University of Groningen

Stressful life events and adolescents' mental health

Bakker, Martin Paul

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2010

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):
Bakker, M. P. (2010). *Stressful life events and adolescents' mental health: The TRAILS study*. s.n.

Chapter 5

Childhood family instability and mental health problems
during late adolescence: A test of two mediation models

Abstract

This study tested whether childhood family instability is associated with mental health problems during adolescence through continued family instability or rather through an early onset of mental health problems, using data from a prospective population cohort of 2230 Dutch adolescents. Childhood family instability was associated with both internalizing problems and externalizing problems during late adolescence. The association between childhood family instability and adolescent mental health problems largely disappeared when controlling for pre-adolescent onset of mental health problems but only slightly when controlling for continued family instability during adolescence. These patterns were comparable for both types of mental health problems, but relatively stronger for internalizing problems. Growing up in an unpredictable family environment has longlasting negative mental health effects, most of which are due to a pre-adolescent onset of mental health problems.

Introduction

       Numerous studies have indicated that childhood abuse and neglect are inextricably linked to emotional and behavioral problems during adolescence and adulthood (e.g. Brown & Harris, 2008; Keiley, Howe, Dodge, Bates, & Pettit, 2001; Van der Vegt, Van der Ende, Ferdinand, Verhulst, & Tiemeier, 2009; Weich, Patterson, Shaw, & Steward-Brown, 2009). Abuse and neglect are severe and relatively rare types of childhood family adversity. In Western societies, children are more likely to be exposed to milder disruptive family events, such as parental divorce, household conflicts and parental psychopathology (Rosenman & Rodgers, 2004). Because these types of disruptive family events are more common, their population attributable risk for longterm mental health problems may be greater than that of abuse and neglect (Rosenman & Rodgers, 2004; Weich et al., 2009). However, prospective cohort studies are needed to assess whether common disruptive family events are actually related to longterm mental health problems (e.g. Weich et al., 2009).

       Previous research suggests that (common) childhood family adversities tend to co-occur (Rosenman & Rodgers, 2004). Childhood family instability is defined as an accumulation of common disruptive family events that undermine the predictability and stability of family life from the childs' perspective (Ackerman, Kogos, Youngstrom, Schoff, & Izard, 1999; Forman & Davies, 2003). Family instability includes disruptive events that "happen" to the child, like parental divorce, residential moves, parental illness and changes in family composition (e.g. Forman & Davies, 2003). Childhood family instability is known to be cross-sectionally associated with internalizing problems and externalizing problems (e.g. Ackerman et al., 1999; Cavanagh & Huston, 2008; Forman & Davies, 2003; Milan & Pinderhughes, 2006). Thus, changes and disruptions in the family environment, particularly when they accumulate, are linked to adverse mental health outcomes in children. It is unclear whether childhood family instability predicts mental health during adolescence, but it is likely associated with adolescent mental health through a chain of effects (Rutter & Maughan, 1997; Turner & Butler, 2003).

       The "chain of effects" from childhood family instability to adolescent mental health might include persistent adversity or rather persistent mental health problems. Childhood family instability could be associated with mental health problems during adolescence through a continued or recurrent exposure to family instability (Marcynszyn, Evans, & Eckenrode, 2008). This explanation is consistent with previous research, which suggests that recent stress is likely to mediate the risk of childhood adversities on later mental health (e.g. Hazel, Hammen, Brennan, & Najman, 2008; Korkeila et al., 2005; Turner & Butler, 2003). If this notion is correct, the association between childhood family instability and later mental health problems should become weaker when controlling for family instability during adolescence.

       Another, not necessarily competing, explanation of the association between childhood family instability and poor adolescent mental health is that childhood adversities are likely to promote an early onset of mental health problems during pre-adolescence (e.g. Ackerman et al., 1999; Cavanagh & Huston, 2008; Milan & Pinderhughes, 2006), which last at least until adolescence (e.g. Kessler & Magee, 1994; Turner & Butler, 2003). Based on this notion, we

would expect that the association between childhood family instability and later mental health problems will become weaker when we control for pre-adolescent mental health problems.

This study builds upon previous cross-sectional results regarding the negative effects of childhood family instability on mental health and puts them in a longitudinal perspective. Using a prospective large population cohort study of adolescents, we tested the hypothesis that childhood family instability is associated with internalizing problems and externalizing problems during late adolescence (Hypothesis 1).Thereby, providing clinically relevant information about the longterm mental health effects of relatively common disruptive family events. Childhood was broadly defined as the developmental period from infancy to early adolescence (to age 12 years), while late adolescence was defined as the period between age 16 and 18 years (e.g. Denham, Wyatt, Bassett, Echeverria, & Knox, 2009). In addition, we tested whether the effect of childhood family instability on later mental health is mediated by family instability during adolescence (Hypothesis 2), and by pre-adolescent onset of mental health problems (Hypothesis 3).

Methods

Sample

Subjects were participants of the 'TRacking Adolescents' Individual Lives Survey' (TRAILS), a prospective cohort study of Dutch adolescents, aimed at explaining the development of mental health from pre-adolescence into adulthood. A detailed description of the sampling procedure and methods is provided in Huisman et al. (2008). So far, three data collection waves have been completed: T1 (2001-2002), T2 (2003-2004) and T3 (2005-2007). Participants will be followed until (at least) the age of 24.

Of all the children approached (N = 3145), 6.7% (n = 211) were excluded because of mental or physical incapability or language problems. Of the remaining 2934 children, 76.0% (N = 2230, mean age = 11.09, SD = 0.56, range = 10.0 - 12.0, 50.8% girls) were enrolled in the study (i.e. both child and parent agreed to participate). Of the 2230 baseline participants, 96.4% (N = 2149) participated in the first follow-up (mean age = 13.56, SD = 0.53, range = 12.0 - 15.0, 51.0% girls), held two to three years after baseline (T1) (mean number of months = 29.44, SD = 5.37, range = 16.69 - 48.06). The second follow up (T3) was completed with 81.4 % of the original number of participants (N = 1816), mean age = 16.27 years; SD = 0.73 and 52.3% girls. Written informed consent was obtained from the parents and from the adolescents themselves at all three assessment waves. The present study is based on data from both the baseline (T1) and second follow-up (T3) assessment wave.

Measures

  Internalizing and externalizing problems - Two broad domains of mental health problems were included in this study: internalizing and externalizing problems. Internalizing problems include the narrow-band domains Anxious/Depressed, Withdrawn/Depressed and Somatic Complaints, while externalizing problems encompass Aggressive Behavior and Rule-Breaking Behavior. These problems were assessed at baseline (T1) and the second follow-up (T3) with the parent-rated Child Behavior Checklist (CBCL)(Achenbach, 1991a), the Youth Self Report (YSR) (Achenbach, 1991b), and the Teacher Checklist of Psychopathology (TCP).

  The TCP was developed by TRAILS to reduce the respondent burden for teachers, as each had multiple participants to report on. The TCP is composed of descriptions of problem behaviors similar to Achenbachs' Teacher Report Form (Achenbach, 1991c), which is the teacher-report version of the CBCL and YSR. The TCP yields the same syndrome and domain scales as the TRF, CBCL and YSR, but based on (sets of) single vignettes rather than sets of items. For example, the vignette for Withdrawn/Depressed is: "The adolescent wants to be alone rather than to have company. He/she is withdrawn and has little contact with others. The adolescent doesn't show initiative or shows a lack of energy"; and the vignette for Aggressive behavior is: "The adolescent is conflictuous and challenges others. He/she bullies others and physically attacks them. The adolescent has an explosive and unpredictable nature. He/she gets easily frustrated by others and frequently uses abusive language". Response options for each description of the TCP ranged from 0 (not applicable) to 4 (very clearly or frequently applicable). The TCP vignettes correlated around 0.60 with the full TRF syndrome scales filled out by a small sample of teachers (Ferdinand, 2003, internal report available on request).

  The validity of the scales for internalizing problems and externalizing problems have been documented (Achenbach, 1991a, 1991b, 1991c) and reiterated in a Dutch sample (Verhulst, Van der Ende, & Koot, 1996, 1997). In our sample, the reliability statistics for the baseline sample (T1) were as follows: CBCL-internalizing (32 items, $\alpha = 0.85$), CBCL-externalizing (35 items, $\alpha = 0.90$); YSR-internalizing (31 items, $\alpha = 0.87$), YSR-externalizing (32 items, $\alpha = 0.85$); TCP-Internalizing (3 vignettes, $\alpha = 0.71$), TCP-externalizing (2 vignettes, $\alpha = 0.78$). For the second follow-up sample (T3) the reliability statistics were: CBCL-internalizing (32 items, $\alpha = 0.88$), CBCL-externalizing (35 items, $\alpha = 0.90$); YSR-internalizing (31 items, $\alpha = 0.89$), YSR-externalizing (32 items, $\alpha = 0.88$); TCP-Internalizing (3 vignettes, $\alpha = 0.66$), TCP-externalizing (2 vignettes, $\alpha = 0.75$).

  The agreement between parent-reported, adolescent-reported, and teacher-reported internalizing and externalizing problems was moderate ($r = 0.23 - 0.38$ for internalizing problems and $0.35 - 0.42$ for externalizing problems). Each informant perceives different aspects of problem behavior and differences between informants are meaningful. An additional advantage for using multiple informants is that it reduces the bias associated with monoinformant information. Mental health problems that are rated as present by multiple informants are assumed to be more severe (generalized) than problems rated by only one informant (e.g. Noordhof, Oldehinkel, Verhulst, & Ormel, 2008; Verhulst, Koot, & Van der Ende, 1994). Based on these considerations, we used the mean of the standardized parent,

adolescent, and teacher scores as a measure of internalizing and externalizing problems. When data of one informant was missing or unreliable (for internalizing: CBCL: T1 n = 157, T3 n = 257,, YSR: T1 n = 41, T3 n = 9, TCP: T1 n = 281, T3 n = 772; for externalizing: CBCL: T1 n = 148, T3 n = 257, YSR: T1 n = 32, T3 n = 1, TCP: T1 n = 279, T3 n = 757), the composite score was based on the other informants. The composite scores of T1 and T3 internalizing problems and externalizing problems were subsequently standardized to mean zero and standard deviation one (z-scores). The T1 measure reflects mental health problems during pre-adolescence, while the T3 measure reflects mental health problems during late adolescence.

Family instability – Childhood family instability was assessed at baseline by the TRAILS parent interview. Well-trained interviewers visited one of the parents or guardians (preferably the mother, 95.6%) in their homes to administer an interview covering a wide range of topics, among which perinatal problems, early problem behavior in children, family psychopathology and addiction, and stressful life events during childhood. The parent interview covered the period from birth to the start of the baseline measurement wave (approximately 11 years).

Based on the revised family instability index (Forman & Davies, 2003), we selected the following disruptive family events: changes in residence, parental divorce, romantic relationships of biological parents after divorce, changes in family composition, death of family member, serious somatic illness of family member. In addition, we selected mental health problems of family members and parental addiction (alcohol or drugs), because these events can have a considerable disruptive effect on family life as well. The term 'family' pertained to biological parents, brothers and sisters, step parents, stepbrothers and sisters, half brothers and sisters, foster brothers and sisters. All events were summed up to form a composite score of childhood family instability. Eighty-one percent of the baseline sample experienced at least one disruptive event (range = 0 - 7).

Family instability during adolescence was assessed at the second follow up (T3), by the Event History Calender (EHC) (Caspi et al., 1996). Test-retest reliability as well as validity of the EHC have been reported to be moderate to good (e.g. Belli, Shay, & Stafford, 2001; Caspi et al., 1996; Freedman, Thorton, Camburn, Alwin, & Young-De Marco, 1988). Of the 1816 T3 participants, 83 % (n = 1513, 55 % girls) participated in the EHC. Responders and non-responders of the EHC did not differ regarding the prevalence of T3 total mental health problems, emotional problems and behavioral problem behaviors and baseline socio-economic position. Responders included more girls (responders: 55%; non-responders: 42%; χ^2 = 31.58, df = 1, p <.01).

From the EHC, we selected the same disruptive family events as included in the childhood family instability measure, complemented by longterm conflict between family members, which is also likely to have a disruptive effect on family life from the adolescents' perspective. The events were selected if adolescents had experienced them in the period between T1 and T3 (age range approximately between 11 and 16 years). The number of disruptive family events experienced in this period was used as a measure of family instability during adolescence. Fifty-eight percent experienced at least one disruptive event (range = 0 - 8).

Statistical analyses

Missing data on any of the variables were handled by multiple imputation, using the ICE (Imputation by Chained Equations) approach available in the statistical package Stata (StataCorp, 2007). Given other variables in the dataset, we created five datasets with imputed missing values, which were joined in subsequent analyses (Royston, 2005). After multiple imputation, we were able to use data from all 2230 baseline participants for the multivariate regression analyses, which prevents bias due to selective attrition.

We first tested whether childhood family instability was associated with internalizing problems and externalizing problems during late adolescence (hypothesis 1). We used the mediation procedure advocated by Baron and Kenny (1986) to test our hypothesis 2 and 3. To ensure that all variables in the mediation models were comparable we standardized them to mean zero and standard deviation one (z-scores). We performed four multiple regression mediation models in which family instability during adolescence and childhood mental health problems were entered separately.

The mediation steps for T3 internalizing problems were as follows (hypothesis 3 is presented within brackets): (1) we tested the relation between childhood family instability on T3 internalizing problems, (2) we tested childhood family instability on family instability during adolescence (early onset of internalizing problems (T1)), and (3) we tested childhood family instability problems on T3 internalizing problems, adjusted for family instability during adolescence (early onset of internalizing problems). The magnitude of mediation was assessed by the relative decrease in the unstandardized regression coefficient for childhood family instability when including family instability during adolescence (early onset of internalizing problems) into the model. This procedure was repeated for T3 externalizing problems, with the exception that mediation by early onset of mental health problems was focused on T1 externalizing problems.

Because we aimed to determine whether there is an association of childhood family instability with both internalizing problems and externalizing problems we adjusted all analyses for co-morbidity (Kessler, Davis, & Kendler, 1997). Because the prevalence of internalizing problems and externalizing problems tends to differ for boys and girls (e.g. Leadbeater, Blatt, & Quilan, 1995), the analyses were also adjusted for gender (0 = girls, 1 = boys).

The significance of the mediation models was tested by means of a bootstrapping procedure developed by Preacher and Hayes (Preacher & Hayes, 2008). The 95% confidence intervals based on the bias-corrected bootstrapping method are reported because confidence intervals have been shown to be the most accurate method of assessing mediated effects (MacKinnon, Lockwood, & Williams, 2004).

Results

Descriptive statistics

The descriptives are presented in Table 1.

Childhood family instability and mental health during late adolescence

Childhood family instability was associated with both internalizing problems and externalizing problems during late adolescence. Adjusted for family instability during adolescence, the effect of childhood family instability dropped with 23 % for externalizing problems, and with 13% for internalizing problems, suggesting limited mediation (Figures 1 and 2). Bootstrapping indicated that mediation via family instability during adolescence was not statistically significant for internalizing problems (95% CI: .00 - .01), while it was statistically significant for externalizing problems (95% CI: .02 - .03).

Adjusted for pre-adolescent onset of mental health problems, the effect of childhood family instability dropped with 45% for externalizing problems and with 63% for internalizing problems, suggesting substantial mediation via early onset of mental health problems (Figures 1 and 2). Bootstrapping indicated that the mediation effect for both internalizing problems (95% CI: .04 - .07*)* and externalizing problems (95% CI: .03 - .07) was statistically significant.

Table 1. Correlations and sample characteristics for family instability and mental health problems during late adolescence.

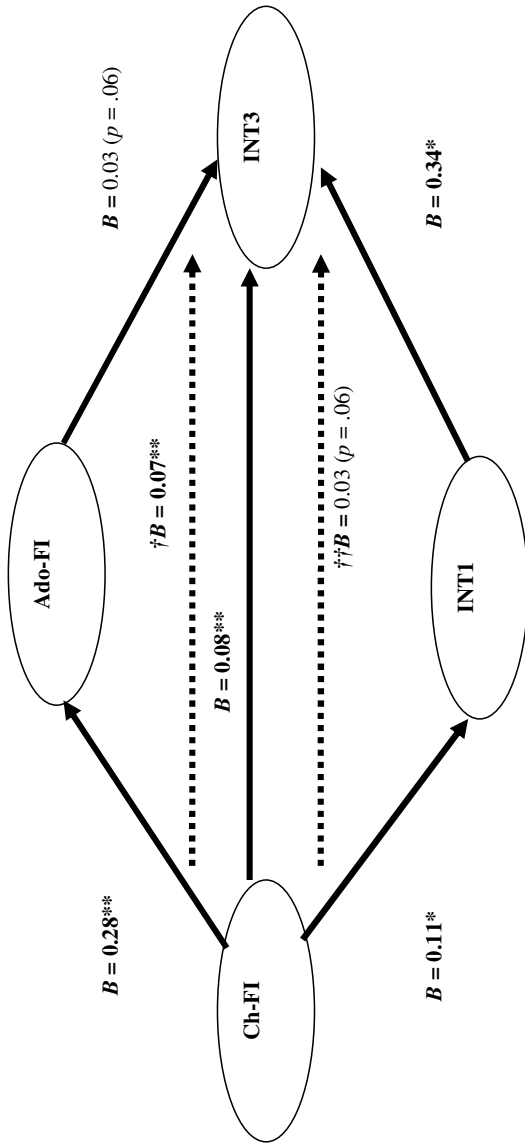|	1.	2.	3.	4.	5.	6.	M (SD) / (%)
1. Internalizing problems T3[a]							-0.01 (0.83)
2. Externalizing problems T3[a]	**0.33****						0.05 (0.84)
3. Childhood Family instability[bd]	**0.15****	**0.17****					1.46 (1.14) / (82%)
4. Adolescent Family instability[cd]	**0.16****	**0.18****	**0.23***				1.04 (1.24) / (57%)
5. Internalizing problems T1[a]	**0.41****	**0.16****	**0.19****	**0.09****			-0.00 (0.72)
6. Externalizing problems T1[a]	**0.08****	**0.47****	**0.16****	**0.09****	**0.41****		0.01 (0.77)
7. Gender (0 = girls; 1 = boys)	**-0.26****	**0.09****	-0.01	**-0.12***	**-0.06****	**0.25****	(49%)

[a] Score is based on the mean standardized parent, adolescent and teacher reports: T1 = childhood mental health problems; T3 = mental health problems during late adolescence.

[b] Sumscore (total range between 0 and 7 disruptive family events) and based on parent-report.

[c] Sumscore (total range between 0 and 8 disruptive family events) and based on self-report.

[d] The frequencies reflect the exposure to at least 1 disruptive family event.

Bold: statistically significant correlation; * $p<.01$, ** $p<.001$

Figure 1. Two multiple regression mediation models for T3 internalizing problems. Family instability during adolescence (**Ado-FI**) and early onset of internalizing problems (**INT1**) were entered separately into the models. The unstandardized regression coefficient *B* above the solid line represents the direct effect of childhood family instability on internalizing problems during late adolescence. *† Represents B* after family instability during adolescence was included into the model. *†† Represents B* after early onset of internalizing problems was included into the model. The mediation models were adjusted for gender and comorbid externalizing problems.**Ch-FI** = childhood family instability, **INT3** = internalizing problems during late adolescence (T3). **Bold**: statistically significant effect.
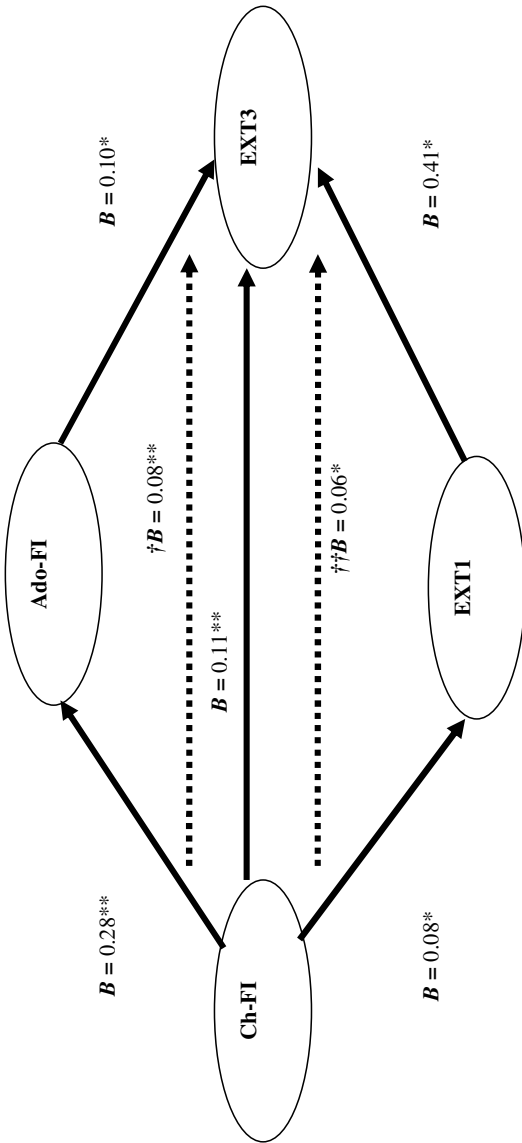
*p < .01, ** p < .001

Figure 2. Two multiple regression mediation models for T3 externalizing problems. Family instability during adolescence (**Ado-FI**) and early onset of externalizing problems (**EXT1**) were entered separately into the models. The unstandardized regression coefficient *B* above the solid line represents the direct effect of childhood family instability on externalizing problems during late adolesence. *† Represents *B* after family instability during adolescence was included into the model. *†† Represents *B* after early onset of externalizing problems was included into the model. The mediation models were adjusted for gender and comorbid internalizing problems. **Ch-FI** = childhood family instability, **EXT3** = externalizing problems during late adolescence (T3).

73

Discussion

Main findings

It is well-known that childhood abuse and neglect predispose children to longterm mental health problems. However, more common childhood family adversities may also leave a deep imprint on children (e.g. Rosenman & Rodgers, 2004; Weich et al., 2009). Consistent with this view, our results showed that childhood family instability was associated with both internalizing problems and externalizing problems during late adolescence. We hypothesized that this effect of childhood family instability on later mental health persists because of continued family instability during adolescence and because of an early onset of mental health problems during pre-adolescence, and we tested these assumed 'chains of effects' for both internalizing problems and externalizing problems.

Pre-adolescent onset of internalizing problems mediated the association between childhood family instability and internalizing problems during late adolescence to a considerable extent; the effect of childhood family instability was not statistically significant anymore when T1 internalizing problems were included into the model. The mediation pathway via continued family instability during adolescence was not statistically significant for internalizing problems. Furthermore, the effect of family instability during adolescence was not significant when controlling for childhood family instability. Thus, when children have been exposed to childhood family instability, continued family instability during adolescence does not add much to further disrupt their emotional state. Our results therefore suggest that childhood family instability predisposes children to internalizing problems during late adolescence through an early onset of internalizing problems rather than through continued family instability during adolescence.

Comparable to internalizing problems, the effect of childhood family instability on externalizing problems during adolescence was largely explained by pre-adolescent onset of externalizing problems, but continued family instability during adolescence also had a moderate effect. The modest contribution of continued family instability during adolescence might emerge because family instability reduces effective parenting (Forman & Davies, 2003). Specifically, children in unstable families are often subjected to less parental warmth, and are less monitored and supervised by their parent(s) (e.g. Davies, Winter, & Cicchetti, 2006; Forman & Davies, 2003; Milan & Pinderhughes, 2006), which makes them susceptible to a wide range of behavioral problems (Bennet, Farrington, & Huesmann, 2005; Campbell, Shaw, & Gilliom, 2000; Cavanagh & Huston, 2008; Loeber & Hay, 1997; Moffitt, 1993; Odgers et al., 2008). During adolescence, parental monitoring activities such as sollicitation (information gathering) and control (having clear expectations and rules) help deter and reduce adolescent antisocial behaviors (e.g. Kiesner, Dishion, Poulin, & Pastore, 2009; Laird, Marrero, & Sentse, 2009). However, children who are exposed to continued family instability are most likely subjected to less parental monitoring activities during adolescence, which makes them susceptible to externalizing problems throughout adolescence.

In general, our findings provide additional support for the notion that early onset of mental health problems is a major risk factor for later mental health problems (Kessler & Magee, 1994). Our results therefore suggest that early onset of mental health problems better explains the longlasting mental health risks of childhood family instability than continued family instability during adolescence.

Limitations and strengths

A limitation of this study is the retrospective nature of the assessments of family instability, which may have been subject to memory bias. The events that were included in the family instability measures were obtained from a parent interview (childhood family instability) and an interview with the adolescents (family instability during adolescence). Parents may have forgotten or intentionally not have reported certain disruptive events. The adolescents reported the events graphically on a calendar using a month-to-month horizontal timeline. This visual aid likely helped them to reconstruct past experiences more accurately. Nonetheless, we cannot exclude the possibility of (memory) bias for both assessments of family instability but it would most likely have led to an underestimation of the results.

Another limitation is that our assessment of family instability is not exhaustive. It is possible that there are other stressful family events that disrupt the continuity, cohesiveness, and stability of family life from the perspective of the adolescent but that were not measured in our sample. However, we were able to categorize most stressful family-related events into a family instability measure on the basis of the revised family instability index (Forman & Davies, 2003), which makes our results comparable to previous research.

Not all family risk factors in our sample were included in the family instability measure. Family instability reflects the accumulation of multiple "fateful" disruptive family events, that is, family events that are not dependent on the behavior of the child or adolescent (e.g. Forman & Davies, 2003). Based on this conceptualization, we omitted parenting difficulties because parenting is bi-directional and reciprocal by design; the child or adolescent is an active participant in the parenting process, they elicit parenting behavior and respond in ways that shape parenting (e.g. Gallangher, 2002; Kerr & Stattin, 2003; Lengua et al., 2000). However, we acknowledge that parenting difficulties could be present in the causal chain between family instability and mental health problems (e.g. Forman & Davies, 2003).

It is also not evident that all of the events that were included in the measure of family instability are necessarily undesirable (e.g. residential moves, changes in family composition), nor necessarily unpredictable or stressful. Nonetheless, family instability is a cumulative risk index, which means that the level of instability is the result of the accumulation of multiple disruptive family events. Put in other words, the assumption is that the more disruptive family events, the higher the level of family instability.

Important assets of this longitudinal study are the size and representativeness of our sample, the use of multiple outcome measures, the use of multiple informants for both the predictors and the outcome measures, and the use of interview data to assess family instability during both childhood and adolescence.

Conclusion and implications

This prospective study contributes to the literature by showing that growing up in an unpredictable family environment has longlasting negative mental health effects. Because childhood family instability is more common in Western societies than severe abuse and neglect, this type of adversity is likely to contribute substantially to the prevalence of persistent mental health problems. As we showed, most of these longterm mental health risks are not due to the continuation of family instability into adolescence, but rather to a pre-adolescent onset of mental health problems