

Supplementary online materials for the article

Parental separation and intergenerational support

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Appendix

Table A1. Means and proportions of model covariates according to respondent's participation in wave 6.

	Sample (a) Respondents <i>not</i> included in wave 6	Sample (b) Respondents included in wave 6
Birth cohort		
1991/93	0.12	0.09
1981/83	0.41	0.41
1971/73	0.47	0.50
Woman	0.54	0.58
Migration status		
No migration background	0.75	0.80
First generation migrant	0.16	0.11
Second generation migrant	0.09	0.09
Years of education	12.73	13.40
Residence in East Germany	0.21	0.21
Residence in urban area	0.66	0.62
Father's age	62.01	62.74
Mother's age	58.77	59.58
Father's years of education	12.17	12.38
Mother's years of education	11.62	11.86
Number of siblings	0.76	1.53

Source: Pairfam (2010, unweighted); authors' calculation. Note: model covariates are measured in wave 4. Sample (a) and (b) includes survey respondents who were age 18 or older, with at least one parent alive, and who did not live with parents at survey time. Sample (a) includes those that did not respond the survey questionnaire in wave 6 or thereafter. Sample (b) includes those that did respond the survey questionnaire in wave 6 or thereafter.

Table A2. Summary statistics of model covariates.

	Proportion	Mean	SD	Minimum	Maximum
Parental separation	0.17			0.00	1.00
Separation in adulthood	0.05			0.00	1.00
One parent is dead	0.22			0.00	1.00
Age (in years)*		33.47	7.11	18.00	45.00
Cohort 1991/93	0.15			0.00	1.00
Cohort 1981/83	0.38			0.00	1.00
Cohort 1971/73	0.47			0.00	1.00
Woman	0.57			0.00	1.00
Migration status					
No migration background	0.80			0.00	1.00
First generation migrant	0.10			0.00	1.00
Second generation migrant	0.09			0.00	1.00
Years of education		13.44	2.88	8.00	20.00
Residence in East Germany	0.21			0.00	1.00
Residence in urban area	0.64			0.00	1.00
Father's age					
<50	0.11			0.00	1.00
50-64	0.49			0.00	1.00
>64	0.41			0.00	1.00
Mother's age					
<50	0.13			0.00	1.00
50-64	0.58			0.00	1.00
>64	0.29			0.00	1.00
Father's years of education		12.48	2.82	8.00	20.00
Mother's years of education		11.98	2.63	8.00	20.00
Number of siblings					
None	0.17			0.00	1.00

1 sibling	0.41	0.00	1.00
2 or more siblings	0.43	0.00	1.00
Survey year			
year 2009/10	0.21	0.00	1.00
year 2011/12	0.24	0.00	1.00
year 2013/14	0.28	0.00	1.00
year 2015/16	0.26	0.00	1.00

Source: Pairfam (2009-2016, unweighted); authors' calculation. Note: values for age and years of education are displayed before centering and rescaling. SD stands for standard deviation.

Table A3. Multivariate associations of intergenerational support with separated parents (logit coefficients): Robustness to variance-covariance structure.

	Emotional		Material		Instrumental		Childcare	
	Coeff.	std.err.	Coeff.	std.err.	Coeff.	std.err.	Coeff.	std.err.
<i>PANEL A: No variances-covariance estimated</i>								
Downward support								
Mother-adult child	-0.57** #	(0.09)	-0.55*** #	(0.06)	-0.64*** #	(0.05)	-0.44*** #	(0.06)
Father-adult child	-3.09***	(0.07)	-1.08***	(0.06)	-1.94***	(0.09)	-1.19***	(0.07)
Upward support								
Adult child-mother	-0.50*** #	(0.10)	-0.13* #	(0.06)	-0.51*** #	(0.09)		
Adult child-father	-1.41***	(0.07)	-0.86***	(0.06)	-1.47***	(0.06)		
<i>PANEL B: Parent-specific variances-covariance (Original results in Table 2)</i>								
Downward support								
Mother-adult child	-0.33 #	(0.19)	-0.50*** #	(0.10)	-0.59*** #	(0.17)	-0.42*** #	(0.10)
Father-adult child	-1.66***	(0.18)	-1.14***	(0.12)	-2.47***	(0.19)	-1.38***	(0.12)
Upward support								
Adult child-mother	-0.20 #	(0.21)	-0.04 #	(0.09)	-0.49*** #	(0.12)		
Adult child-father	-1.62***	(0.18)	-0.87***	(0.11)	-1.84***	(0.14)		
Cov(father*mother)	3.05***	(0.31)						
<i>PANEL C: Support type-specific variances-covariances</i>								
Downward support								
Mother-adult child	-0.44** #	(0.16)	-0.52*** #	(0.11)	-0.57*** #	(0.17)	-0.27* #	(0.11)
Father-adult child	-2.16***	(0.26)	-1.27***	(0.13)	-2.23***	(0.17)	-1.21***	(0.12)

Upward support							
Adult child-mother	-0.38*	#	(0.16)	-0.07	#	(0.10)	-0.41** # (0.13)
Adult child-father	-2.00***		(0.24)	-0.89***		(0.12)	-1.71*** (0.13)
Cov(emotional*material)	1.18***		(0.33)				
Cov(emotional*inst/child)	1.52***		(0.27)				
Cov(material* inst/child)	1.31***		(0.13)				

PANEL D: Support flow-specific variances-covariance

Downward support							
Mother-adult child	-0.48**	#	(0.16)	-0.45**	#	(0.10)	-0.56*** # (0.19)
Father-adult child	-1.50***		(0.13)	-1.09***		(0.11)	-2.28*** (0.18)
							-1.28*** (0.12)
Upward support							
Adult child-mother	-0.51**	#	(0.18)	0.06	#	(0.09)	-0.43** # (0.14)
Adult child-father	-1.47***		(0.12)	-0.79***		(0.10)	-1.78*** (0.14)
Cov(upward*downward)	2.33***		(0.42)				

Source: Pairfam (2009-2016, unweighted); authors' calculations. Note: Series of generalized linear regression models with correlated random terms. Outcome variables are measures of exchange during the last 12 months by support type, direction and gender of the parent. Other variables in the model include: respondent's gender, age, birth cohort group, migration background, years of education, residence in urban area, residence in Eastern Germany, number of siblings, father's and mother's age at respondent's birth and years of education, whether the other parent is dead, and random term variances (except in Panel A). Standard errors are cluster-robust at the respondent level.

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

p<.05 of chi2 test for difference between mother and father coefficients.

Table A4. Multivariate association of intergenerational support with parental separation and parental repartnering (Logit coefficients).

	Emotional		Material		Instrumental		Childcare	
	coefficient	std.err.	coefficient	std.err.	coefficient	std.err.	coefficient	std.err.
<i>Parental separation</i>								
Downward support								
Mother-adult child	-0.58**	(0.21)	-0.75***	(0.11)	-0.41***	(0.11)	-0.65***	(0.19)
Father-adult child	-2.07***	(0.23)	-1.46***	(0.16)	-1.22***	(0.15)	-2.62***	(0.24)
Upward support								
Adult child-mother	-0.52*	(0.23)	0.04	(0.10)	-0.15	(0.14)		
Adult child-father	-1.90***	(0.22)	-0.84***	(0.14)	-1.39***	(0.18)		
<i>Parent repartnered</i>								
Downward support								
Mother-adult child	0.60**	(0.21)	0.52***	(0.11)	-0.01	(0.11)	0.14	(0.19)
Father-adult child	0.72***	(0.22)	0.50***	(0.15)	-0.22	(0.15)	0.29	(0.23)
Upward support								
Adult child-mother	0.69**	(0.22)	-0.15	(0.10)	-0.67***	(0.13)		
Adult child-father	0.52*	(0.21)	-0.02	(0.14)	-0.72***	(0.17)		

Source: Pairfam (2009-2016, unweighted); authors' calculations. Note: Outcome variables are measures of exchange during the last 12 months by support type, direction and gender of the parent. Other variables in the model include: respondent's gender, age, birth cohort group, migration background, years of education, residence in urban area, residence in Eastern Germany, number of siblings, father's and mother's age at respondent's birth and years of education, whether the other parent is dead, and random term variances and covariance between mother- and father-specific support equations. Standard errors are cluster-robust at the respondent level. Sample size differs across support items and gender of the parent; see Table 1 for details.

* $p < .05$, ** $p < .01$, *** $p < .001$.

$p < .05$ of χ^2 (Wald test) for statistical significance of coefficient difference between mothers and fathers' parental separation for each type and direction of support.

Table A5. Multivariate associations of emotional support between parents and adult children (Logit coefficients)

	Adult child to mother	Mother to adult child	Adult child to father	Father to adult child
	B/(SE)	B/(SE)	B/(SE)	B/(SE)
Parental separation	-0.21 (0.21)	-0.31 (0.19)	-1.62*** (0.18)	-1.67*** (0.19)
Parental death	-0.61** (0.20)	-0.68*** (0.19)	-3.75*** (0.27)	-3.65*** (0.29)
<i>Cohort: 1971/73 (ref.)</i>				
Cohort 1981/83	-0.31 (0.89)	-1.87* (0.81)	0.84 (0.71)	-1.05 (0.74)
Cohort 1971/73	-0.37 (1.75)	-3.47* (1.56)	1.24 (1.41)	-1.73 (1.45)
Age (in years)	-0.60 (0.78)	0.50 (0.70)	-0.99 (0.63)	-0.35 (0.65)
Woman	1.02*** (0.16)	0.96*** (0.14)	0.09 (0.13)	0.03 (0.13)
<i>Survey year: 2009/10 (ref.)</i>				
Year 2011/12	0.04 (0.21)	-0.15 (0.19)	0.35* (0.17)	-0.01 (0.17)
Year 2013/14	0.13 (0.36)	-0.44 (0.33)	0.41 (0.30)	-0.22 (0.30)
Year 2015/2016	0.09 (0.53)	-0.73 (0.47)	0.54 (0.43)	-0.23 (0.44)
<i>Migration background: not migrant (ref.)</i>				
First generation migrant	0.05 (0.28)	-0.04 (0.26)	-0.38 (0.21)	-0.70** (0.21)

Second generation background	0.23 (0.27)	-0.09 (0.24)	0.13 (0.23)	-0.41 (0.25)
Residence in East Germany	-0.38* (0.19)	-0.19 (0.18)	-0.01 (0.16)	-0.01 (0.17)
Residence in urban area	0.13 (0.16)	0.36* (0.14)	0.16 (0.13)	0.35** (0.13)
<i>Mother's age: less than 50 (ref.)</i>				
Mother's age 50-64	0.40 (0.24)	-0.03 (0.22)		
Mother's age >64	0.36 (0.30)	-0.31 (0.27)		
Years of education	0.53*** (0.13)	0.52*** (0.11)	0.30** (0.10)	0.40*** (0.10)
<i>Siblings: no siblings (ref.)</i>				
1 sibling	0.35 (0.23)	0.26 (0.22)	-0.26 (0.19)	-0.15 (0.20)
2+ siblings	0.20 (0.23)	-0.11 (0.21)	-0.27 (0.19)	-0.36 (0.20)
Mother's years of education	-0.11 (0.14)	0.17 (0.13)		
<i>Father's age: less than 50 (ref.)</i>				
Father's age 50-64			0.17 (0.22)	-0.04 (0.24)
Father's age >64			0.36 (0.26)	-0.08 (0.27)
Father's years of education			-0.09 (0.10)	0.13 (0.10)
<hr/>				
Var(mother)		7.70***	(0.76)	
Var(father)		6.26***	(0.54)	
Cov(mother*father)		3.05***	(0.31)	

LL		-61,440.05		
N Observations	10,946	10,946	10,133	10,133

Source: Pairfam (2009-2016, unweighted); authors' calculations. Note: Series of generalized linear regression models with correlated random terms. Outcome variables are measures of exchange during the last 12 months by support type, direction and gender of the parent. Standard errors are cluster-robust at the respondent level. Results for material and instrumental/childcare outcomes are presented in Tables A4 and A5. * p<.05, ** p<.01, *** p<.001

Table A6. Multivariate associations of material support between parents and adult children (Logit coefficients)

	Adult child to mother	Mother to adult child	Adult child to father	Father to adult child
	B/(SE)	B/(SE)	B/(SE)	B/(SE)
Parental separation	-0.04 (0.09)	-0.51*** (0.10)	-0.86*** (0.11)	-1.16*** (0.12)
Parental death	0.08 (0.09)	-0.38*** (0.10)	-1.89*** (0.16)	-2.12*** (0.18)
<i>Cohort: 1971/73 (ref.)</i>				
Cohort 1981/83	0.31 (0.36)	-0.92* (0.41)	0.10 (0.41)	-1.64*** (0.49)
Cohort 1971/73	0.23 (0.70)	-0.94 (0.80)	-0.24 (0.79)	-2.37* (0.95)
Age (in years)	-0.17 (0.32)	-0.61 (0.36)	0.08 (0.35)	-0.17 (0.43)
Woman	-0.12 (0.06)	0.13 (0.07)	-0.19** (0.07)	-0.00 (0.08)
<i>Survey year: 2009/10 (ref.)</i>				
Year 2011/12	-0.15 (0.09)	-0.06 (0.10)	-0.18 (0.10)	-0.29* (0.12)
Year 2013/14	-0.20 (0.15)	-0.10 (0.17)	-0.24 (0.17)	-0.34 (0.20)
Year 2015/2016	-0.18 (0.21)	-0.18 (0.24)	-0.26 (0.24)	-0.48 (0.29)
<i>Migration background: not migrant (ref.)</i>				
First generation migrant	1.12*** (0.12)	-0.08 (0.12)	0.93*** (0.12)	-0.23 (0.14)

Second generation background	0.31** (0.11)	0.24 (0.13)	0.26* (0.12)	0.14 (0.15)
Residence in East Germany	0.01 (0.08)	-0.10 (0.09)	0.03 (0.09)	-0.17 (0.11)
Residence in urban area	0.04 (0.07)	0.13 (0.07)	0.01 (0.07)	0.19* (0.09)
<i>Mother's age: less than 50 (ref.)</i>				
Mother's age 50-64	-0.14 (0.10)	-0.08 (0.12)		
Mother's age >64	-0.10 (0.13)	-0.01 (0.15)		
Years of education	0.11* (0.05)	0.15** (0.05)	0.10 (0.05)	0.19** (0.06)
<i>Siblings: no siblings (ref.)</i>				
1 sibling	-0.25** (0.09)	-0.22* (0.11)	-0.31** (0.10)	-0.22 (0.13)
2+ siblings	-0.44*** (0.09)	-0.81*** (0.11)	-0.41*** (0.10)	-0.80*** (0.13)
Mother's years of education	-0.18*** (0.05)	0.42*** (0.06)		
<i>Father's age: less than 50 (ref.)</i>				
Father's age 50-64			0.02 (0.14)	0.01 (0.16)
Father's age >64			0.09 (0.17)	0.10 (0.19)
Father's years of education			-0.13* (0.06)	0.35*** (0.07)
Var(mother)	7.70*** (0.76)		7.70*** (0.76)	

Var(father)		6.26*** (0.54)		6.26*** (0.54)
Cov(mother*father)		3.05*** (0.31)		3.05*** (0.31)
LL		-61440.05		
N Observations	10,946	10,946	10,133	10,133

Source: Pairfam (2009-2016, unweighted); authors' calculations. Note: Series of generalized linear regression models with correlated random terms. Outcome variables are measures of exchange during the last 12 months by support type, direction and gender of the parent. Standard errors are cluster-robust at the respondent level. Results for emotional and instrumental/childcare outcomes are presented in Tables A3 and A5. * p<.05, ** p<.01, *** p<.001

Table A7. Multivariate associations of instrumental and childcare support between parents and adult children (Logit coefficients)

	Instrumental		Childcare		Instrumental		Childcare	
	Adult child to mother	Mother to adult child	Mother to adult child	Adult child to father	Father to adult child	Father to adult child		
	B/(SE)	B/(SE)	B/(SE)	B/(SE)	B/(SE)	B/(SE)		
Parental separation	-0.50*** (0.12)	-0.60*** (0.17)	-0.42*** (0.10)	-1.84*** (0.14)	-2.47*** (0.19)	-1.37*** (0.12)		
Parental death	0.01 (0.13)	-0.78*** (0.16)	-0.27** (0.11)	-2.46*** (0.21)	-3.16*** (0.24)	-2.15*** (0.18)		
<i>Cohort: 1971/73 (ref.)</i>								
Cohort 1981/83	-0.62 (0.49)	0.57 (0.76)	-0.02 (0.41)	-0.11 (0.52)	-0.36 (0.79)	-0.83 (0.45)		
Cohort 1971/73	-0.74 (0.95)	0.67 (1.39)	-0.41 (0.79)	0.05 (1.01)	-0.88 (1.44)	-2.03* (0.87)		
Age (in years)	-0.48 (0.43)	-1.39* (0.62)	0.03 (0.36)	-0.68 (0.45)	-0.39 (0.64)	0.80* (0.39)		
Woman	-0.25** (0.09)	0.10 (0.12)	0.19** (0.07)	-0.68*** (0.09)	0.05 (0.12)	-0.09 (0.08)		
<i>Survey year: 2009/10 (ref.)</i>								
Year 2011/12	-0.07 (0.11)	0.10 (0.16)	-0.04 (0.10)	0.03 (0.12)	-0.05 (0.16)	-0.21* (0.11)		
Year 2013/14	-0.12 (0.20)	0.17 (0.28)	-0.18 (0.17)	0.06 (0.21)	-0.11 (0.29)	-0.51** (0.18)		
Year 2015/2016	-0.03 (0.29)	0.11 (0.41)	-0.11 (0.24)	0.20 (0.30)	-0.24 (0.43)	-0.50 (0.27)		
<i>Migration background: not migrant (ref.)</i>								

First generation migrant	-0.36*	-1.32***	-0.34**	-0.43**	-1.31***	-0.43**
	(0.14)	(0.19)	(0.13)	(0.15)	(0.20)	(0.14)
Second generation background	0.06	0.04	0.15	-0.05	0.10	0.08
	(0.15)	(0.21)	(0.13)	(0.16)	(0.21)	(0.14)
Residence in East Germany	0.13	-0.29	0.02	0.37**	-0.27	0.01
	(0.11)	(0.16)	(0.09)	(0.12)	(0.15)	(0.10)
Residence in urban area	-0.03	0.06	-0.04	-0.10	-0.13	-0.12
	(0.09)	(0.12)	(0.08)	(0.09)	(0.12)	(0.08)
<i>Mother's age: less than 50 (ref.)</i>						
Mother's age 50-64	0.26*	0.24	-0.19			
	(0.12)	(0.23)	(0.10)			
Mother's age >64	0.45**	0.05	-0.19			
	(0.16)	(0.27)	(0.14)			
Years of education	-0.11	0.59***	0.10	-0.17*	0.35***	0.09
	(0.07)	(0.09)	(0.05)	(0.07)	(0.09)	(0.06)
<i>Siblings: no siblings (ref.)</i>						
1 sibling	0.04	0.16	-0.10	0.02	-0.03	-0.16
	(0.13)	(0.18)	(0.10)	(0.13)	(0.18)	(0.12)
2+ siblings	0.08	-0.24	-0.36***	0.03	-0.44*	-0.41***
	(0.13)	(0.18)	(0.11)	(0.13)	(0.17)	(0.12)
Mother's years of education	-0.07	0.08	-0.07			
	(0.07)	(0.11)	(0.06)			
<i>Father's age: less than 50 (ref.)</i>						
Father's age 50-64				0.12	-0.15	-0.06
				(0.16)	(0.32)	(0.15)
Father's age >64				0.26	-0.47	-0.19
				(0.19)	(0.35)	(0.17)
Father's years of education				0.05	0.10	-0.16**

				(0.07)	(0.10)	(0.06)
Var(mother)			7.70***	(0.76)		
Var(father)			6.26***	(0.54)		
Cov(mother*father)			3.05***	(0.31)		
LL			-61440.05			
N Observations	10,946	10,946	10,133	10,133	6,166	5,675

Source: Pairfam (2009-2016, unweighted); authors' calculations. Note: Series of generalized linear regression models with correlated random terms. Outcome variables are measures of exchange during the last 12 months by support type, direction and gender of the parent. Standard errors are cluster-robust at the respondent level. Results for emotional and material outcomes are presented in Tables A3 and A4. * p<.05, ** p<.01, *** p<.001

Table A8. Multivariate association of intergenerational support with parental separation and parental separation at child's adult age (Logit coefficients).

	Emotional		Material		Instrumental		Childcare	
	AME	std.err.	AME	std.err.	AME	std.err.	AME	std.err.
<i>Parental separation</i>								
Downward support								
Mother-adult child	-0.04**	(0.01)	-0.10***	(0.02)	-0.06***	(0.02)	-0.07***	(0.02)
Father-adult child	-0.20***	(0.02)	-0.20***	(0.03)	-0.21***	(0.02)	-0.34***	(0.03)
Upward support								
Adult child-mother	-0.02	(0.01)	-0.01	(0.02)	-0.10***	(0.02)		
Adult child-father	-0.19***	(0.02)	-0.17***	(0.04)	-0.29***	(0.02)		
<i>Parental separation at adult age</i>								
Downward support								
Mother-adult child	0.01	(0.02)	-0.00	(0.03)	-0.03	(0.03)	-0.00	(0.04)
Father-adult child	0.05**	(0.02)	0.01	(0.03)	0.07	(0.03)	0.04	(0.04)
Upward support								
Adult child-mother	-0.02	(0.02)	0.02	(0.03)	0.05	(0.04)		
Adult child-father	0.04*	(0.02)	0.10*	(0.04)	0.08*	(0.04)		

Source: Pairfam (2009-2016, unweighted); authors' calculations. Note: Outcome variables are measures of exchange during the last 12 months by support type, direction and gender of the parent. Other variables in the model include: respondent's gender, age, birth cohort group, migration background, years of education, residence in urban area, residence in Eastern Germany, number of siblings, father's and mother's age at respondent's birth and years of education, whether the other parent is dead, and random term variances and covariance between mother- and father-specific support equations. Standard errors are cluster-robust at the respondent level. Sample size differs across support items and gender of the parent; see Table 1 for details.

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

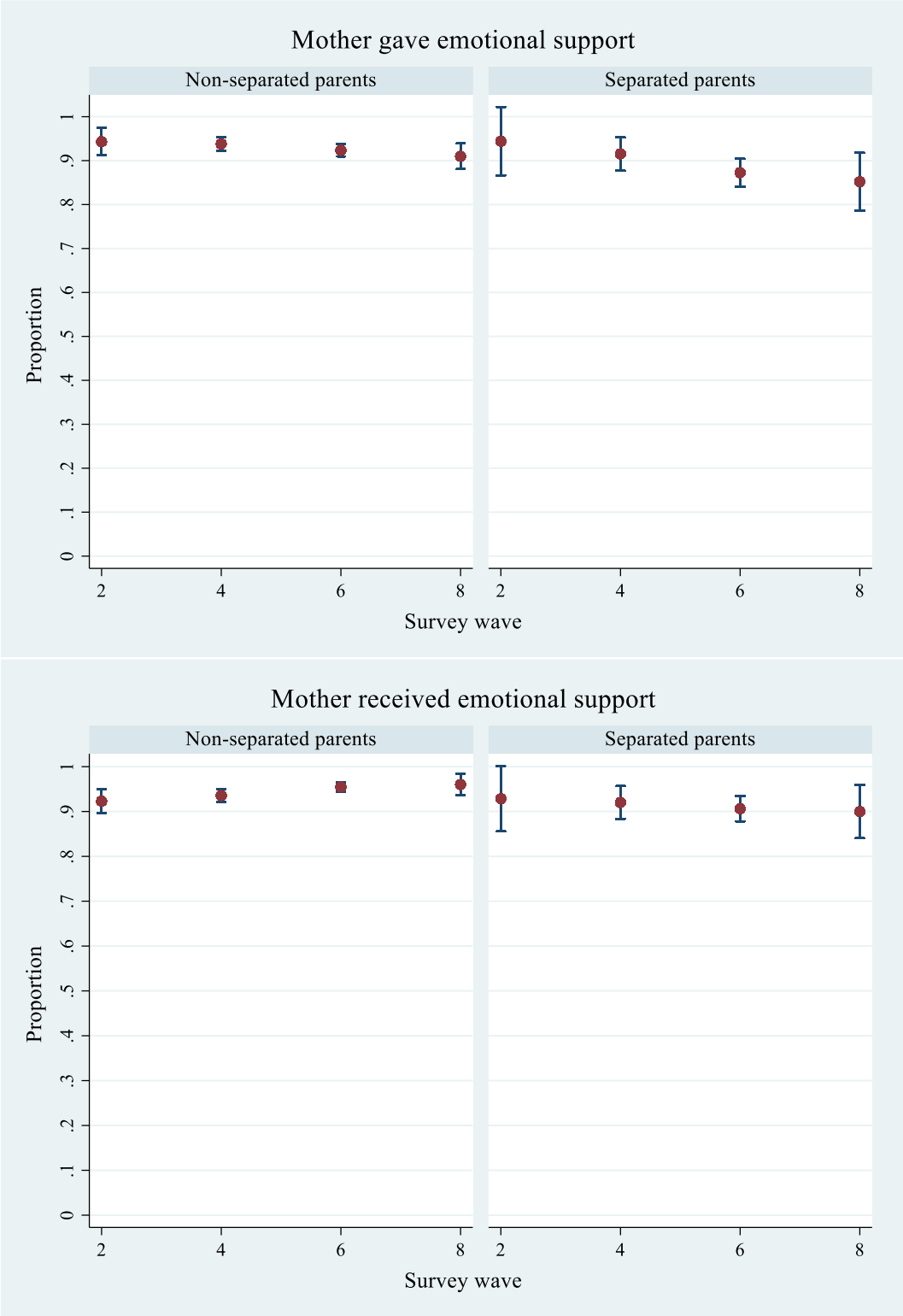
Table A9. Multivariate associations between parental separation and determinants of support between parents and adult children (Logit coefficients)

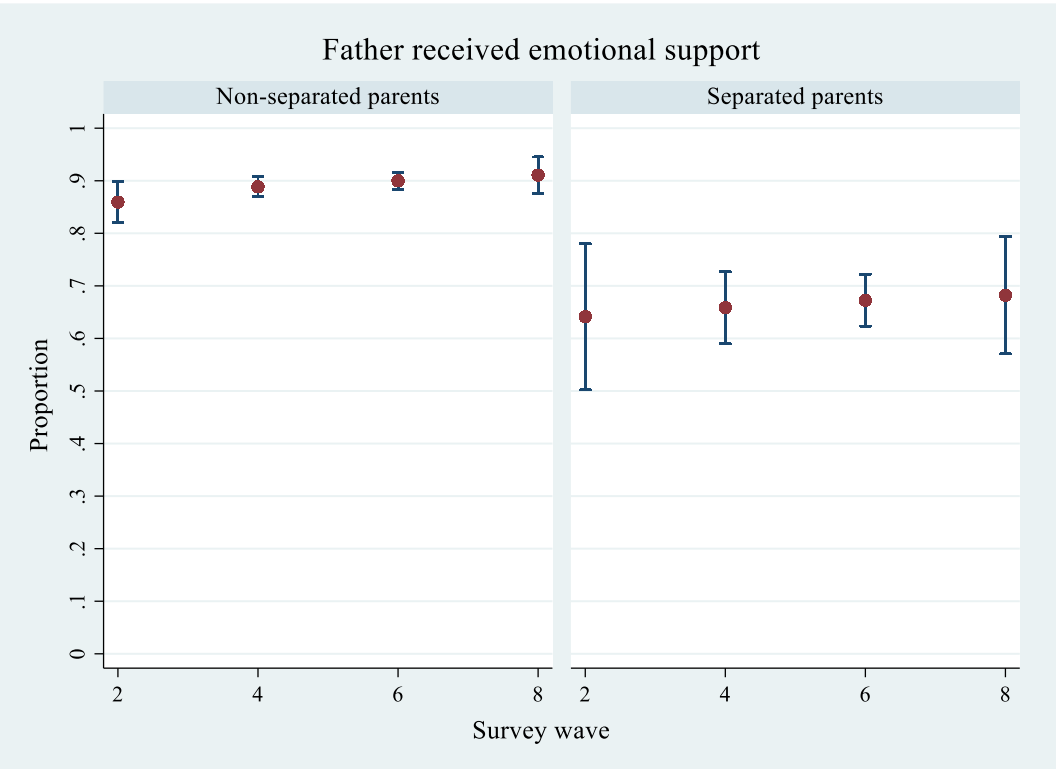
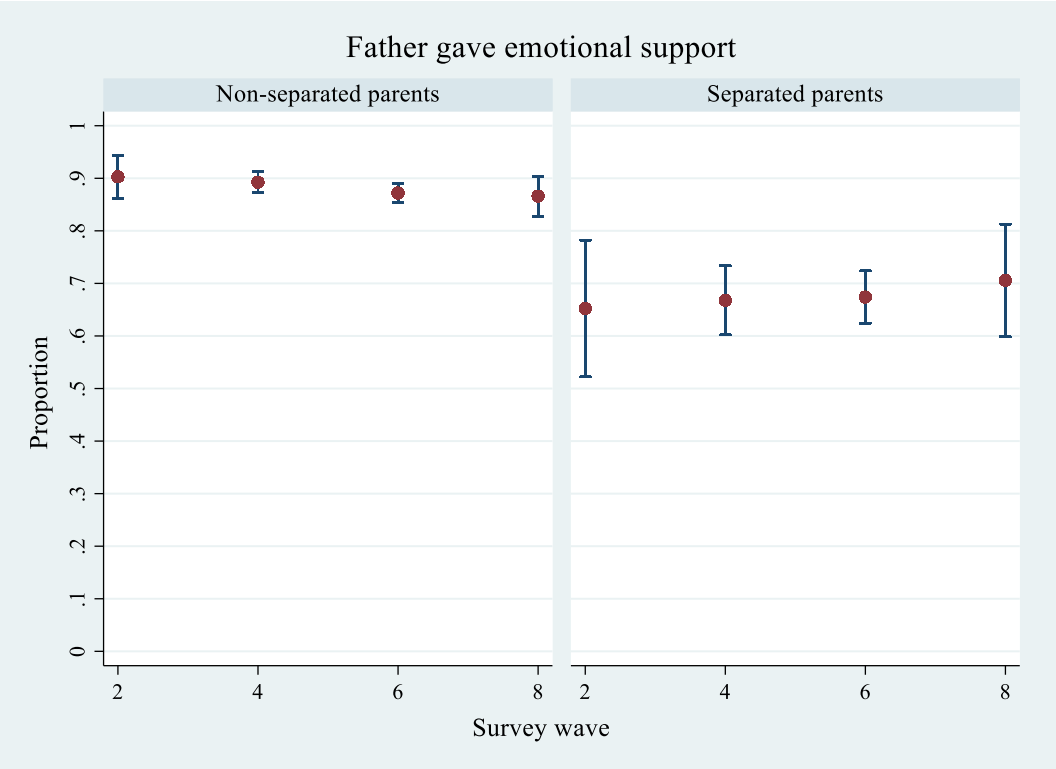
	Parent needs care	Frequent contact	Close relationship	Geographical distance
<i>Mother</i>				
Parental separation	0.24 (0.22)	-0.58*** (0.08)	-0.33*** (0.09)	0.15 (0.10)
<i>Father</i>				
Parental separation	0.47* (0.21)	-1.57*** (0.10)	-0.88*** (0.09)	0.52* (0.21)

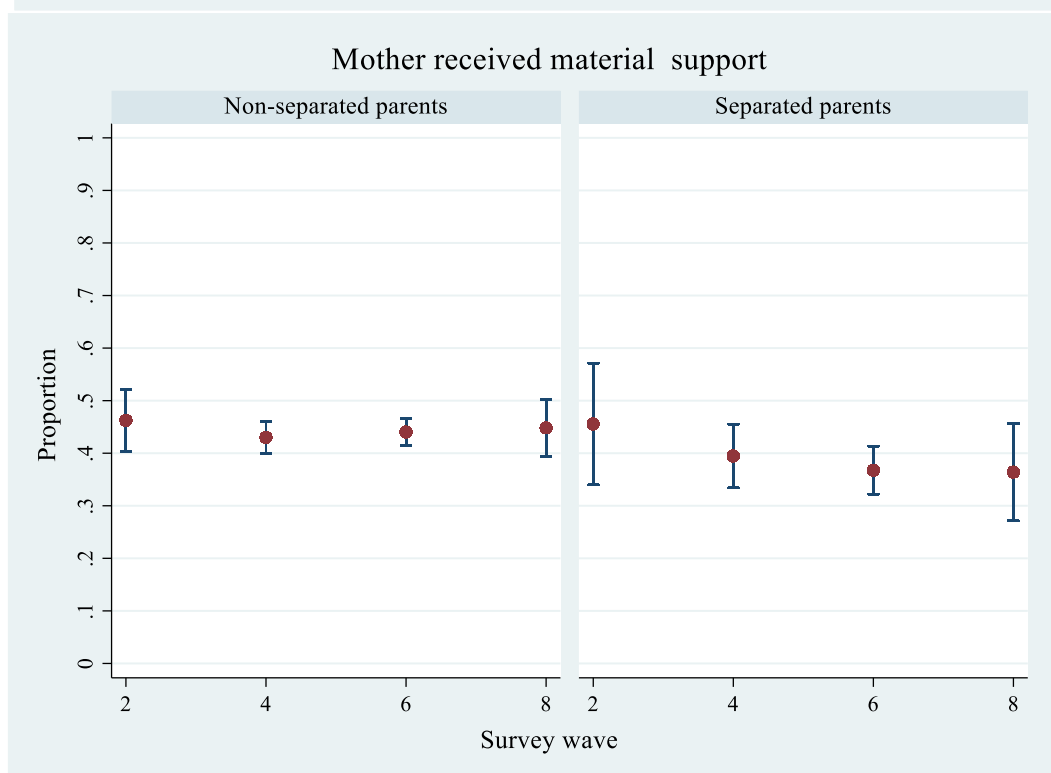
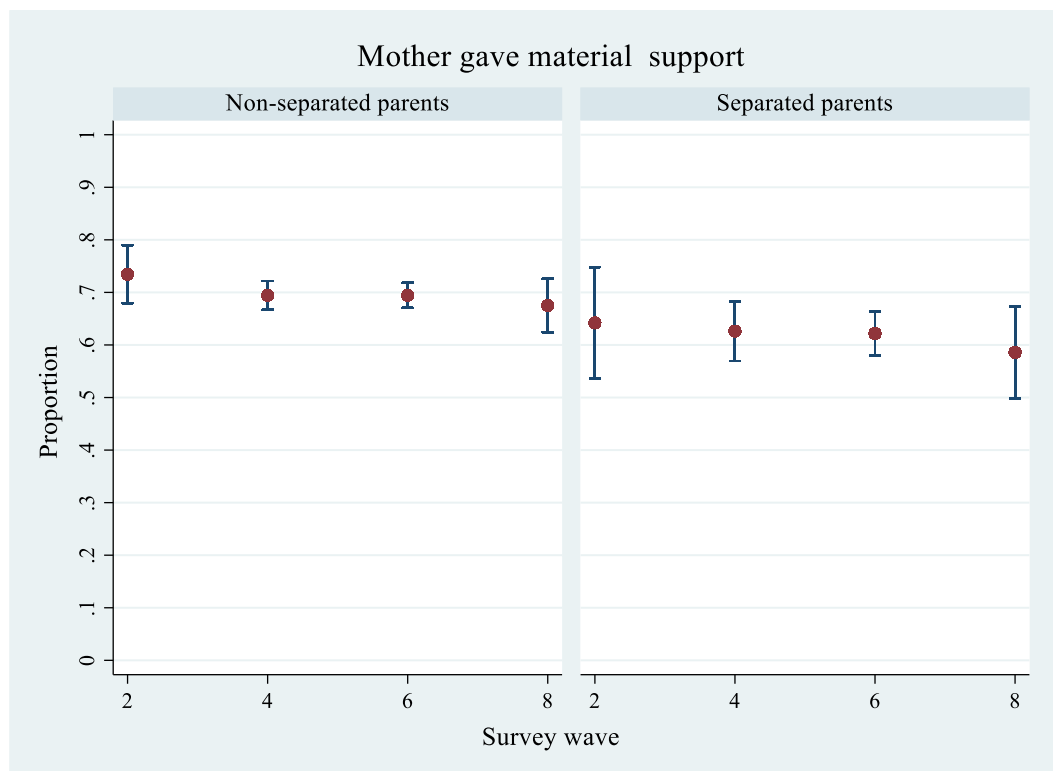
Source: Pairfam (2009-2016, unweighted); authors' calculations. Note: *Parent needs care* indicates whether care services required by the parent in the twelve months prior to the interview. Frequent contact indicate that the respondent has weekly contact with the parent. Close relationship indicates that the respondent considers the relationship with the parents quite or very close. Geographical distance indicates that the place of residence of the parent lies over one-hour travel time from the respondent's main residence. Control variables in the model include: respondent's gender, age, birth cohort group, migration background, years of education, residence in urban area, residence in Eastern Germany, number of siblings, father's and mother's age at respondent's birth and years of education, and whether the other parent is dead. Sample size differs across support items and gender of the parent; see Table 1 for details. Cluster-robust standard errors in brackets below the logit coefficients.

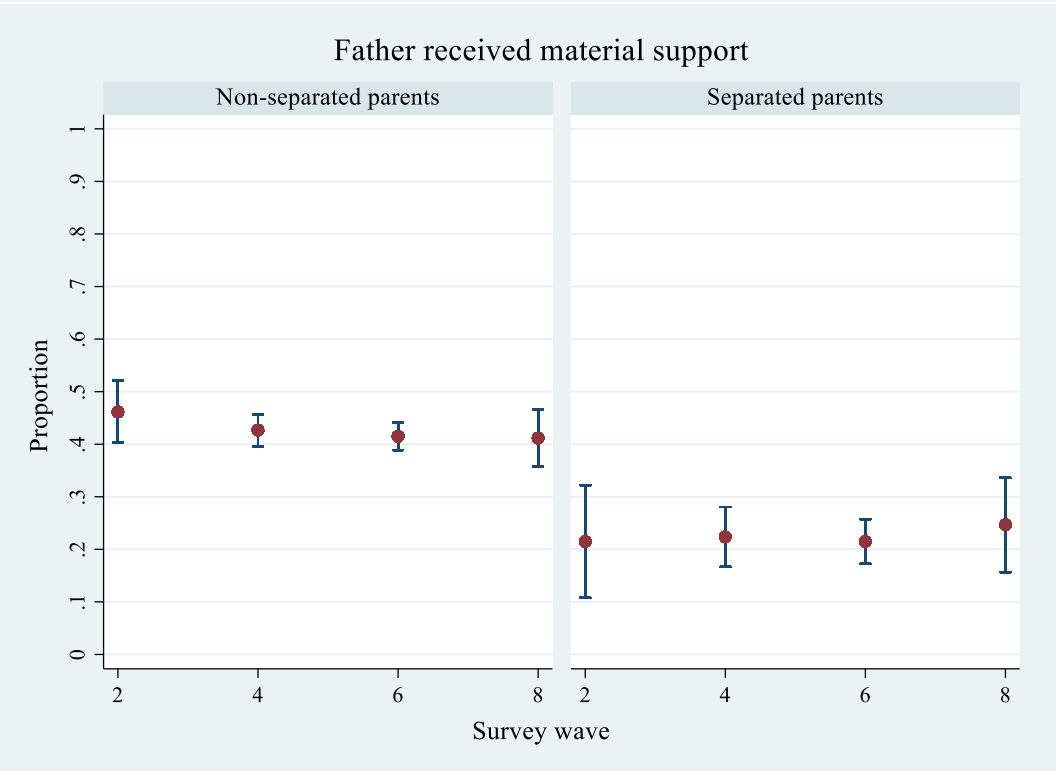
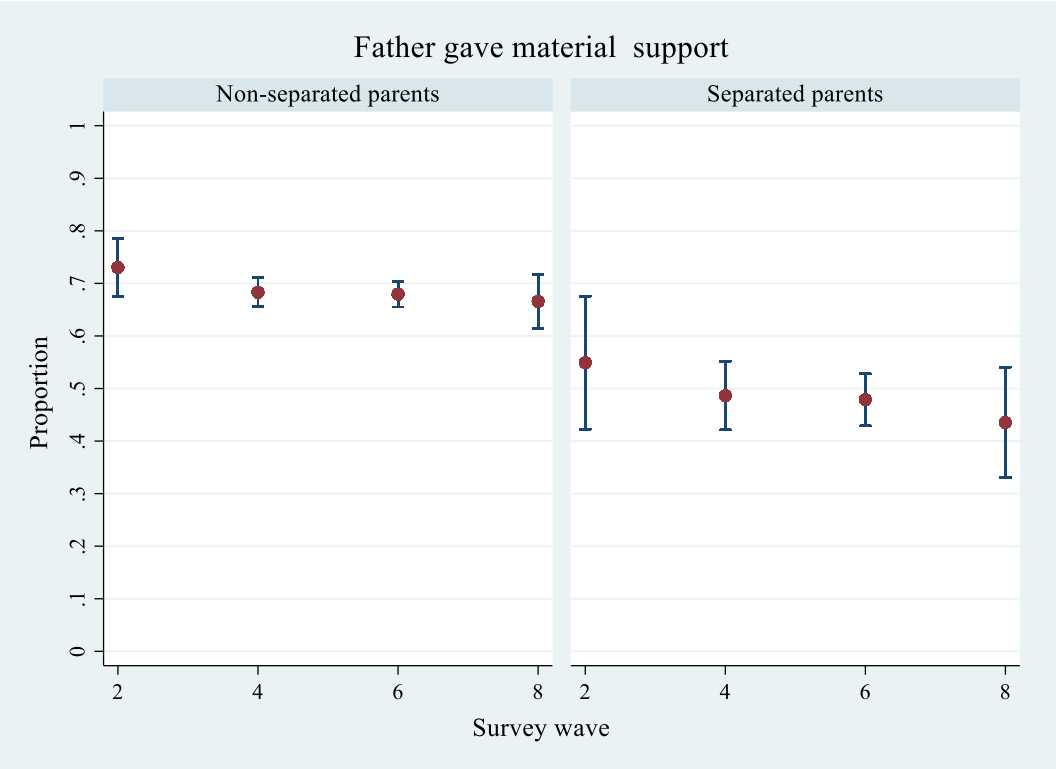
* p<.05, ** p<.01, *** p<.001.

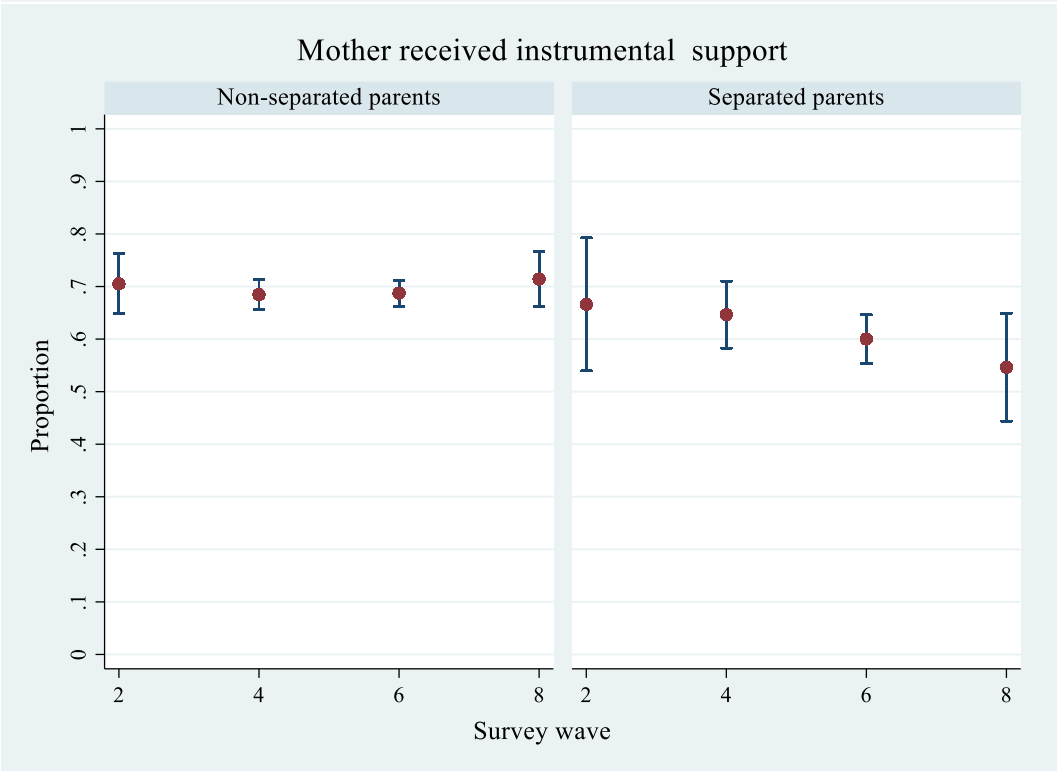
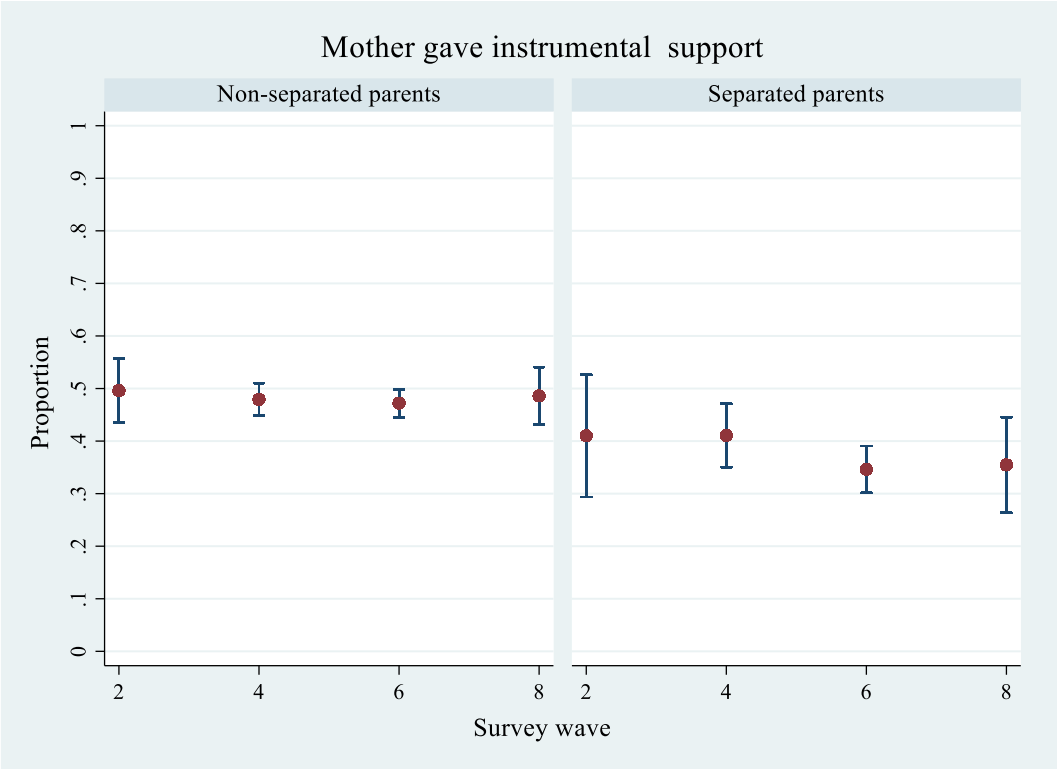
Figure A1. Predicted intergenerational support across time periods by parental separation status (linear predictions).



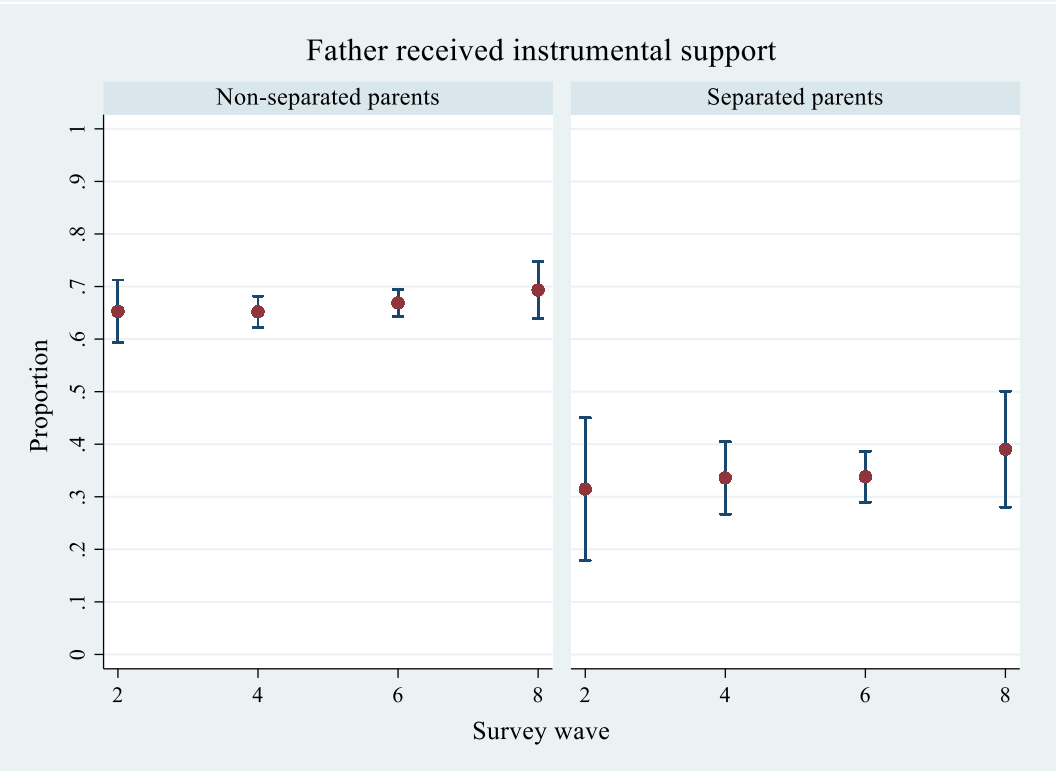
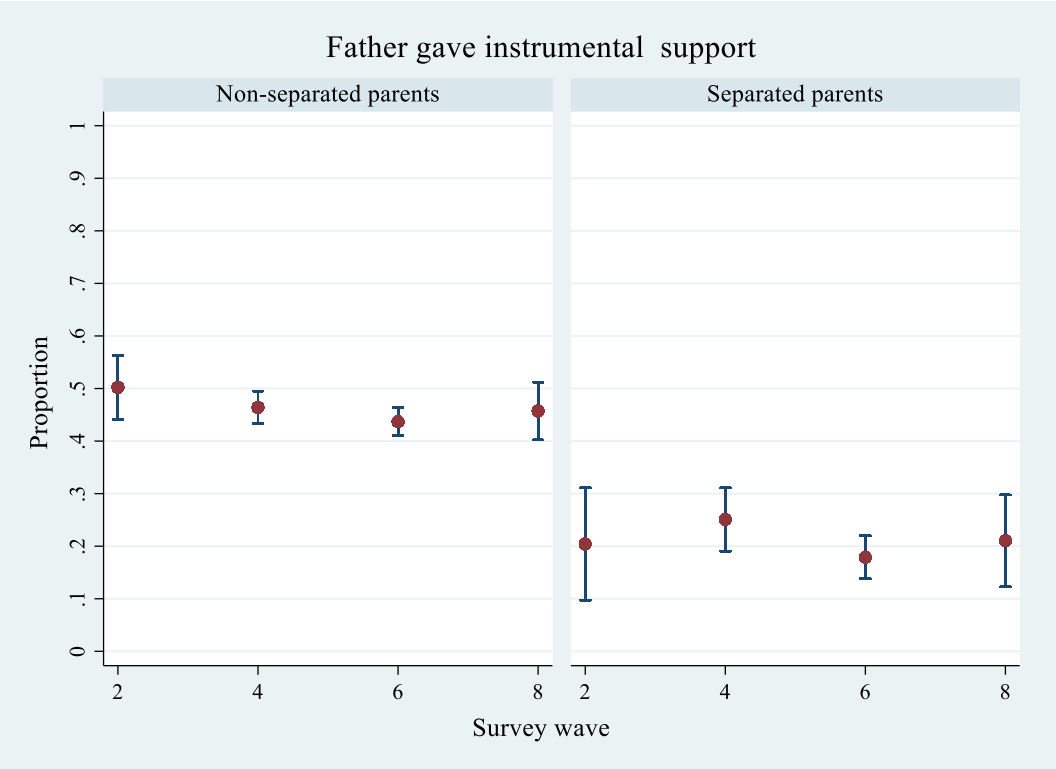


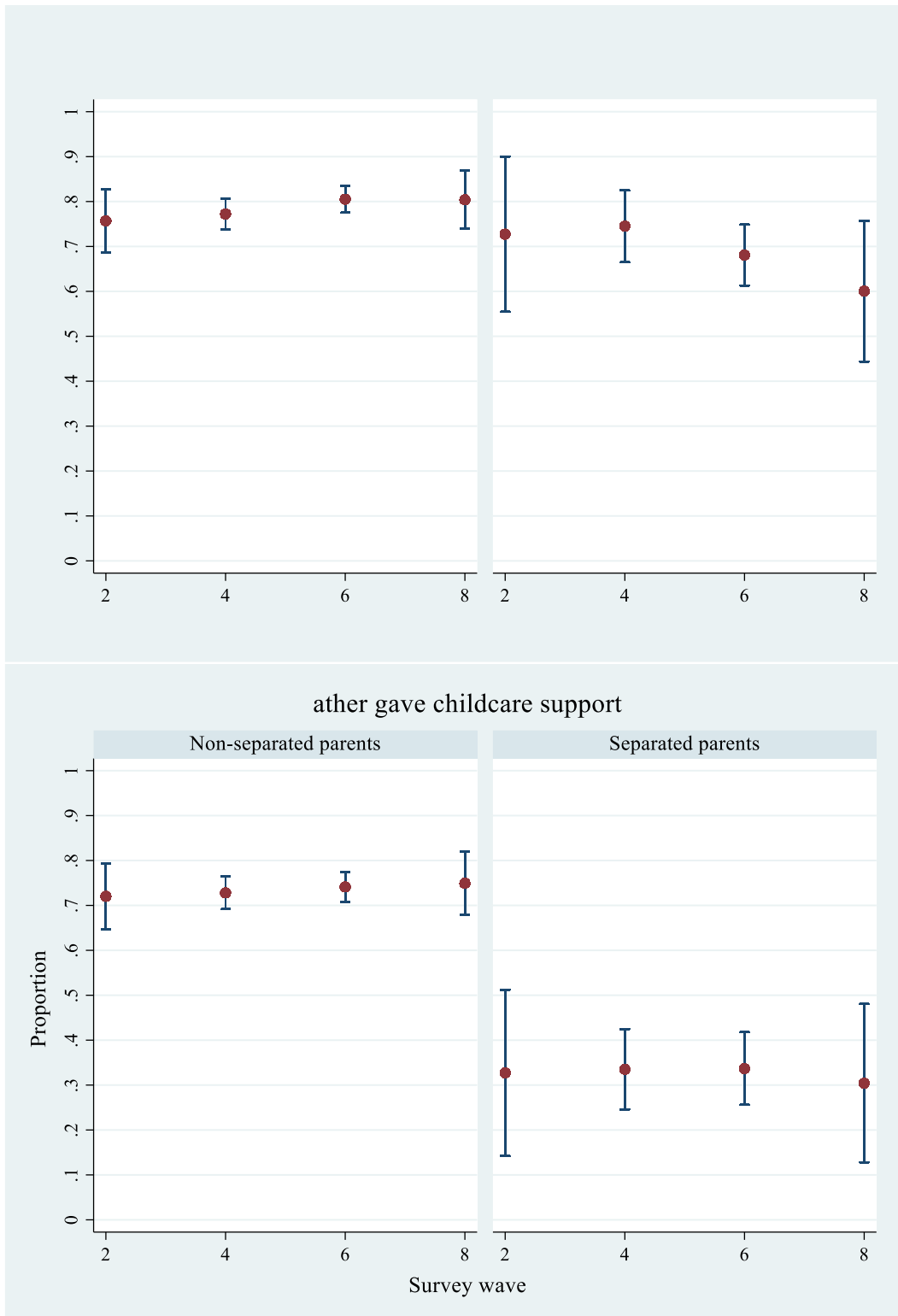






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Source: Pairfam (2009-2016, unweighted); authors' calculations. Note: Linear predictions (proportions) calculated from logistic regression models for each outcome. Outcome variables are measures of exchange during the last 12 months by support type, direction and gender of the parent. Other variables in the models include: respondent's gender, age, birth cohort group, migration background, years of education, residence in urban area, residence in Eastern Germany, number of siblings, parent's age at respondent's birth and years of education, and whether the other parent is dead.