

Maternal Psychological Distress and Offspring Psychological Adjustment in Emerging Adulthood: Findings from Over 18 Years

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ABSTRACT: *Objective:* To examine the long-term prediction of psychological maladaptive (i.e., symptoms of anxiety and depression) and adaptive adjustment (i.e., self-efficacy) in emerging adult offspring from trajectories of maternal psychological distress from toddlerhood to adolescence. *Method:* Trajectories of maternal psychological distress (low, moderate, high, and low-rising patterns) from toddlerhood (age 1.5 years) to adolescence (age 14.5 years) were used to predict psychological adjustment in emerging adult offspring (age 18–20 years) (n = 400). *Results:* Adverse maternal distress trajectories during childhood were linked to maladaptive and adaptive adjustment in adult offspring. Consistently high maternal distress levels experienced across childhood predicted higher symptoms of anxiety and depression and lower self-efficacy than low maternal distress trajectories. Two other adverse maternal distress trajectories (consistently moderate and low-rising patterns) compared with the low trajectory predicted higher offspring depressive symptoms. The findings persisted when adjusting for potential confounders: offspring gender and maternal education, relationship status, language, and economy. *Conclusion:* The current study showed longitudinal multi-informant impact from adverse maternal distress trajectories to adult offspring maladjustment over 18 years, emphasizing the importance of early identification and prevention.

(*J Dev Behav Pediatr* 37:746–752, 2016) **Index terms:** mothers, mental health, intergenerational, emerging adulthood, self-efficacy, depression, anxiety.

Parental psychological distress has the potential to affect the offspring adversely across the child-rearing phase (i.e., infancy to adolescence) and into emerging adulthood.^{1–4} Thus, it is valuable to examine trajectories (i.e., developmental patterns) of parental distress across the child-rearing phase, which includes several transitional periods affecting both the parent and the child in different ways. A person-centered approach, in which differences in distress trajectories are highlighted, is especially appropriate when developmental trajectories are assumed to systematically differ across individuals.⁵ Moreover, identifying which maternal distress trajectories are particularly risky for offspring adjustment, such as mental health and self-efficacy, could make it possible

to prevent or reduce the continuity and intergenerational transmission of mental health problems.

The intergenerational transmission of psychological distress is suggested to work through biological and environmental influences, or a combination of these.^{1–3,6,7} Some periods might be particularly sensitive for experiencing parental psychological distress. Early childhood maternal depression is linked to increased child problem behavior,^{2,8–10} with suggested causes being nonoptimal mother-child interactions.^{3,4} Middle childhood is suggested as another sensitive period because of stage-salient expectations of academic, social, and cognitive abilities.^{11,12} By using person-oriented methods, we can investigate how different trajectories of maternal psychological distress across the entire child-rearing period impact long-term adjustment.

Of the few earlier studies that have examined the link between maternal psychological distress trajectories and psychological adjustment in older offspring, the findings vary both in types of identified trajectories and in the outcomes. Adverse maternal distress trajectories have predicted psychiatric disorder and depressive symptoms at ages 9 to 17 years,¹³ internalizing and externalizing problems at age 15 years,¹⁴ and suicidal ideation at age 16 years¹⁵ in some studies. Other studies have reported no associations between adverse maternal distress trajectories and offspring internalizing problems at ages 11 to 13 years¹⁶ and 16 years.¹⁷ The only study examining late adolescence reported that adverse maternal

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depressive trajectories from 10 to 15 years predicted anger regulation, self-concept, and depressive symptoms at ages 16 to 19 years.¹⁸ Still, none of these studies capture maternal distress patterns across the entire child-rearing period, and few studies examine both adaptive characteristics, such as self-efficacy, in addition to maladaptive adjustment. Self-efficacy is a person's belief about their capability to achieve what they desire and is related to well-being, mental health and somatic health.¹⁹⁻²¹ An increased understanding of adaptive and modifiable factors such as self-efficacy is important for health promotion and intervention efforts.

The focus on emerging adulthood adjustment is important due to several factors. First, this stage is characterized by several milestones including getting an education and establishing a career, long-lasting relationships, and a family.²² Having good psychological adjustment at this time is important for reaching such milestones. Second, internalizing problems and depression increases steadily after early adolescence up to late adolescence, making emerging adulthood a suitable time to examine psychological adjustment without interference of the turmoil of adolescence. In addition, with increasing age, social support and self-efficacy is increasingly drawn from nonfamilial context such as educational institutions, work places, and other social arenas. The potential adverse effect of maternal psychological distress experienced in childhood could therefore have been "washed off" by emerging adulthood. The current study uses previously identified latent profiles of maternal distress (e.g., symptoms of anxiety and depression) across 6 waves from toddlerhood to early adolescence (age 1.5–14.5 years)²³ to predict self-reported psychological adjustment (e.g., symptoms of anxiety and depression, and self-efficacy) in male and female offspring in emerging adulthood (age 18–20 years).

METHODS

Sample and Procedure

The current study used data from the Tracking Opportunities and Problems (TOPP)-study, a community-based prospective longitudinal study.²⁴ The data collection is approved by The Data Inspectorate and the Regional Committee for Medical Research Ethics and is subject to the ethical guidelines and rules of confidentiality. All families from 19 geographic health care areas in Norway were invited to complete a survey questionnaire when attending the 18-month vaccination visit for the offspring in 1993 (t1: age 1.5 years). Routinely, more than 95% of all Norwegian families with children attend a public health program during the first 4 years of the child's life. Of 1081 eligible families visiting the 19 child health clinics, 913 mothers participated at baseline (t1). Families participating at t1 received a similar questionnaire when the children were of ages 2.5 (t2), 4.5 (t3), 8.5 (t4), 12.5 (t5), 14.5 (t6), 16.5 (t7), and 18 to 20 (t8) years. Mothers completed questionnaires at all waves, and the offspring completed questionnaires

from wave t5 onward. We distributed questionnaires at the health clinics at t1 to t3 and by post from t4.

Table 1 shows descriptive data of the participating families. At baseline, the majority of the mothers was in a relationship, had more than 9 years of education, and reported Norwegian as their mother tongue. Background data from the child health clinics showed that non-respondent mothers at t1 did not differ significantly from responding mothers with regard to maternal age, education, employment status, or marital status.²⁴ The sample for the current study included mothers responding from t1 to t6 (t1: *n* = 913; t2: *n* = 777; t3: *n* = 727; t4: *n* = 505; and t5: *n* = 587; t6: *n* = 472). Offspring responses at age 18–20 (t8) (*n* = 400; 58% women) were used in the current study.

Attrition

Attrition analyses of several factors (e.g., mother's temperament and psychological distress, offspring's temperament, and mothers' emotional support from partner and friends) indicated that only low maternal educational level predicted maternal drop-out from t1 to t5⁹ and t1 to t7.²⁵ Similarly, low maternal education level and male gender predicted offspring dropout from t1 to t7¹⁰ and t8.²⁶ Associations between baseline variables did not differ among dropout versus remaining families, suggesting estimated associations between variables are generalizable (blinded reference).

Measures

Trajectories of Maternal Psychological Distress

We assessed psychological distress in mothers with the Hopkins Symptom Checklist (SCL)^{27,28}; at all waves (t1–t8). Originally consisting of 25 items, the SCL measures symptoms of anxiety and depression on a 4-point scale (from 1 "Not at all" to 4 "Very much"). One item: "Thoughts of killing yourself", was removed at t1 to t2, and another item: "Loss of sexual interest or pleasure" was removed at all waves, as they were rated as offensive in our pilot study.²⁴ The SCL is a validated instrument with high psychometric qualities.²⁷⁻²⁹ Cronbach alpha in the current sample varied from 0.87 to 0.91 (t1–t6).

Former research using the same data identified 6 latent trajectories based on mean scores of the SCL from 1993 (t1) to 2008 (t6) using latent profile analysis (LPA), which is a person-centered approach, grouping the sample into a set of latent subpopulations with similar developmental trajectories.^{23,30} Posterior class membership probabilities were estimated after model estimation for the assignment of individuals to pseudoclasses according to the maximum probability rule.^{23,30} The 913 women were grouped into 4 trajectory groups: (1) "Low" group with no, low or moderate-to-low levels of distress (54%); (2) a "Moderate" group with consistent moderate symptom scores at all waves (32%); (3) a "High" group with overall high symptom levels (10%); and (4) a "Low-Rising" group with initially low symptom levels that start increasing from t4 (age 8.5 years) to

Table 1. Characteristics of Participating Mothers and Their Child at Baseline (t1)

Maternal age (years), mean (SD)	30 (4.7)
Maternal education (%)	
Basic schooling (≤ 9 yr)	9.5
Basic schooling+ (10–11 yr)	27.6
Finished high school (12 yr)	25.4
Higher education (≥ 13 yr)	37.6
Maternal work status (%)	
No paid work	37.0
Part-time paid work	32.0
Full-time paid work	31.0
Maternal relationship status (%)	
Married/cohabiter	91.2
Single	8.8
Maternal mother tongue (%)	
Norwegian	93.6
Other than Norwegian	6.4
Family economy (%)	
We manage well/very well	53.4
We manage	40.7
We manage poorly/very poorly	5.9
Parity (%)	
1 child	48.2
2 children	37.2
3–10 children	14.6
Offspring infant gender (%)	
Girl	51.1
Boy	48.9

a level similar to the High group by t6 (age 12.5 years) (4%) (for further details, see Refs. 23, 30). Figure 1 shows the mean and SD for the SCL scores of the resulting 4 distress trajectory groups at each time point. The sample consisted of 400 emerging adults participating at t8 with the following distribution in the maternal distress groups: Low (55%; $n = 221$), Moderate (31%; $n = 123$), High (10%; $n = 40$), and Low-rising (4%; $n = 16$) group.

Offspring Mental Health

The Short Mood and Feelings Questionnaire (SMFQ)³¹ was used to measure depressive symptoms at t8. The SMFQ measures affective and cognitive symptoms of depression with 13 items (e.g., “did not enjoy anything at all” and “felt miserable or unhappy”) on a 3-point scale (0: “True,” 1: “Sometimes true,” and 2: “Not true”). A mean score was computed. Cronbach alpha was 0.88. The Anxiety Scale from the Depression, Anxiety, and Stress Scale (DASS)³² was used to measure symptoms of general anxiety at t8. The Anxiety Scale measures autonomic arousal, skeletal muscular effects, situational anxiety, and subjective experiences of anxiousness with 14 items on a 4-point scale ranging from 0 (“did not

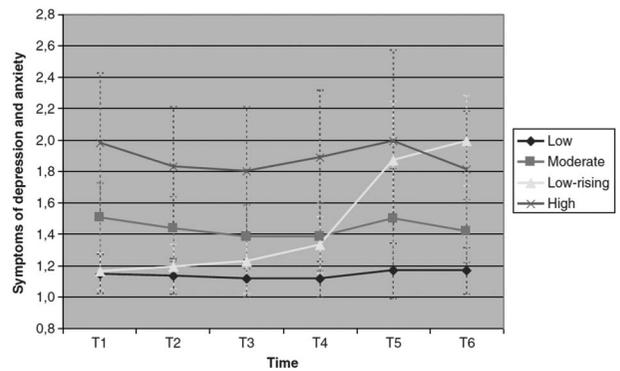


Figure 1. Mean symptom scores and SDs (Hopkins Symptom Checklist) in the 4 trajectory groups on each of the 6 waves of data collection. From Skipstein et al.³⁰ (p.5). Copyright holder/original publisher is BioMed Central. Reproduced with permission.

apply at all”) to 3 (“applied very much, or most of the time”). A mean score was calculated. Cronbach alpha in the current sample was 0.90. Both SMFQ^{31,33} and DASS^{32,34} are well-used instruments with high psychometric quality.

Offspring Self-Efficacy

Generalized self-efficacy²⁰ measures self-efficacy with 5 items (e.g., “I can always manage to solve problems if I try hard enough”) on a 4-point scale (“Not at all true” to “Exactly true”). A mean score was calculated. The scale is well used in different countries and settings, and has shown good psychometric validity and reliability.^{20,35} Cronbach alpha in the current sample was 0.79.

Confounders

We examined correlations between the main variables (offspring mental health and self-efficacy, and maternal psychological distress) and potential confounders (maternal age, years of education, maternal work participation, maternal relationship status, language, economy, and number of children in the household) offspring gender. Offspring female gender was associated with significantly higher symptoms of anxiety and depression ($r = 0.23/0.25$; $p = .000$) and lower self-efficacy ($r = -.14$; $p = .004$). Low maternal education ($r = 0.18$; $p = .000$), single relationship status ($r = 0.10$; $p = .025$), mother tongue other than Norwegian ($r = 0.09$; $p = .037$) and low family economy ($r = 0.17$; $p = .000$) were associated with more adverse psychological distress group. We adjusted the analyses for these 5 variables.

Statistical Analyses

We used 1-way between-subjects analyses of variance with SPSS version 17 to assess differences in emerging adulthood psychosocial adjustment between the 4 trajectory groups of maternal psychological distress between t1 and t6 (Low, Moderate, High, and Low-rising distress groups). Multivariate analyses examined offspring mental health (i.e., symptoms of anxiety and depression), and univariate analyses examined offspring self-efficacy. First, we conducted unadjusted analyses. Second, maternal education, relationship status,

language, family economy, and offspring gender were adjusted for. Interaction analyses were conducted to examine the effect of maternal distress trajectories on male versus female offspring.

RESULTS

Table 2 shows the correlations between maternal psychological distress during childhood and psychological adjustment in emerging adulthood. The majority of the associations between maternal psychological distress at age 1.5 to 14.5 years (t1-t6) and psychological adjustment in emerging adulthood (t8) were significant.

Multivariate analyses of variance were conducted to examine the relationship between maternal distress trajectories and psychological adjustment in adult offspring. There was a statistically significant difference between the 4 trajectories of maternal distress (Low, Moderate, High, and Low-rising distress) on the combined dependent variable of offspring mental health: $F_{6,790} = 5.30, p = .000$, Wilks' lambda = 0.92, partial $\eta^2 = 0.04$. There were significant maternal distress group differences for offspring symptoms of depression: $F_{3,396} = 8.66, p = .000$, partial $\eta^2 = 0.06$, and anxiety $F_{3,396} = 4.51, p = .004$, partial $\eta^2 = 0.03$. Bonferroni post-hoc test show significant higher anxiety and depressive symptoms for offspring with mothers in the High distress versus the Low distress groups ($p = .006$). The mothers in the moderate distress group had offspring reporting higher depressive symptoms than the Low distress group ($p = .000$). There were no significant group differences between the Moderate and High groups, and the Low-rising distress group was not significantly different from the other groups. See mean scores and confidence intervals in Table 3.

Univariate analysis of variance showed significant maternal distress group differences for self-efficacy:

$F_{3, 396} = 3.81, p = .010$, partial $\eta^2 = 0.03$. Bonferroni post-hoc test showed significant lower self-efficacy for offspring with mothers in the High distress group versus the Low distress group. There were no significant differences with or between the other groups.

All analyses remained significant and similar for most offspring outcomes when adjusting stepwise for (1) offspring gender and (2) offspring gender, maternal education, relationship status, language, and family economy. However, there were no significant differences between maternal trajectory groups for offspring anxiety, when adjusting for all confounders concurrently (Model 3, Table 3). There were no significant gender interactions for any outcome ($p > .05$).

DISCUSSION

We aimed to explore to what extent trajectories of maternal psychological distress during 13 years of childrearing (from ages 1.5 to 14.5 years) predicted offspring psychological adjustment in emerging adulthood (ages 18–20 years). There are 3 main findings: First, findings indicate that exposure to consistently high maternal psychological distress across the entire childhood period is associated with both higher maladaptive (i.e., offspring symptoms of anxiety and depression) and lower adaptive (i.e., offspring self-efficacy) adjustment. Second, exposure to consistent moderate distress across childhood or high maternal distress levels during some parts in childhood (i.e., Low-rising trajectory group) also represented a risk for higher levels of offspring depressive symptoms in emerging adulthood. Third, the findings indicated no gender-specific vulnerability for experiencing maternal psychological distress.

These findings underscore the intergenerational transmission of psychological distress—from adverse maternal distress levels across childhood to both

Table 2. Descriptive Details and Correlations Between Maternal Psychological Distress During Childhood (Age 1.5–14.5 Years) and Offspring Psychological Adjustment (Age 18–20 Years)

	Mean	SD	Offspring Adjustment at Age 18–20 Years		
			Depressive Symptoms	Anxiety Symptoms	Self-Efficacy
Maternal psychological distress					
Age 1.5 (t1) years	1.33	0.32	0.19 ^a	0.18 ^a	−0.15 ^a
Age 2.5 (t2) years	1.29	0.27	0.13 ^b	0.14 ^b	−0.08
Age 4.5 years (t3)	1.28	0.28	0.18 ^a	0.18 ^a	−0.14 ^b
Age 8.5 years (t4)	1.29	0.31	0.2 ^a	0.16 ^a	−0.15 ^a
Age 12.5 years (t5)	1.4	0.41	0.18 ^a	0.15 ^a	−0.19 ^a
Age 14.5 years (t6)	1.35	0.32	0.18 ^a	0.13 ^b	−0.14 ^b
Age 19 years (t8)	1.36	0.33	0.19 ^a	0.16 ^a	−0.13 ^a
Offspring adjustment at age 18 to 20 years					
Depressive symptoms (t8)	0.47	0.41			
Anxiety symptoms (t8)	1.3	0.42			
Self-efficacy (t8)	2.11	0.59			

Correlations for offspring $n = 294$ to 385 . ^aCorrelation is significant at the 0.01 level (2-tailed). ^bCorrelation is significant at the 0.05 level (2-tailed).

Table 3. Mean Scores and Confidence Intervals (CIs) for Offspring Psychological Adjustment (Age 18–20 Years) for Different Maternal Psychological Distress Trajectory Groups During Childhood (Age 1.5–14.5 Years)

Distress Groups	Model 1		Model 2		Model 3	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
Depressive symptoms						
Consistent low	0.38	0.32–0.43	0.38	0.32–0.43	0.37	0.31–0.42
Consistent moderate	0.56 ^a	0.49–0.63	0.57 ^a	0.50–0.64	0.56 ^b	0.49–0.63
Consistent high	0.60 ^c	0.48–0.73	0.59 ^c	0.47–0.71	0.58 ^b	0.45–0.70
Low-to-high	0.64 ^b	0.44–0.83	0.64 ^b	0.45–0.83	0.65 ^b	0.45–0.85
Anxiety symptoms						
Consistent low	1.24	1.18–1.29	1.24	1.18–1.29	1.24	1.18–1.29
Consistent moderate	1.34	1.27–1.41	1.35	1.28–1.42	1.34	1.27–1.41
Consistent high	1.47 ^c	1.34–1.59	1.46 ^c	1.33–1.58	1.42	1.29–1.55
Low-to-high	1.26	1.07–1.46	1.27	1.07–1.46	1.26	1.06–1.46
Self-efficacy						
Consistent low	2.19	2.11–2.26	2.19	2.11–2.26	2.21	2.13–2.29
Consistent moderate	2.04	1.94–2.15	2.04	1.93–2.14	2.04	1.93–2.14
Consistent high	1.89 ^b	1.70–2.07	1.90 ^b	1.71–2.08	1.92 ^b	1.72–2.11
Low-to-high	2.15	1.86–2.44	2.15	1.86–2.43	2.09	1.79–2.39

Model 1: Unadjusted. Model 2: Adjusted for adult offspring gender. Model 3: Adjusted for adult offspring gender, maternal education, relationship status, language, and family economy. ^aSignificantly different from consistent low group $p > .001$. ^bSignificantly different from consistent low group $p > .05$. ^cSignificantly different from consistent low group $p > .01$.

offspring anxiety and depressive symptoms over a period of 18 years—and expand on former findings reporting similar links over shorter periods of follow-up.^{13–18} Moreover, we also expand the findings to including links between maternal distress and adaptive psychological adjustment: self-efficacy was significantly lower in adult offspring with mothers having consistent high distress levels. Thus, self-efficacy, which is a modifiable trait, might be an area to focus interventional efforts when targeting families with parental psychopathology.

Our findings underscore the examination of psychological distress patterns across time. Offspring, experiencing maternal psychological distress from middle childhood (age 8.5 years) and onwards, reported higher depressive symptoms than offspring of mothers with low distress, supporting the view of middle childhood as a vulnerable period.¹¹ However, there were no significant differences between the 3 adverse distress trajectories. The small number in some of the trajectory groups might be a potential reason for this: 2 of the adverse distress groups were of small sizes with 10% adolescents experiencing consistently high maternal distress and 4% experiencing low-rising maternal distress. These numbers represent a threat to the statistical power of the study but are in line with low number of adverse maternal distress trajectories in former studies.^{36,37} Still, future studies should include larger samples to examine nuanced group differences with higher statistical power.

Despite the multiwave and multi-informant associations reported in the current study, maternal psychological distress only accounted for a modest portion of variance (i.e., 2–6%) in emerging adult offspring adjust-

ment, representing a nondeterministic perspective of childhood adversities. Furthermore, the trajectories span across a long time and many different individual and contextual factors may come into play during this period. Additionally, as mentioned in the introduction, the emerging adulthood stage is characterized by new transitions and milestones, with increasing influences from other contexts than the family (e.g., teachers, coworkers/fellow students, romantic partners, and peers).²² The current findings show that adverse maternal trajectories is similarly detrimental for emerging adult women versus men and that background characteristics such as maternal education, relationship status, language, and family economy did not reduce the significance of the long-term intergenerational link between maternal distress and offspring adjustment. The examination of other risk factors throughout development is needed to see for whom early adverse risk factors are most detrimental.

Strengths and Limitations

Although the study has strengths in its multiwave and multi-informant approach and psychometrically sound measures, there are some limitations. First, the use of self-report increase the risk for shared method variance to inflate the strength of associations. However, the use of multiple waves and informants reduces the common method bias. Second, although former attrition analyses indicate that only low maternal education and male gender are associated with nonparticipation, it is important to note that the sample is representative of a “normal” population and not to the same extent representative of a high-risk population. Significant findings

may be stronger in a high-risk sample with larger variance in psychological distress.

Despite one of the strengths of this study being the use of a person-centered approach to derive trajectory groups throughout the child-rearing period, the groups for the current article are based on pseudoclasses, not taking into consideration the uncertainty of the class memberships, instead of modelling outcomes within a complex LPA model. Because the average posterior class probabilities for trajectory membership for our 6-group solution ranged from .80 to .91, the ambiguities regarding the class memberships are not large and the effect of not including the uncertainty of latent class membership in the analyses is not likely to produce substantial bias to the current results.^{23,30}

CONCLUSION

The study expands on previous studies by using a longer time span, multi-informant method following mother-child dyads across 18 years. The impact of maternal-reported distress on offspring-reported adjustment underscores early prevention within an integrative family perspective. However, the effects were only moderate, suggesting a non-deterministic indication that early maternal distress may not affect long-term maladjustment for all.

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