychology and Psychiatry* 35, 1289-1308.

Rodgers, B, Power, C, Hope, S., 1997. Parental divorce and adult psychological distress: Evidence from a national birth cohort: A research note. *Journal of Child Psychology and Psychiatry* 38, 867-872.

Rutter, M, Kim-Cohen, J., Maughan, B., 2006. Continuities and discontinuities in psychopathology between childhood and adult life. *Journal of Child Psychology and Psychiatry* 47, 276-295.

Storksen, I., Roysamb, E., Gjessing, H.K., Moum, T., Tambs, K., 2007. Marriages and psychological distress among adult offspring of divorce: A Norwegian study. *Scandinavian Journal of Psychology* 48, 467-476.

Storksen, I., Roysamb, E., Holmen, T.L., Tambs, K., 2006. Adolescent adjustment and well-being: Effects of parental divorce and distress. *Scandinavian Journal of Psychology* 47, 75-84.

Sahade, V., Franca, S., Badaro, R., Fernando Adan, L., 2011. Obesity and postprandial lipemia in adolescents: risk factors for cardiovascular diseases. *Endocrinologia y Nutricion* 59(2), 131-139.

Tollebrant, J., 2013. Barn, föräldrar och separation (Children, parents and separation.). Report 2013:1. Statistics Sweden, Stockholm.

Table 1. Prevalence (%) of poor psychological health and experience of parental separation/ divorce in childhood. The public health survey in Scania 2012. N=28,029.

	Men (n = 12,828)	Women (n = 15,201)	Total (n = 28,029)
Psychological health			
Good	83.7	77.6	80.7
Poor	16.1	22.4	19.3
Parental separation/divorce			
No	79.6	77.7	78.6
Yes, aged 0-4 years	5.9	6.7	6.3
Yes, aged 5-9 years	5.6	5.9	5.8
Yes, aged 10-14 years	5.0	5.9	5.5
Yes, aged 15-18 years	3.9	3.8	3.8

Table 2. Prevalence (%) and odds ratios (OR, 95% CI) in bivariate analyses of poor psychological health according to parental separation/ divorce in childhood/ adolescence, age, country of birth, socioeconomic status, civil status, emotional support, instrumental support, generalized trust in other people and economic stress in childhood. The public health survey in Scania 2012. N=28,029.

	Men (n=12,828)		Women (n=15,201)	
	%	OR(95%CI)	%	OR(95%CI)
Parental separation/divorce				
No	14.9	1.00	20.4	1.00
Yes, aged 0-4 years	25.5	1.96 (1.64-2.34)	33.0	1.92 (1.65-2.24)
Yes, aged 5-9 years	16.0	1.09 (0.88-1.35)	23.9	1.23 (1.03-1.47)
Yes, aged 10-14 years	18.1	1.26 (1.01-1.56)	29.0	1.59 (1.34-1.88)
Yes, aged 15-18 years	19.1	1.35 (1.06-1.71)	29.8	1.66 (1.35-2.03)
Age				
18-24	22.5	1.00	31.6	1.00
25-34	23.1	1.04 (0.89-1.21)	27.5	0.82 (0.72-0.94)
35-44	17.2	0.72 (0.61-0.84)	24.3	0.69 (0.61-0.79)
45-54	16.1	0.66 (0.56-0.78)	22.7	0.63 (0.55-0.73)
55-64	14.0	0.56 (0.47-0.67)	18.0	0.47 (0.41-0.55)
65-80	8.3	0.31 (0.26-0.38)	11.3	0.28 (0.24-0.32)
Born in Sweden/born in other country than Sweden				
Sweden	15.3	1.00	21.9	1.00
Other country	20.2	1.40 (1.26-1.56)	23.9	1.12 (1.02-1.24)
Socioeconomic status				
High non-manual	14.4	1.00	21.3	1.00
Medium non-manual	15.7	1.10 (0.90-1.36)	21.5	1.01 (0.65-1.21)
Low non-manual	14.8	1.03 (0.81-1.32)	19.1	0.87 (0.72-1.06)
Skilled bluecollar	12.5	0.85 (0.70-1.04)	20.9	0.98 (0.82-1.16)
Unskilled bluecollar	14.8	1.03 (0.85-1.25)	24.7	1.21 (1.02-1.44)
Employer/farmer	14.7	1.02 (0.83-1.26)	20.4	0.94 (0.75-1.20)
Sick leave/ long-term	45.6	4.98 (3.83-6.49)	45.1	3.03 (2.44-3.76)
Unemployed	36.3	3.38 (2.76-4.15)	35.7	2.05 (1.66-2.54)
Student	27.0	2.20 (1.78-2.72)	32.5	1.78 (1.48-2.14)
Pensioner	8.9	0.58 (0.48-0.71)	11.5	0.48 (0.40-0.58)
SES not available	47.8	5.38 (2.37-12.18)	27.5	1.38 (0.89-2.15)

Civil status				
Married/ registered partnership/ co-habitant	13.3	1.00	19.3	1.00
Unmarried	22.0	1.85 (1.67-2.04)	30.7	1.86 (1.69-2.04)
Divorced	24.6	2.14 (1.82-2.53)	26.4	1.50 (1.31-1.72)
Widower/ widow	15.5	1.20 (0.85-1.70)	14.9	0.73 (0.59-0.91)
Emotional support				
High	11.0	1.00	17.3	1.00
Low	23.9	2.54 (2.30-2.81)	33.2	2.38 (2.18-2.60)
Instrumental support				
High	12.6	1.00	19.0	1.00
Low	24.4	2.22 (2.01-2.46)	33.0	2.10 (1.91-2.31)
Trust				
High	12.7	1.00	17.6	1.00
Low	22.3	1.96 (1.79-2.16)	30.6	2.07 (1.90-2.25)
Economic stress in childhood				
No significant problem	13.7	1.00	19.4	1.00
Less severe and/or shorter period	20.2	1.59 (1.43-1.77)	26.5	1.50 (1.36-1.64)
Severe and/or longer period)	26.8	2.30 (1.98-2.66)	35.3	2.27 (1.98-2.59)

Table 3. Age-adjusted and multiple adjusted odds ratios (OR, 95% CI) of poor psychological health according to parental separation/ divorce. The public health survey in Scania 2012. N=28,029.

Men			
	OR (95% CI)^a	OR (95% CI)^b	OR (95% CI)^c
No	1.00	1.00	1.00
Yes, aged 0-4 years	1.70 (1.42-2.03)	1.52 (1.25-1.84)	1.33 (1.08-1.62)
Yes, aged 5-9 years	0.88 (0.71-1.10)	0.86 (0.69-1.08)	0.78 (0.62-0.98)
Yes, aged 10-14 years	1.08 (0.87-1.35)	1.09 (0.86-1.37)	1.01 (0.80-1.27)
Yes, aged 15-18 years	1.18 (0.93-1.50)	1.14 (0.88-1.48)	1.06 (0.82-1.38)
Women			
	OR (95% CI)^a	OR (95% CI)^b	OR (95% CI)^c
No	1.00	1.00	1.00
Yes, aged 0-4 years	1.61 (1.38-1.68)	1.46 (1.24-1.73)	1.31 (1.11-1.55)
Yes, aged 5-9 years	1.00 (0.83-1.20)	0.95 (0.78-1.15)	0.86 (0.71-1.05)
Yes, aged 10-14 years	1.41 (1.19-1.67)	1.46 (1.22-1.75)	1.39 (1.16-1.67)
Yes, aged 15-18 years	1.47 (1.19-1.80)	1.57 (1.26-1.96)	1.52 (1.22-1.89)

a Adjusted for age.

b Adjusted for age, country of birth, socioeconomic status (SES), civil status, emotional support, instrumental support and trust.

c Adjusted for age, country of birth, socioeconomic status (SES), civil status, emotional support, instrumental support, trust and economic stress in childhood.

Highlights

- More studies regarding associations between parental separation in childhood and psychological health in adulthood are needed, particularly regarding timing.
- This study included a large stratified population sample of men and women aged 18-80 years in southern Sweden, a country with high divorce rates.
- Parental separation/divorce was significantly associated with poor self-reported psychological health among men who had experienced parental separation at ages 0-4 years.
- Parental separation/divorce was significantly associated with poor self-reported psychological health among women with this experience at ages 0-4, 10-14 and 15-18 years.

Accepted manuscript