



The intergenerational effects of unemployment: How parental unemployment affects educational transitions in Germany

Kristina Lindemann^{a,*}, Markus Gangl^b

^a Institute of Sociology, Goethe University Frankfurt, Theodor-W.-Adorno-Platz 6, 60323 Frankfurt am Main, Germany

^b Goethe University Frankfurt, Germany, and University of Wisconsin-Madison, USA



ARTICLE INFO

Keywords:

Intergenerational effects
Educational inequalities
Educational transitions
Parental unemployment
Propensity score matching

ABSTRACT

This paper studies the intergenerational effects of parental unemployment on students' post-secondary transitions. Besides estimating the average treatment effect of parental unemployment on transition outcomes, we identify the economic, psychological or other intra-familial mechanisms that might explain any adverse impact of parental unemployment. Using longitudinal data from the German Socio-Economic Panel and propensity score matching estimators we find that paternal unemployment has an adverse impact on the likelihood of entering tertiary education, whereas maternal unemployment does not. We also find that the magnitude of the effect depends on the duration of unemployment. Even though we are unable to fully account for the underlying mechanisms, our mediation analysis suggests that the effect of paternal unemployment is not due to the loss of income, but relates to the negative consequences of unemployment for intra-familial well-being and students' declining optimism about their academic prospects.

1. Introduction

Social inequalities related to the intergenerational effects of unemployment is a topic of growing interest. Recent studies find that parental unemployment negatively affects children's psychological well-being (Bubonya, Cobb-Clark, & Wooden, 2017; Schaller & Zerpa, 2015), educational performance (Rege, Telle, & Votruba, 2011), educational ambitions (Andersen, 2013), attitudes towards work (Mooi-Reci, Bakker, Wooden, & Curry, 2019) and outcomes in education and the labor market (e.g. Brand & Thomas, 2014; Coelli, 2011; Lohmann & Groh-Samberg, 2017; Oreopoulos, Page, & Stevens, 2008). These adverse effects could arise because of negative consequences of unemployment such as reduced family income and increased levels of stress (e.g. Brand, 2015). Moreover, any negative consequences of parental unemployment experienced in childhood can be quite long-term, affecting children also in their early adulthood or even beyond if parental unemployment occurs at critical stages in a child's educational trajectory (Brand & Thomas, 2014; Lehti, Erola, & Karhula, 2017). All of this suggests that parental unemployment may have a significant role in enhancing educational inequalities and, through this channel, economic and labor market inequalities in the next generation.

Educational attainment has long been conceptualized in the sociological literature as the outcome of a multistage decision and transition processes (Breen & Goldthorpe, 1997; Erikson & Jonsson, 1996; Mare,

1980), but recent scholarship has only started to explore how parental unemployment affects these processes. A key question that animates the present paper is not just if, but why adverse effects of parental unemployment arise in educational transition processes. Previous research suggests that income loss due to unemployment is one reason (Coelli, 2011; Kalil & Wightman, 2011). Surprisingly, there is only limited empirical research on mechanisms other than parents' financial resources. The question is further complicated by the potential for differential effects of maternal and paternal unemployment. For instance, Kalil and Ziolk-Guest (2008) and Rege et al. (2011) find that paternal job loss has more severe effects on children's school performance than maternal job loss. Different implications of gender roles or gender differences in parents' relative contribution to household income may explain the greater impact of paternal unemployment on educational transitions. This paper extends the scarce empirical research on the mechanisms behind the intergenerational effects of unemployment.

We focus specifically on how parental unemployment that coincides with a child's secondary education affects the transition from school to post-secondary education in Germany. We focus on this transition because higher education is often a key to upward social mobility and economic security. We draw on the literature on educational transitions to describe the options available to school-leavers after secondary education, such as entry to tertiary education, vocational training, employment or inactivity. We identify different financial, educational

* Corresponding author.

E-mail addresses: lindemann@soz.uni-frankfurt.de (K. Lindemann), mgangl@soz.uni-frankfurt.de, mgangl@ssc.wisc.edu (M. Gangl).

or familial mechanisms that may generate a negative impact of parental unemployment on outcomes in the transition process. We specifically explore the roles of family income, adolescents' school performance, educational aspirations and perceived likelihood of success in post-secondary education, as well as the family's home environment as expressed in the degree of supportive parenting and parents' own life satisfaction. We also systematically compare the effects of maternal and paternal unemployment on transition outcomes.

In our empirical analysis, we rely on propensity score matching to identify the causal effect of parental unemployment on transition outcomes. Thus, our methodological approach contributes to the recent research that increasingly emphasizes the importance of causal inference in studying the effects of parental unemployment. Yet, we do not aim to give a strictly causal interpretation to the mediation analysis. We base our analysis on longitudinal data from the German Socio-Economic Panel (SOEP), which enables us to follow children living in a representative sample of survey households from early adolescence into their early adulthood. The SOEP survey also includes rich background data to control for the social selectivity of parental unemployment, and to test potential mediators for any adverse effect of parental unemployment on transition outcomes.

Two features of our analysis suggest that we focus on households that are economically relatively successful. First, because we wish to identify the impact of job loss rather than mere search unemployment, we restrict our sample to working families where either the mother or the father was employed prior to unemployment. Thus, we implicitly exclude families in chronic poverty from our analyses. Second, as we deliberately restrict our sample to the pool of young people who are eligible to enter tertiary education after completing secondary education, we also focus on a group that is positively selected in terms of academic ability and social background. However, even in this scenario of a least-likely test case in many respects, we obtain empirical evidence for a negative effect of parental unemployment on students' transitions from upper secondary education. The negative effect is evident for fathers' unemployment, not mothers', and relates specifically to a lower propensity to enter tertiary education and a higher probability to begin vocational training. We also find that loss of family income is not the relevant mechanism that drives the adverse intergenerational effects of unemployment in the German case.

2. German context

In many respects Germany may be considered a critical case study, where potential intergenerational effects of unemployment are likely to be muted. Relative to Anglo-Saxon countries, Germany has a generous unemployment benefit system and a largely public higher education system dominated by public universities without tuition fees¹ and supported by federal needs-based study grants for students from the most economically disadvantaged families. This speaks to a reduced role for financial constraints to prevent students' entry into higher education.

However, the German education and training system features an attractive non-academic alternative to university in the form of vocational training and dual-system apprenticeships (VET). Apprenticeships combine practical training in the firm with learning more general skills at vocational schools (Protsch & Solga, 2015). This pathway could be considered low-cost and low-risk for young people as apprentices already earn a small salary, gain professional experience and might even get a job in their training company after completing their training (typically as an intermediate level specialist). Previous research has suggested that the security offered by the vocational training is

¹ Beginning in 2007, some German states introduced quite moderate tuition fees (about 1000€ per academic year) but all abolished them again within a few years.

diverting students from lower socioeconomic backgrounds away from tertiary education (Hillmert & Jacob, 2003; Müller & Pollak, 2007), due to both higher perceived costs of university studies and a lower expected likelihood of success in those studies (Becker & Hecken, 2009). Similar considerations of risk aversion may generate a diversion from higher education in response to parental unemployment, even when Germany's institutional environment may not otherwise appear vulnerable to such intergenerational effects of unemployment.

3. Theoretical framework

3.1. Parental unemployment and educational transitions

Standard sociological models of educational attainment mostly focus on the effects of parental education and social class (Breen & Goldthorpe, 1997; Erikson & Jonsson, 1996). Their theoretical logic can also be applied to the possible role of parental unemployment in educational transitions. In the following we discuss mechanisms by which parental unemployment might affect transition outcomes, and summarize them in Fig. 1.

Taking a status attainment approach as a point of departure suggests that social influences from an early age support the formation of quite stable educational expectations that shape later educational decisions (Andrew & Hauser, 2011; Sewell, Haller, & Portes, 1969). For instance, Grodsky and Riegle-Crumb (2010) assert that some students form the expectation of attending a college in their childhood, and thus this transition is an eventual non-decision for them. We might expect that educational ambitions already formed by early adolescence should increase a student's (and her family's) resilience to later parental unemployment. However, recent research shows that students can change their expectations of attending college (Bozick, Alexander, Entwisle, Dauber, & Kerr, 2010) and family economic shocks reduce these expectations for students and their parents (Renzulli & Barr, 2017).

More specifically, parental unemployment may affect educational transitions through the economic, behavioral or attitudinal changes it brings, and the probable implications can be mapped within the framework of a standard but broadly conceived rational choice model of educational decision making (e.g. Breen & Goldthorpe, 1997; Erikson & Jonsson, 1996). As the Breen-Goldthorpe model expects families to evaluate financial costs against the subjective benefits of pursuing alternative educational options, weighted by the perceived likelihood of successfully completing them, families' economic circumstances deserve primary consideration. Research on the scarring effects of unemployment has unequivocally found that long-term household income tends to be reduced significantly after job loss (e.g. Brand, 2015; DiPrete & McManus, 2000; Gangl, 2006), making it also more difficult to manage the costs of children's higher education or provide additional learning opportunities during secondary education (e.g. extracurricular activities). For instance, two previous studies on populations in the United States and Canada suggest that income is an important factor that mediates the effect of parental unemployment on the next generation's educational outcomes (Coelli, 2011; Kalil & Wightman, 2011). Hence, we expect parental unemployment to have a negative effect on the likelihood of continuing in tertiary education (*H1*). Moreover, although family income may be a less decisive factor in a higher education system like Germany's, we expect income to serve as a mediator for this effect (*H2a*).

In general, parental unemployment might have important effects on transition outcomes over and above any direct economic implications. Parental unemployment has been shown to affect stress levels and personal relations in the family (Burgard & Kalousova, 2015; Kalil, 2013) and also children's mental health (Bubonya et al., 2017; Schaller & Zerpa, 2015). High stress levels might affect parents' ability to provide consistent psychological support and a stable learning environment for their child. Therefore, we expect emotional support from parents and their life satisfaction to serve as mediators for the negative

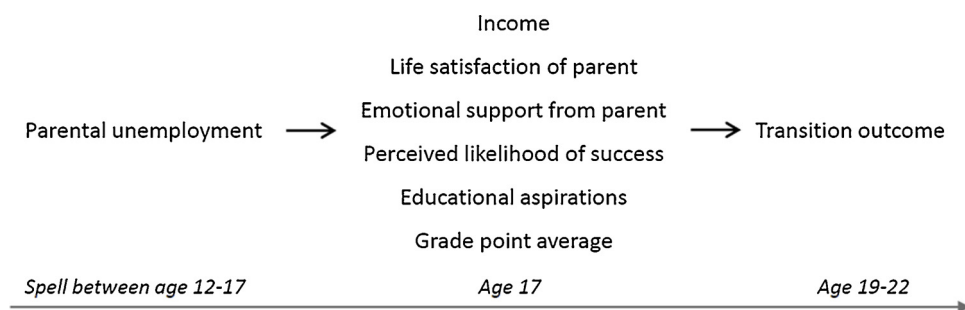


Fig. 1. A Stylized Model for the Mediation of the Effect of Parental Unemployment.

Note: Timeline for a child's age reflects the research design adapted in this study (cf. the discussion in the methods section for details).

effect of unemployment on transition outcomes (*H2b*).

The psychological consequences of parental unemployment could also affect students' subjective perceptions of either the benefits of or their perceived likelihood of succeeding in higher education. For instance, Peter (2016) finds that maternal job loss decreases a child's belief in self-determination in Germany. It is even possible that parental unemployment affects the value that families attach to higher education in general, following a pattern of adaptive preference change known as the 'sour grapes' phenomenon (Elster, 1983): to reduce cognitive dissonance, preferences may adapt to the feasible set of educational opportunities, typically by mentally downgrading the less accessible options. In accordance with this idea, some recent research in the United Kingdom finds that parental unemployment reduces a child's educational ambitions (Andersen, 2013), a result that aptly resonates classical findings of the Marienthal study from Depression-era Austria (Jahoda, Lazarsfeld, & Zeisel, 1971 [1933]; Jahoda et al., 1971; Jahoda, Lazarsfeld, & Zeisel, 1971 [1933]). Therefore, we expect educational aspirations and perceived likelihood of success to serve as mediators for the negative effect of unemployment on transition outcomes (*H2c*).

In addition, the important source of information that children and families have for educational decisions is the child's academic performance in school (Breen & Goldthorpe, 1997). Academic performance is known to be shaped by students' social background in the sense of the social, emotional, economic and cultural resources linked to a supportive home environment (Erikson & Jonsson, 1996) and unemployment may have detrimental effects on these resources. Empirically, Levine (2011) finds very limited evidence for an effect of parental unemployment on children's school performance in the United States while Rege et al. (2011) show that parental job loss has a negative causal effect on children's grade point average in Norway. Hence, we expect grades in school to serve as a mediator for the negative effect of parental unemployment on transition outcomes (*H2d*).

Finally, parental unemployment could lead to failed post-secondary transitions as it might affect attitudes and role models that parents transmit to their children as well as invoking social stigma. For instance, previous research provides some evidence that parents' unemployment increases the risk of joblessness for their children (Macmillan, 2014; Müller, Riphahn, & Schwientek, 2017; Oreopoulos et al., 2008; Vauhkonen, Kallio, Kauppinen, & Erola, 2017). More specifically, resourceful parents have better opportunities to provide positive encouraging role models (Haveman, Wolfe, & Spaulding, 1991); this might be more difficult for unemployed parents. Moreover, based on Dutch data, Mooi-Reci et al. (2019) find that parental unemployment reduces children's educational achievement because unemployment changes the work orientation within the family, namely by lessening its subjective importance to parents. In addition, children's relationships outside the family might be affected by parental unemployment. For example, Brand and Thomas (2014) suggest that social stigma attached to parental unemployment may have a long-term effect on children by reducing their well-being and educational outcomes. Therefore, we expect parental unemployment to increase the

risk of staying out of education and employment after completing secondary education (*H3*).

3.2. Maternal and paternal unemployment

The strength of any intergenerational effects of unemployment might depend on whether it is the mother or the father who is unemployed. To begin with, the financial consequences of a father's job loss might be more severe for the household. Although couples have increasingly moved to dual-earner arrangements also in Germany, men have remained the primary providers in many households as mothers often take up part-time employment (Trappe, Pollmann-Schult, & Schmitt, 2015). Another reason for gender-differential effects could be that, maybe linked to the threat implied to traditional male breadwinner roles, unemployment tends to distress men more severely than women (Paul & Moser, 2009), which generates further adverse spillover effects on the mental health of their spouse and other family members (Bubonya et al., 2017; Marcus, 2013).

In addition, there might be gender-specific patterns in how parents make use of their involuntary non-work time during unemployment: some time might simply be used for intensified parenting. The changes in time spent on housework during unemployment provide some indirect support for the possibility that mothers' unemployment might differ from fathers' also in this respect. For instance, Gough and Killewald (2011) show that unemployed women in the United States increase their time spent on housework twice as much in relation to unemployed men. Similarly, van der Lippe, Treas, and Norbutas (2017) conclude, based on data from 28 European countries, that unemployed women do more extra housework than unemployed men even though men also contribute more to housework during their unemployment than while employed.

Plausible as these considerations might be, previous empirical studies to compare the effects of maternal and paternal unemployment are rare and mostly point towards the importance of paternal unemployment. For instance, Kalil and Ziol-Guest (2008) show that in the United States, a father's involuntary joblessness in two-parent families has an adverse effect on children's academic progress but a mother's joblessness has no such effect. Similarly, Rege et al. (2011) find in a Norwegian study that paternal job loss has a negative effect on a child's school performance while the effect of maternal job loss is not significant. Both studies conclude that the reasons for the adverse effect of paternal unemployment relate to mental distress rather than income loss. However, some studies that focused solely on maternal job loss report significant adverse effects on the likelihood of enrolling in college (Brand & Thomas, 2014 for single mothers in the United States) and increased risk of grade repetition (Peter, 2016 for Germany).

4. Data and methods

4.1. Data and sample

This paper uses longitudinal survey data from the German Socio-Economic Panel (SOEP) to analyze empirically the effect of parental unemployment on children's transition outcomes and to test the possible mechanisms.² The SOEP is a large-scale longitudinal study that is representative of private households in Germany (Wagner, Frick, & Schupp, 2007). We use the SOEP data from all survey waves conducted between 1984 (the start of the SOEP study) until 2015. Our sample includes children born between 1973 and 1998.

Overall, we have information on the completion of secondary education for 5711 children living in SOEP families.³ However, we focus on young people who have the credentials to continue in tertiary education and thus restrict our sample to the 2295 school-leavers from SOEP families with either a full or a restricted upper secondary degree. More specifically, the secondary education system in Germany is highly differentiated and students are assigned to different tracks of secondary schooling (typically at age 10–12) based on their previous academic performance, but also effects of social background are strong at this transition point (Neugebauer, Reimer, Schindler, & Stocké, 2013). Importantly, however, a recent study in Germany finds no effect of paternal unemployment on this transition (Lohmann & Groh-Samberg, 2017). Only the graduates of upper secondary schools (*Gymnasium*) are eligible to enter tertiary education later on, whereas students who do not complete *Gymnasium* may choose to obtain a restricted upper secondary degree (*Fachhochschulreife*) that gives access to universities of applied science (see also Weiss & Schindler, 2017).

Furthermore we observe family life courses while children are in secondary school, to estimate the impact of parental unemployment that occurred at this stage of a child's education, i.e. when children were aged 12 years or older. Since a fair share of SOEP households joined the survey only when their children were already older (as a part of new or refresher samples), this age requirement further reduces our sample size to 1526 children who are present in the SOEP survey from age 12 onwards. Finally, when seeking to identify and estimate the impact of parental experiences of unemployment, information on parents' earlier employment status is critical. It is a relevant confounder to predict parental unemployment incidence and also a means of ensuring that our measure of unemployment reflects job loss rather than unemployment of parents who re-enter the labor force after a family-related work interruption, or any other type of long-term non-employment. To that end, we restricted our analysis to children whose parent was employed when the child was 12 years old. We defined parental employment as having worked for at least one month in the year when the child was 12. With this, our final sample for the analysis of mothers' unemployment includes 1027 children and 1321 children for our analysis of fathers' unemployment.⁴

When analyzing possible mediators for the effect of parental unemployment on transition outcomes, we can draw on a smaller sample of 793 children for whom more detailed information on potential mediating variables is available. Our main source of these variables is the SOEP's youth questionnaire that is filled in the year when children in SOEP households turn 17. Since this questionnaire was introduced in 2000 only, our available sample is restricted to respondents born between 1982 and 1998. Importantly, the treatment effect estimates in

this reduced sample are almost identical to those obtained in the main analysis, so that the more restricted cohort range is not an apparent source of bias in the mediation analysis (see the results section for more details). Also, as we do not find any treatment effect for maternal unemployment, we conduct and report on the mediation analysis only for the case of paternal unemployment (again, see the Results section below).

4.2. Variables

The treatment variable of interest in our analysis is the unemployment experience of a parent (either the mother or the father) while the child attended secondary school. We use the SOEP calendar data to identify parents' unemployment spells, i.e. the exact times when a parent was not employed and looking for work. We only consider those spells in our analysis where the parent was unemployed for at least for 4 months within an observation window of 2 years, to remove singular short-term unemployment spells between job changes unless these are frequent.⁵ In the main analyses, we focus on the effect of parental unemployment that occurred when the child was aged 12–19 years. For the mediation analysis we restrict this age range to 12–17 years, i.e. before the measurement of the mediator variables in the SOEP youth survey. Overall, about 11% of fathers and 13% of mothers experienced some unemployment in the full transition sample, and 9% of fathers in the mediation sample.

We assess the impact of maternal and paternal unemployment on a child's transition outcome within three years of leaving upper secondary education. By choosing this timeframe, we seek to discount the gap year that some school-leavers take as well as military or social service that was compulsory for men in earlier cohorts. We study whether school-leavers (1) enter tertiary education, (2) enter a vocational training program (VET), (3) are in paid employment or (4) are out of education and work (NEET), i.e. either economically inactive or unemployed. In the case of multiple outcomes, we prioritize the coding of outcomes as listed, e.g. we code school-leavers who enrolled in tertiary education but also had an employment spell as students in tertiary education. In line with the tracked nature of the German schooling system, sample descriptives show that only a small fraction of school leavers from upper secondary education remain in NEET status for three years after finishing school (see Table 1). Moreover, young people whose fathers have experienced unemployment enter tertiary education less often than their peers do. The same holds for children whose mother has been unemployed, albeit to a lesser extent.

Moreover, the SOEP dataset includes a rich set of control variables that may predict parental unemployment as well as children's transition outcomes. All parental and household variables refer to the time when the child was 12 years old. We expect the following paternal or maternal employment characteristics to predict unemployment incidence: industry and size of the company where the parent was employed, net labor income decile and years of working experience in full-time employment. We also control for parents' satisfaction with health, the level of education and whether the parent was born in Germany. As mothers tend to shift to part-time work after childbirth in Germany (Trappe et al., 2015), our analysis of maternal unemployment also includes variables to indicate whether the mother worked part-time (< 35 h per week) and a measure of part-time work experience (in years). We also control for parents' age as parents at the prime working age might have different unemployment risks than younger parents (below 35) or older parents (50+). In addition, we control for unspecified period effects and whether the respondent lived in a rural area or in East Germany.⁶

² The SOEP version 32, doi: 10.5684/soep.v32.1.

³ We excluded the few households where one of parents was less than 17 at child's birth as employment patterns might be very specific for such households.

⁴ We do not correct for the selection into secondary school track in the analysis. This is because we do not aim to generalize any of our results to young people who have only completed the vocational school track that does not allow direct access to tertiary education.

⁵ In sensitivity analyses we also included shorter unemployment spells and find, as expected, that very short spells do not have any visible negative effects on transitions (see Fig. 4 below).

⁶ East Germany joined the SOEP after Germany's reunification. Since our

Table 1
Distribution of Covariates in the Sample.

	Mother				Father			
	Employed		Unemployed		Employed		Unemployed	
	Mean/%	SE	Mean/%	SE	Mean/%	SE	Mean/%	SE
Parent's characteristics (age 12)								
Subjective health	7.3	(.06)	6.7	(.17)	7.2	(.06)	6.7	(.18)
Full-time work experience (years)	9.3	(.21)	8.7	(.52)	19.3	(.18)	19.8	(.56)
Full-time employment	39		51		–		–	
Part-time work experience (years)	5.2	(.16)	3.8	(.40)	–		–	
Wage decile	3.9	(.09)	3.1	(.16)	8.2	(.06)	5.9	(.21)
<i>Size of firm</i>								
Self-employed, no employees	3		3		4		3	
1–99 employees	44		44		28		50	
100–1999 employees	37		41		39		35	
More than 2000 employees	16		11		28		12	
<i>Economic sector</i>								
Energy, construction, transport	10		14		30		50	
Manufacturing	10		20		24		21	
Trade	14		25		9		15	
Service	66		41		37		14	
<i>Age group</i>								
34 or younger	12		20		4		6	
35–49	85		79		86		81	
50 or older	3		1		10		13	
Born outside Germany	11		15		14		23	
<i>Level of education</i>								
Lower secondary	5		9		4		10	
Upper secondary	47		61		43		57	
Post-secondary non-tertiary	12		5		13		19	
Tertiary	36		25		40		15	
<i>Period</i>								
1984–1990	14		12		20		14	
1991–1995	21		38		21		27	
1996–2000	23		21		21		23	
2001–2006	36		25		33		34	
2007–2009	6		4		5		3	
Household situation (age 12)								
Other parent is employed	88		78					
Other parent employed part-time					42		18	
Other parent employed full-time					24		32	
Lives in East Germany	29		50		23		43	
Lives in rural area	32		39		29		45	
Single parent	7		12		–		–	
<i>Number of kids (age < 16)</i>								
1 (= target child)	25		37		21		30	
2	56		45		52		48	
3 or more	19		18		26		21	
Child's characteristics								
Female	52		61		52		53	
Full upper secondary degree	90		88		90		80	
Other parent has higher education	37		20		29		26	
Other parent born outside Germany	11		12		15		23	
Child's transition outcomes								
Tertiary education	53		48		56		41	
Vocational training	36		40		35		47	
Employment	9		10		7		9	
NEET status	2		2		2		3	
N	890		137		1176		145	

Note: Unweighted distributions.

We include variables measuring the number of children younger than 16 in the household and the other parent's migration status, level of education and employment status. We also control for whether the child lived with a single mother; the number of single father households

(footnote continued)

unemployment definition requires observing the family in the year when the child was 12, our sample does not include parental employment before reunification.

is too marginal to permit any meaningful distinction. We also include the child's gender and the type of upper secondary degree (restricted or full). Table 1 gives a detailed overview of all the covariates we use in the analysis. Appendix A presents a directed acyclic graph showing that with the exception of the child's gender and the migration status of the other parent, we expect all control variables to predict both parental unemployment and transition outcomes. Even employment characteristics of parents such as economic sector, firm size and wage decile, likely indicate social class and income security that could affect educational transitions (see also Appendix B). The child's gender and the

migration status of the other parent are possible moderator variables which are not central to our analysis, but we include them in the models for more accurate matching of the treatment and control group.

In the subsequent mediation analysis, we are able to test empirically the role of six mechanisms that could account for the treatment effect of parental unemployment on transition outcomes. First, we test the possible mediating role of families' financial resources measured as the family's relative economic position in terms of *household net disposable income*, expressed as its decile position. Because the SOEP provides annual income data, we use family income when the child was 18 years old. In addition, we also include the difference between the family's income decile when the child was ages 12 and 18 as a measure of the *change in households' economic position* while children attended secondary education. Second, as a catch-all indicator of psychological stress, we test for the role of *parent's life satisfaction* when the child was 17 years old. Third, the SOEP measured perceived *paternal emotional support* based on adolescents' replies to nine questions (see online Appendix C) about supportive parenting. We took the average of these replies and coded it into five categories: very low support (more than 1 standard deviation (SD) below the mean), rather low support (at most 1 SD below the mean), rather high support (at most 1 SD above the mean), very high support (more than 1 SD above the mean) and missing answer. Fourth, we test the role of students' subjective perceptions of their own *likelihood of academic success*. The SOEP asked young people to estimate their probability of being accepted for an apprenticeship or at the university to study their desired profession, which respondents answered on a scale from 0% to 100%. In conceptual terms, it is important to note that this question refers to the student's perception of chances of achieving personal occupational aspirations (and to acquire the required educational certificates) and not specifically to the expected success in an academic program at university. Fifth, parental unemployment could have an adverse impact on *educational aspirations*, which we measure with a variable that indicates whether students plan to seek a tertiary education (university or university of applied sciences) degree. Finally, we test the role of academic performance, measured as students' *grade point average* (GPA) in the first foreign language, math and German on the last report card.⁷

It is worth repeating that we face the practical constraint that virtually all potential mediators refer to the situation at age 17, as that is when respondents are asked to provide the relevant information in the SOEP Youth Questionnaire module. By implication, our mediation analysis does not and cannot revolve around the contemporaneous effects of parental unemployment on any of the mediators in the short run, as parental unemployment spells may have ended by age 17 already. But what we can and do assess is potential longer-term effects of parental unemployment on the mediators, i.e. unemployment-induced effects on mediators that persist up until the age of 17 and that therefore also may assume factual relevance for youth transitions after upper secondary education.

4.3. Methods

Our empirical analysis aims to identify the causal effect of parental unemployment on children's transition outcomes. We base our analysis on an observational design that seeks to estimate the treatment effect of interest from the comparison of outcomes in the treatment and the control group, while holding constant theoretically relevant and empirically observable confounders. For this purpose, we use non-parametric propensity score matching (PSM) estimators to account for potential selection into parental unemployment (Rosenbaum & Rubin, 1983). To estimate the treatment effect of interest empirically, PSM constructs the counterfactually expected transition outcome for each

⁷In contrast to German practice, grades are rescaled so that higher grades denote higher performance.

child whose parent was unemployed using data on the outcomes of children whose parents were not unemployed but who are otherwise as similar as possible to the focal child in terms of observed characteristics X of parents and children. By expressing similarity between observations through a one-dimensional propensity score, PSM reduces the high dimensionality-comparison across a multitude of observed covariates X to an empirically manageable one-dimensional comparison.

In our analysis, we will specifically focus on estimating the average treatment effect on the treated (ATT) because this quantity expresses the transition outcomes that children of unemployed parents would have had without the experience of parental unemployment (treatment D). Empirically, the ATT is calculated as the average of all differences between the factually observed outcomes (Y) of individuals i in the treatment group ($D_i = 1$) and the counterfactual outcome estimated from the factually observed outcomes among observationally similar individuals j from the control group ($D_i = 0$) for the sample of treatment group observations (e.g. Gangl, 2015; Morgan & Winship, 2015):

$$ATT_{match} = \frac{1}{N^{D=1}} \sum_{i|D=1} \left[Y_i - \sum_{j|D=0}^0 w_{ij} Y_j \right]$$

where $N^{D=1}$ is the number of observations in the treatment group and w_{ij} denotes the matching weight that, based on the propensity score, any control group observation j receives in the computation of the counterfactually expected outcome for a treatment group observation i .

For our PSM analysis, we first estimate the propensity scores from a logistic regression model to predict the incidence of parental unemployment from the observed covariates X . Based on the estimated propensity scores, we apply the kernel matching estimator (Heckman, Ichimura, & Todd, 1998).⁸ It has the advantage of using all cases in the control group to construct the counterfactuals and thus reducing the variance of the resulting treatment effect estimates.⁹ Empirically, post-estimation tests also showed that residual bias was marginal after balancing control and treatment groups in our analysis, so that our PSM estimator rests on acceptable covariate balance (online Appendix D). Moreover, PSM methods allow estimation of treatment effects only over the common covariate support in the treatment and control group overlap, yet due to the large reservoir of control group cases, we were able to assign counterfactual observations to almost all children of unemployed parents in our analysis (see online Appendix D again). As a further robustness check, we compare the ATT estimates from PSM matching with the corresponding estimates from a linear probability regression. Both methods share the principal vulnerability of inferences to unobserved confounders, but the comparison will at least illuminate whether our conclusions were to change in linear probability models that trade-off parametric functional form assumptions for greater statistical efficiency (Imbens, 2015).¹⁰

Following up on the main analysis, the mediation analysis explores the mechanisms through which the causal effects of parental unemployment on children's transition outcomes may operate. We again use PSM estimators and implement a PSM mediation model by conditioning on mediators (M) as well as pre-treatment confounders (X), i.e. by incorporating the covariate vector (M, X) in the assignment model and by subsequently balancing observations across the joint ($M,$

⁸We used an Epanechnikov kernel function and bandwidth parameter 0.05 for transition analysis and 0.06 for mediation analysis.

⁹As a robustness check, we also conducted our analysis using entropy balancing matching (EBM). In contrast to PSM methods, EBM focuses on achieving covariate balance at the level of the raw data directly (in terms of mean, variance and skewness of covariates). Empirically, we found no relevant difference in results attained with these two methods.

¹⁰We expect panel attrition not to bias the ATT estimates, as additional analysis shows that paternal unemployment did not increase the likelihood of dropping out from the SOEP among households where the father was employed when the child was 12 years old. The same applied for mothers.

X) distribution (see Huber, Lechner, & Mellace, 2017 for a related application).¹¹ Conceptually, the effect of parental unemployment on children's transition outcomes most likely arises through multiple mechanisms, and a causal interpretation of mediation in this case would require that each of the mediators *M* may be considered exogenous after conditioning on other mediators, the treatment and pre-treatment covariates (Imai & Yamamoto, 2013). However, given our limited sample sizes, we refrain from simultaneously conditioning on all possible mediators in a single specification, but present the results from multiple PSM mediation models that include single mediators or a combination of a few selected mediators instead. As a result, we will not offer a strictly causal interpretation of our mediation analysis, but rather see it as an attempt to explore and describe empirical evidence about what the mediating variables on the path between parental unemployment and the transition outcomes of their children might be.

5. Empirical results

5.1. The average treatment effect of parental unemployment

We begin our analysis with the estimation of the incidence of parental unemployment, i.e. the assignment model of the PSM estimator. The logistic regression models show that mothers and fathers who have lower levels of education are more likely to be unemployed, as are parents who were located at lower deciles of the income distribution, who lived in East Germany and who had a non-employed partner (see Table 2). Table 2 also suggests that mothers whose work experience is shorter, whose health is poorer and who live with a less-educated partner face a higher risk of unemployment. In addition, fathers' likelihood of unemployment is affected by firm size, economic sector and age. Fathers whose children attained a restricted upper secondary degree were more likely to experience unemployment.¹² Note that the assignment models include the child's gender and the migration status of the other parent not as predictors of parental unemployment in any causal sense, but because they might predict children's transition outcomes and moderate the effect of parental unemployment. Hence, respective covariate adjustment improves the estimation of causal inference.

Based on the assignment models of Table 2, we constructed the propensity scores as the predicted probability of maternal and paternal unemployment and then applied these in conjunction with kernel matching to tackle the selection into unemployment and to estimate the ATT. Fig. 2 presents our ATT estimates for the effect of maternal unemployment on children's transition outcomes. Fig. 3 below has the corresponding ATT estimates for the effect of paternal unemployment. In both cases we present our ATT estimates from both the PSM and the LPM model. The results are mutually very consistent and thus do not

¹¹ Empirically, we had to slightly adapt some covariates to achieve successful covariate balance with a smaller sample size. These changes are the following: 1) for father's age, we only distinguish whether the father is aged 50 or younger; 2) instead of the migration background of the parent we use a binary variable for the child's own migration background; 3) we combined services and trade sectors into one industry code; 4) the variable for maternal employment does not separate full-time and part-time employment; 5) we do not include period effects because the cohort range is more confined in the mediation sample.

¹² Although the type of degree attained at the end of upper secondary is measured after parental unemployment, sorting to the school track occurs before parental unemployment. Yet, as mobility between tracks is empirically limited (Hillmert & Jacob, 2010), we see this as a defensible approximation in practice. Given that parental unemployment might induce some downward track mobility as a relatively strong response in terms of children's declining school performance (Macmillan, 2014), the fact that we include the type of degree (rather than the track attended) implies that our estimates of the effects of parental unemployment on transitions are likely to be conservative.

Table 2
Logistic Regression Predicting Parental Unemployment.

	Mother		Father	
Parent's characteristics at age 12				
<i>Level of education (ref. lower)</i>				
Secondary	-.423	(.445)	-.929*	(.420)
Post-secondary	-1.159+	(.604)	-.602	(.485)
Tertiary	-.876+	(.519)	-1.568***	(.510)
<i>Age group (ref. 34 or younger)</i>				
35–49	.221	(.289)	.473	(.437)
50 or older	-1.504	(1.144)	1.328*	(.628)
Not born in Germany	.629	(.489)	.095	(.451)
Full-time work experience	-.083***	(.024)	-.024	(.021)
Part-time experience	-.075**	(.028)	–	
Full-time employment	.124+	(.071)	–	
Subjective health	-.177***	(.054)	-.036	(.050)
Wage decile	-.145*	(.063)	-.267***	(.050)
<i>Economic sector (ref. energy, construction, transport)</i>				
Manufacturing	.577	(.385)	-.506*	(.256)
Trade	.258	(.360)	.114	(.309)
Service	-.398	(.327)	-.934**	(.300)
<i>Size of firm (ref. self-employed)</i>				
1–99 employees	-.189	(.587)	1.425*	(.610)
100–1999 employees	-.207	(.592)	.916	(.625)
More than 2000 employees	-.185	(.649)	.821	(.663)
<i>Period (ref. 1984–1990)</i>				
1991–1995	.777*	(.356)	.626+	(.353)
1996–2000	-.022	(.382)	.490	(.360)
2001–2006	.017	(.381)	.637+	(.344)
2007–2009	.109	(.597)	.317	(.625)
Household situation at age 12				
<i>Other parent is employed (ref. not employed)</i>				
Other parent is employed full-time			–1.046***	(.269)
Other parent is employed part-time			–1.364***	(.271)
Lives in East Germany	1.454***	(.300)	.667*	(.309)
Lives in rural area	-.079	(.240)	.327	(.230)
Single parent	.058	(.526)	–	
Number of children in the household	-.315*	(.169)	-.146	(.153)
Child				
Female	.405+	(.209)	.109	(.203)
Full upper secondary degree	-.049	(.323)	–1.017***	(.273)
<i>Education of other parent (ref. no higher)</i>				
Higher education	-.515+	(.265)	-.059	(.269)
Missing	-.234	(.568)	–	
Other parent not born in Germany	-.354	(.521)	.379	(.441)
Log likelihood	–329.55		–348.74	
Pseudo R square	.183		.237	

Note: Coefficients from logistic regression models; *N* = 1027 for mothers; *N* = 1321 for fathers; standard errors in parentheses; ****p* < .001, ***p* < .01, **p* < .05, +*p* < .1 (two-tailed tests).

appear to critically depend on the specific assumptions of either estimator, so we simplify the following presentation of results by focusing exclusively on the PSM estimates.

As far as a mother's unemployment is concerned, we find no evidence of any causal effect of unemployment on children's post-secondary education transition outcomes in Germany (in contrast to H1 that expected parental unemployment to have a negative effect). In Fig. 2, we provide three different ATT estimates that seek to ascertain the impact of maternal unemployment across all possible post-secondary pathways. Yet neither for the probability of entering tertiary education, nor for the probability of choosing to pursue tertiary education vs. vocational training, nor for the probability of NEET status do we find any evidence of an adverse impact.

It is important to stress that these findings refer to the average treatment effect of unemployment in the sample of all working mothers. As recent research in the U.S. has reported evidence of negative inter-generational effects of unemployment among single mother families

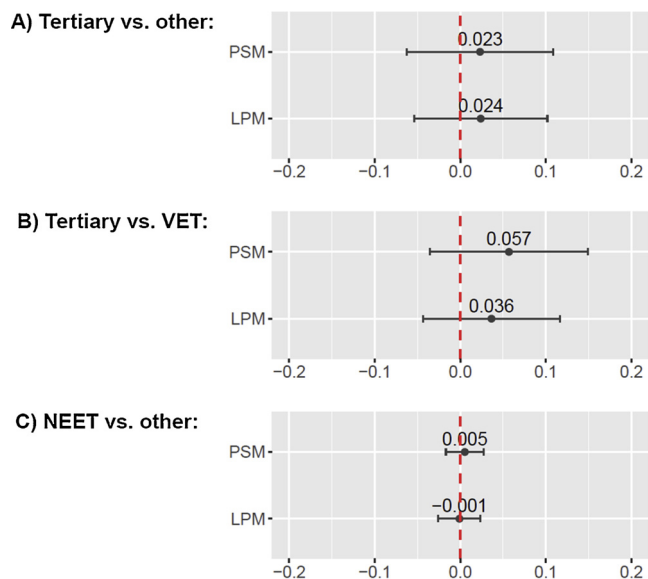


Fig. 2. ATT Estimates for the Effects of Maternal Unemployment on Transition Outcomes.

Note: $N = 1027$ for outcomes A and C; $N = 872$ for outcome B; 90 percent confidence intervals; online Appendix D reports bootstrapped standard errors and significance levels of ATT estimates, common support and the results of balancing tests.

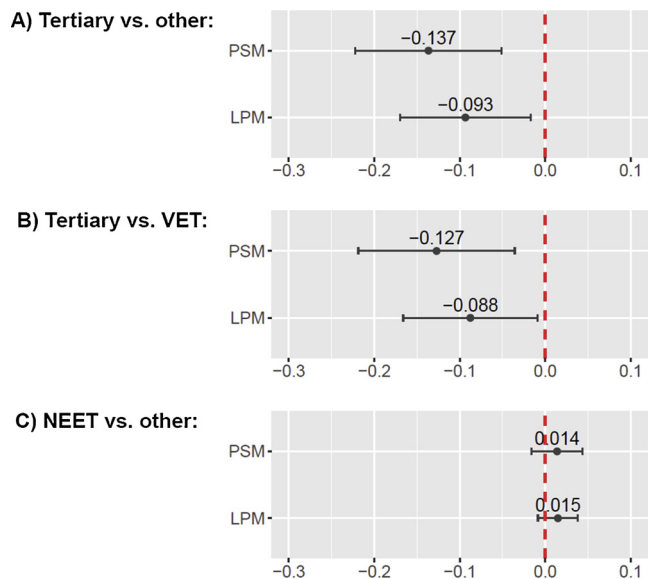


Fig. 3. ATT Estimates for the Effects of Paternal Unemployment on Transition Outcomes.

Note: $N = 1321$ for outcomes A and C; $N = 1142$ for outcome B; 90 percent confidence intervals; online Appendix D reports bootstrapped standard errors and significance levels of ATT estimates, common support and the results of balancing tests.

(see Brand & Thomas, 2014), it would of course be of interest to focus on this group in our case too. However, the relatively small size of our sample and the low prevalence of single motherhood in Germany (around 10% of mothers in our sample, see Table 1) does not allow for any more differentiated analysis along these lines.

These findings in the case of a mother's unemployment stand in sharp contrast to the results on the impact of a father's unemployment on children's post-secondary transition outcomes. In line with our expectations (H1), empirical results in Fig. 3 show that paternal unemployment indeed has a clear adverse effect on children's transition

outcomes. Students whose father experienced unemployment while they were in secondary education have about a 14 percentage points lower likelihood of continuing in tertiary education than students whose father was not unemployed during their secondary education (Fig. 3, panel A). Panel B in Fig. 3 shows that the treatment effect of paternal unemployment is -13 percentage points if we compare only the choice between tertiary education or vocational training. The similarity between these ATT estimates indicates that the main effect of paternal unemployment in Germany is to channel students away from higher education and into the VET system. As shown in the ATT estimates presented in Panel C of Fig. 3, and contrary to our hypothesis that expected parental unemployment to increase the risk of staying out of education and employment (H3), there is again no evidence that parental unemployment would induce severe transition problems involving extended periods of NEET status.¹³

In additional sensitivity analyses, we tested whether accounting for paternal unemployment that occurred before a child was 12 years old would change our conclusions. This tests whether the effect of paternal unemployment that we observe might be a severe long-term effect of parental unemployment that the child experienced already in the childhood. We added the overall duration of earlier unemployment spells to the covariate vector of the PSM (and LPM) model, but found no evidence of any meaningful difference in the ATT estimates (see online Appendix E for details). In other words, we find that our results indeed speak to a genuine causal effect of paternal unemployment during secondary schooling, independently of whether this might have been the first or a repeated spell of unemployment for the father. However, as the model's balancing tests are not as good as for the simpler models from Fig. 3, we prefer to use the latter specification in the remaining analysis.

To further probe whether it is not simply the incidence, but rather the severity of paternal unemployment experiences that might be relevant for children's transition outcomes, we explore whether the ATT estimates vary with the duration of paternal unemployment. This provides an empirical corroboration for our theoretically informed decision to disregard very short spells of parental unemployment in our main analysis. Fig. 4 shows that when fathers experienced only short-term unemployment while their children attended secondary schooling, there was no subsequent discouragement of entry into tertiary education at all. If anything, the point estimate is even positive, although not reaching statistical significance. Fathers' longer unemployment spells, however, reduce the likelihood that children enter tertiary education, and this negative effect increases with the duration of the father's unemployment. Among children whose father had a total of 4-12 months of unemployment, our ATT estimate indicates that the probability of entering tertiary education falls by some 10 percentage points, yet this transition penalty increases to 17 percentage points for children whose father had been long-term unemployed.

Moreover, although our assignment model includes several variables that measure parental occupation indirectly, we estimated additional models with father's occupational status (ISEI) and occupation-based social class (EGP). As expected, Appendix B shows that ATT estimates almost do not change after controlling for paternal occupation.

¹³ Our results differ from the findings in Müller et al. (2017). Using data from the SOEP, they report that paternal unemployment even increases the likelihood of college attendance for daughters, while it has no effect on the college attendance of sons. In our view, the main reason for the discrepancy in results is the more theoretically informed research design adopted in the present paper. In contrast to Müller et al. (2017) analysis: (1) we deliberately excluded short spells of parental unemployment that are unlikely to create transition problems; (2) we ensured that our treatment variable refers to unemployment experiences that occurred during secondary education; (3) our treatment variable (predominantly) captures job loss rather than mere search unemployment; (4) we also condition on the sorting of children into the academic and non-academic tracks of the German secondary educational system (see footnote 11).

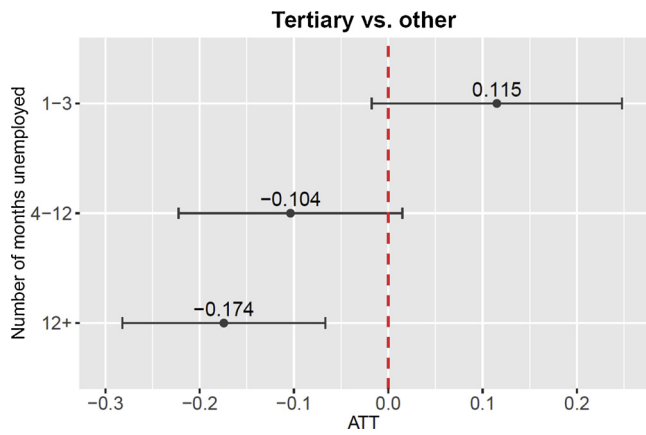


Fig. 4. Effects of the Duration of Paternal Unemployment on Transition Outcomes.

Note: ATT estimates from propensity score matching analysis, duration is measured in months; control group is young people whose parents did not experience unemployment; $N = 1080$ for 1-3 months; $N = 1193$ for 4-12 months; $N = 1208$ for 12+ months; 90 percent confidence intervals; online Appendix D reports bootstrapped standard errors and significance levels of ATT estimates, common support and the results of balancing tests.

However, since PSM model balancing tests are not as good as for the simpler model, we used a specification without occupation in the main analysis.

5.2. Mediation analysis

We next explore why paternal unemployment has an adverse effect on children’s post-secondary transitions. Due to the reduced sample size available for the detailed mediation analysis, we focus here on the contrast between entering tertiary education vs. all other transition outcomes. Fig. 5 reports the corresponding ATT estimates that we

obtained as the estimates of the (residual) direct effect from a series of PSM mediation model estimators. Although the sample size (and, indirectly, the range of birth cohorts that can be included in the analysis) is reduced relative to the main analysis, our baseline ATT estimate from a model without mediators is -13 percentage points (see model M1 in Fig. 5), which closely replicates the findings from the main analysis of the preceding paragraph. In further specifications, we explore the role of several potential mediating factors discussed in our theoretical framework. Specifically, models M2 and M3 explore the role of family income, models M4 and M5 the role of supportive parenting and family stress, and models M6-M8 evaluate the contribution of educational aspirations and children’s subjective expectations of educational success and school performance. In addition, models M9-M11 present three further extensions of the basic mediation analyses that will be discussed in more detail below.¹⁴ Because of limited sample size we refrain from giving a strictly causal interpretation to this mediation analysis, as we are not able to estimate all possible causal pathways and possible confounders for relationship between mediators and outcome. Our aim is rather to explore and describe empirical evidence on possible mediating variables on the path between parental unemployment and the transition outcomes of their children.

In contrast to some recent results for the U.S. and Canada, but not wholly unexpected in the German institutional context, we find that household income does not mediate the adverse effect of paternal unemployment (see model M2 in Fig. 5). To understand these findings, we estimated a series of supplementary linear regression models to quantify the nature of the relationships along the paths between paternal unemployment, the mediators and transition outcomes (for this and other mediators in the analysis, see online Appendices F and G). We find that parental unemployment leads to lower family income, but family income does not influence students’ propensity to continue their education in the tertiary system in Germany (at least when social background is controlled for). The same applies when we explicitly add the change in household income during secondary education to the covariate vector (see model M3 in Fig. 5). Thus, results do not support

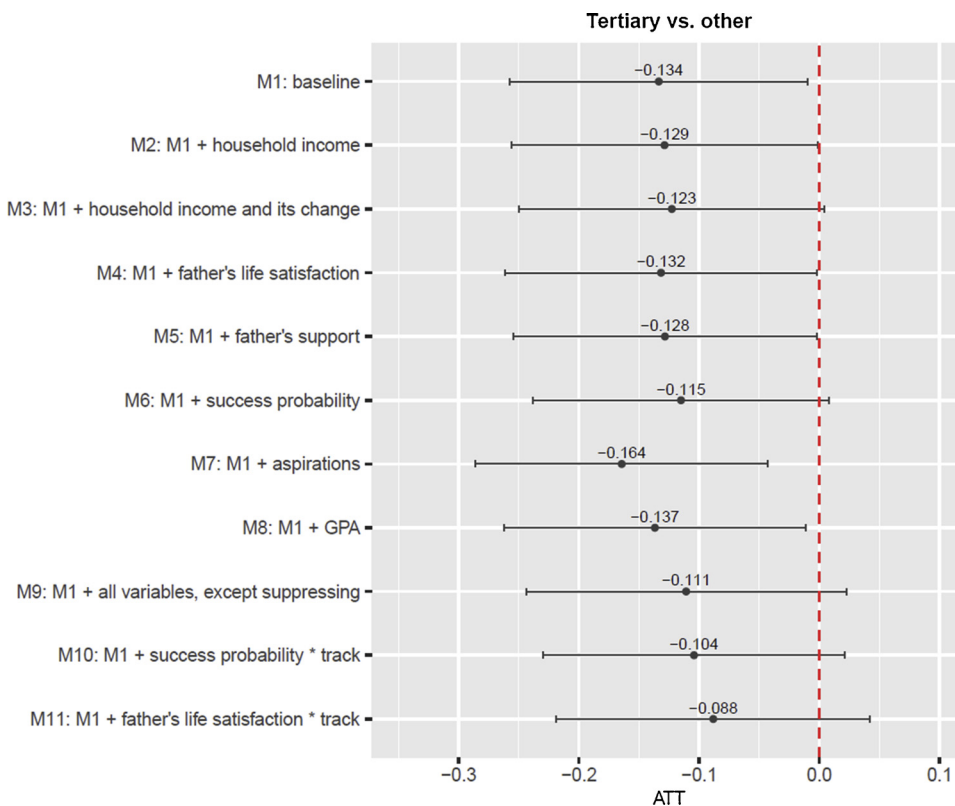


Fig. 5. Mediation of the Effect of Paternal Unemployment on Transition Outcomes.

Note: ATT estimates from propensity score matching analysis; baseline model includes all control variables; each mediator is added separately to baseline model M1; $N = 793$; 90 percent confidence intervals; online Appendix D reports bootstrapped standard errors and significance levels of ATT estimates, common support and the results of balancing tests.

H2a that expected income to serve as a mediator for the effect of parental unemployment.

On the side of intra-familial stress factors neither father's life satisfaction nor the emotional support the child reported to receive from the father mediate the adverse effect of paternal unemployment on entering higher education (see M4 and M5 in Fig. 5). Further analysis shows that paternal unemployment reduces the amount of perceived emotional support from father as well as father's own life satisfaction, confirming our theoretical expectations (see online Appendices F and G). However, supportive parenting and father's life satisfaction both have at best very minor effects on children's entry into higher education (in contrast to H2b proposing that these consequences of unemployment serve as mediators for the effect of parental unemployment on educational outcomes).

As regards educational factors, however, Model 6 suggests that students' subjective expectations of academic success work as a partial mediator for the treatment effect of paternal unemployment. In M6, the (residual) direct effect estimate is reduced to 11.5 percentage points. Our supplementary analyses indeed show that father's unemployment somewhat reduces the likelihood that children believe they can be successful in attaining their desired career (the effect is no longer statistically significant if all covariates are included, however). We also find that these subjective expectations of academic success are a clear predictor of enrollment in tertiary education (see online Appendices F and G again). This finding provides support to H2c that expected perceived likelihood of success to mediate the negative effect of parental unemployment.

In contrast, models M7 and M8 reveal that neither grades nor educational aspirations contribute to mediate the adverse effect of paternal unemployment on students' chances of entering tertiary education.¹⁵ From supplementary analyses, we find that grades and educational aspirations strongly predict enrolment in tertiary education (online Appendices F and G), but we also find that a father's unemployment does not have any effect on his children's aspirations and has even a slight positive effect on the grade point average in Germany (in contrast to H2c and H2d that expected aspirations and grades to mediate the adverse effect of parental unemployment).

Because of the very modest results from these different single-mediator specifications, we implement and report a few selected multiple-mediator PSM estimates to get a better sense of whether the joint impact of several mediators might better explain the treatment effect of interest. As a first extension, we tested a mediation model that included all mediator variables except those that were found to suppress the effect of paternal unemployment on transition outcomes (i.e. grades and aspirations). However, this is not much more effective empirically than considering adolescents' subjective expectations of academic success alone (compare models M6 and M8 in Fig. 5). As a second extension, we considered the possibility that the importance of potential mediators depends on whether a child attends a school track leading to a restricted or a full upper secondary degree (i.e. a *Fachgymnasium* or a traditional *Gymnasium*). Given the clear academic orientation in the traditional *Gymnasien* from ages 10 or 12, it might be presumed that educational trajectories are more firmly settled and more of a non-decision there. On the other hand students in the *Fachgymnasien* might be a more selective group in terms of high educational motivation because

¹⁴ We assume that these variables are mediators and not moderators for the relationship between parental unemployment and educational transition for three reasons. First, theory and previous research suggest that parental job loss affects these variables. Second, we measure them after parental job loss. Third, we control for some similar pre-unemployment variables that affect the likelihood of job loss, such as wage decile and the subjective health of parent.

¹⁵ We also tested whether the effects of potential mediators might differ depending on students' academic performance, but found no support at all from models with full interactions between grades and all other mediator variables at our disposal (results not presented).

enrolling in these schools requires an explicit decision by the student after grade 10. We tested the interactions between school track and all potential mediators and report the two instances where we obtained some findings of interest in Fig. 5. Model M10 demonstrates that the mediating role of students' subjective success probability differs between tracks (and reduces the negative direct effect of paternal unemployment to 10 percentage points). The same is true for father's life satisfaction (see M11, where the residual ATT drops to less than 9 percentage points), which provides some support to H2b proposing that high stress levels in the family might mediate the effect of parental unemployment. Interestingly, additional analysis indicates in both cases that the mediators affect the educational decisions of students from traditional *Gymnasien* more strongly than their peers from more vocationally oriented *Gymnasien* (results not presented).

6. Conclusion

Recent scholarship has expressed a growing concern about durable intergenerational effects of unemployment that may affect socio-economic outcomes in the next generation. This study has sought to extend the previous literature by shifting the focus to educational transition instead of final attainment, and by evaluating the impact of parental unemployment preceding critical decision points in educational trajectories. We specifically investigated how parental unemployment affects the likelihood of different transitions after upper secondary schooling, which has become the decisive educational decision point in the post-industrial economies. By using longitudinal data for Germany, our analysis contributes new empirical evidence on the intergenerational effects of unemployment in an institutional environment that might be expected to render educational trajectories rather resilient to the adverse impact of economic shocks.

Nevertheless, our findings suggest that parental unemployment, especially a father's unemployment, has a strong negative impact on children's education decisions even in a favorable institutional environment like Germany's. We find that paternal unemployment reduces the likelihood that students enter tertiary education, and increases the likelihood that they pursue vocational training (VET) instead. In the German debate, this pathway is often regarded as offering more secure employment prospects and thereby deterring working-class children from academic trajectories (Müller & Pollak, 2007). Applying the same reasoning to the case of adverse intergenerational effects of unemployment would suggest that a father's unemployment triggers transitions into Germany's high-quality VET system as the preferred training strategy among risk-averse families, and students under economic uncertainty and stress.

Although lacking definitive proof, the findings from our mediation analysis would be consistent with this interpretation in principle. Our empirical findings certainly underscore that family income is not a mediating factor in explaining the intergenerational effect of (father's) unemployment. This result may be somewhat surprising as men are still primary breadwinners in many households in Germany (Trappe et al., 2015), yet the irrelevance of financial constraints is in perfect accordance with the institutional environment of both Germany's education and training system and its larger welfare state. Public universities and need-based federal study grants reduce direct financial barriers to access, and generous unemployment benefits and other transfers protect family income after job loss. Some of our findings from the mediation analysis point towards a role for more psychological consequences of unemployment, notably on children's subjective expectations of academic success and also family stress levels as indexed by father's life satisfaction. Both of these variables partially explain the treatment effect of interest, especially when we allow mediation effects to vary between school tracks. But as the results from the mediation analysis are quite modest overall, it would be consistent to conclude that the event of parental unemployment may not so much *change* educationally relevant orientations as simply imply a heightened sense

of economic insecurity to which students and their families respond by adopting educational trajectories that involve fewer risks and more predictability.

In fact, the specific educational response observed among families where the father experienced unemployment – pursuing VET instead of academic education – is also likely to be highly contingent on the German context where the VET system is long established, highly reputed and famous for providing youth with a smooth and predictable pathway into the labor market. Tellingly then, the adverse intergenerational effects of parental unemployment are indeed quite circumscribed relative to an Anglo-Saxon context, for example, because the adversity entails a curbing of academic aspirations, but not an outright exclusion from the opportunity to acquire qualifications that will be of relevance in the labor market. Empirically, we do not find that parental unemployment would lead to severe transition problems, such as extended periods of NEET status. Thus, our results do not provide any indication of possible negative attitudes or a lack of positive role models that would hinder working or studying among upper secondary school leavers whose parents are unemployed.

Further analysis also seems warranted in case of the gender differentials that we observe. In accordance with two previous studies in the United States and Norway (Kalil & Ziol-Guest, 2008; Rege et al., 2011), we find that paternal unemployment has a negative effect on children's educational transitions in Germany, but not maternal unemployment. This result might be consistent with the argument that the psychological consequences of unemployment are more severe for men as the breadwinner role continues to be more central to men's identity than to women's (e.g. review in Paul & Moser, 2009). However, the observed gender difference might also be highly context-specific, as work-family arrangements and gender role expectations vary across countries and over time. As women's economic role outside the home has continuously increased over time, it would be of particular interest to examine in future research whether the importance of maternal unemployment for children's education decisions is also increasing, or, likewise, whether it already is larger in countries with a longer history of high female labor force participation than Germany.

We also have to acknowledge the methodological limitations of the present study. When utilizing PSM or LPM estimators we cannot exclude the possibility that some relevant unobserved factor that predicts both the selection of fathers into unemployment and the transition outcomes of their children might still be biasing our causal inferences. For instance, some psychological characteristic of the father could be driving the outcome. Another possible limitation is that our data does not include information on fathers who did not live with their 12-year-old child, although the resulting bias might be small as previous research has suggested that socioeconomic status of non-residential fathers has a limited impact on children (Erola & Jalovaara, 2017). More importantly, however, our relatively small sample size has not allowed us to further explore how the intergenerational consequences of unemployment might vary for different social groups, including the impact of unemployment among female-headed families, among the lower educated or among migrant parents. We have to leave these questions for future research.

Finally, it seems important to emphasize again: in many respects, whether for the structure of its education and training system, for the strength of its welfare state, for the comparatively low prevalence of single parenthood, or even for the selectivity of students in terms of higher abilities and parental background attending upper secondary school (Gymnasium), Germany presents a critical test case where different theoretical reasons suggest the intergenerational effects of unemployment on entry to tertiary education to be mitigated – relative to the U.S. or British case, for example. Nonetheless, we do find evidence of a clear adverse effect of father's unemployment on children's educational transitions from upper secondary education even in this otherwise favorable context. Consistent with the institutional environment, we find that financial constraints are not among the causes of the

intergenerational effects in Germany, but it seems that other consequences of unemployment – on educational expectations, family stress levels, or broader feelings of economic insecurity – are indeed difficult to avoid.

Acknowledgements

The German Institute for Economic Research (DIW) kindly provided the SOEP data used in this research. Of course, DIW is not responsible for our analysis or for our interpretation of results. For helpful comments and suggestions we thank Jan Brülle, Dimitrios Efthymiou, Rona Geffen, Carlotta Giustozzi, Stefanie Hoherz, Anne Kronberg, Eleonora Vlach and participants at *Transitions in Youth* workshop 2017 in Brussels and *ISA RC28 Summer Meeting 2017* in New York. We gratefully acknowledge funding from the European Research Council under the European Union's Seventh Framework Programme (FP7/2007-2013, ERC grant agreement n° ERC-2013-CoG-615246-CORRODE) for this research.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.rssm.2019.100410>.

References

- Andersen, S. H. (2013). Common genes or exogenous shock? Disentangling the causal effect of paternal unemployment on children's schooling efforts. *European Sociological Review*, 29, 477–488.
- Andrew, M., & Hauser, R. M. (2011). Adoption? Adaptation? evaluating the formation of educational expectations. *Social Forces*, 90, 497–520.
- Becker, R., & Hecken, A. E. (2009). Why are working-class children diverted from universities?—An empirical assessment of the diversion thesis. *European Sociological Review*, 25, 233–250.
- Bozick, R., Alexander, K., Entwisle, D., Dauber, S., & Kerr, K. (2010). Framing the future: Revisiting the place of educational expectations in status attainment. *Social Forces*, 88, 2027–2052.
- Brand, J. E. (2015). The far-reaching impact of job loss and unemployment. *Annual Review of Sociology*, 41, 359–375.
- Brand, J. E., & Thomas, J. S. (2014). Job displacement among single mothers: Effects on children's outcomes in young adulthood. *American Journal of Sociology*, 119, 955–1001.
- Breen, R., & Goldthorpe, J. H. (1997). Explaining educational differentials: Towards a formal rational action theory. *Rationality and Society*, 9, 275–305.
- Bubonya, M., Cobb-Clark, D. A., & Wooden, M. (2017). Job loss and the mental health of spouses and adolescent children. *IZA Journal of Labor Economics*, 6, 6.
- Burgard, S. A., & Kalousova, L. (2015). Effects of the Great Recession: Health and well-being. *Annual Review of Sociology*, 41, 181–201.
- Coelli, M. B. (2011). Parental job loss and the education enrollment of youth. *Labour Economics*, 18, 25–35.
- DiPrete, T. A., & McManus, P. A. (2000). Family change, employment transitions, and the welfare state: Household income dynamics in the United States and Germany. *American Sociological Review*, 65, 343–370.
- Elster, J. (1983). *Sour grapes: Studies in the subversion of rationality*. Cambridge: Cambridge University Press.
- Erikson, R., & Jonsson, J. O. (1996). *Can education be equalized?: The Swedish case in comparative perspective*. Boulder, CO: Westview Press.
- Erola, J., & Jalovaara, M. (2017). The replaceable: The inheritance of paternal and maternal socioeconomic statuses in non-standard families. *Social Forces*, 95, 971–995.
- Gangl, M. (2006). Scar effects of unemployment: An assessment of institutional complementarities. *American Sociological Review*, 71, 986–1013.
- Gangl, M. (2015). *Matching estimators for treatment effects. The SAGE handbook of regression analysis and causal inference*, Vol. 251.
- Gough, M., & Killewald, A. (2011). Unemployment in families: The case of housework. *Journal of Marriage and Family*, 73, 1085–1100.
- Grodsky, E., & Riegle-Crumb, C. (2010). Those who choose and those who don't: Social background and college orientation. *The Annals of the American Academy of Political and Social Science*, 627, 14–35.
- Haveman, R., Wolfe, B., & Spaulding, J. (1991). Childhood events and circumstances influencing high school completion. *Demography*, 28, 133–157.
- Heckman, J. J., Ichimura, H., & Todd, P. (1998). Matching as an econometric evaluation estimator. *The Review of Economic Studies*, 65, 261–294.
- Hillmert, S., & Jacob, M. (2003). Social inequality in higher education: Is vocational training a pathway leading to or away from university? *European Sociological Review*, 19, 319–334.
- Hillmert, S., & Jacob, M. (2010). Selections and social selectivity on the academic track: A life-course analysis of educational attainment in Germany. *Research in Social Stratification and Mobility*, 28, 59–76.

- Huber, M., Lechner, M., & Mellace, G. (2017). Why do tougher caseworkers increase employment? The role of program assignment as a causal mechanism. *The Review of Economics and Statistics*, 99, 180–183.
- Imai, K., & Yamamoto, T. (2013). Identification and sensitivity analysis for multiple causal mechanisms: Revisiting evidence from framing experiments. *Political Analysis*, 21, 141–171.
- Imbens, G. W. (2015). Matching methods in practice: Three examples. *Journal of Human Resources*, 50, 373–419.
- Jahoda, M., Lazarsfeld, P., & Zeisel, H. (1971 [1933]). *Marienthal. The sociography of an unemployed community*. Chicago: Aldine Atherton.
- Kalil, A. (2013). Effects of the Great Recession on child development. *The ANNALS of the American Academy of Political and Social Science*, 650, 232–250.
- Kalil, A., & Wightman, P. (2011). Parental job loss and children's educational attainment in black and white middle-class families. *Social Science Quarterly*, 92, 57–78.
- Kalil, A., & Ziolo-Guest, K. M. (2008). Parental employment circumstances and children's academic progress. *Social Science Research*, 37, 500–515.
- Lehti, H., Erola, J., & Karhula, A. (2017). *Less advantaged more averse? Heterogeneous effects of parental unemployment on siblings' educational achievement*. Turku Center for Welfare Research. Working Papers on Social and Economic Issues 2/2017.
- Levine, P. B. (2011). How does parental unemployment affect children's educational performance? In G. J. Duncan, & R. J. Murnane (Eds.). *Whither opportunity: Rising inequality, schools, and children's life chances* (pp. 315–358). New York: Russell Sage Foundation.
- Lohmann, H., & Groh-Samberg, O. (2017). Elterliche Arbeitslosigkeitsdynamiken und bildungsverläufe vom ende der grundschulzeit bis zum jungen Erwachsenenalter. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 69, 623–650.
- Macmillan, L. (2014). Intergenerational worklessness in the UK and the role of local labour markets. *Oxford Economic Papers*, 66, 871–889.
- Marcus, J. (2013). The effect of unemployment on the mental health of spouses—Evidence from plant closures in Germany. *Journal of Health Economics*, 32, 546–558.
- Mare, R. D. (1980). Social background and school continuation decisions. *Journal of the American Statistical Association*, 75, 295–305.
- Mooi-Reci, I., Bakker, B., Wooden, M., & Curry, M. (2019). Why parental unemployment matters for children's educational attainment: empirical evidence from The Netherlands. *European Sociological Review*, 35, 394–408.
- Morgan, S. L., & Winship, C. (2015). *Counterfactuals and causal inference: Methods and principles for social research* (Second edition). Cambridge: Cambridge University Press.
- Müller, W., & Pollak, R. (2007). Weshalb gibt es so wenige Arbeiterkinder in Deutschlands Universitäten? In R. Becker, & W. Lauterbach (Eds.). *Bildung als Privileg: Erklärungen und Befunde zu den Ursachen der Bildungsungleichheit* (pp. 345–386). Wiesbaden: Springer Fachmedien Wiesbaden.
- Müller, S., Riphahn, R. T., & Schwientek, C. (2017). Paternal unemployment during childhood: Causal effects on youth worklessness and educational attainment. *Oxford Economic Papers*, 69, 213–238.
- Neugebauer, M., Reimer, D., Schindler, S., & Stocké, V. (2013). Inequality in transitions to secondary school and tertiary education in Germany. In M. Jackson (Ed.). *Determined to succeed?: Performance versus choice in educational attainment* (pp. 56–88). Stanford: Stanford University Press.
- Oreopoulos, P., Page, M., & Stevens, A. H. (2008). The intergenerational effects of worker displacement. *Journal of Labor Economics*, 26, 455–483.
- Paul, K. I., & Moser, K. (2009). Unemployment impairs mental health: Meta-analyses. *Journal of Vocational Behavior*, 74, 264–282.
- Peter, F. (2016). The effect of involuntary maternal job loss on children's behaviour and non-cognitive skills. *Labour Economics*, 42, 43–63.
- Protsch, P., & Solga, H. (2015). The social stratification of the German VET system. *Journal of Education and Work*, 1–25.
- Rege, M., Telle, K., & Votruba, M. (2011). Parental job loss and children's school performance. *The Review of Economic Studies*, 78, 1462–1489.
- Renzulli, L., & Barr, A. B. (2017). Adapting to family setbacks: Malleability of students' and parents' educational expectations. *Social Problems*, 64, 351–372.
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70, 41–55.
- Schaller, J., & Zerpa, M. (2015). *Short-run effects of parental job loss on child health*. NBER working paper series.
- Sewell, W. H., Haller, A. O., & Portes, A. (1969). The educational and early occupational attainment process. *American Sociological Review*, 34, 82–92.
- Trappe, H., Pollmann-Schult, M., & Schmitt, C. (2015). The rise and decline of the male breadwinner model: Institutional underpinnings and future expectations. *European Sociological Review*, 31, 230–242.
- van der Lippe, T., Treas, J., & Norbutas, L. (2017). Unemployment and the division of housework in Europe. *Work Employment & Society*, 0.
- Vauhkonen, T., Kallio, J., Kauppinen, T. M., & Erola, J. (2017). Intergenerational accumulation of social disadvantages across generations in Young Adulthood. *Research in Social Stratification and Mobility*, 48, 42–52.
- Wagner, G. G., Frick, J. R., & Schupp, J. (2007). The German Socio-Economic Panel Study (SOEP)—Scope, evolution and enhancements. *Schmollers Jahrbuch*, 127, 139–169.
- Weiss, F., & Schindler, S. (2017). EMI in Germany. *American Behavioral Scientist*, 61, 74–93.