

The Contexts of Parental Job Loss and Children's Educational Attainment

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## **ABSTRACT**

Prior research on the effects of parental job loss on children has paid little attention to the life course and contextual features of parental job loss. In my dissertation, I examine three such contexts: timing of job loss in the child's life, family socioeconomic status, and the amount of exposure to parental job loss(es). The dissertation contains three related papers. I focus on a cohort of children in the Panel Study of Income Dynamics to examine the relationship between these contexts of parental job loss and educational attainment at age 25. In the first paper, I draw from interdisciplinary research on parental job loss, sibling differences and life course theories. I consider whether the timing of a parent's job loss moderates the impact of the event on children's educational attainment in adulthood. The results suggest that, contrary to theory, timing is not a significant moderator. In the second paper, I examine the educational attainment of children born into socioeconomically similar families, but who have divergent experiences related to parental job loss. I find that family SES primarily moderates the probability of experiencing a parental job loss. Finally, I focus on the impact of the number of parental job losses, the duration of parental unemployment spells and the interaction between number of job losses and the length of unemployment spells. I find that any parental job loss harms educational attainment, with a non-linear relationship between exposure to parental job loss and educational attainment at age 15. This dissertation on the timing of parental job loss, family socioeconomic background and exposure to job loss/unemployment helps create a fuller picture of the potential consequences of parental job loss on children's educational attainment.

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## INTRODUCTION

Traditional unemployment figures focus on the individuals who experience the job loss, but it is clear that the economic and other consequences of unemployment extend beyond the individual to the larger family (e.g. Elder, Conger, Foster, and Ardel 1992; Moen 1983). In 2010, 12 percent of U.S. families with children had an unemployed adult, an increase of six percentage points from 2007 (Bureau of Labor Statistics 2011). With so many children experiencing so many parental job losses during the “Great Recession,” understanding the long-term effects of unemployment is crucial for those concerned with educational outcomes. Looking to prior recessions provides important information about job loss<sup>1</sup> and children’s life course paths.

In the following sections, I review the general research on family contexts, the consequences of parental job loss on children and research on educational attainment. Then I discuss the focus of my dissertation, including the research questions, an abstract for each chapter and the contributions my research makes toward a holistic view of youths’ educational outcomes in the context of economic instability.

## FAMILY CONTEXTS AND EDUCATIONAL ATTAINMENT

Research on family contexts provides a base for thinking about how parental job loss and family socioeconomic status at the time of unemployment may moderate children’s long-term outcomes (Heckman and Borjas 1980). Family contexts, such as residential parents (Biblarz and Raftery 1999), sibling births (Menaghan and Parcel 1995) and sibship size (Kim and Stafford 2000; Kuo and Hauser 1997), influence children’s learning, social adjustment and behavior. Like

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<sup>1</sup> The Bureau of Labor Statistics (BLS; 2011) considers an individual unemployed when he or she is not currently working, looking for work and available for work. Unemployment includes not just the event, but the time over which someone is out of work. Job loss usually refers to an individual’s involuntary departure from an employment situation. Other reasons for unemployment, such as choosing to leave a job, are outside the scope of this project.

<sup>2</sup> The research from Canada and Great Britain on adult income and unemployment as related to children 1

family composition, socioeconomic status and others, parent job loss and subsequent changes are a form of family context.

In the short term, children's behavior and learning and, in the long-term, educational attainment and health are influenced by family contexts (Crosnoe and Cavanagh 2010). For instance, among children aged 3-6, short-term cognitive and developmental growth are sensitive to family contexts and home environments (Cooksey, Menaghan, and Jekielek 1997; Menaghan, Kowaleski-Jones, and Mott 1997; Menaghan and Parcel 1995; Parcel and Menaghan 1994), and changes in family structure (such as divorce) are associated with declines in student engagement and parent involvement in schools (Astone and McLanahan 1991).

Research on adverse events (such as a period of unemployment or illness) and family contexts finds that the intensity of consequences linked to adverse events generally varies with children's exposure to adversities, including the duration and number of spells (e.g. Heard 2007a; Kalmijn 1994; Wagmiller, Lennon, Kuang, Alberti, and Aber 2006). For example, poverty research shows that if research only considers whether a child has *ever* lived in poverty, the evidence about the consequences of poverty is limited. Accounting for the number and duration of poverty spells provides necessary context so that researchers can say with certainty, for example, that long exposures to poverty make children less likely to complete high school (Haveman, Wolfe, and Spaulding 1991; Wagmiller et al. 2006).

Family socioeconomic status (SES) is one of the most studied family contexts related to educational attainment in sociology. Research on status attainment (Kerckhoff 1976; Sewell and Shah 1968a; Sewell and Shah 1968b), social mobility and reproduction (Breen and Goldthorpe 1997; Breen and Jonsson 2000; Lucas 2009) highlight the importance of parent socioeconomic status for children's success in school. One of the major contributions of this status-attainment tradition is documenting the importance of family background. Yet even in current research, the usual SES measures are static; they rarely address *changes* in family SES during a child's life. Parental job loss provides an interesting case where two common measures of family SES (parental education and income characteristics) diverge for a time, making it possible to parse out their individual contributions to stratification processes.

Aside from Glen Elder's work, which examines cohort differences in the lasting social-psychological impacts of the Great Depression (Elder 1999 [1974]), quantitative research on parental job loss rarely incorporates such life course concerns. Newman (1988) and Conley (2004) both comment on the life course effects of parental job loss on children when they analyze interview data, yet parental job loss remains a secondary concern. In research specific to parental job loss, researchers who overlook life course considerations also overlook many factors that may create differential consequences within and across groups of children. As parental job loss potentially shifts family contexts, it is reasonable to expect it may affect children's educational outcomes and important to understand how.

#### EDUCATIONAL CONSEQUENCES OF PARENTAL JOB LOSS

Most of the research in this area defines parental job loss as the household head having ever experienced job loss (e.g. Kalil and Wightman 2011). It is a binary measure that does not account for the amount of unemployment, only the presence of any parental unemployment anytime within childhood. Some research specifies which parent experiences the job loss (e.g. Kalil and Ziol-Guest 2005; Oreopoulos, Page, and Stevens 2008), and some considers the mediating influences of household structure and access to resources on the detrimental impacts of job loss (Heeringa, Berglund, Khan, Lee, and Gouskova 2011; Kalil and Wightman 2010). Thus, existing research can provide some preliminary findings from which to begin.

In the short-term, parental job loss causes delays in children's behavioral growth, cognitive development, educational ambitions, self-concept, self-esteem, classroom behavior and educational progress (Andersen 2013; Farrell and Ortiz 1993; Hill, Morris, Castells, and Walker 2011; Jackson 2003; Kalil and Ziol-Guest 2005; Kalil and Ziol-Guest 2008; McLoyd 1989; McLoyd, Jayaratne, Ceballo, and Borquez 1994; Stevens and Schaller 2011). Mother's unemployment during preschool is associated with children's problem behavior in late elementary school (Hill, Morris, Castells, and Walker 2011; Johnson, Kalil, and Dunifon 2012). Among children already in school, the probability of grade retention increases as a consequence of the parental head of household's unemployment across all socioeconomic backgrounds (Stevens and Schaller 2011).

The effects of parental job loss may not be limited to the children who experience the parental job loss, particularly for older children (Ananat, Gassman-Pines, and Gibson-Davis 2011). Further, some evidence exists that short-term cognitive growth may *not* be impacted by parental job loss (Levine 2011). Still, the short-term consequences of job loss identified by researchers are associated with lower levels of educational attainment (e.g. McLeod and Kaiser 2004; Rumberger 1990). That is, the short-term outcomes affect the long-term for kids whose parents lose their jobs.

Turning to the long-term, then, experiencing parental job loss in childhood is associated with more negative income, employment, health, mental health and educational outcomes in early adulthood (Brand and Simon Thomas 2014; O'Neill and Sweetman 1998; Oreopoulos, Page, and Stevens 2008). For example, parental job loss during childhood or adolescence is associated with lower earnings between ages 25 and 33 and an increase in the months unemployed and/or receiving unemployment benefits as an adult<sup>2</sup> among men in Canada and Great Britain. (O'Neill and Sweetman 1998; Oreopoulos, Page, and Stevens 2008).

Children who experience parental job loss also, on average, earn one year less of schooling than their peers (Kalil and Wightman 2011). Much of the prior research on the effects of parental job loss on long-term educational attainment in the U.S. has focused on a specific risk group. For middle-class children and the children of single mothers in the U.S., such unemployment is associated with a decreased likelihood of *any* college attendance (Brand and Simon Thomas 2014; Kalil and Wightman 2011). Brand and Simon Thomas (2014), focusing on children with single mothers, find that the timing of parental job loss matters, with adolescent outcomes harmed most. Wightman (2009) finds, however, net of the number of exposures parental unemployment spells, younger children (pre-adolescents) are most harmed. Parental education, attitudes, cognitive ability or unobserved characteristics are all ruled out as factors in these kids' lower educational attainment (Wightman 2012).

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<sup>2</sup> The research from Canada and Great Britain on adult income and unemployment as related to children has only looked at sons (O'Neill and Sweetman 1998; Oreopoulos, Page, and Stevens 2008).

More research is needed because there are such differences in results and gaps in the research. Extant studies do not sufficiently address whether features of parental job loss moderate the association between job loss and educational attainment, the duration of the unemployment spell or family socioeconomic background, any of which may differentiate the long-term consequences on children.

#### POTENTIAL MECHANISMS

Job loss triggers negative changes in a family. While generally difficult to trace using survey data, parental job loss can lead to a chain of events that harm children's long-term outcomes. A parent's job loss shapes their children's social, developmental and educational progress through several mechanisms, including changing available resources, parent behavior, parent support and parent stress (Elder, Nguyen, and Caspi 1985; McLoyd, Jayaratne, Ceballo, and Borquez 1994). Fathers, for instance, have been found to provide less support to their children when unemployed, and that impacts children's health (Bacikova-Sleskova, Madarasova Geckova, van Dijk, Groothoff, and Reijneveld 2011). Mechanisms like this provide additional information as to why a parent's job loss may harm children's long-term educational attainment.

In "Falling from Grace," Newman (1988) traces several families where a parent's job loss started an unraveling of family relations and conditions, including alcoholism, shame, lack of trust, poor communication and stress from making tough choices. Parental job loss can spur a relocation (Browne 1995); residential mobility, specifically residential mobility associated with changing schools, reduces adolescents' likelihood of high school graduation (Conger, Wallace, Sun, Simons, McLoyd, and Brody 2002; Haveman, Wolfe, and Spaulding 1991). These and other negative changes brought on by unemployment can potentially impact children's educational attainment years later.

#### RESEARCH QUESTIONS AND STRUCTURE OF THE DISSERTATION

In this project I bring a life course and a stratification perspective to research on parental job loss and children's educational attainment. In three papers, presented here as chapters

and intended as individual journal articles, I focus on the contexts of those job losses and their long-term effects by asking:

How does the timing of parental (mother's and/or father's) job loss influence children's long-term educational attainment?

How does family socioeconomic status moderate the impact of job loss on children's educational outcomes?

How does the amount of exposure (in terms of the number and duration of unemployment spells) to parental job loss affect children's educational attainment?

The chapters that follow from these questions are summarized, respectively:

*Paper 1: Is Timing Everything?*

Drawing from research on parental job loss, sibling differences and life course theories, I consider whether (and how) the timing of a parent's job loss moderates the impact of the event on children's educational attainment in adulthood. Life course and child development theories lead to a hypothesis that the timing of family events in each child's life may lead to long-term differences in educational attainment. Using the Panel Study of Income Dynamics, I examine the educational attainment at age 25 of siblings who had a parent experience a job loss. Using fixed effects models to control for family contexts at the time of parental job loss, I find little difference in siblings' educational attainment at age 25 based on children's age when the parent lost his or her job. My results show that the impact of parental job loss on children's educational attainment is relatively consistent regardless of the timing of parental unemployment in a child's life.

*Paper 2: Does Family Socioeconomic Status Moderate the Relationship Between Parental Job Loss and Children's Educational Attainment?*

This paper brings a stratification perspective to research on parental job loss and children's educational attainment. In it, I hypothesize that family socioeconomic status (SES) moderates the effect of parental job loss, given that economic and non-economic resources (e.g.,

social networks) can lessen the potential negative effects of unemployment spells. Using data from the Panel Study of Income Dynamics (PSID), I examine the educational attainment of children born into socioeconomically similar families, but who have divergent experiences related to parental job loss. I find that much of the difference in educational attainment between children who do and do not experience parental job loss may be a function of the propensity to experience parental job loss (as a function of family SES at birth). This research is relevant for policies meant to alleviate the negative impact of unemployment on families, providing insight into variation in children's long-term educational outcomes.

### *Paper 3: Exposure to Parental Job loss and Children's Educational Attainment*

Building on the interdisciplinary research on childhood exposure to adverse events and adulthood outcomes, I examine the association between the amount of exposure to parental job loss and children's educational attainment. In this paper, I focus on the impact of the number of parental job losses, the duration of parental unemployment spells and the interaction between number of job losses and the length of unemployment spells. I use a cohort of children from the Panel Study of Income Dynamics (PSID) to examine children who experience parental job loss(es) compared to those who do not, finding that the children who experience three or more parental job losses are less likely to graduate college than children who experience just one parental job loss. Children who experience two parental job losses have similar levels of educational attainment to those who experience one. Additionally, experiencing parental unemployment for a year or more is associated lower levels of educational attainment than children who experience a parental job loss with no unemployment; parental unemployment that lasts under a year is associated with similar education outcomes to those of children whose parent leaves the labor market after a job loss.

### CONTRIBUTIONS

Prior research has paid little attention to the life course and contextual features of parental job loss, such as the timing of job loss in the child's life, family socioeconomic status, the number of parental job losses and the duration of parental unemployment spells. The contextu-

al features listed above may moderate the impact of parental job loss on children, creating within-group differences (see Wightman 2009 for an exception). Including research data on the timing of parent job loss, family socioeconomic background and exposure to job loss/unemployment will help create a fuller picture of the potential consequences of parent job loss on children's educational attainment.

My project contributes to the sociological literature by applying the theories of timing, linked lives (Elder 1998) and cumulative disadvantage (O'Rand 1996) to the effects of parental job loss on children's educational attainment. I contend that parental job loss disrupts children's educational growth and thus constitutes a form of cumulative disadvantage, even for children who were otherwise advantaged prior to their parent's job loss. The consequences of parental job loss may vary depending on when and for how long the disruption occurs in a child's life.



## **Paper 1**

### **IS TIMING EVERYTHING? PARENTAL UNEMPLOYMENT AND CHILDREN'S EDUCATIONAL ATTAINMENT**

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## SUMMARY

Drawing from research on parental job loss, sibling differences and life course theories, I consider whether (and how) the timing of a parent's job loss moderates the impact of the event on children's educational attainment in adulthood. Life course and child development theories lead to a hypothesis that the timing of family events in each child's life may lead to long-term differences in educational attainment. Using the Panel Study of Income Dynamics, I examine the educational attainment at age 25 of siblings who had a parent experience a job loss. Using fixed effects models to control for family contexts at the time of parental job loss, I find little difference in siblings' educational attainment at age 25 based on children's age when the parent lost his or her job. My results show that the impact of parental job loss on children's educational attainment is relatively consistent regardless of the timing of parental unemployment in a child's life.

## INTRODUCTION

Life course theories about the timing of events in lives (e.g. Elder 1999 [1974]; Heckman and Borjas 1980) and cumulative disadvantage (e.g. Dannefer 2003) predict that *when* events happen in an individual's life course moderates the impact of those events. In considering how parental job loss influences children, timing may provide important insights into the severity of the consequences. Hence, the timing of a parent's involuntary job loss should help capture the potential consequences for children's educational attainment. Prior research has paid little attention to the life course features of parental unemployment, such as the timing of job loss in the child's life.

When considering the impact of parental job loss on children, siblings provide an excellent comparison since siblings in a family experience the same events at different ages (Conley, Pfeiffer, and Velez 2007; Ermisch and Wright 1991; Ermisch, Francesconi, and Pevalin 2004). At the individual family level, family dynamics can differentiate the impact, however, a general pattern in the age-specific impact of parental unemployment across a large number of families provides valuable and more robust evidence about the timing of parental unemployment on children's educational attainment.

In this paper, I bring life course and sibling difference perspectives together to further research on the ways parental unemployment is associated with children's educational outcomes. I ask: **How does the timing of the parental job loss influence children's educational attainment at age 25?** In the following sections I argue that the cumulative disadvantage and timing perspectives present compelling reasons for why age at the time of parental unemployment likely leads to differences in the effects of the job loss on children. I estimate the effects of the timing of parental unemployment on the child's adult educational attainment using both OLS regressions and sibling fixed effects models to control for family context at the time of parental unemployment.

My results show that even if the process or reasons that parental unemployment reduces educational attainment in children vary, the impact on children's educational attainment is relatively consistent regardless of the timing of parental unemployment in a child's life.

## THEORETICAL AND EMPIRICAL PERSPECTIVES

### *Research on Parental Unemployment and Job Loss*

Prior research on the consequences of parental job loss has examined children's short- and long-term outcomes, but has done little to differentiate the consequences of parental job loss based on the timing in children's lives. Additionally, prior research focuses on children compared to their peers, not their siblings, who can provide a better within-family measure of the same job loss affecting differently aged children. This section reviews existing research on the consequences of parental job loss and highlights gaps in the literature.

In the short-term, parental job loss causes delays in children's behavioral growth, cognitive development, educational ambitions, self-concept, self-esteem, classroom behavior and educational progress (Andersen 2013; Farrell and Ortiz 1993; Hill, Morris, Castells, and Walker 2011; Jackson 2003; Kalil and Ziol-Guest 2005; Kalil and Ziol-Guest 2008; McLoyd 1989; McLoyd, Jayaratne, Ceballo, and Borquez 1994; Stevens and Schaller 2011). Mothers' unemployment during preschool is associated with children's problem behavior in late elementary school (Hill, Morris, Castells, and Walker 2011). For children already in school, the probability of grade retention increases as a consequence of the parental head of household's unemployment for children from all socioeconomic backgrounds (Stevens and Schaller 2011). Mothers' job instability is also associated with children's behavior problems (Johnson, Kalil, and Dunifon 2012). These effects may not be limited to children whose experience the parental job loss, particularly for older children (Ananat, Gassman-Pines, and Gibson-Davis 2011), and there is some evidence that short-term cognitive growth may not be impacted by parental job loss (Levine 2011). The short-term consequences of job loss, specifically social and emotional problems and grade repetition, are, however, associated with lower levels of educational attainment (e.g. McLeod

and Kaiser 2004; Rumberger 1990). Short-term consequences highlight the link between parental job loss and children's educational outcomes.

In the longer term, parental job loss during childhood or adolescence is associated with lower earnings and an increase in months unemployed and/or receiving unemployment benefits in early adulthood for *men* in Canada and Great Britain (Gregg, Macmillan, and Nasim 2012; O'Neill and Sweetman 1998; Oreopoulos, Page, and Stevens 2008), although this result does not hold for Norway (Bratberg, Nilsen, and Vaage 2008). In the United States, for middle-class children and the children of single mothers, parental job loss during childhood is associated with a decreased likelihood of college attendance (Brand and Simon Thomas 2014; Kalil and Wightman 2011). This detrimental effect of parental job loss on post-secondary attendance is not explained by parental education, attitudes, cognitive ability or unobserved characteristics (Wightman 2012).

The two studies which currently address the timing of parental job losses in children's lives do not agree on the ages where children's outcomes are the most and least impacted by parental job losses. Brand and Simon Thomas (2014) show that the timing of parental job loss matters, with adolescents' outcomes harmed more than those of children who are younger when their parent becomes unemployed. Wightman (2009) finds, however, net of the number of exposures to parental unemployment spells, younger children (pre-adolescents) are most harmed. Parental education, attitudes, cognitive ability or unobserved characteristics are all ruled out as factors in these kids' lower educational attainment (Wightman 2012). These contrasting results speak to the need for more research in this area.

One shortcoming of the extant research on parental job loss is that it generally focuses on peers, not siblings. These studies also tend to focus on children at specific developmental stages or overlook timing as a possible mediating factor. Only one paper examines the effect of parental job loss on siblings, and this is in the British context. Ermish, Francesconi and Pevalin (2004) use sibling models and find that parental job loss in early childhood (before age 5) and in the early teenage years (11-15) have qualitatively similar (negative) associations with completing "A level" educational qualifications at age 18. That is, they find little quantitative difference

in the educational outcomes of children based on their age at parental job loss. These results motivate an application of this line of research in the American setting and considering educational outcomes to age 25. Importantly, these findings run counter to the timing theories.

### *Theories of Timing*

A life course approach provides several frames for thinking about how the timing of parental job loss impacts children. The perspective emphasizes that children are part of a family system and that family events impact children differentially based on how old the child is when the event occurs (Mayer 2009). Thus, a parent's unemployment influences children: their lives are linked (Elder 1994). The concept of linked lives complements the principle of the timing—many events that happen to parents change the lives of children as well and, if timing matters for adult outcomes, we can theorize that it affects the linked child's outcomes, as well. "Timing" refers to developmental contexts and when events occur in lives, highlighting the importance of age for understanding the way unemployment impacts children (Elder 1998:3).

So, the consequences of similar events may vary based on when they occur in a child's life. For example, economic hardship in later adolescence is associated with lower educational attainment than the same hardship earlier in life (Sobolewski and Amato 2005). The effect of parental job loss on children is likely analogous to the effects of parent divorce or poverty in that the timing of the event in the child's life will moderate the consequences. Brand and Simon Thomas' (2014) finding that maternal unemployment harms older children more than younger children fits with this theoretical prediction, but its robustness is limited, as the authors study only one specific case. Applying general life course theory leads to a hypothesis that the consequences of similar events should vary based on when they occur in a child's life, yet it does not lead to a specific prediction about the relationship between the child's age at the time of parental job loss and his or her educational attainment.

### *Cumulative Disadvantage*

Theories of cumulative disadvantage<sup>3</sup> argue that disadvantages accumulate over the life course such that early life setbacks in schooling, health or work strongly influence later life experiences (Dannefer 2003; DiPrete and Eirich 2006; Elman and O'Rand 2004; Grieger and Danziger 2011; O'Rand 1996; Schafer, Ferraro, and Mustillo 2011). Specifically, theories of cumulative advantage posit that if two children experience a disadvantage of similar magnitudes, the child who experienced the disadvantage at a younger age will ultimately be more disadvantaged than the child who experienced it at an older age (DiPrete and Eirich 2006). Thus, the cumulative disadvantage perspective provides a mechanism for understanding how seemingly small differences in developmental progress or educational achievement at earlier life stages become large gaps as people age. While relatively robust, not all findings above the timing of events support cumulative disadvantage theory.

Consistent with cumulative disadvantage theory, researchers in economics, child development, and policy have focused on the importance of early childhood contexts on later life outcomes. Recent research highlights the detrimental effects of early exposure to poverty on later life attainments such as health, employment and income (Duncan, Brooks-Gunn, Yeung, and Smith 1998; Duncan, Magnuson, Kalil, and Ziol-Guest 2012; Duncan, Ziol-Guest, and Kalil 2010; Wagmiller et al. 2006). Skills learned prior to kindergarten (also referred to as early childhood human capital accumulation or school readiness) continue to influence children's educational attainment years later (Cunha and Heckman 2010; Currie and Almond 2011; Farber 2010). Family transitions at early ages also impact children's education; for example, when parents divorce before a child enters school, the child has lower educational expectations than a child who experiences divorce later (Heard 2007b).

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<sup>3</sup> Cumulative advantage, cumulative disadvantage and cumulative stratification all refer to the concepts discussed in this paragraph. In this paper, I primarily refer to this theory as cumulative disadvantage since parental job loss is considered a disadvantage.

Applied to parental job loss, the cumulative disadvantage perspective predicts that (small) gaps in educational progress as a result of a parental unemployment may lead to larger differences in educational outcomes (such as attainment) later in life. Cumulative disadvantage theory would posit that the short-term harm to children's development caused by parental job loss manifests as larger educational attainment gaps in early adulthood, consistent with prior research in other areas. Two mechanisms are at work: first, because smaller disadvantages become larger over time, children who experience parental job loss at younger ages should experience more disadvantage in educational outcomes than an older sibling. Second, children at earlier developmental stages may be more vulnerable to negative events.

These theories make a convincing case that the timing of parental job loss in a child's life should moderate educational attainment. Yet what if timing is not a primary predictor? While the mechanisms that cause lower educational attainment may vary by age/developmental stage, the effects of those mechanisms may be more similar than different for children. For example, a younger child's entire educational trajectory may be stunted by the experience, but a teenager faced with a parent's unemployment may choose to work rather than attend college in response to the job loss.

### *Research on Sibling Educational Attainment*

Sibling comparison provides a way to both control for stable, family-level differences and to identify additional life course features that may moderate the effect of parental job loss. Sibling research considers similarities in educational attainment, effects of sibship size (the number of siblings), birth order and the gender composition of sibling groups.

Similarities in siblings' educational attainment make family-level comparisons an excellent avenue for examining timing. Approximately 40%-50% of the variance in educational attainment is *within* families (Hauser, Sheridan, and Warren 1999; Hauser and Wong 1989). If families generally account for half of the variance in educational attainment, it should be possible to examine some of the within-family determinants (in this case, a child's age at the time of parental job loss).



A given child's gender and the gender composition of sibling groups may also impact educational attainment. While the results generally point to relatively small differences in educational attainment based on the gender composition of a sibling group, studies emphasize the importance of including the child's gender. For example, using the WLS, Kuo and Hauser (1997) find that gender is the most significant predictor of within-family variance in educational attainment, but that gender effects do not vary based on birth order or sibship size. Conley and Glauber (2008) find that gender composition of families does not change the correlation between siblings' educational attainment for children in the Panel Study of Income Dynamics (PSID). The existing research on sibling differences in educational attainment provides additional information on family-level processes, which I consider further in the methods section.

### *Contributions*

My project contributes to sociological knowledge by applying life course theories of timing to better understand the effects of involuntary parental job loss on children's educational attainment. One theoretical perspective strongly suggests that parental job loss disrupts children's educational growth and thus constitutes a form of cumulative disadvantage, even for children from generally advantaged homes. Life course theory more generally predicts that the consequences of parental job loss may vary depending on when the disruption occurs in a child's life. This project extends the research on sibling educational attainment by looking at the timing of an important family event—job loss—in children's lives. If timing of parental job loss is not a significant predictor of educational attainment for siblings, other characteristics of parental job loss may be more important or the general association of parental job loss may be similar for children even if the process varies by the child's age.

## DATA, MEASURES AND METHODS

### *Data*

Using the PSID (2014) I look at the educational attainment at age 25 or 26 of children born between 1968 and 1984. The PSID started in 1968 with approximately 5,000 families from

a nationally representative sample, with an oversample of low-income respondents (the Survey of Economic Opportunity, or SEO sample). As children in PSID families start their own households, they continue to participate in the PSID as new households (McGonagle and Schoeni 2006). In the late 1990s, over 500 immigrant families were added to improve the national representation of the study (Heeringa, Berglund, and Khan 2011b). As of 2009, then, the PSID contains around 9,000 families (Killewald, Andreski, and Schoeni 2011). Because the PSID follows families over time, it provides information on parents' occupational trajectories as well as children's educational and occupational attainment. The University of Michigan collected this data annually until 1997 and biannually thereafter.

The high sample attrition in the PSID requires that I weight the data<sup>4</sup>. Almost half of the PSID sample individuals left the study between 1968 and 1989 (Fitzgerald, Gottschalk, and Moffitt 1998a). While the attrition looks uneven by race and class, the between-group differences are not statistically significant and the data remain representative, particularly when weighted (Fitzgerald, Gottschalk, and Moffitt 1998a; Fitzgerald, Gottschalk, and Moffitt 1998b). The longitudinal weights in the PSID are designed for analyses like mine, which take responses from multiple years and account for panel attrition (Gouskova, Heeringa, McGonagle, Schoeni, and Stafford 2009; Gouskova, Heeringa, McGonagle, Schoeni, and Stafford 2008; Heeringa, Berglund, and Khan 2011a; Heeringa, Berglund, McGonagle, and Schoeni 2013). All of the results presented below use the longitudinal weight for the year each PSID respondent turned 25.<sup>5</sup>

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<sup>4</sup> More information on the weighting scheme is available upon request.

<sup>5</sup> I have built a small correction into the weight to capture panel members who had data but do not have a valid weight at age 25, generally due to re-entry into the survey. Only 179 of the 3,150 members of my sample had 0 or missing weights for the wave they turned 25. The 179 missing cases have weights taken from the following or the prior wave, depending on availability.

I focus on two samples: a full sample and a sibling sample.<sup>6</sup> The full sample includes all children born into a PSID family between 1968 and 1984 who have parent employment/unemployment data for at least 13 years between birth and age 20 and have educational attainment data at age 25. There are 3,150 children from 1,944 families in this “full sample.” The “sibling sample,” used in the fixed effects models, contains 850 sample individuals in 356 families where two or more siblings born between 1968 and 1984 experienced a head of household job loss. Table 1.1 contains the descriptive statistics for both samples.

### *Measures*

I use the term “parental job loss” to refer to any situation in which a previously working parental head of household reports an *involuntary* end of employment. The PSID defines the “head” as the man in a two-parent household and only includes women when there is no man to be the head of household. While far from ideal, the PSID did not consistently collect data on “wives” employment status until 1979. The definition of unemployment encompasses two primary reasons for parental job loss: layoff (generally due to economic conditions, work place restructuring or business closure) or firing (when an employee is let go due to job performance, behavioral issues or workplace politics).<sup>7</sup> Laid off or fired employees generally have no choice as to when and whether they exit and have often little warning.

There are three ways to operationalize parental job loss: using the first spell of parental job loss, creating a measure where children who experienced multiple job losses were included in all of the groups or using the longest parental job loss spell as the reference. I choose to operationalize the timing of parental job loss by focusing on the first spell of parental job loss for several reasons. Most importantly, the results are substantively similar to the measure including all of the parental job losses a child experiences and the first job loss measure has better model

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<sup>6</sup> The results for a third sample of individuals with siblings is presented in Appendix B, section four. The results for this sample are similar to those presented in the core of this paper.

<sup>7</sup> Unless the firm closed, the PSID does detail whether an individual was part of a larger layoff or was fired.

fit when measured by BIC'. (See Table 1.3 for the comparison of the models. Results for the alternative measures of parental job loss are in Appendix B.) Additionally, the first job loss spell serves as an important marker: it is the child's first exposure to the family-level effects of parental job loss and prior research finds that a single unemployment spell increases the likelihood of another unemployment spell in the short term (Fallick 1996; Stevens 1997). Using the first spell of parental job loss fits well with cumulative disadvantage theory, since that theory is concerned with early life experiences. In order to prevent age at the time of parental job loss for potentially serving as a proxy for number of spells experienced by the child, I control for the number of parental job loss spells the child experienced from birth to age 19.

In this paper, I compare three separate strategies for measuring timing. In most life course and developmental social-psychology research, the authors measure timing by dividing the ages of children into five categories roughly corresponding to developmental stage. These categories are young children (aged 0-5), older children (6-10), early adolescence (11-15), later adolescence (16-18) and did not experience parental job loss<sup>8</sup> (e.g. Ermisch and Wright 1991; Ermisch, Francesconi, and Pevalin 2004). These categories are potentially problematic, as siblings aged 6 and 9 fall into the same category, eliminating some variation within families. Table 1.A1 presents the model fit for multiple specifications of age at parental job loss along with continuous, cubic and quartic measures. Because they were the best fitting models, I use a categorical variable with a three-year age gradient instead. The models have substantively similar results.<sup>9</sup>

I measure educational attainment as years of education completed. This continuous measure ranges from 11 (less than a high school diploma) to 17 (more than a BA, top coded by the PSID). Since siblings tend to be more similar (even accounting for unobserved family charac-

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<sup>8</sup> For the models including all children the group that did not experience parental job loss is the reference group.

<sup>9</sup> I include models using this specification in Part 1 of Appendix B. The results do not differ substantially based on how age is measured.

teristics) than a random sample, measuring years of school completed will capture smaller differences in educational attainment that would otherwise be lost using a categorical analysis. For example, two sisters who both have attended “some college” have the same outcome in a categorical analysis, even though the older sister persisted for three years before leaving college and the younger sister left after her first year.

Children in smaller families tend to have higher levels of educational attainment (Felmlee 1988; Rich and Kim 1999), although the levels of educational attainment are more heterogeneous in smaller families (Kuo and Hauser 1997). Thus, in the OLS regression portion of the paper, I include number of siblings as a control for family size. While important to note, research on family size does not provide predictive potential for within-family differences, only between-family differences.<sup>10</sup>

I include a several controls. First, I control for gender in all of my models. This is particularly important as sisters in this cohort have higher educational attainment than their brothers. In the OLS models, I also control for race, parent education (measured the same way as the dependent variable), year of birth<sup>11</sup> and female-headed households at the time of the job loss. There is no need to control for these variables in the fixed effects equations since they measure family-level characteristics.

### *Methods*

I begin by presenting tables and figures illustrating the educational attainment of children who experience parental job loss compared to those who do not, with a focus on age at the time of the job loss. Then I provide a base set of descriptive OLS regression analyses with clustered standard errors to correct for sibling correlations. Finally, I use the sibling data more

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<sup>10</sup> I chose not to control for birth order because controlling for the oldest child may be over controlling. However, when the variable is included in the models, the substantive results do not change.

<sup>11</sup> Year of birth is not multi-collinear with age at parental job loss or birth order, and the OLS results are similar with and without this variable.

fully in family fixed effects models that estimate the impact of parental job loss timing on a child's adult educational attainment. All models are weighted.

Family fixed effects models allow me to control for unmeasured family effects to better tease out the specific effect of the age of the children at the time of parental job loss (Allison 2009; Conley, Pfeiffer, and Velez 2007). The fixed effects model controls for (time invariant) family-specific contexts, such as the duration of the unemployment spell, parental stress, financial strain, coping mechanisms and other unmeasured differences between families. A fixed effects model is analogous to an OLS regression, but with dummy variables for each family group (in this case with clustered standard errors, as discussed above)<sup>12</sup>.

Thus:

$$Y = \beta_0 + \beta_1(\textit{Child Age}) + \beta_{2\dots7}(\textit{Controls}) + \beta_n(\textit{Family Level Dummy}) + u$$

Where:

Y= Educational attainment in years at age 25;

$\beta_1(\textit{Child Age})$  = The age of the child the first time he or she experiences a parental job loss;

$\beta_{2\dots7}(\textit{Controls})$  = The child level covariates for each child. The control variables are gender, a dummy for oldest child in the family, year of birth, and number of job losses experienced;

$\beta_n(\textit{Family Level Dummy})$ =The family level fixed effect which controls for differences between families; and

$u$  =The residual or error, which is assumed to be normally distributed and uncorrelated with the family specific residual. This contains the variation caused by unobserved factors (anything not in the model).

Fixed effects models control for time invariant family contexts. Fixed effects models do not control for dynamic changes over time within families and thus do not perfectly control for family context, including marital dissolution. However, they do provide the best available controls for family-specific contexts, allowing me to focus on the child's age at the time of job loss.

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<sup>12</sup> For an in-depth discussion of why I choose fixed effects models over random effects see Appendix B.

Additional within-family differences remain, specifically child-specific attributes such as intelligence, work ethic, personality etc.

## RESULTS

On average, individuals in the full sample attend school for thirteen and a half years before age 25 (Table 1.1). The children who did not experience a parental head losing a job attended, on average, 14.1 years of school, approximately one year more than children who had a parent lose his or her job at least once (with a mean of 13 years of school). Aside from that, the characteristics of the children are similar, with slightly more than half of the respondents being young women. One-third are eldest siblings, and the mean year of birth is 1976. Forty-five percent of children who experienced parental job loss did so before the age of six, with a mean age of 7. In general, the sample containing 857 siblings who experienced parental job loss (the right column) is similar to the sample of 1,398 children with parental job loss in the main sample. There are some differences between the children's families: children who have a parent lose a job are slightly more likely to be black than white and to have parents with slightly lower educational attainment.

Table 1.2 and figure 1.1 focus on the mean educational attainment for each of the groups described in table 1.1. There is little difference in the educational attainment of children who were under the age of 15 at the time of the first parental job loss spell.<sup>13</sup> Importantly, there appears to be no relationship between age at time of parent job loss and educational attainment. This suggests that if there is a relationship, it is non-linear. Cumulative disadvantage theory predicts a linear relationship between age at parental job loss and educational attainment. Since the relationship between age at first parental job loss is not linear, this provides

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<sup>13</sup> An unweighted test of the mean differences (pwmean in stata) showed significant differences between children who did not experience a parental job loss spell and those who did. There was no significant difference in educational attainment for any group compared to any other based on age at the time of first parental job loss. This test is only descriptive, since I used unweighted data.

evidence that cumulative disadvantage theory does not explain differences in educational attainment for children who experience parental job loss.

The descriptive results indicate that age or life course stage may not be a major reason for within-group difference in educational attainment. Thus, the family (fixed effects) results may not support the hypotheses about age and life course effects of parental job loss on children. It is important to continue examining the relationship between educational attainment and age at parental job loss because of the strong predictions of general life course theory.

In table 1.3 I present the adjusted  $R^2$  and BIC' for each OLS regression (Raftery 1995). This allows me to compare model fit across models. Adding age increases the adjusted r-squared values: (percentage of educational attainment explained) increases by .030 or .035, or 3 or 3.5 percentage points. The BIC' measure of model fit suggests that age at the time of first parental job loss improves model fit for both the OLS and sibling fixed effects models as compared to models with only controls. The fit statistics suggest that including age at the time of first parental job loss improves the overall model fit of educational attainment. In the next few paragraphs, I examine the models in more detail.

Table 1.4 includes the results of traditional OLS regressions of educational attainment regressed on age at the time of parental job loss and controls for child and family characteristics. The left columns in table 1.4 compare child age at parental job loss to children whose parents never experienced unemployment. Prior to adding controls, experiencing any parental job loss predicts 1.2 fewer years of educational attainment for children aged 9-11 and 12-14, compared with children who do not experience job loss. In these full sample models (on the left), children who did not experience a parental job loss are the reference category. Since prior research has shown that parental job loss is associated with lower educational attainment, in these full OLS models it is not surprising that age at job loss is significant since the comparison group is made up of children with no parental job loss. After adding controls, age at any parental job loss shows smaller differences in attainment. After controlling for child gender, age, year of



birth, number of job losses experienced,<sup>14</sup> parental education and family race the differences age at job loss is no longer a significant predictor of educational attainment

The right columns of table 1.4 present the educational attainment of children (with siblings in the sample) who experienced parental job loss. These models show that there is no statistically significant difference in educational attainment based on age at the time of parental job loss.

Table 1.5 provides the results of the fixed effects regression equations of age at the time of job loss for children within families. Age at the time of parental job loss generally does not have a statistically significant effect on educational attainment for siblings.<sup>15</sup> Gender is the only consistently significant predictor of educational attainment in the model, indicating that, on average, sisters attended school for about a half year more than their brothers did.

The fixed effects findings are consistent with the OLS findings that age at parental job loss is not a primary predictor of educational attainment. All of the models describe about 73 percent of the within-family variation in educational attainment. Unfortunately, using the PSID, I do not have access to individual-level social-psychological characteristics, such as ability or achievement (prior to job loss), motivation or personality measures.

## DISCUSSION

Life course and cumulative disadvantage theories strongly predict that the timing of parent's job loss in a child's life should moderate children's educational attainment. That is, some of the within-group difference in educational attainment for children who have a parent

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<sup>14</sup> The inclusion of number of job losses may cause concern about multi-collinearity in my model. After examining the variable inflation factor (using `estat vif` in Stata), I find that this variable does not cause issues in the model. Conceptually, I include number of job losses so as not to conflate age at the time of parental job loss with experiencing parental job loss at all.

<sup>15</sup> These results are consistent using alternative measures of age at the time of parental job loss. See the appendices for detail.

lose his or her job is likely related to the development of the child, of which age is the primary measure. Cumulative disadvantage specifies that younger children experience more detrimental consequences in the long-term. Evidence for cumulative disadvantage theory would come from a linear or non-linear relationship where younger children at parental job loss have lower educational attainment.

Counter to both life course and cumulative disadvantage theories, my findings suggest that for children in families who have experienced a parent's job loss, age at the time of the job loss does *not* moderate their educational attainment compared to their siblings. Regardless of how I defined age at parental job loss—using linear, four or 7 age categories and first or any job loss (see appendices for details)—the models show little to no effect of age at parental job loss on siblings. The adjusted r-squared of the models (or the percent of variation described by each model and “corrected” for the number of variables in the models) is generally not higher for the age models than for models that only include the control variables. The “best” model, the seven-category measure of age at first parental job loss spell improves model fit by .004, or .4 percentage points—a very small amount.

Along with their theoretical implications, my results are interesting for several reasons. The finding that age at parental job loss is not significant indicates that either there are few or no differences in the long-term educational impacts of parental job loss or that, while the net association between age at parental job loss and education is similar, the underlying processes differ. Future research may want to address the mechanisms by which parental job loss harms educational attainment in order to clarify if these mechanisms vary by age.

Several less established perspectives are consistent with the possibility that the net association between age at parental job loss and educational attainment is similar, although the underlying processes are likely different. Qualitative findings by Conley (2004) and Newman (1988) suggest that older children at the time of job loss or other negative family changes experience a more negative impact because they are able to take on more responsibility in the family. When a parent loses his or her job, teenagers may be pressured to take on adult roles inside and outside the home, and often voluntarily forgo higher education to enter the labor

market (Coelli 2011). Thus, the process of educational disadvantage for children who experience a parental job loss may be distinct by age, even if the long-term educational consequences are the same.

My analyses are limited by a lack of information on children's abilities, achievement and social-psychological characteristics prior to and post unemployment. This means I cannot control for individual differences between children, although that is unlikely to change my results. The small sample size (857 children in 359 families, with half under age 5 at the time of the first job loss) may also be a reason why the models are not significant, but this does not fully explain the low r-squared or model-fit values.

Other factors, aside from life course and age, may be useful in examining the association between parent job loss and children's lower educational attainment. One of these is similar to research on poverty and educational attainment in that it addresses the duration and number of unemployment spells. I will explore this further in future work by considering whether family socioeconomic status (focusing on family poverty status and parent education) prior to the unemployment spell moderates the impact of parental job loss on children's long-term educational attainment.

Table 1.1: Descriptive Statistics for Key Variables

	Full Sample			Siblings and Job Loss
	No Job Loss	Job Loss	All	
Educational Attainment				
Years of Ed	14.1	13.0	13.6	13.0
sd	1.9	1.7	1.9	1.7
Age at First Job Loss (categorical)				
[None]	100.0	0.0	57.8	0.0
Age 0-2	0.0	22.6	9.5	21.6
Age 3-5	0.0	22.0	9.3	22.2
Age 6-8	0.0	16.5	7.0	17.8
Age 9-11	0.0	13.5	5.7	14.9
Age 12-14	0.0	12.2	5.2	12.6
Age 15-19	0.0	13.3	3.5	11.0
Gender				
Men	51.6	50.4	51.1	50.1
[Women]	48.4	49.6	48.9	50.0
Year of Birth				
Year Born	1976	1976	1976	1976
sd	5.0	5.0	4.7	4.7
Number of Job Losses from Age 0-18				
Number of Job Losses	0.0	1.8	0.8	1.9
sd	0.0	1.1	1.1	1.1
Sibship Size				
Number of Siblings in Family	2.1	2.2	2.2	2.4
sd	1.8	1.6	1.7	1.4
Parent Educaton				
Years of Ed	14.1	13.0	13.6	12.9
sd	2.1	1.7	2.1	1.6
Family Race				
[White]	80.0	76.9	78.7	77.7
Black	14.3	17.5	15.7	16.0
Other	5.6	5.6	5.6	6.3
Parent Who Lost Job				
[None]	100.0	0.0	57.8	--
Father	0.0	80.8	34.1	84.0
Mother	0.0	19.2	8.1	16.0
N				
Families	1,126	900	1,938	359
Children	1,754	1,398	3,152	857

Notes: The left columns present data for individuals born into the PSID between 1968 and 1984, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion.

Table 1.2: Educational Attainment at Age 25 by Other Characteristics

	Full Sample			Experienced Head Job Loss w/Sib in Sample		
	Mean	SD	Percent	Mean	SD	Percent
Gender						
Men	13.4	1.8	51.1	12.7	1.5	50.1
Women	13.8	1.9	48.9	13.2	1.8	50.0
Birth Order						
Not Oldest Sibling	13.6	1.9	65.7	13.0	1.7	67.2
Oldest Sibling	13.7	1.9	34.3	12.9	1.6	32.8
Number of Siblings						
0	13.7	1.9	5.3			
1	14.0	1.8	33.9	13.2	1.7	27.4
2	13.6	1.9	31.4	12.8	1.6	33.6
3	13.3	1.9	18.0	12.8	1.8	23.2
4	13.2	1.8	5.5	13.4	1.7	8.9
5 or more	12.8	1.5	5.9	12.8	1.4	4.7
Age at First Job Loss						
[None]	14.1	1.9	57.8			
Age 0-2	13.2	1.8	9.5	13.0	1.8	21.6
Age 3-5	12.9	1.7	9.3	12.9	1.7	22.2
Age 6-8	12.9	1.6	7.0	12.9	1.6	17.8
Age 9-11	12.8	1.5	5.7	12.8	1.3	14.9
Age 12-14	12.8	1.7	5.2	12.9	1.7	12.6
Age 15-19	13.5	1.8	3.5	13.4	1.8	11.0
Number of Job Losses						
[None]	14.1	1.9	58			
1	13.4	1.8	21.9	13.3	1.8	46.2
2	12.8	1.6	12.1	12.9	1.6	30.7
3	12.5	1.4	5.3	12.6	1.4	15.0
4 or more	12.3	1.4	3.1	12.2	1.3	8.1
N						
Children			3152			857
Families			1938			359

Notes: This table presents the years of education completed for individuals born into the PSID between 1968 and 1984, with educational attainment measured at age 25 or 26. These samples use listwise deletion, and are weighted.

**Figure 1.1. Mean Years of Education by Age at Parental Job Loss**

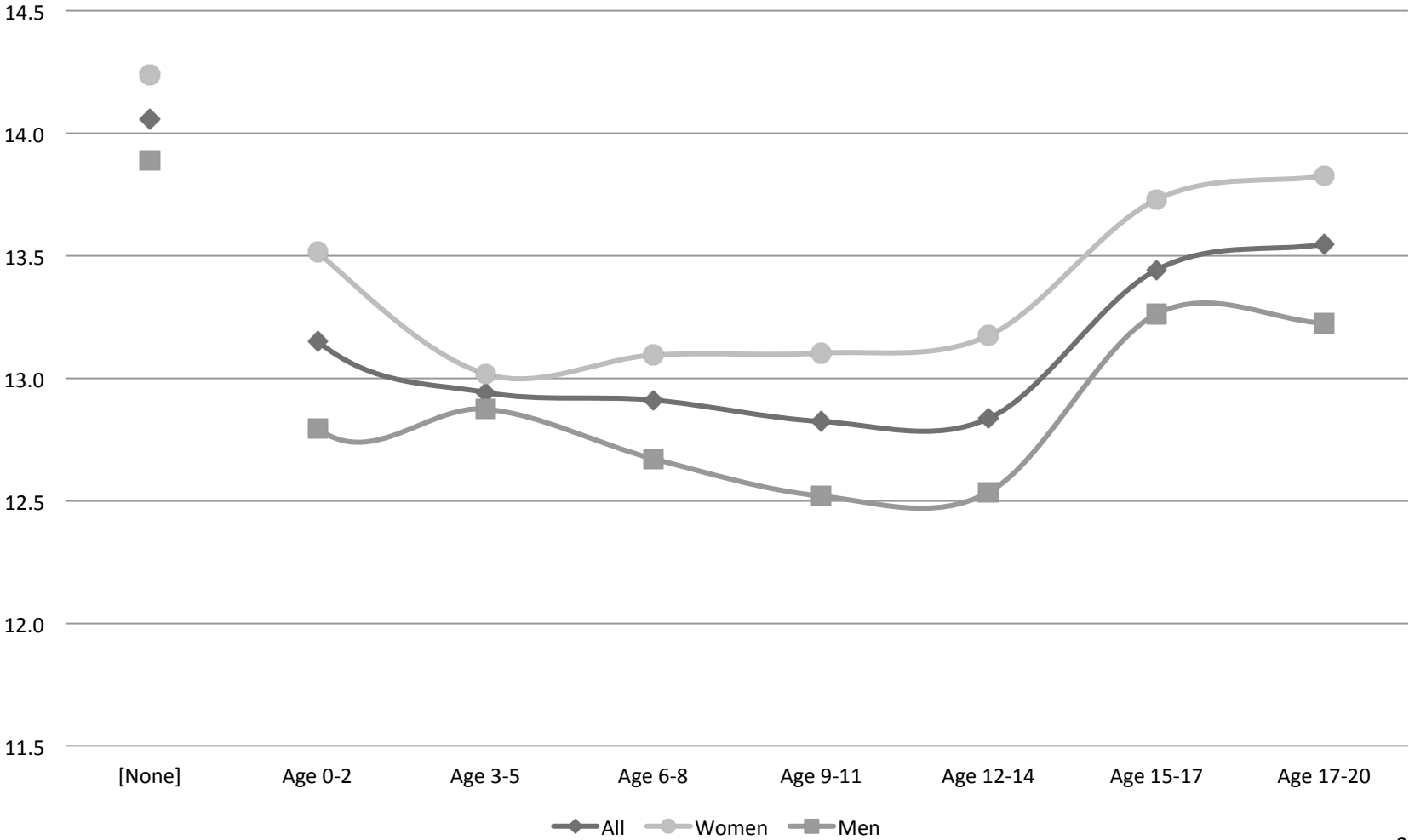


Table 1.3. Fit Statistics for OLS Models of Age at Parental Unemployment

	<i>Full Model</i>		<i>Siblings Only</i>	
	<i>R-Squared</i>	<i>BIC'</i>	<i>R-Squared</i>	<i>BIC'</i>
<i>Controls Only</i>				
Sex and Ever Had JL	0.083	-840	0.028	-32
Sex and Number of JL	0.091	-924	0.067	-156
Child Controls	0.098	-1498	0.071	-252
Family Controls	0.313	-7220	0.279	-1816
Family and Child Controls	<b>0.343</b>	<b>-14134</b>	<b>0.314</b>	<b>-3368</b>
<i>Age and Controls</i>				
Age at JL	0.076	-2334	0.006	-66
Age and Child Controls	0.107	-5023	0.278	-2930
Age and Family Controls	0.327	-19108	0.080	-1042
Full Model	<b>0.344</b>	<b>-26534</b>	<b>0.315</b>	<b>-5578</b>

Notes: Numbers in bold represent the 2 best fitting models in each column. Full models presented in Tables A1 and A2. All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members born into PSID families between 1968 and 1984. These results reflect the use of longitudinal weights and listwise deletion.

Table 1.4. Age at Job loss and Selected Controls for Full and Sibling Samples

	Full Sample (n=3152)				Sibling Sample (N=857)			
	Age at JL	Age and Child Controls	Age and Family Controls	Full Model	Age at JL	Age and Child Controls	Age and Family Controls	Full Model
Age at Parent Job Loss [None]								
Age 0-2	-0.907(***) [0.149]	-0.143 [0.195]	-0.342(**) [0.130]	0.204 [0.167]	0.139 [0.229]	0.301 [0.216]	0.156 [0.191]	0.253 [0.184]
Age 3-5	-1.115(***) [0.142]	-0.455(*) [0.184]	-0.518(***) [0.120]	-0.052 [0.149]		Reference		
Age 6-8	-1.147(***) [0.161]	-0.586(**) [0.192]	-0.513(***) [0.138]	-0.129 [0.161]	-0.009 [0.212]	-0.183 [0.202]	0.054 [0.172]	-0.058 [0.169]
Age 9-11	-1.234(***) [0.156]	-0.702(***) [0.170]	-0.539(***) [0.131]	-0.168 [0.143]	-0.129 [0.222]	-0.212 [0.206]	0.034 [0.163]	-0.008 [0.159]
Age 12-14	-1.221(***) [0.190]	-0.663(**) [0.206]	-0.644(***) [0.157]	-0.274 [0.174]	-0.036 [0.293]	-0.209 [0.285]	-0.074 [0.223]	-0.180 [0.219]
Age 15-19	-0.576(**) [0.195]	-0.136 [0.203]	-0.332 [0.175]	0.057 [0.221]	0.526 [0.322]	0.303 [0.328]	0.130 [0.256]	0.033 [0.266]
Gender [Women]								
Men		-0.400(***) [0.078]		-0.375(***) [0.066]		-0.584(***) [0.132]		-0.562(***) [0.113]
Num Head JL to age 20		-0.337(***) [0.051]		-0.243(***) [0.047]		-0.329(***) [0.069]		-0.179(**) [0.057]
Parental Head [Father]								
Mother							-0.219 [0.177]	-0.305 [0.186]
Constant	14.058(***) [0.066]	-42.701(*) [17.090]	7.834(***) [0.309]	-11.361 [14.367]	12.888(***) [0.166]	-34.028 [35.256]	6.354(***) [0.583]	-2.132 [29.116]
df	6	9	10	13	5	8	10	13
Observations	3,152	3,152	3,152	3,152	857	857	857	857
R-squared	0.078	0.110	0.329	0.347	0.012	0.285	0.091	0.325
Adjusted R-S	0.076	0.107	0.327	0.344	0.006	0.278	0.080	0.315
BIC'	-2334	-5023	-19108	-26534	-66	-2930	-1042	-5578

Notes: All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members born into PSID families between 1968 and 1984. These results reflect the use of longitudinal weights and listwise deletion. Full models presented in Tables A1 and A2. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05



Table 5. Sibling Fixed Effects Coefficients for Age and Sex at Parent Job Loss

	Gender	Age	Age and Gender
Gender [Women]			
Men	-0.412(**) [0.132]		-0.416(**) [0.134]
Age at Parent Job Loss [Age 3-5]			
Age 0-2		0.231 [0.211]	0.254 [0.212]
Age 6-8		0.1 [0.176]	0.059 [0.175]
Age 9-11		0.053 [0.222]	0.077 [0.216]
Age 12-14		-0.122 [0.256]	-0.107 [0.247]
Age 15-19		-0.265 [0.357]	-0.228 [0.351]
Constant	13.156(***) [0.078]	12.919(***) [0.135]	13.120(***) [0.135]
N			
Children	857	857	857
Families	359	359	359
R-squared	0.728	0.722	0.731
BIC	2214	2261	2239

Notes: Fixed effects regression models run using the areg command in Stata. All sample members born into PSID families between 1968 and 1984. These results reflect the use of longitudinal weights and listwise deletion. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 1.A1. Comparing Model Fit for 5 Different Operationalizations of Age at Parental Job Loss

	Full Sample		Sibling Sample	
	Adjusted R-Squared	BIC'	Adjusted R-Squared	BIC'
<b>Child Controls</b>				
<i>Controls Only</i>	0.098	-1498	0.071	-252
Age at First Job Loss (7 Cat)	0.107	<b>-5023</b>	0.278	-2930
Age at First Job Loss (5 Cat)	0.106	-3831	0.081	-596
Age at Any Job Loss (7 Cat)	0.100	-4685	<b>0.279</b>	<b>-3693</b>
Age Squared at First Job Loss	<b>0.108</b>	-2764	0.085	-515
Age Cubic at First Job Loss	<b>0.108</b>	-3349	0.084	-618
<b>Family Controls</b>				
<i>Controls Only</i>	0.313	-7220	<b>0.279</b>	-1816
Age at First Job Loss (7 Cat)	0.327	-19108	0.080	-1042
Age at First Job Loss (5 Cat)	0.327	-15287	0.278	<b>-2930</b>
Age at Any Job Loss (7 Cat)	<b>0.329</b>	<b>-19251</b>	0.069	-809
Age Squared at First Job Loss	0.327	-11422	0.278	-2553
Age Cubic at First Job Loss	0.328	-13376	0.278	-2553
<b>Family and Child Controls (Full Model)</b>				
<i>Controls Only</i>	0.343	-14134	0.314	-3368
Age at First Job Loss (7 Cat)	<b>0.344</b>	<b>-26534</b>	<b>0.315</b>	<b>-5578</b>
Age at First Job Loss (5 Cat)	<b>0.344</b>	-22371	0.314	-4684
Age at Any Job Loss (7 Cat)	<b>0.344</b>	<b>-26534</b>	0.311	-5494
Age Squared at First Job Loss	<b>0.344</b>	-18304	<b>0.315</b>	-4258
Age Cubic at First Job Loss	<b>0.344</b>	-20337	<b>0.315</b>	-4258
<b>Age Measures Only (Cannot compare across models)</b>				
Age at First Job Loss (7 Cat)	0.076	-2334	0.006	-66
Age at First Job Loss (5 Cat)	0.076	-1535	0.008	-36
Age at Any Job Loss (7 Cat)	0.074	-2271	0.013	-105
Age at First Job Loss (continuous)	0.034	-166	0.001	-2
Age Squared at First Job Loss	0.067	-675	0.010	-26
Age Cubic at First Job Loss	0.072	-1089	0.009	-40

Notes: Adjusted R-squared and BIC' calculated as per Raftery (1995). Bolded values are the best fitting values in comparison to the "controls only" model. Complete models can be found in Tables A.2, A.3., and B.2-B.5.

Table 1.A2. Full Models for the Full Sample (Table 1.4)

	Base Model	Gender & Num JL	Child	Family	Family & Child	Age at JL	Age & Child	Age & Family	Full Model
<i>Age at Parent Job Loss [None]</i>									
Age 0-2						-0.907(***) [0.149]	-0.143 [0.195]	-0.342(**) [0.130]	0.204 [0.167]
Age 3-5						-1.115(***) [0.142]	-0.455(*) [0.184]	-0.518(***) [0.120]	-0.052 [0.149]
Age 6-8						-1.147(***) [0.161]	-0.586(**) [0.192]	-0.513(***) [0.138]	-0.129 [0.161]
Age 9-11						-1.234(***) [0.156]	-0.702(***) [0.170]	-0.539(***) [0.131]	-0.168 [0.143]
Age 12-14						-1.221(***) [0.190]	-0.663(**) [0.206]	-0.644(***) [0.157]	-0.274 [0.174]
Age 15-19						-0.576(**) [0.195]	-0.136 [0.203]	-0.332 [0.175]	0.057 [0.221]
<i>Child Level Controls</i>									
<i>Parent Job Loss [No Job Loss]</i>									
Job Loss	-1.036(***) [0.095]								
Num Head JL to age 20	-0.475(***) [0.035]	-0.472(***) [0.035]			-0.243(***) [0.032]		-0.337(***) [0.051]		-0.243(***) [0.047]
<i>Gender [Women]</i>									
Men	-0.401(***) [0.079]	-0.389(***) [0.079]	-0.388(***) [0.079]		-0.371(***) [0.067]		-0.400(***) [0.078]		-0.375(***) [0.066]
Year of Birth			0.030(***) [0.009]		0.011 [0.007]		0.029(***) [0.009]		0.010 [0.007]
<i>Family Level Controls</i>									
Highest Parent Ed (median)				0.490(***) [0.020]	0.451(***) [0.020]			0.456(***) [0.020]	0.448(***) [0.020]
<i>Family Race [White]</i>									
Black/African American				-0.258(*) [0.104]	-0.247(*) [0.100]			-0.273(**) [0.099]	-0.246(*) [0.099]
Hispanic, Asian, and Other				0.066 [0.160]	0.124 [0.146]			0.033 [0.149]	0.099 [0.148]
Number of siblings				-0.099(**) [0.040]	-0.100(**) [0.040]			-0.095(**) [0.040]	-0.098(**) [0.040]

Constant	14.265(***) [0.077]	14.183(***) [0.072]	-44.467(**) [17.075]	7.177(***) [0.290]	-14.147 [14.194]	14.058(***) [0.066]	-42.701(*) [17.090]	7.834(***) [0.309]	-11.361 [14.367]
df	2	2	3	4	7	6	9	10	13
Observations	3,152	3,152	3,152	3,152	3,152	3,152	3,152	3,152	3,152
R-squared	0.084	0.092	0.099	0.314	0.344	0.078	0.110	0.329	0.347
Adjusted R-Squ:	0.083	0.091	0.098	0.313	0.343	0.076	0.107	0.327	0.344
BIC'	-840	-924	-1498	-7220	-14134	-2334	-5023	-19108	-26534
BIC' Compared to Controls		-84	-573		-12636		-2689	-16775	-24200
Model compared		1	2		3		6	6	6

Notes: All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members born into PSID families between 1968 and 1984. These results reflect the use of longitudinal weights and listwise deletion. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 1.A3: Full Models for the Sibling Sample (Table 1.4)

	Gender	Gender & Num JL	Child	Family	Family & Child	Age at JL	Age & Child	Age & Family	Full Model
<i>Age at Parent Job Loss [Age 3-5]</i>									
						0.139	0.301	0.156	0.253
						[0.229]	[0.216]	[0.191]	[0.184]
						-0.009	-0.183	0.054	-0.058
						[0.212]	[0.202]	[0.172]	[0.169]
						-0.129	-0.212	0.034	-0.008
						[0.222]	[0.206]	[0.163]	[0.159]
						-0.036	-0.209	-0.074	-0.180
						[0.293]	[0.285]	[0.223]	[0.219]
						0.526	0.303	0.130	0.033
						[0.322]	[0.328]	[0.256]	[0.266]
<i>Child Level Controls</i>									
		-0.306(***)	-0.299(***)		-0.143(*)		-0.329(***)		-0.179(**)
		[0.064]	[0.065]		[0.056]		[0.069]		[0.057]
	Gender [Women								
	Male	-0.573(***)	-0.537(***)	-0.555(***)	-0.549(***)		-0.584(***)		-0.562(***)
		[0.133]	[0.133]	[0.134]	[0.113]		[0.132]		[0.113]
	Year of Birth		0.025	0.008	0.008		0.024		0.005
			[0.018]	[0.014]	[0.014]		[0.018]		[0.015]
<i>Family Level Controls</i>									
				0.516(***)	0.494(***)			0.514(***)	0.489(***)
				[0.042]	[0.043]			[0.041]	[0.042]
	Family Race [White]								
	Black/African American			-0.281	-0.183			-0.289	-0.195
				[0.155]	[0.154]			[0.156]	[0.157]
	Hispanic, Asian, and Other			-0.299	-0.211			-0.309	-0.236
				[0.227]	[0.237]			[0.241]	[0.252]
	Number of siblings			0.011	-0.015			0.013	-0.018
				[0.060]	[0.057]			[0.061]	[0.059]
	Which Parent is Head [Father]								
	Mother			-0.240	-0.342			-0.219	-0.305
				[0.177]	[0.183]			[0.177]	[0.186]
	Constant	13.237(***)	13.798(***)	-36.309	6.391(***)	-9.274	12.888(***)	-34.028	6.354(***)

	[0.126]	[0.194]	[36.125]	[0.553]	[28.314]	[0.166]	[35.256]	[0.583]	[29.116]
df	1	2	3	5	8	5	8	10	13
Observations	857	857	857	857	857	857	857	857	857
R-squared	0.029	0.069	0.074	0.283	0.320	0.012	0.285	0.091	0.325
Adjusted R-Square	0.028	0.067	0.071	0.279	0.314	0.006	0.278	0.080	0.315
BIC'	-32	-156	-252	-1816	-3368	-66	-2930	-1042	-5578
BIC' Compared to Controls		-124	-96		-1552		-2864	-976	-5512
Model compared		1	2		3		6	6	6

Notes: All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members experienced a parental job loss, were born into PSID families between 1968 and 1984 with at least one sibling born during those years. These results reflect the use of longitudinal weights and listwise deletion. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

## APPENDIX B: ALTERNATIVE MODEL SPECIFICATIONS/ROBUSTNESS CHECKS

This appendix contains a series of alternative model specifications that serve as robustness checks of the models in the main paper. None of these models changes the substantive results, although the point estimates are slightly different. Section 1 discusses four alternatives for how to measure age at parental job loss and provides the results testing these models. The second section presents random effects (RE) versions of the main models in the paper and explains why fixed effects are more appropriate models for this paper. For each, I provide a short description of the robustness check, a series of tables presenting the results and a brief discussion of the results.

### *Section 1: Alternative Age Measures*

In the main paper, I operationalize age at parental job loss as a categorical measure of the child's age at the first instance of parental job loss. The measure is a series of seven dummy variables measuring age at first job loss where each child is counted once. Here I discuss three alternative ways to measure age at parental job loss: a 5-category model of age at first job loss, age at any job loss and continuous measures (Table B.1 presents the descriptive statistics). I discuss each in detail, then present the results (Tables B.2-B.6) and compare model fit (Table B.2).

#### *Age at first job loss: 5-category model*

Prior life course and developmental social psychology research generally measures timing by dividing child ages into five categories roughly corresponding to developmental stage. These categories are young children (aged 0-5), older children (6-10), early adolescence (11-15) and later adolescence (16-19) (e.g. Ermisch and Wright 1991; Ermisch, Francesconi, and Pevalin 2004). In this paper, these categories are potentially problematic, as siblings aged 6 and 9 fall into the same category, eliminating some variation within families. Figure B.1 and Table B.1 present the mean years of education for children using this measure, and Table B.3 presents the OLS regression results for these models.

### *Age at any job loss*

The cumulative measure summarizes at what age(s) a child experiences a parental job loss considering all unemployment spells. For this measure, I use a series of dummy variables where children are coded as 1 in *all* age categories in which they experienced parental job loss. This operationalization allows children with multiple exposures to job loss to be counted as many times as they experienced a parent's job loss. Table B.4 presents the OLS regression results for these models.

For example, David and Bill's mother (the head of household) loses her job twice, once when the boys are 2 and 5, and again when they are 10 and 13. When measuring the first job loss, David is coded as a 1 in the 0-2 category and 0 for all other age categories. Likewise, Bill is coded 1 in the 3-5 age category and 0 in all of the others. Under the any job loss measure, David is coded as a 1 in both the 0-2 and 9-11 categories and a 0 in the other categories. Bill would be coded as a 1 in the 3-5 and 12-14 category. Thus, this measure captures all of the age ranges when a child experiences a parental job loss. Figure B.2 and Table B.1 present the mean years of education for children using this measure.

### *A continuous measure of age*

Alternatively, using age as a continuous variable, including a square and a cubic term, allows for finer grained distinctions in the data while also allowing for non-linear relationships. It is likely that the linear/square/and cubic terms may not capture the true shape of the distribution and may not be very useful. Figure B.1.3 illustrates this challenge: there is no strong linear trend.

### *Choosing a measure*

Like Figure 1 in the paper. Figures B.1 through B.3 show children's mean educational attainment by age at the time of the first parental job loss. Figure B.1 presents the mean educational attainment using a continuous measure (each age) of age at parental job loss. The trends



displayed in the pattern are not statistically significant, nor are they linear for boys or girls. Similar to Figure 1, Figure B.2 shows educational attainment by age category, also with no trend.

In the main body of the paper, I present a 7-category model of child age at first job loss. In addition to the reasons listed in the main text, I chose to use first job loss because the results are substantively similar and it is simpler to discuss the first job loss than any job loss. I chose to use the seven-category model for three related reasons: First, the seven categories provide better model fit for the fully controlled OLS model based on BIC' than the larger age ranges or a continuous measure (see Table B.2). Second, the descriptive statistics indicate that age at parental job loss is not a continuous predictor (see Figure B.1). The sample size is too small to include a dummy at each age, so I need to group the ages. While I need groupings, smaller age ranges preserve a larger amount of the variation between children. By breaking age into three-year age groupings instead of 5-year groupings, fewer siblings are likely to be in the same age category at the time of the first parental job loss. Finally (and most importantly), as the models presented in Tables B.1.3-B.1.5 show, the substantive results are equivalent, so the models are interchangeable.

### *Section 2: Random Effects Models*

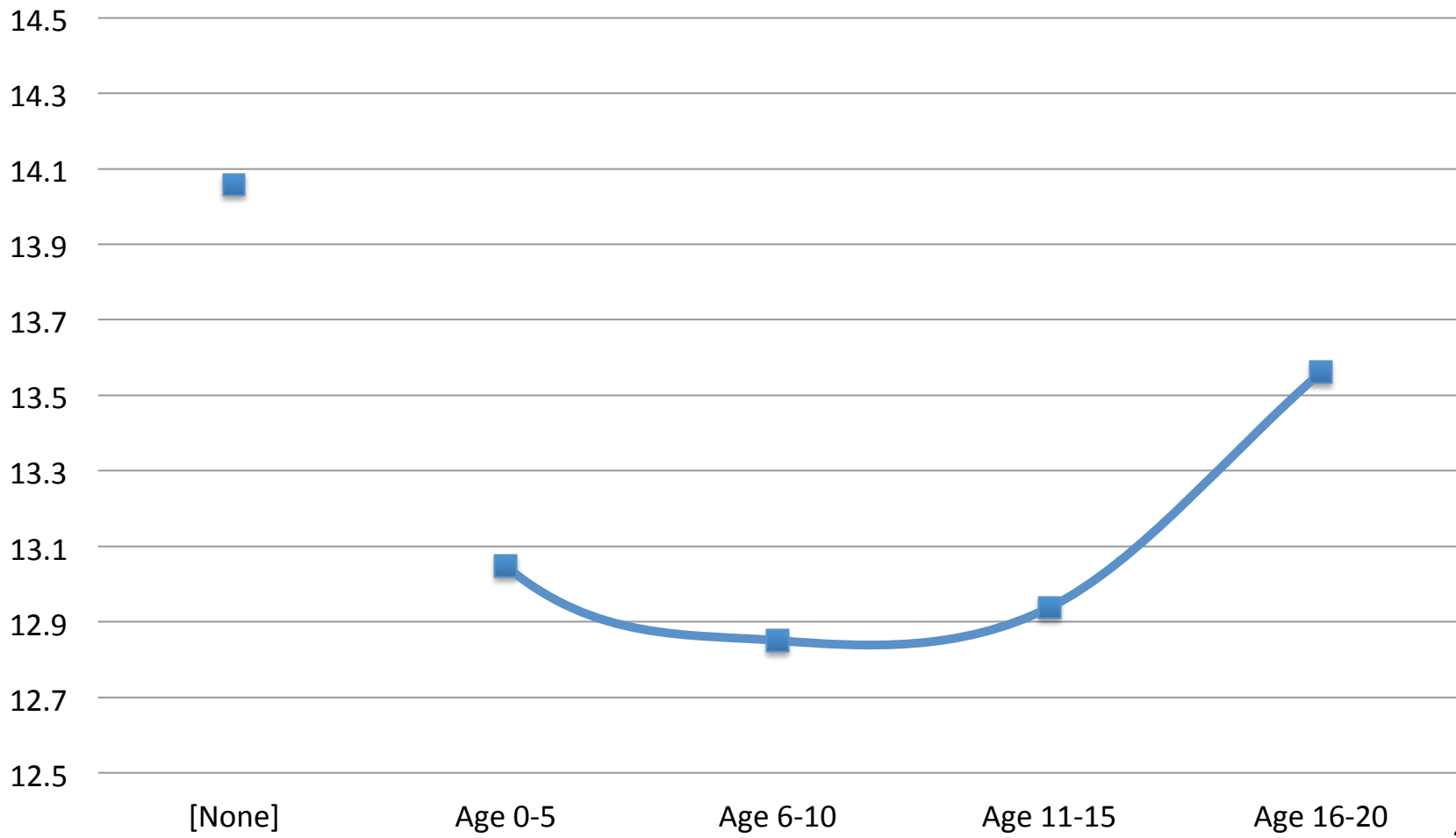
Over the course of this project, it has been suggested that random effects models may be preferable to fixed effects models. While I conceptually prefer fixed effects models, I also show results of random effects models and Hausman tests comparing the fixed and random effects models. As with prior robustness checks, the results of random effects models are consistent with the results from the models presented in the paper. More importantly, the Hausman test indicates that the fixed effects model is mathematically more appropriate than the random effects model.

Table B.1: Descriptive Statistics for 3 Measures of Age at Parental Job Loss

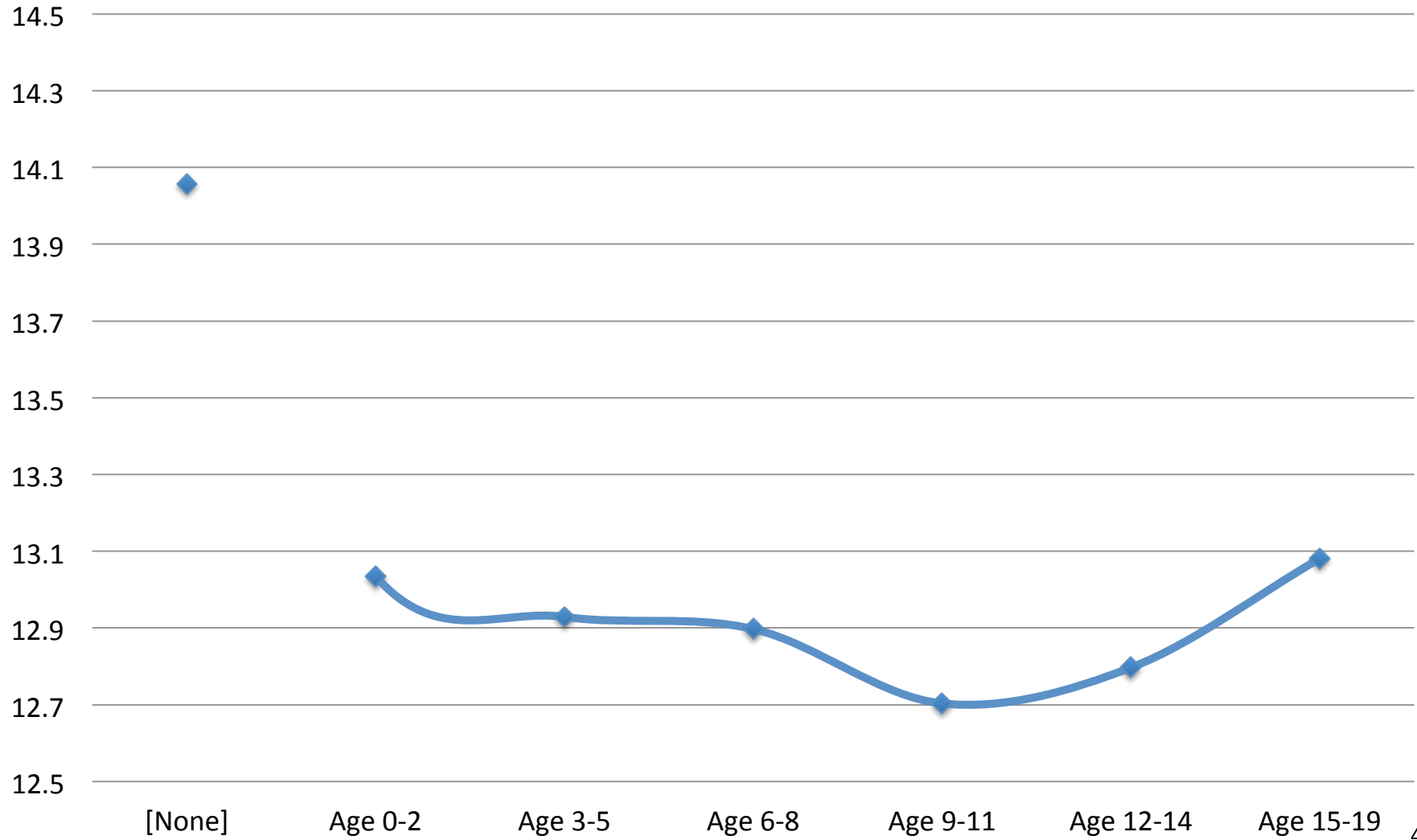
	Full Sample				Loss w/Sib in Sample			
	Mean	SD	Percent	N	Mean	SD	Percent	N
7 Category								
[None]	14.1	1.9	57.8	1821				
Age 0-2	13.2	1.8	9.5	301	13.0	1.8	21.6	185
Age 3-5	12.9	1.7	9.3	292	12.9	1.7	22.2	190
Age 6-8	12.9	1.6	7.0	219	12.9	1.6	17.8	153
Age 9-11	12.8	1.5	5.7	180	12.8	1.3	14.9	127
Age 12-14	12.8	1.7	5.2	162	12.9	1.7	12.6	108
Age 15-19	13.5	1.8	3.5	177	13.4	1.8	11.0	94
5 Category								
[None]	14.1	1.9	57.8	1821				
Age 0-5	13.0	1.7	18.8	593	13.0	1.7	43.8	375
Age 6-10	12.9	1.6	11.4	360	12.8	1.5	29.3	251
Age 11-15	12.9	1.6	7.7	243	12.9	1.7	18.9	162
Age 16-20	13.6	1.9	4.3	136	13.5	1.9	8.1	69
Age at ANY job Loss (Does not sum to 100%)								
[None]	14.1	1.9	57.8	1821				
Age 0-2	13.0	1.7	9.6	302	13.0	1.8	21.7	186
Age 3-5	12.9	1.6	12.2	385	12.8	1.6	29.8	256
Age 6-8	12.9	1.7	10.8	341	12.9	1.7	28.5	244
Age 9-11	12.7	1.5	9.9	312	12.7	1.4	26.6	228
Age 12-14	12.8	1.6	8.8	277	12.8	1.7	22.5	193
Age 15-19	13.1	1.8	10.2	322	13.0	1.8	23.4	200
N								
Children				3152				857

Notes: This table presents the years of education completed for individuals born into the PSID between 1968 and 1984, with educational attainment measured at age 25 or 26. These samples use listwise deletion, where the parental head's employment status was available for at least 10 years.

**Figure 1.B.1.1. Mean Educational Attainment by Age at First Parental Job Loss, 5 Category**



**Figure 1.B.1.2. Mean Educational Attainment by Age at ANY Parental Job Loss**



**Figure 1.B.1.3. Mean Educational Attainment by Age at First Parental Job Loss**

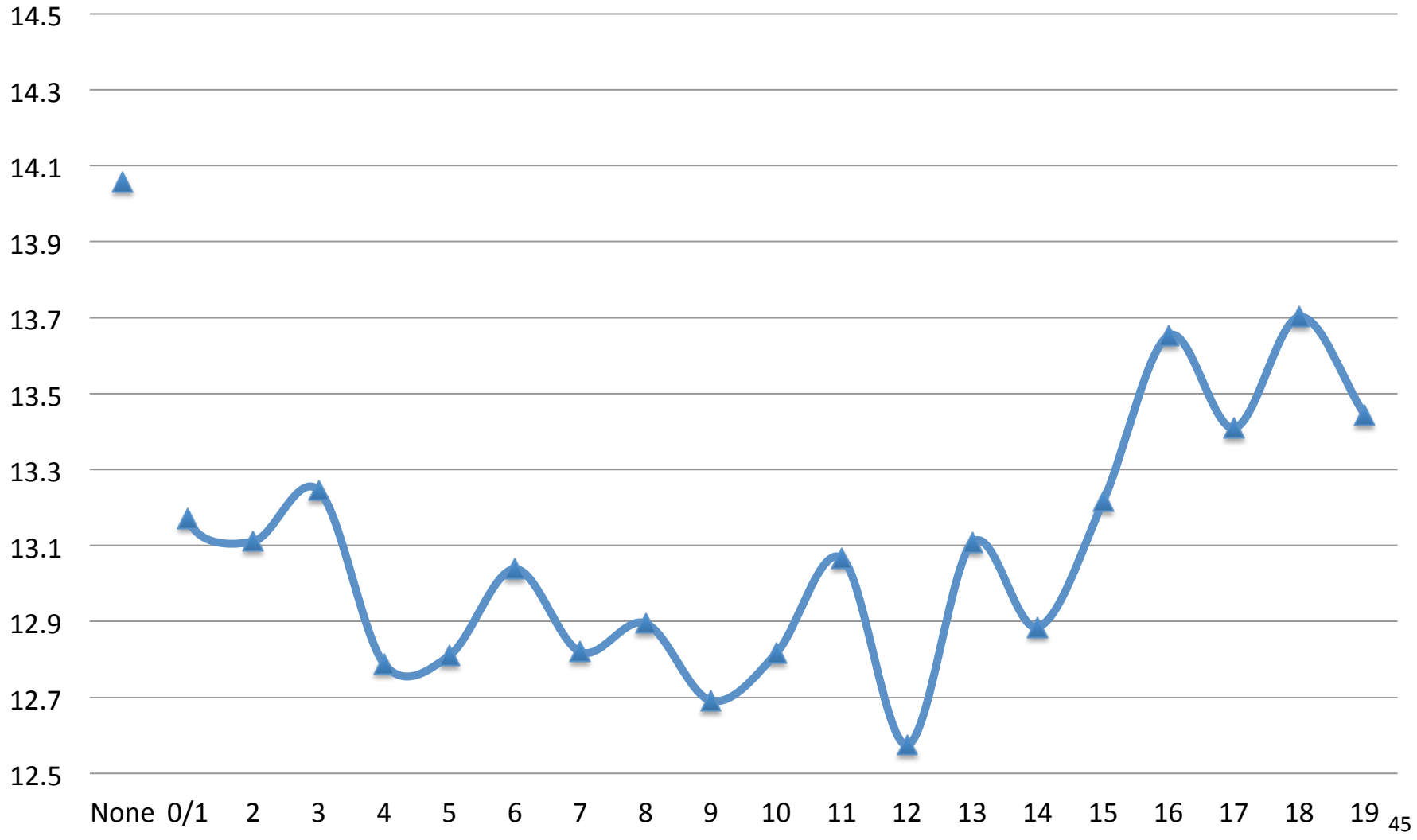


Table 1.B.2. OLS Regression Results for the 5 category measure of age, Full Sample

	Age only	Child Controls	Family Controls	Full Model
Age at Parent Job Loss				
Age 0-5	-1.010(***) [0.116]	-0.326 [0.168]	-0.429(***) [0.099]	0.052 [0.139]
Age 6-10	-1.208(***) [0.129]	-0.680(***) [0.161]	-0.533(***) [0.112]	-0.174 [0.135]
Age 11-15	-1.120(***) [0.162]	-0.590(***) [0.176]	-0.604(***) [0.128]	-0.250 [0.145]
Age 16+	-0.497(*) [0.224]	-0.100 [0.228]	-0.257 [0.209]	0.009 [0.213]
Child Level Controls				
Gender [Women]				
Men		-0.400(***) [0.078]		-0.373(***) [0.066]
Num Head JL		-0.324(***) [0.050]		-0.231(***) [0.047]
Year of Birth		0.029(***) [0.009]		0.010 [0.007]
Family Controls				
Highest Parent Ed (median)			0.456(***) [0.020]	0.447(***) [0.020]
Family Race				
Black			-0.277(**) [0.099]	-0.254(*) [0.099]
Hispanic, Asian and Other			0.032 [0.149]	0.093 [0.148]
Number of siblings			-0.094(**) [0.032]	-0.097(**) [0.032]
Parental Head at 1st Job Loss [Father]				
Mother				
Constant	14.058(***) [0.066]	-43.334(*) [17.074]	7.832(***) [0.308]	-11.634 [14.338]
df	4	7	8	11
N	3,152	3,152	3,152	3,152
R-squared	0.077	0.108	0.329	0.346
Adjusted R-Squared	0.076	0.106	0.327	0.344
BIC'	-1535	-3831	-15287	-22371

Notes: All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members born into PSID families between 1968 and 1984. These results reflect the use of longitudinal weights and listwise deletion. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 1.B.2a. OLS Regression Results for the 5 category measure of age, Sibling Sample

	Age only	Child Controls	Family Controls	Full Model
Age at Parent Job Loss				
Age 0-5				
Age 6-10	-0.159 [0.165]	-0.366(*) [0.157]	-0.035 [0.138]	-0.163 [0.134]
Age 11-15	-0.011 [0.237]	-0.246 [0.233]	-0.136 [0.184]	-0.257 [0.185]
Age 16+	0.533 [0.345]	0.251 [0.349]	0.153 [0.296]	0.030 [0.307]
Child Level Controls				
Gender [Women]				
Men		-0.582(***) [0.132]		-0.557(***) [0.112]
Num Head JL		-0.315(***) [0.068]		-0.164(**) [0.057]
Year of Birth		0.025 [0.018]		0.006 [0.015]
Family Controls				
Highest Parent Ed (median)			0.514(***) [0.042]	0.489(***) [0.043]
Family Race				
Black			-0.293 [0.159]	-0.202 [0.159]
Hispanic, Asian and Other			-0.316 [0.238]	-0.252 [0.249]
Number of sil			0.014 [0.061]	-0.014 [0.058]
Parental Head at 1st Job Loss [Father]				
Mother			-0.220 [0.180]	-0.306 [0.189]
Constant	12.956(***) [0.128]	-35.907 [35.275]	6.439(***) [0.565]	-3.889 [29.150]
df	3	6	8	11
N	857	857	857	857
R-squared	0.011	0.087	0.285	0.323
Adjusted R-Square	0.008	0.081	0.278	0.314
BIC'	-36	-596	-2930	-4684

Notes: All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members born into PSID families between 1968 and 1984. These results reflect the use of longitudinal weights and listwise deletion. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 1.B.3a OLS Regression Results for the Age at ANY Job Loss Measure, Full Sample

	Age	Child	Family	Full
Age at ANY Job Loss [None]				
Age 0-2	-0.262 [0.140]	0.229 [0.164]	-0.039 [0.121]	0.339(*) [0.142]
Age 3-5	-0.602(***) [0.119]	-0.077 [0.146]	-0.242(*) [0.104]	0.150 [0.124]
Age 6-8	-0.613(***) [0.128]	-0.072 [0.162]	-0.283(**) [0.108]	0.121 [0.136]
Age 9-11	-0.818(***) [0.118]	-0.316(*) [0.132]	-0.409(***) [0.111]	-0.035 [0.125]
Age 12-14	-0.768(***) [0.135]	-0.252 [0.154]	-0.407(***) [0.116]	-0.047 [0.134]
Age 15-19	-0.540(***) [0.137]	-0.057 [0.153]	-0.348(**) [0.118]	-0.004 [0.135]
Child Level Controls				
Gender [Women]				
Men		-0.392(***) [0.079]		-0.370(***) [0.066]
Num Head JL to age 20		-0.416(***) [0.065]		-0.313(***) [0.057]
Year of Birth		0.028(**) [0.009]		0.009 [0.007]
Family Controls				
Highest Parent Ed (median)			0.458(***) [0.020]	0.451(***) [0.020]
Family Race				
Black			-0.257(**) [0.100]	-0.241(*) [0.100]
Hispanic, Asian and Other			0.073 [0.148]	0.112 [0.148]
Number of siblings			-0.098(**) [0.032]	-0.099(**) [0.032]
Constant	13.991(***) [0.062]	-41.283(*) [17.181]	7.790(***) [0.302]	-9.414 [14.387]
Observations	6	9	10	13
R-squared	0.076	0.103	0.331	0.347
Adjusted R-Squared	0.074	0.100	0.329	0.344
BIC'	-2271	-4685	-19251	-26534

Notes: All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members born into PSID families between 1968 and 1984. These results reflect the use of longitudinal weights and listwise deletion. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05



Table1.B.3b OLS Regression Results for the Age at ANY Job Loss Measure, Sibling Sample

	Child	Family	Full
Age at ANY Job Loss			
Age 0-2			
Age 3-5	-0.118 [0.148]	0.038 [0.190]	0.054 [0.158]
Age 6-8	-0.044 [0.148]	0.072 [0.185]	0.096 [0.159]
Age 9-11	-0.176 [0.157]	-0.105 [0.166]	-0.012 [0.161]
Age 12-14	-0.159 [0.155]	-0.018 [0.204]	-0.051 [0.173]
Age 15-19	-0.185 [0.159]	0.238 [0.214]	-0.016 [0.178]
Child Level Controls			
Gender [Women]			
Men		-0.567(***) [0.135]	-0.545(***) [0.114]
Num Head JL t		-0.304(***) [0.074]	-0.156(*) [0.063]
Year of Birth		0.028 [0.018]	0.006 [0.015]
Family Controls			
Highest Parent l	0.512(***) [0.041]		0.496(***) [0.042]
Family Race			
Black	-0.254 [0.160]		-0.185 [0.155]
Hispanic, Asian	-0.268 [0.242]		-0.213 [0.247]
Number of sibli	-0.001 [0.061]		-0.017 [0.057]
Parental Head at 1st Job Loss [Father]			
Mother	-0.260 [0.180]		-0.332 [0.184]
Constant	6.641(***) [0.570]	-41.996 [36.384]	-4.017 [29.004]
Observations	10	9	13
R-squared	0.287	0.079	0.321
Adjusted R-Squared	0.279	0.069	0.311
BIC'	-3693	-809	-5494

Notes: All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members born into PSID families between 1968 and 1984. These results reflect the use of longitudinal weights and listwise deletion. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 1.B.4. OLS Regression Results for Continuous Measures of Age at Parental Unemployment, Full Sample (N=3,152)

	Age	Age Squared	Child Controls Age Squared	Family Controls Age Squared	Full Model	Age Cubed	Child Controls Age Cubed	Family Controls Age Cubed	Full Model
Age	-0.069(***) [0.010]	-0.281(***) [0.027]	-0.146(***) [0.030]	-0.122(***) [0.024]	-0.050 [0.027]	-0.434(***) [0.061]	-0.164(*) [0.074]	-0.192(***) [0.051]	-0.036 [0.061]
Age Squared		0.015(***) [0.002]	0.008(***) [0.002]	0.006(***) [0.002]	0.002 [0.002]	0.042(***) [0.010]	0.011 [0.011]	0.018(*) [0.008]	0.000 [0.009]
Age Cubed						-0.001(**) [0.000]	-0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]
Gender [Women]									
Men			-0.395(***) [0.078]		-0.373(***) [0.066]		-0.396(***) [0.078]		-0.372(***) [0.066]
Num Head JL to age 20			-0.332(***) [0.038]		-0.191(***) [0.037]		-0.325(***) [0.043]		-0.196(***) [0.040]
Year of Birth			0.028(***) [0.009]		0.011 [0.007]		0.029(***) [0.009]		0.010 [0.007]
Highest Parent Ed (median)				0.460(***) [0.020]	0.446(***) [0.020]			0.459(***) [0.020]	0.446(***) [0.020]
Family Race									
Black				-0.273(**) [0.099]	-0.255(**) [0.099]			-0.267(**) [0.099]	-0.256(**) [0.099]
Hispanic, Asian and Other				0.017 [0.153]	0.088 [0.147]			0.027 [0.150]	0.088 [0.147]
Number of siblings				-0.093(**) [0.033]	-0.097(**) [0.032]			-0.094(**) [0.032]	-0.097(**) [0.032]
Constant	13.841(***) [0.060]	13.982(***) [0.062]	-41.865(*) [16.952]	7.744(***) [0.303]	-12.644 [14.281]	14.018(***) [0.064]	-42.302(*) [17.052]	7.786(***) [0.305]	-12.312 [14.283]
D	1	2	5	6	9	3	6	7	10
R-squared	0.034	0.068	0.109	0.328	0.346	0.073	0.110	0.329	0.346
Adjusted R-Square	0.034	0.067	0.108	0.327	0.344	0.072	0.108	0.328	0.344
BIC'	-166	-675	-2764	-11422	-18304	-1089	-3349	-13376	-20337

Notes: All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members born into PSID families between 1968 and 1984. These results reflect the use of longitudinal weights and listwise deletion. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 1.B.5 OLS Regression Results for Continuous Measures of Age at Parental Unemployment, Sibling Sample (N=857)

	Age	Age Squared	Child Controls	Family Controls	Full Model	Age Cubed	Child Controls	Family Controls	Full Model
			Age Squared				Age Cubed		
Age	0.015 [0.019]	-0.101 [0.055]	-0.154(**) [0.053]	-0.036 [0.048]	-0.069 [0.047]	-0.050 [0.149]	-0.158 [0.145]	-0.023 [0.127]	-0.093 [0.126]
Age Squared		0.007(*) [0.003]	0.008(**) [0.003]	0.002 [0.003]	0.003 [0.003]	-0.000 [0.020]	0.009 [0.019]	0.000 [0.016]	0.007 [0.016]
Age Cubed						0.000 [0.001]	-0.000 [0.001]	0.000 [0.001]	-0.000 [0.001]
Gender [Women]									
Men			-0.570(***) [0.131]		-0.551(***) [0.112]		-0.570(***) [0.132]		-0.552(***) [0.113]
Num Head JL			-0.328(***) [0.070]		-0.176(**) [0.057]		-0.328(***) [0.070]		-0.176(**) [0.057]
Year of Birth			0.024 [0.018]		0.005 [0.015]		0.024 [0.018]		0.005 [0.015]
Highest Parent Ed (median)				0.513(***) [0.041]	0.488(***) [0.042]			0.513(***) [0.041]	0.488(***) [0.042]
Family Race									
Black				-0.284 [0.158]	-0.189 [0.157]			-0.285 [0.159]	-0.186 [0.160]
Hispanic, Asian and Other				-0.322 [0.239]	-0.251 [0.250]			-0.322 [0.238]	-0.250 [0.249]
Number of siblings				0.011 [0.061]	-0.018 [0.058]			0.012 [0.061]	-0.018 [0.058]
Parental Head at 1st Job Loss [Father]									
Mother				-0.225 [0.181]	-0.312 [0.187]			-0.224 [0.182]	-0.314 [0.190]
Constant	12.842(***) [0.159]	13.156(***) [0.210]	-33.814 [35.458]	6.540(***) [0.561]	-2.418 [29.473]	13.079(***) [0.291]	-33.877 [35.463]	6.522(***) [0.599]	-2.706 [29.470]
DF	1	2	5	7	10	3	6	7	10
R-squared	0.002	0.012	0.090	0.284	0.323	0.012	0.090	0.284	0.323
Adjusted R-Squared	0.001	0.010	0.085	0.278	0.315	0.009	0.084	0.278	0.315
BIC'	-2	-26	-515	-2553	-4258	-40	-618	-2553	-4258

Notes: All OLS regressions run using standard errors clustered by family. BIC' and Adjusted R-squared calculated as per Raftery (1995). All sample members experienced parental job loss, were born from 1968-84 with at least one sibling born in the same time span. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

## **Paper 2**

### **DOES FAMILY SOCIOECONOMIC STATUS MODERATE THE RELATIONSHIP BETWEEN PARENTAL JOB LOSS AND CHILDREN'S EDUCATIONAL ATTAINMENT?**

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## SUMMARY

This paper brings a stratification perspective to research on parental job loss and children's educational attainment. In it, I hypothesize that family socioeconomic status (SES) moderates the effect of parental job loss, given that economic and non-economic resources (e.g., social networks) can lessen the potential negative effects of unemployment spells. Using data from the Panel Study of Income Dynamics (PSID), I examine the educational attainment of children born into socioeconomically similar families, but who have divergent experiences related to parental job loss. I find that much of the difference in educational attainment between children who do and do not experience parental job loss may be a function of the propensity to experience parental job loss (as a function of family SES at birth). This research is relevant for policies meant to alleviate the negative impact of unemployment on families, providing insight into variation in children's long-term educational outcomes

## INTRODUCTION

The many consequences of an individual's unemployment extend to his or her family, especially affecting children in the household (e.g. Elder, Conger, Foster, and Ardel 1992; Moen 1983). Approximately half of all American children experience a parent's job loss during their childhood (Kalil and Wightman 2011).<sup>16</sup> With so many children experiencing a parent's involuntary separation from employment and the potential that some children are particularly vulnerable to parental job loss impacts, it is crucial to understand how parental job loss plays a part in outcomes of affected children. In this paper, I examine the lives of young adults who experienced parental job loss to extend the research on the long-term consequences of this family shock by considering the family's economic and social resources at the time of the job loss.

Family socioeconomic status (SES) is usually not considered a moderator of the impact of parental job loss (see Newman 1988 for an exception.), yet there are good reasons to believe that children in more advantaged families experience their parent's job loss differently from less advantaged children. For example, a higher-SES family may have more economic and social resources, and these can be helpful in sheltering children from the negative effects of an unemployment spell. Yet, higher SES may also bring more social stress and high-stakes financial commitments (Newman 1988) that make families experiencing unemployment consider difficult choices, such as not paying their mortgage.

When a parent loses his or her job, some social and economic attributes of family SES decline, while others remain stable. Parent's education is fixed; it cannot be lost with a job. If the parent returns to school as the result of a job loss, the educational aspect of family SES will

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<sup>16</sup> The Bureau of Labor Statistics (BLS 2011) considers an individual unemployed when he or she is not currently working, looking for work and available for work. Unemployment importantly includes not just the event, but the time someone is out of work. Job loss usually refers to an individual's involuntary departure from an employer or employment situation. Other reasons for parental job displacement, such as choosing to leave a job, are outside the scope of this project.

actually improve. Importantly, however, parental job displacement leads to a short-term (and possibly a long-term) decline in income (Gangl 2006; Stevens 1997). Elements of SES based on occupational characteristics decline or do not fully apply. Job losses can also disrupt social networks and other employment-related forms of family social capital (Newman 1988). All of these are possible mechanisms for ways family SES may affect the impact of parental job loss on children, including their education outcomes.

In this paper I bring a stratification perspective to research on parental job loss and children's educational attainment, asking **How does family socioeconomic status moderate the impact of parental job loss on children's educational outcomes?** I break this down into two further questions: For children from similar SES families at birth, what is the association between parental job loss and educational attainment? Does this change based on the likelihood of experiencing parental job loss? I use data from a cohort of children from the Panel Study of Income Dynamics (PSID) and consider involuntary displacement—situations in which (two-parent or single parent) families may have little time to prepare for or prevent a job loss.

Just as the relationship between family SES to job loss and children's educational attainment is complicated, so are the results I present below. I find the difference in educational attainment between children who do and do not experience parental job loss may partially be a function of the propensity to experience parental job loss (based on family SES at birth).

## REVIEW OF THEORETICAL AND EMPIRICAL LITERATURE

Prior research on the consequences of parental job loss has examined a variety of children's short- and long-term outcomes. Researchers also consider the moderating influences of household structure and access to resources on the detrimental impacts of displacement (Heeringa et al. 2011; Kalil and Wightman 2010). This section reviews the existing research and highlights the gaps this project addresses.

### *Educational Consequences of Parental Job Loss*

During childhood, parental job loss causes delays in children's cognitive development, self-concept, classroom behavior and educational progress (Farrell and Ortiz 1993; Hill, Morris, Castells, and Walker 2011; McLoyd 1989; McLoyd, Jayaratne, Ceballo, and Borquez 1994; Stevens and Schaller 2011). Mothers' unemployment during preschool is associated with children's problem behavior in late elementary school (Hill, Morris, Castells, and Walker 2011).

Parental job loss also has consequences for children long after the unemployment spell ends.<sup>17</sup> Even as adults, parental job loss during childhood or adolescence is associated with lower earnings between the ages 25 and 33 and in the months unemployed and/or receiving unemployment benefits as an adult<sup>18</sup> for men in Canada and Great Britain (O'Neill and Sweetman 1998; Oreopoulos, Page, and Stevens 2008). In the United States, among middle-class children parental job loss during childhood is associated with a decreased likelihood of college attendance (Kalil and Wightman 2011). Yet this research pays little attention to family SES or differences in educational attainment among all those children who experience parental job loss.

While other research has examined the effect of parental job loss on the educational attainment of children (Kalil and Wightman 2011; Wightman 2009), most focuses on high school graduation and college attendance, and does not extend past college. Except for Wightman (2009), children's age and the features of parental job loss have not been examined for all American children who experience parental job loss, just for some risk groups, such as children in single-mother households (Brand and Simon Thomas 2014) or middle-class families (Kalil and Wightman 2011).

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<sup>17</sup> Unemployment spells can end either because of a new job or a long-term change in family-work arrangement, such as a total exit from the labor force.

<sup>18</sup> The research from Canada and Great Britain on adult income and unemployment among children who experienced parental job loss has only looked at sons (O'Neill and Sweetman 1998; Oreopoulos, Page, and Stevens 2008).



### *Considering the Likelihood of Parental Unemployment*

Beyond controlling for demographic characteristics, current research also pays little attention to the potential differences in the likelihood of parent job loss. Observed and unobserved characteristics of parents may impact this likelihood. For instance, from 1984 to 1991 for individuals in the PSID, marriage and having children in the household were both related to a decline in the incidence of job loss (Attewell 1999). If other characteristics, particularly unobserved characteristics, increase the probability of a parent losing his or her job, those same characteristics may also impact children's educational attainment.

Demographic characteristics, such as age (Boisjoly, Duncan, and Smeeding 1998), birth cohort (Lippmann 2008), race (Couch and Fairlie 2010), parental job loss experiences (Oreopoulos, Page, and Stevens 2008), parents' education (discussed above) and even marital status (Attewell 1999) impact the probability of experiencing job loss. For example, from 1989-2004, African-Americans in the Current Population Survey (CPS) were more likely than white respondents to be fired in times of economic decline (Couch and Fairlie 2010). Since 1980, the incidence of job turnover has increased for more educated, working-age men, although through the late 1990s, they were still less likely to experience job loss than workers with less education (Boisjoly, Duncan, and Smeeding 1998). These demographic differences in the likelihood of unemployment may stem from observable (industry, job type and bias) and unobservable characteristics (social-psychological traits).

Detangling potential bias and unobserved individual differences between and within these demographic groups is difficult. For example, class differences exist in self-direction, occupational self-direction, and flexibility, with more advantaged classes having higher levels of each (Caliendo and Kopeinig 2008).<sup>19</sup> Parent social-psychological characteristics also moderate how families react to situations such as unemployment and may influence parents' ability to hold sTable 2.jobs (Mayer 1997). These unobservable characteristics may make some parents

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<sup>19</sup> These findings are robust across the U.S., Japan and Poland (Kohn et. al 1990).

more susceptible to both job loss and negative consequences of unemployment. Thus, including measures of family SES serve as a first step toward also addressing unobserved differences in parents, without completely accounting for these differences.

### *Family Resources and Parental Job Loss*

When a parent loses a job, it causes a shift in the economic and non-economic resources available to a family. The economic resources available to families include savings, unemployment insurance and other government assistance programs, severance packages, access to credit and/or the income resulting from other family members' labor market participation. Non-economic resources include other family members who may be able to work, support from extended family, social networks, and the ability to adapt skills to other contexts. Even in the context of parental job displacement, access to material and non-material resources varies by family type and socioeconomic status (and, by extension race).

Of course, parental job loss directly reduces the economic resources available for food, healthcare, housing, and other family needs, at least in the short-term (Browne 1995; Eamon and Wu 2011). More broadly, resource availability affects the educational and psychological development of children, such as the amount of cognitive stimulation, parent perceptions of stress, and the stability of home environments (Bradley and Corwyn 2002; Menaghan, Kowaleski-Jones, and Mott 1997; Sobolewski and Amato 2005; Votruba-Drzal 2003). For children growing up in less advantaged homes, increases in income improve home environments more than among peers in more advantaged homes (Votruba-Drzal 2003), suggesting that the converse might also be true—that economic declines due to parental job loss may have especially pronounced impacts on the environments of disadvantaged children. Relatively minor shifts in resources produce larger consequences for families with fewer resources; changes in the financial situations of families will likely impact children in multiple ways.

Children living with two parents live in homes with the possibility for additional psychological, economic and human capital resources to adapt to a parent's displacement. For example, during the Great Recession, a husband's unemployment led to an increase in his wife's work

hours or labor market participation (Heeringa, Berglund, and Khan 2011b). Yet there are also possibilities for additional concerns, such as marital strain, in a two-parent home. A formerly two-parent family may experience a breakdown in communication, adjustments in gender roles, and shifts in economic and household responsibilities when facing a job loss (Conley 2004; Sherman 2009). While dual-parent households provide distinct advantages, they also feature distinct possibilities for disadvantage.

Still, single-parent families are, in general, more vulnerable to job displacement because there is usually no other adult in the home to cushion the economic blow. Parental job loss is not only more likely in single parent households but more difficult to overcome. When the residential parent in a single-parent family loses his or her job, children often experience psychological stress, higher chances of smoking and lower educational attainment than their peers who have not experienced parental job loss (Ermisch, Francesconi, and Pevalin 2004). For children whose single mother has a low likelihood of becoming unemployed, the consequences of an unemployment spell are greater (Brand and Simon Thomas 2014): among these children, the “shock” of parental job loss is associated with a larger impact.

Like single-parent families, minority families often have fewer resources to draw upon for support; minority parents often have less wealth and education than do white parents. For example, middle-class African-American families are more vulnerable to economic shocks, such that parental job loss is associated with lower educational attainment for African-American children than for white children (Kalil and Wightman 2011).

In the face of a job loss, higher SES families are more likely to move and/or reduce food expenditures than lower income families, which may not be able to reduce already-low housing or food costs (Browne 1995). Some qualitative research indicates that higher SES families may, instead, choose to mask economic struggles for as long as possible (Newman 1988), drawing on social and financial resources and buffering children from the negative impacts of parental job loss more than is possible for their peers in lower SES families.

Research on other family processes indicates that age is a crucial factor for understanding the long-term impact of childhood events on later life outcomes. If this is the case, the current research on parental job loss ignores a crucial component of within-group variation in the impact of parental job loss on children. Further, most of the research in this area defines parental job loss as the household head ever experiencing displacement (e.g. Kalil and Wightman 2011). Some research specifies which parent (usually fathers in two-parent families and mother in single parent families) experiences the displacement (e.g. Kalil and Ziol-Guest 2005; Oreopoulos, Page, and Stevens 2008), but, clearly, incorporating more context into studies of parental job loss will provide a more nuanced picture of children's long-term outcomes.

### *Family Socioeconomic Status*

Family SES is a prominent predictor of educational attainment. Research on status attainment (Kerckhoff 1976; Sewell and Shah 1968a; Sewell and Shah 1968b), social mobility and reproduction (Breen and Goldthorpe 1997; Breen and Jonsson 2000; Lucas 2009) highlights its importance. Yet even in current status-attainment research, the measures of parent SES often used rarely address changes in family SES during a child's life.

Conceptually, family SES refers to the combined social and economic standing of a family based on the educational and occupational characteristics of the parents. Practically, this is measured using the characteristics of the head of household (generally the father) or by examining the characteristics of all adults in the household. SES is a latent variable, not directly measurable, but measured through proxies. Parent education, income, occupational characteristics (e.g., occupational prestige or occupational earnings), or a composite are normal proxies for family SES in research on social mobility and educational attainment.

Parental job loss provides an interesting case: two common measures of family SES diverge for a time, making it possible to parse out their individual contributions to stratification processes. When a parent loses a job, family SES based on occupational and income characteristics declines (at least temporarily) while parent education remains stable (or, if the parent seeks out additional training or education, increases). Family income prior to displacement provides

some information about potential economic resources available during an unemployment spell, while parental education speaks more to the non-economic resources available to families (such as the ability to quickly secure another job). The financial and social strain of job loss on families likely varies across these dimensions.

Indeed, parent education and occupation are both associated with the *likelihood* of job loss. Parents with more years of education (a general proxy for SES) are less likely to become unemployed (Ashenfelter and Ham 1979; Mincer 1991) and less likely to lose occupational prestige as a consequence of unemployment (Lippmann and Rosenthal 2008). While the likelihood of college-educated adults becoming unemployed increased between 1980 and 1992 compared to other workers, college-educated workers experienced a lower risk of job loss (Boisjoly, Duncan, and Smeeding 1998). Generally, more educated workers have shorter durations of unemployment (Mincer 1991); some contradictory evidence (Ashenfelter and Ham 1979), specifically that white collar professionals may experience longer unemployment spells than other workers (e.g. Lippmann 2008; Moen 1979). At the other end of the spectrum, low-skilled workers in dangerous occupations are particularly susceptible to layoffs (Monea and Sawhill 2009). Parent propensity for displacement and the duration of the unemployment spells vary based, at least partially, on parent educational attainment and type of job.

When job loss displacement occurs, the stress of unemployment differs by SES; lower SES individuals experience financial stress and higher SES individuals experience stress related to status or social standing (Rank, Yoon, and Hirschl 2003). We know little about how this stress impacts children in the household. While higher SES families may be more able to shelter themselves from the financial consequences of unemployment, concerns about social standing and appearances may drain financial reserves (Newman 1988). In other words, children from more advantaged families likely experience parental job loss differently than children from disadvantaged socioeconomic backgrounds partially because of the way parents respond to the event.

Children's class backgrounds also affect how they handle change. For example, when looking at children who grew up in the Great Depression, Elder (1999 [1974]) found middle-class children were more able to adapt to depression-related economic the changes than those from

working-class families. Thus, children's socioeconomic background likely bears on how children react to parental job loss.

### *Poverty and Family Contexts*

Family social and economic contexts influence children's educational attainment. These contexts include everything from residential parents (Biblarz and Raftery 1999), sibling births (Menaghan and Parcel 1995), sibship size (Kim and Stafford 2000; Kuo and Hauser 1997), parent occupational characteristics (Parcel and Menaghan 1994), and changes in family income (Elder, Conger, Foster, and Ardel 1992) including transitions into or out of poverty (Haveman, Wolfe, and Spaulding 1991; Wagmiller et al. 2006). In sociology, parental job loss has received much less attention. Like family composition, SES and residential mobility, however, parental job loss and subsequent changes are part of family contexts. The findings from poverty research point to the need to include these factors to understand how poverty—and, by extension, parental job loss—impacts children.

In the short-term, children's behavior and learning, and in the long-term, educational attainment and health, are influenced by family contexts (Crosnoe and Cavanagh 2010). For children aged 3-6, short-term cognitive and developmental growth are sensitive to family contexts and home environments (Cooksey, Menaghan, and Jekielek 1997; Menaghan, Kowaleski-Jones, and Mott 1997; Menaghan and Parcel 1995; Parcel and Menaghan 1994). Changes in family structure (such as divorce) are associated with declines in student engagement and parent involvement in schools (Astone and McLanahan 1991). Parental job loss potentially shifts these family contexts.

Research on the consequences of parental job loss and poverty suggests parallels between the two experiences. Like poverty, parental job loss often leads to a short-term decline in a child's cognitive, academic and/or behavioral growth (e.g. Flanagan and Eccles 1993; Stevens and Schaller 2011). This similarity between unemployment and poverty extends to children's outcomes, such as educational attainment and income in adulthood. Yet, unlike poverty, unemployment strikes across all levels of SES.

## DATA, MEASURES, AND METHODS

### *Data*

Using the Panel Study of Income Dynamics (2014) I look at variations in educational attainment as dependent on parental job loss. I focus on people born between 1972 and 1986 at ages 25 and 26. The PSID started in 1968 nationally as a representative sample with an oversample of low-income respondents (the Survey of Economic Opportunity, or SEO sample). As children in PSID families start their own households, they continue to participate in the PSID as new households (Holland 1986). As of 2009, the PSID contains around 9,000 families (Killewald, Andreski, and Schoeni 2011). Because the PSID follows families over time, it provides information on parents' occupational trajectories as well as children's educational and occupational attainment. The University of Michigan collected data annually until 1997 and in odd-numbered years thereafter.

The sample design, length of the survey, number of interview waves, and sample attrition require that I weight the data. Almost half of the PSID sample participants left the study between 1968 and 1989 (Fitzgerald, Gottschalk, and Moffitt 1998a). While sample attrition appears uneven by race and class, the between-group differences are not statistically significant and the data remain representative when weighted (Fitzgerald, Gottschalk, and Moffitt 1998a; Fitzgerald, Gottschalk, and Moffitt 1998b). The longitudinal weights in the PSID are designed for analyses like mine, which take responses from multiple years and consider panel attrition. Thus, in this analysis, I use the longitudinal weight for the year each the respondent turned 25.

My sample includes all children born into a PSID family between 1968 and 1986 who have parent employment/unemployment data for at least 13 years between birth and age 19 and have educational attainment data at age 25. There are 3,821 children. Table 2.1 contains weighted descriptive statistics for the sample.

## *Measures*

I use the term “parental job loss” to refer to any situation in which a previously working parental head of household (defined by the PSID as the man in a two-adult household), reports an involuntary end of employment. This definition encompasses layoff (generally due to economic conditions, work place restructuring or business closure) and firing (when an employee is let go due to job performance, behavioral issues or workplace politics).<sup>20</sup> Employees who get laid off or fired generally have no choice as to whether and when they exit the company, and generally have little warning.<sup>21</sup> Parental job loss is a dichotomous variable, measuring if a child experienced a parental head of household involuntarily losing his or her job before the child reaches age 18.<sup>22</sup> This measure aligns well with prior research on parental job loss.

Education at age 25 is the dependent variable in my OLS regression models, representing “long-term” educational attainment. I measure educational attainment based on years of education completed, as this information is more readily available for the children than highest degree earned.<sup>23</sup> I use a continuous measure of educational attainment coded from 11 (less

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<sup>20</sup> Unfortunately, unless the firm closed, the PSID does not detail whether an individual was part of a larger layoff or was fired.

<sup>21</sup> I chose a definition of job loss that excludes time out of work caused by voluntary departures from a job. Workers and their families have time to prepare for voluntary separations from work and may take steps to minimize the time unemployed (by searching for jobs in advance) or may deliberately choose to leave a job for personal reasons (family is moving to further the spouse’s career). While interesting, unemployment due to a voluntary departure is outside the scope of this project.

<sup>22</sup> Ideally, I would be able to include the unemployment status of any parent figure in the household. Unfortunately, prior to 1978, the PSID did not collect information on “wives” employment on a regular basis.

<sup>23</sup> From 1984 to the present, questions about college attendance, completion and highest degree earned are only asked of “heads” and “wives.” Thus, adult children who live at home are not asked these questions. Given the changes in the life course over the last 25 years, I am remiss to eliminate this group from my sample and thus use the continuous measure.



than high school) to 17 (generally, at least one more year of school than earning a BA). Age 25 is a good time to measure educational attainment, as students *over* the age of 25 are considered “non-traditional” students and have often exited and reentered education.

I consider family SES as a moderator. There are many ways to measure family SES, both because it contains many elements and because it is fluid over time. When comparing people who experience childhood parental job loss to those who do not, I measure socioeconomic origins as family SES at the time of the person’s birth. I utilize several different measures of family SES, in the models presented here. In the OLS regression models, I use two variables: parental education level and family income quintile. These two measures have a correlation of .5. In the propensity score models, I also use parental occupation, industry, home ownership (also a proxy for wealth), self-employment status, and region.

Parental education represents the more permanent elements of SES, while income quintile represents the less sTable 2.elements of SES. Parental education level is the highest level of education of either parent in the first year parental education was available after the child was born. For most children, the data come from the year after they were born. The categories are less than high school degree, high school graduate (includes GED recipients), some college (includes associates degree holders), and bachelors degree or higher.

Income quintile at birth contains the categories Low Income (bottom 20%), Lower-Middle (21-40%), Middle (41-60%), Upper Middle (61-80%), and Upper (highest 20%). To create this variable, I used data from the current population survey (CPS)<sup>24</sup> and constructed income quintiles for each year; I then constructed family income quintile by grouping family income in the year of birth into the correct CPS-based quintiles (King, Ruggles, Alexander, Flood, Genadek, Schroeder, Trampe, and Vick 2010). Thus, the income quintiles are slightly unbalanced, even in the weighted sample.

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<sup>24</sup> Specifically, I used the harmonized IPUMS-CPS in order to ensure comparability across years and available at <https://cps.ipums.org/cps/> (King et. al. 2010).

In the models, I control for demographic and other family characteristics as well. These include family race, child's gender, year of birth, number of siblings, and state of birth. For models that include children who do not experience parental job loss, I include a variable for having ever lived in a single-parent household; for the models with only children who experience parental job loss, I include the family composition at the time of unemployment. Family race is based on the race of the parents and includes three categories: Black only; White only; and all other races (including Multiracial, Hispanic, Asian and Other). While my preference is to have Hispanic as a separate category, there are not enough children in this sample due to the years of data collection.

### *Methods*

I begin by presenting tables describing and figures illustrating the educational attainment of children who experience parental job loss compared to those who do not, with a focus on family SES at birth. Then I move into two sets of multivariate analyses. The first is a set of descriptive OLS regression analyses of educational attainment of children who come from similar socioeconomic backgrounds (measured using parental education and parental income at birth) with a focus on ever having experienced parental job loss. These models serve as a baseline for understanding the relationship between family SES and parental job loss; they will also be a comparison point for the propensity score matching models. I then estimate the propensity of a child to experience parental job loss. Finally, I use propensity score matching to create a weight to account for parental propensity to experience parental job loss, which I then use to re-run the OLS regressions estimating educational attainment by socioeconomic status.

### *Propensity score matching*

Methodologically, causal inference and counterfactuals refer to a large group of methods which aim to identify the "effects of a cause" or the consequences of an event or other treatment (Morgan and Harding 2006). Causal inference methods are designed for research where random assignment is not possible (either practically or ethically), such as parental job loss. Using language referencing experimental methods, causal inference conceptualizes a

treatment and control group, where only one of the two states is observed for any given person. “The key assumption of the counterfactual framework is that individuals assigned to these treatment and control groups have potential outcomes in both states: the one in which they are observed and the one in which they are not observed” (Winship and Morgan 1999:662). Thus causal methods infer an outcome for the treatment status which was not observed (Brand and Xie 2007). The counterfactual framework is still limited by observed variables.

Propensity score matching thus identifies the likelihood of an individual experiencing parental job loss allows me to compare cases with an equal likelihood of experiencing job loss, contrasting those who *did* experience job parental job loss (treatment) and who did not (control group). The average treatment effect (ATE) compares the mean outcomes as if the entire sample experienced the treatment vs. the control. The ATE is effectively composed of average effect of treatment on the treated (ATT) and the average treatment effect of the untreated (ATU). The ATT compares the mean outcomes of the treatment group to the counterfactual situation (if they had received the control), and ATU estimates the effects of the treatment on the control group.

In this paper, I use a t-test as the naïve estimator—that is, an estimate of the difference in educational attainment with no controls, just information on parental job loss. This provides a baseline against which to compare the propensity score matching results. I choose to use logit models to model the treatment. Since the results for the logits and probit models provide similar estimates (Caliendo and Kopeinig 2008), using logits allows me to present the odds ratios, which are easier to interpret than probit coefficients. There is some disagreement about whether to err on the side of including too many as opposed to too few variables, although most research tends to include as many indicators as the models can support (Caliendo and Kopeinig 2008). In order to best get at family SES at birth, I have chosen to present a more comprehensive model.

The propensity score matching section of the paper is unweighted, as `psmatch2` in Stata 12 does not allow for weights per recommendations in the literature (Leuven and Sianesi 2003; Nichols 2007). Following Leuven and Sianesi (2003), I estimate the propensity score using logistic

regression and match on the odds ratios. I estimate the results presented below using a kernel density matching with a uniform distribution. These results are similar to kernel density results estimated with different distributions (see Table 2.A9 for additional propensity score matching estimates). In order to compare these results to others in the paper, unweighted versions of all analyses are included in Appendix 2.A.

Psmatch2 also provides a weight based on the propensity estimates. I use this weight as an estimate of the likelihood of experiencing job loss, allowing me to compare those who do and do not experience job loss more accurately.

Of the prior research on parental job loss, two studies have used causal inference. In his dissertation, Wightman (2009) attempts to incorporate concerns about unobserved differences between parents who do and do not experience unemployment. He addresses this issue using an instrumental variable (IV) approach focused on the employment patterns in the industry in which the focal parent was employed in prior to the displacement. Brand and Simon Thomas (2014) use propensity score matching (kernel) to estimate the effects of maternal displacement (in single-mother families) on children's high school completion, college attendance, college completion and depressive symptoms at two ages.

Like Brand and Simon Thomas (2014) and in contrast to Wightman (2009), I favor a propensity score matching approach, as described by Morgan and Harding (2006). This allows me to match children on the likelihood of parental job loss, then compare educational attainment on two dimensions: if the children experienced parent displacement and their likelihood of experiencing parental job loss. While economists tend to favor the instrumental variable approach, in this case finding a single valid instrument is not as feasible as matching on observable characteristics.

One of the strengths of propensity score matching is the ability to identify differences between the treated and untreated individuals based on *observable* characteristics. While propensity score matching is a form of causal inference, I use this method as a more robust test of the descriptive associations between parental job loss, family SES and children's educational

attainment. Even with a large number of observable characteristics, there are likely many social-psychological characteristics that are not observed in my data but may differentiate the parents who experience job loss and those who do not.<sup>25</sup>

## RESULTS

Children who experience parental job loss differ from their peers in many important ways, as seen in Tables 2.1 and 2.2. In addition to a one-year difference in educational attainment, their background characteristics vary. Children who experience parental job loss are less likely to come from the top 40% of the income distribution (22% vs. 44%) and less likely to have a parent who graduated from college (13% vs. 34%). Put differently, over half of children from low-income households (56%) or with parents who did not graduate from high school (59%) experience a parental job loss.

For the most part, children who experience parental job loss come from different families than those who do not. They are less likely to have a parent who worked in a professional occupation (7% to 21%) or industry (7% vs. 14%) or was self-employed (6% vs. 14%) and more likely have a parent who worked in manufacturing (28% vs. 21%). A higher percentage of children who experience parental job loss were born into female-headed households (15% vs. 9%). Further, more children who experience parental job loss come from families who rent their homes (47% vs. 30%).

While children who experience parental job loss, on average, attend almost one less year of school, a higher percentage of children who experience parental job loss come from less socioeconomically advantaged families. The descriptive differences highlight one concern I discussed earlier: that family SES is related to both the educational outcomes of children *and* the

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<sup>25</sup> I recognize that the vast majority of propensity score matching papers use this tool as causal inference, thus this is an uncommon use of the method. While I have chosen not to make causal claims, this is not intended as a critique of prior research.

probability of experiencing parental unemployment. Thus, family SES rather than parental unemployment may be the driver behind differing educational outcomes.

### *OLS Regression Models*

I estimate weighted OLS regression models stratified by family income quintile and parental education level to compare children's educational outcomes with those from similar socioeconomic backgrounds who experience parental job loss to those who do not (Table 2.3). Looking at all children in the sample, children who experience parental job loss attend school for .92 years less than children who do not, with no additional controls, and .86 when adding controls for student characteristics (gender and family race). For all children, the association between parental job loss and educational attainment is .48 of year of education when controlling for parental education, .62 when controlling for parental income at birth and .41 when controlling for parental education *and* income at birth.

The model including individual characteristics and parental education fits better (according to BIC' and adjusted R-squared) than the model with individual characteristics and family income. For the model including parental education, the adjusted r-squared increases from .108, or explains 10.8% of the variation in educational attainment, compared to .248 in the model with individual characteristics only. Similarly, the BIC' improves by 10,251. By comparison, the adjusted r-squared of .165 is lower than for the model which included parental education and the BIC' improves less (by 3,905) for the model including family income at birth. The model with both parental education and family income explains children's educational attainment best, with an adjusted r-squared on .258 (25.8%) and an improved BIC' over both the models of parental education and family income (-7,798 and -11,703 respectively). Parental education and income are both factors in the association between parental job loss and children's educational attainment.

Examining results by parental income quintile at birth identifies some differences in the association between parental job loss and children's educational attainment. For children from the highest and lowest income quintiles, parental job loss is not associated with significantly

different educational attainment. For children from the three middle-income quintiles, children who experience parental job loss attend fewer years of school. Controlling for children's gender, year of birth and family race, children from lower-middle income families who experience a parental job loss average .63 years less of education; for children from middle-income families, the association is .85 years and .79 years for children from upper-middle income families. Including a control for parent education reduces the associations to .50, .55 and .58 years, respectively. Thus, there are some minor differences in the association between parental job loss and educational attainment by family income quintile at birth, particularly if parental education is not included. Controlling for parental education, the association is similar across the three middle-income quintiles.

Turning to parental education, the educational attainment of children who do not experience parental job loss is generally higher when compared to children from similar income quintiles and parents with similar levels of education (Table 2.3). As with the income quintiles, parental job loss is not associated with the educational attainment of the most disadvantaged children. Controlling for children's characteristics, the association between parental job loss and educational attainment is higher for children whose parents have completed a bachelor's degree. This is also the case when adding a control for family income. After adding all controls, children whose parents graduated high school and experienced job loss attended school for .39 years fewer than children who did not experience parental job loss. For children whose parents attended some college, the association is .43 years and .55 years for children whose parents attended college.

Small differences in the magnitude of the association between parental job loss and children's educational attainment exist by level of parental education and income. While the point estimates are different, the standard errors are large enough that the confidence intervals overlap. To formally test differences between the coefficients across samples is challenging, so I ran OLS models for the whole sample. One set of OLS models contains interaction terms between job loss and parental education; the other interacts job loss and parental income (Tables A6 and A7). While there are significant differences in educational attainment between the

omitted category (middle-income, no parental job loss and parents graduated from HS, no parental job loss), contrast tests on these models show little difference by parental education or family income.

There is, then, some evidence that family SES moderates the impact of parental unemployment on children's educational attainment. This evidence is not overwhelming, however, particularly when looking at the contrast test.

### *Propensity Score Matching*

I start examining the association between parental job loss and children's educational attainment for children from similar families by presenting the results of the t-test, or the naïve estimator (in Table 2.4). The t-test estimate indicates that, controlling for nothing else, the difference in mean educational attainment for between children who experience a parental job loss and those who do not is .77 years with mean educational attainments of 13 and 13.8 years, respectively. These results are not weighted, whereas all of the OLS results were weighted (see Appendix A for the unweighted results of the prior models).

I present the results of the propensity score matching described above in Table 2.5.<sup>26</sup> Children who experience parental job loss attend one-quarter of a year less school once I account for the propensity of the parental head of household to lose his or her job based on family SES at birth. Controlling for the propensity of their parents to experience job loss, children whose parents do not experience job loss would likely have earned .36 years less education had their parental head of household experienced job loss. Thus, approximately half of the observed difference in educational attainment between children who do and do not experience parental job loss is related to the job loss. The rest is a consequence of the *likelihood* of job loss.<sup>27</sup>

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<sup>26</sup> I present alternate specifications for the propensity score matching in Table A9. The logistic regression model used is presented in Table A8.

<sup>27</sup> I conducted several robustness checks in order to verify the propensity score matching results. They indicate that the distribution of children based on the propensity to experience parental job loss overlaps,



Next, I use a weight generated by the propensity score matching equation, which calculates the likelihood a child will experience parental job loss in order to compare children with similar probabilities of job loss. In Table 2.6, I present the results of the regression equations by family income and education when weighted by the head of household's propensity for job loss.

Now the association between job loss and educational attainment is lower than the results reported in Table 2.3 (before accounting for the propensity to experience parental job loss). Specifically, for students from all socioeconomic backgrounds, parental job loss is associated with a fifth of a year less schooling when controlling for individual characteristics and parent's education at birth. When controlling for individual characteristics, parent education at birth and family income at birth, parental job loss is associated with a quarter of a year less education. Looking across income quintiles at birth, when also controlling for individual characteristics and parental education at birth, parental job loss during childhood is significantly associated with educational attainment for children from the 3<sup>rd</sup> and 4<sup>th</sup> income quintiles (-.36 years and -.53 years, respectively). Once I weight for the propensity to experience parental job loss, the association between parental job loss for children from the 2<sup>nd</sup> income quintile is no longer significant. While, for most income categories, parental job loss is not significantly associated with fewer years of education for middle- and upper middle-class children, the association remains notable.

Looking across different levels of parental education, only models controlling for individual characteristics and parental income have significant values for the association between parental job loss and children's educational attainment. Children whose parents had a high school diploma, some college or a BA or higher when they were born and who experienced parental job loss in childhood attended .2, .3 and .4 years less school than peers from the same socioeconomic backgrounds.

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but is not the same. Parental job loss does not happen completely at random; some children are at higher risk. The results of additional robustness checks are available upon request.

## DISCUSSION

In this study, I find evidence that parental job displacement in childhood is associated with lower educational attainment, with slight variations by family SES. This is a complex moderator of the association between parental job loss and children's outcomes. Its complexity comes from the challenges of disentangling the many ways family SES can, directly or indirectly, influence children's educational outcomes and from the probability that children will experience a parental job loss. In this paper, I focus on the interaction between family SES, measured by family income at birth and parental education level, and parental job loss as predictors of children's educational attainment at age 25.

For children from middle- and upper middle-income families, educational attainment remains significantly associated with parental job loss. The same is true for children whose parents had at least a high school degrees, particularly for children whose parents had BA or higher at birth. Brand and Simon Thomas (2014), found that children with single mothers with lower likelihoods of job loss experienced more detrimental effects from the job loss. My findings are generally consistent, as parental job loss remains a significant predictor of educational attainment for children with college-educated parents.

When comparing children with others from similar family SES backgrounds, I find some differences in the association between job loss and SES. The family income analyses indicate that, on average, parental job loss harms the educational attainment of children from the middle three income quintiles more than those from the highest and lowest income quintiles. For children whose parents have not graduated high school, experiencing parental job loss is not significantly associated with educational attainment, where it is significant for children from families where parents have graduated college or high school.

The propensity score matching and OLS estimates show that much of the difference in educational attainment between children who do and do not experience parental job loss may be a function of the propensity to experience parental job loss (as a function of family SES at birth). For children who experience parental job loss, the event is associated with a reduction in

educational attainment of a fifth of a year (ATT). There is a quarter year educational disadvantage to parental job loss (ATE, and weighted regression results) based on the propensity score matching results. Thus, while parental job loss was associated with lower levels of educational attainment, the magnitude is much less than previously estimated.

As with all research, these conclusions have limitations. The first is that my results only reflect the labor market experiences of the parental head of household, usually the father or stepfather, and do not account for dual-earner households. Second, the PSID sample reflects racial/ethnic the composition of the United States in 1968. My results do not include enough Hispanic/Latino, Asian American, or immigrant families to reflect those children's experiences with parental job loss. While the PSID provides detailed family history information, for this cohort, data children's characteristics prior to the parental job loss is scarce.

Future research on parental job loss needs to address several challenges outside the scope of this paper, namely disentangling the complex relationships between family SES, parental job loss and children's long- and short-term educational outcomes. Structural equation models may be one way to do this. Further, more research on potential moderators of the relationship between parental job loss and educational attainment would add to knowledge about which children are more or less impacted by parental job loss.

**Table 2.1. Descriptive Statistics, Predictors of Educational Attainment**

	<u>No Job Loss</u>	<u>Job Loss</u>	<u>All</u>	<u>t/z</u>
Years of Education, Age 25				
mean	13.99	13.06	13.62	***
sd	1.92	1.69	1.89	
Income Quintile(CPS Based), Year of Birth				
Lowest 20%	13.49	26.72	18.69	***
Lower Middle (21-40)	19.46	28.79	23.13	***
<i>Middle (41-60)</i>	23.15	22.19	22.77	
Upper Middle(61-80)	24.00	15.38	20.61	***
Highest 20%	19.90	6.91	14.80	***
Parent Education Level				
No HS Diploma	9.53	20.91	14.00	***
<i>HS Grad (Diploma or GED)</i>	31.18	43.11	35.87	***
Attended Some College	25.41	23.08	24.50	**
BA or Higher	33.88	12.90	25.63	***
Family Race				
<i>White</i>	80.57	75.28	78.49	*
Black	14.44	17.30	15.56	**
All Other	4.99	7.42	5.95	***
Gender				
<i>Women</i>	47.46	49.94	48.43	
Men	52.54	50.06	51.57	
Year Born				
mean	1978.74	1977.90	1978.41	***
sd	5.53	5.56	5.56	
Percent who Experienced Parental Job Loss by Socioeconomic Status				
Income Quintile(CPS Based), Year of Birth				
Lowest 20%	43.82	56.18		
Lower Middle (21-40)	51.08	48.92		
<i>Middle (41-60)</i>	61.71	38.29		
Upper Middle(61-80)	70.67	29.33		
Highest 20%	81.64	18.36		
Parent Education Level				
No HS Diploma	41.30	58.70		
<i>HS Grad (Diploma or GED)</i>	52.77	47.23		
Attended Some College	62.97	37.03		
BA or Higher	80.23	19.77		
N	2319	1502	3821	

Notes: Weighted proportions and means of individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. Reference categories are denoted in italics. The t/z column compares the means/ proportions of those who experienced parental job loss with those who did not. Table A1 presents the unweighted results of this table.

**Table 2.2 Descriptive Statistics, Family SES Year of Birth**

	<u>No Job Loss</u>	<u>Job Loss</u>	<u>All</u>	<u>t/z</u>
Head's Occupation				
Professional, Technical, and Kindred Wo	20.64	6.97	15.27	***
Managers and Administrators	13.13	9.59	11.74	***
Sales Workers	3.82	3.45	3.67	**
Clerical and Kindred Workers	6.33	7.75	6.89	***
Craftsmen and Kindred Workers	16.24	19.41	17.49	***
Operatives, Except Transport	8.68	15.94	11.53	***
Transport Equipment Operatives	4.27	5.48	4.75	***
Laborers, Except Farm	3.15	4.66	3.74	***
Farmers and Farm Managers	2.37	0.90	1.79	***
Farm Laborers and Farm Foremen	0.48	1.75	0.98	***
Service Workers, Except Private Household	6.15	8.13	6.93	***
Private Household Workers	0.56	1.11	0.77	***
Unknown	14.18	14.85	14.44	
Head's Industry				
Agriculture, Forestry	3.85	3.74	3.81	
Mining	0.83	1.29	1.01	***
Construction	5.77	9.40	7.20	***
Manufacturing	21.38	28.24	24.07	***
Transportation, Commu	8.57	7.26	8.06	***
Wholesale and Retail	13.24	14.96	13.91	***
Finance, Insurance, a	3.62	2.88	3.33	***
Business and Repair S	2.92	2.56	2.78	***
Personal Services	2.09	4.18	2.91	***
Entertainment and Rec	0.50	0.36	0.45	***
Professional and Related	14.24	6.57	11.22	***
Public Administration	8.34	2.94	6.22	***
Unknown	14.65	15.63	15.03	
Self Employment				
Unknown	4.71	6.66	5.48	***
No	81.25	87.17	83.58	*
Yes	14.03	6.18	10.95	***
Region of Residence (Based on Census Division)				
Abroad or Unknown	0.80	0.31	0.60	***
New England	6.43	3.81	5.40	***
Mid-Atlantic	13.64	17.50	15.15	***
Mid-South Atlantic	8.89	5.27	7.47	***
South East	6.56	5.50	6.14	***
East South Central	6.66	7.97	7.18	***
West South Central	8.36	9.11	8.65	*
MI-OH	8.86	11.21	9.78	***
IN, IL, WI	10.22	9.03	9.75	**
West North Central	12.99	11.03	12.22	***
Mountain	5.50	5.60	5.54	***
Pacific	11.10	13.65	12.10	***

Own Home			
Unknown	5.42	6.57	5.87 ***
Own	64.44	46.38	57.34 ***
Rent	30.14	47.05	36.79 ***
Gender of Head			
Head Was not a Parent	2.96	5.68	4.03 ***
Father	84.58	74.87	80.77 ***
Mother	8.54	14.60	10.92 ***
Unknown	3.92	4.85	4.28 ***
N	2319	1502	3821

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Notes: Weighted proportions and means of individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are unweighted samples using listwise deletion. Reference categories are denoted in italics. The t/z column compares the means/proportions of those who experienced parental displacement with those who did not. Table A2 presents the unweighted results of this table.

**Table 2.3. Summary of OLS models Predicting Educational Attainment based on Family SES and Parental Job Displacement Status**

	Job Loss		Controls			Adjusted		
	[None]	SE	Individual	Parent Education	Family Income	N	R <sup>2</sup>	BIC'
All	-0.924(***)	[0.073]				3,821	0.057	-349
	-0.861(***)	[0.073]	X			3,821	0.108	-3430
	-0.475(***)	[0.070]	X	X		3,821	0.248	-13681
	-0.623(***)	[0.073]	X		X	3,821	0.165	-9776
	-0.413(***)	[0.070]	X	X	X	3,821	0.258	-21479
1st Income Quintile	-0.299	[0.155]				957	0.008	-11
	-0.330(*)	[0.158]	X			957	0.034	-246
2nd Income Quintile	-0.154	[0.144]	X	X		957	0.213	-2770
	-0.642(***)	[0.136]				976	0.034	-45
3rd Income Quintile	-0.628(***)	[0.133]	X			976	0.068	-480
	-0.498(***)	[0.130]	X	X		976	0.154	-2016
4th Income Quintile	-0.873(***)	[0.150]				807	0.052	-55
	-0.854(***)	[0.149]	X			807	0.071	-408
5th Income Quintile	-0.545(***)	[0.144]	X	X		807	0.172	-1831
	-0.798(***)	[0.176]				667	0.037	-32
Parent Ed: Less than HS	-0.793(***)	[0.174]	X			667	0.054	-257
	-0.575(***)	[0.170]	X	X		667	0.131	-1136
Parent Ed: HS	-0.326	[0.250]				414	0.003	-2
	-0.291	[0.239]	X			414	0.066	-189
Parent Ed: Some College	-0.055	[0.232]	X	X		414	0.153	-794
	-0.237	[0.146]				745	0.007	-7
Parent Ed: BA or higher	-0.223	[0.145]	X			745	0.008	-70
	-0.175	[0.142]	X		X	745	0.025	-360
Parent Ed: HS Diploma	-0.448(***)	[0.111]				1,433	0.017	-36
	-0.456(***)	[0.110]	X			1,433	0.047	-504
Parent Ed: College	-0.388(***)	[0.110]	X		X	1,433	0.061	-1383
	-0.523(***)	[0.147]				883	0.019	-23
Parent Ed: Some College	-0.527(***)	[0.145]	X			883	0.049	-314
	-0.427(**)	[0.145]	X		X	883	0.066	-905
Parent Ed: BA or higher	-0.627(***)	[0.172]				760	0.020	-20
	-0.573(***)	[0.170]	X			760	0.035	-199
Parent Ed: BA or higher	-0.550(**)	[0.170]	X		X	760	0.035	-403

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. BIC' calculated as per Raftery (1995). Robust standard errors are presented in brackets. Tables 2.A3-2.A5 present the complete results summarized in this table.

**Table 4. T-Test Results**

	<u>N</u>	<u>Mean</u>	<u>SE</u>	<u>SD</u>
<i>No Job Loss</i>	2252	13.75	0.04	1.91
<i>Job Loss</i>	1569	12.97	0.04	1.67
<i>All</i>	3821	13.43	0.03	1.85
<i>Difference</i>		0.77	0.06	

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are unweighted samples using listwise deletion.

**Table 5. Propensity Score Matching**

<u>Sample</u>	<u>Treated</u>	<u>Controls</u>	<u>Difference</u>	<u>S.E.</u>	<u>T-stat</u>
<i>Unmatched</i>	12.97	13.75	-0.77	0.06	***
<i>ATT</i>	12.98	13.24	-0.26	0.07	***
<i>ATU</i>	13.74	13.38	-0.36		
<i>ATE</i>			-0.32		

Cases with Common

Support                      1556              2241

Notes: Propensity score matching model estimated using Kernel density matching with a uniform distribution and common support. Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are unweighted samples using listwise deletion.



**Table 2.6. Summary of Propensity Score Weighted OLS Models Predicting Educational Attainment Based on Family SES and Parental Job Displacement Status**

	Job Loss		Controls			N	Adjusted	
	[None]	SE	Individual	Parent Education	Family Income		R <sup>2</sup>	BIC'
	0.145	[0.079]				3,797	0.002	-12
	0.059	[0.076]	X			3,797	0.068	-2532
All	-0.204(**)	[0.064]	X	X		3,797	0.197	-10478
	-0.115	[0.067]	X		X	3,797	0.133	-7704
	-0.263(***)	[0.061]	X	X	X	3,797	0.216	-17417
<hr/>								
	-0.005	[0.112]				944	-0.001	0
1st Income	-0.047	[0.112]	X			944	0.024	-179
Quintile	-0.151	[0.104]	X	X		944	0.134	-1681
<hr/>								
	-0.090	[0.120]				976	0.000	-1
2nd Income	-0.077	[0.119]	X			976	0.034	-252
Quintile	-0.176	[0.111]	X	X		976	0.121	-1575
<hr/>								
	-0.168	[0.160]				807	0.001	-2
3rd Income	-0.156	[0.158]	X			807	0.018	-124
Quintile	-0.359(**)	[0.135]	X	X		807	0.114	-1214
<hr/>								
	-0.309	[0.188]				665	0.005	-5
4th Income	-0.351	[0.184]	X			665	0.047	-226
Quintile	-0.531(**)	[0.165]	X	X		665	0.113	-980
<hr/>								
	0.087	[0.274]				405	-0.002	0
5th Income	-0.088	[0.256]	X			405	0.101	-272
Quintile	-0.151	[0.241]	X	X		405	0.215	-1090
<hr/>								
Parent Ed:	-0.086	[0.122]				734	0.000	-1
Less than	-0.105	[0.119]	X			734	0.007	-64
HS	-0.148	[0.113]	X		X	734	0.021	-316
<hr/>								
Parent Ed:	-0.142	[0.097]				1,431	0.001	-4
HS	-0.148	[0.097]	X			1,431	0.033	-360
Diploma	-0.208(*)	[0.093]	X		X	1,431	0.063	-1423
<hr/>								
Parent Ed:	-0.201	[0.147]				883	0.002	-3
Some	-0.271	[0.143]	X			883	0.063	-398
College	-0.314(*)	[0.137]	X		X	883	0.083	-1103
<hr/>								
Parent Ed:	-0.425(*)	[0.187]				749	0.008	-8
BA or	-0.378(*)	[0.188]	X			749	0.020	-128
higher	-0.420(*)	[0.177]	X		X	749	0.038	-432

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. Weights calculated using the propensity score matching detailed in Table 5. These are weighted samples using listwise deletion. BIC' calculated as per Raftery (1995). Robust standard errors are presented in brackets. Tables 2.A8-2.A10 present the complete results summarized in this table.

**Table A1. Descriptive Statistics, Predictors of Educational Attainment (Unweighted)**

	<u>No Job Loss</u>	<u>Job Loss</u>	<u>All</u>	<u>t/z</u>
Years of Education, Age 25				
mean	13.75	12.97	13.43	***
sd	1.91	1.67	1.85	
Income Quintile(CPS Based), Year of Birth				
Lowest 20%	19.23	33.40	25.05	***
Lower Middle (21-40)	23.05	29.13	25.54	***
Middle (41-60)	22.07	19.76	21.12	***
Upper Middle(61-80)	20.74	12.75	17.46	***
Highest 20%	14.92	4.97	10.83	***
Parent Education Level				
No HS Diploma	14.92	26.07	19.50	***
HS Grad (Diploma or GED)	33.93	42.64	37.50	***
Attended Some College	24.16	21.61	23.11	***
BA or Higher	27.00	9.69	19.89	***
Family Race	0.00	0.45	0.18	
White	60.39	52.07	56.96	***
Black	35.57	42.51	38.43	***
All Other	4.04	5.42	4.61	***
Gender				
Women	49.20	51.94	50.33	***
Men	50.80	48.06	49.67	***
Year of Birth				
mean	1979.29	1977.94	1978.74	
sd	5.44	5.60	5.55	
Income Quintile(CPS Based), Year of Birth				
Lowest 20%	45.25	54.75		
Lower Middle (21-40)	53.18	46.82		
Middle (41-60)	61.59	38.41		
Upper Middle(61-80)	70.01	29.99		
Highest 20%	81.16	18.84		
Parent Education Level				
No HS Diploma	45.10	54.90		
HS Grad (Diploma or GED)	53.31	46.69		
Attended Some College	61.61	38.39		
BA or Higher	80.00	20.00		
N	2252	1569	3821	

Notes: Unweighted proportions and means of individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are unweighted samples using listwise deletion. Reference categories are denoted in italics. The t/z column compares the means/proprtions of those who experienced parental displacement with those who did not.

**Table A2. Descriptive Statistics, Family SES Year of Birth (Unweighted)**

	<u>No Job Loss</u>	<u>Job Loss</u>	<u>All</u>	<u>t/z</u>
Head's Occupation				
Professional, Technic	15.67	5.29	11.41	***
Managers and Administ	9.95	6.88	8.69	***
Sales Workers	3.11	2.55	2.88	***
Clerical and Kindred	6.22	6.82	6.46	***
Craftsmen and Kindred	16.30	17.97	16.99	***
Operatives, Except Tr	10.26	17.40	13.19	***
Transport Equipment O	5.06	5.80	5.37	***
Laborers, Except Farm	4.88	6.95	5.73	***
Farmers and Farm Mana	1.91	1.21	1.62	***
Farm Laborers and Far	0.98	1.59	1.23	***
Service Workers, Exce	8.08	10.45	9.06	***
Private Household Wor	1.07	1.66	1.31	***
Unknown	16.52	15.42	16.07	***
Head's Industry				
Agriculture, Forestry	3.91	3.63	3.79	***
Mining	1.02	1.21	1.10	***
Construction	6.17	9.94	7.72	***
Manufacturing	21.14	27.53	23.76	***
Transportation, Commu	8.39	6.18	7.48	***
Wholesale and Retail	12.08	14.02	12.88	***
Finance, Insurance, a	3.06	2.74	2.93	***
Business and Repair S	2.80	3.00	2.88	**
Personal Services	3.15	4.59	3.74	***
Entertainment and Rec	0.53	0.45	0.50	***
Professional and Rela	12.61	7.33	10.44	***
Public Administration	8.04	3.57	6.20	***
Unknown	17.10	15.81	16.57	***
Self Employment				
No	81.26	86.93	83.59	***
Yes	11.55	6.05	9.29	***
Unknown	7.19	7.01	7.12	***
Region of Residence (Based on Census Division)				
Abroad or Unknown	0.97	0.38	0.73	***
New England	4.46	2.48	3.65	***
Mid-Atlantic	9.89	12.60	11.00	***
Mid-South Atlantic	14.18	10.05	12.49	***
South East	10.16	10.43	10.27	**
East South Central	9.54	11.90	10.51	***
West South Central	9.41	10.88	10.01	***
MI-OH	8.52	11.58	9.78	***
IN, IL, WI	8.35	7.95	8.19	***
West North Central	10.78	8.46	9.83	***
Mountain	4.33	3.31	3.91	***
Pacific	9.41	9.99	9.65	***

Own Home			
Unknown	5.64	7.20	6.28 ***
Own	56.62	38.94	49.36 ***
Rent	37.74	53.86	44.36 ***
Gender of Head			
Male	79.80	71.38	76.34 ***
Female	9.90	14.53	11.80 ***
Unknown	5.73	7.20	6.33 ***
Parent was not HH	4.57	6.88	5.52 ***
N	2252	1569	3821

Notes: Uneighted proportions and means of individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Reference categories are denoted in italics. The t/z column compares the means/proportions of those who experienced parental displacement with those who did not. Table 2 presents the weighted results of this table.

Table 2.A3. OLS Regression Coefficients for Models Including all Children, Part 1

	Job Loss Only	Weighted			
		Individual Controls	Parental Education	Family Income	Education and Income
Parental Job Loss [None]					
Job Loss	-0.924(***) [0.073]	-0.861(***) [0.073]	-0.475(***) [0.070]	-0.623(***) [0.073]	-0.413(***) [0.070]
Gender [Women]					
Men		-0.320(***) [0.072]	-0.335(***) [0.066]	-0.340(***) [0.070]	-0.340(***) [0.066]
Family Race [White]					
Black		-0.949(***) [0.092]	-0.334(***) [0.090]	-0.528(***) [0.098]	-0.218(*) [0.092]
All Other		-0.691(***) [0.158]	-0.461(**) [0.153]	-0.519(***) [0.150]	-0.410(**) [0.149]
Year Born		0.032(***) [0.007]	0.009 [0.006]	0.025(***) [0.006]	0.009 [0.006]
Parental Education [High School Diploma]					
Less than HS			-0.671(***) [0.092]		-0.581(***) [0.093]
Some College			0.708(***) [0.091]		0.634(***) [0.092]
BA of Higher			1.606(***) [0.093]		1.433(***) [0.102]
Family Income Quintile at Birth [Middle]					
Lowest				-0.645(***) [0.112]	-0.256(*) [0.106]
Lower Middle				-0.347(***) [0.101]	-0.108 [0.096]
Upper Middle				0.536(***) [0.111]	0.333(**) [0.105]
Upper				0.744(***) [0.125]	0.320(**) [0.122]
Constant	13.986(***) [0.050]	-48.531(***) [13.003]	-3.457 [12.209]	-36.113(**) [12.548]	-3.426 [12.116]
DF	1	5	Text 8	9	12
Observations	3,821	3,821	3,821	3,821	3,821
R-squared	0.057	0.109	0.250	0.167	0.260
Adjusted R-squar	0.057	0.108	0.248	0.165	0.258
BIC'	-349	-3430	-13681	-9776	-21479

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26.

Table 2.A3. Part 2

	Job Loss Only	Unweighted			
		Individual Controls	Parental Education	Family Income	Education & Income
Parental Job Loss [None]					
Job Loss	-0.773(***) [0.058]	-0.670(***) [0.057]	-0.379(***) [0.055]	-0.470(***) [0.057]	-0.317(***) [0.055]
Gender [Women]					
Men		-0.392(***) [0.057]	-0.421(***) [0.052]	-0.405(***) [0.055]	-0.422(***) [0.052]
Family Race [White]					
Black		-0.895(***) [0.058]	-0.322(***) [0.059]	-0.501(***) [0.063]	-0.192(**) [0.061]
All Other		-0.705(***) [0.129]	-0.378(**) [0.124]	-0.487(***) [0.125]	-0.314(*) [0.122]
Year Born		0.031(***) [0.005]	0.009 [0.005]	0.024(***) [0.005]	0.008 [0.005]
Parental Education [High School Diploma]					
Less than HS			-0.559(***) [0.067]		-0.467(***) [0.068]
Some College			0.653(***) [0.073]		0.571(***) [0.073]
BA of Higher			1.658(***) [0.080]		1.456(***) [0.088]
Family Income Quintile at Birth [Middle]					
Lowest				-0.731(***) [0.085]	-0.395(***) [0.083]
Lower Middle				-0.338(***) [0.083]	-0.109 [0.080]
Upper Middle				0.468(***) [0.094]	0.278(**) [0.092]
Upper				0.792(***) [0.110]	0.353(**) [0.108]
Constant	13.746(***) [0.040]	-47.002(***) [10.076]	-3.521 [9.596]	-32.537(***) [9.791]	-3.147 [9.561]
DF	1	5	8	9	12
Observations	3,821	3,821	3,821	3,821	3,821
R-squared	0.042	0.113	0.244	0.174	0.258
Adjusted R-squar	0.042	0.112	0.242	0.172	0.256
BIC'	-255	-3564	-13302	-10227	-21286

Notes, con't: These are weighted samples using listwise deletion. BIC' calculated as per Raftery (1995). Robust standard errors are presented in brackets.

**Table A4. OLS Regression Results of Educational Attainment by Parent Education**

	<b>Parent Ed &lt;HS</b>			<b>Parent Ed =HS</b>		
Job Loss [None]						
Job Loss	-0.237 [0.146]	-0.223 [0.145]	-0.175 [0.142]	-0.448(***) [0.111]	-0.456(***) [0.110]	-0.388(***) [0.110]
Gender [Women]						
Men		-0.138 [0.139]	-0.151 [0.139]		-0.430(***) [0.112]	-0.411(***) [0.111]
Family Race [White]						
Black/African-American		0.131 [0.147]	0.180 [0.147]		-0.400(**) [0.137]	-0.206 [0.146]
Other, Mulitrace and Unknown		0.223 [0.211]	0.236 [0.204]		-0.458 [0.250]	-0.405 [0.246]
Year of Birth		0.003 [0.012]	0.005 [0.012]		0.016 [0.010]	0.018 [0.010]
Family Income Quintile at Birth [Middle]						
Lowest			-0.226 [0.203]			-0.471(**) [0.166]
Lower Middle			-0.061 [0.225]			-0.146 [0.146]
Upper Middle			0.595 [0.483]			0.296 [0.191]
Upper			0.398 [0.484]			0.034 [0.284]
Constant	12.422(***) [0.125]	6.759 [23.866]	2.529 [23.089]	13.290(***) [0.083]	-17.049 [19.770]	-22.549 [19.634]
DF	1	5	10	1	5	10
Observations	745	745	745	1,433	1,433	1,433
R-squared	0.008	0.015	0.038	0.018	0.050	0.068
Adjusted R-squared	0.007	0.008	0.025	0.017	0.047	0.061
BIC'	-7	-70	-360	-36	-504	-1383

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. BIC' calculated as per Raftery (1995).

**Table A4. Continued**

	<b>Parent Ed Some College</b>			<b>Parent Ed BA or higher</b>		
Job Loss [None]						
Job Loss	-0.523(***)	-0.527(***)	-0.427(**)	-0.627(***)	-0.573(***)	-0.550(**)
	[0.147]	[0.145]	[0.145]	[0.172]	[0.170]	[0.170]
Gender [Women]						
Men		-0.306(*)	-0.313(*)		-0.272(*)	-0.290(*)
		[0.140]	[0.138]		[0.135]	[0.136]
Family Race [White]						
Black/African-American		-0.635(**)	-0.502(*)		-0.354	-0.337
		[0.210]	[0.208]		[0.364]	[0.369]
Other, Multirace and Unkr		-0.605(*)	-0.554(*)		-0.602	-0.592
		[0.268]	[0.267]		[0.447]	[0.443]
Year of Birth		-0.019	-0.023		0.033(*)	0.031(*)
		[0.013]	[0.013]		[0.014]	[0.014]
Family Income Quintile at Birth [Middle]						
Lowest			0.125			0.123
			[0.248]			[0.345]
Lower Middle			0.046			-0.232
			[0.187]			[0.277]
Upper Middle			0.525(**)			0.160
			[0.191]			[0.188]
Upper			0.744(**)			0.176
			[0.239]			[0.189]
Constant	14.047(***)	51.679(*)	59.250(*)	15.021(***)	-49.995	-45.993
	[0.090]	[25.416]	[25.143]	[0.076]	[27.830]	[28.086]
DF	1	5	10	1	5	10
Observations	883	883	883	760	760	760
R-squared	0.020	0.054	0.077	0.021	0.041	0.046
Adjusted R-squared	0.019	0.049	0.066	0.020	0.035	0.033
BIC'	-23	-314	-905	-20	-199	-448

Notes, continued: Robust standard errors are presented in brackets.



**Table A5. OLS Regression Results of Educational Attainment by Family Income Quintile**

	1st Quintile			2nd Quintile			3rd Quintile		
Job Loss [None]									
Job Loss	-0.299 [0.155]	-0.330(*) [0.158]	-0.154 [0.144]	-0.642(***) [0.136]	-0.628(***) [0.133]	-0.498(***) [0.130]	-0.873(***) [0.150]	-0.854(***) [0.149]	-0.545(***) [0.144]
Gender [Women]									
Men		-0.199 [0.149]	-0.236 [0.132]		-0.412(**) [0.135]	-0.420(**) [0.129]		-0.405(**) [0.148]	-0.343(*) [0.139]
Family Race [White]									
Black/African-Americ		-0.458(**) [0.156]	-0.175 [0.137]		-0.400(*) [0.181]	-0.150 [0.188]		-0.332 [0.222]	0.031 [0.197]
All Others		-0.540(*) [0.221]	-0.623(*) [0.258]		-0.700(**) [0.220]	-0.565(**) [0.211]		-0.539 [0.340]	-0.546 [0.345]
Year of Birth		0.019 [0.013]	-0.001 [0.011]		0.031(**) [0.012]	0.017 [0.011]		0.025 [0.014]	0.013 [0.013]
Parent Education [HS Diploma]									
Less than High School			-0.460(**) [0.144]			-0.669(***) [0.164]			-0.762(***) [0.214]
Some College			0.901(***) [0.240]			0.566(***) [0.167]			0.399(*) [0.170]
BA or Higher			2.036(***) [0.344]			1.284(***) [0.257]			1.399(***) [0.190]
Constant	12.878(***) [0.125]	-23.398 [24.881]	14.402 [22.660]	13.483(***) [0.103]	-46.862(*) [23.260]	-20.637 [21.676]	13.976(***) [0.098]	-35.831 [26.711]	-11.477 [25.519]
DF	1	5	9	1	5	9	1	5	9
Observations	957	957	957	976	976	976	807	807	807
R-squared	0.009	0.039	0.220	0.035	0.073	0.162	0.053	0.077	0.181
Adjusted R-squared	0.008	0.034	0.213	0.034	0.068	0.154	0.052	0.071	0.172
BIC'	-11	-246	-2770	-45	-480	-2016	-55	-408	-1831

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. BIC' calculated as per Raftery (1995).

**Table A5. Continued**

	<b>4th Quintile</b>			<b>5th Quintile</b>		
Job Loss [None]						
Job Loss	-0.798(***) [0.176]	-0.793(***) [0.174]	-0.575(***) [0.170]	-0.326 [0.250]	-0.291 [0.239]	-0.055 [0.232]
Gender [Women]						
Men		-0.344(*) [0.163]	-0.356(*) [0.155]		-0.285 [0.197]	-0.307 [0.190]
Family Race [White]						
Black/African-Americ		-0.653(*) [0.329]	-0.369 [0.338]		-1.863(***) [0.297]	-1.168(***) [0.275]
All Others		0.420 [0.366]	0.492 [0.342]		-1.108 [0.725]	-0.554 [0.750]
Year of Birth		0.027 [0.016]	0.006 [0.017]		0.039(*) [0.018]	0.017 [0.019]
Parent Education [HS Diploma]						
Less than High School			-0.354 [0.466]			-0.183 [0.376]
Some College			0.639(**) [0.214]			1.050(**) [0.350]
BA or Higher			1.310(***) [0.208]			1.571(***) [0.283]
Constant	14.500(***) [0.098]	-38.764 [32.518]	1.116 [33.120]	14.622(***) [0.113]	-62.700 [36.610]	-19.463 [36.659]
DF	1	5	9	1	5	9
Observations	667	667	667	414	414	414
R-squared	0.038	0.061	0.143	0.005	0.077	0.171
Adjusted R-squared	0.037	0.054	0.131	0.003	0.066	0.153
BIC'	-32	-257	-1136	-2	-189	-794

Notes, continued: Robust standard errors are presented in brackets.

**Table 2.A6. Results for OLS Regressions focused on family income at birth**

	Weighted		Unweighted	
	<b>Interaction</b>	<b>Full Model</b>	<b>Interaction</b>	<b>Full Model</b>
Family Income Quintile/Job Loss Interaction [No Job Loss, Middle Income]				
No Job Loss/Lowest	-1.098(***) [0.159]	-0.903(***) [0.164]	-1.098(***) [0.159]	-0.903(***) [0.164]
No Job Loss/Lower Middle	-0.493(***) [0.142]	-0.428(**) [0.141]	-0.493(***) [0.142]	-0.428(**) [0.141]
No Job Loss/Upper Middle	0.524(***) [0.139]	0.496(***) [0.138]	0.524(***) [0.139]	0.496(***) [0.138]
Job Loss/Upper Middle	0.646(***) [0.150]	0.594(***) [0.148]	0.646(***) [0.150]	0.594(***) [0.148]
No Job Loss/Upper	-1.397(***) [0.134]	-1.235(***) [0.138]	-1.397(***) [0.134]	-1.235(***) [0.138]
Job Loss/Lowest	-1.136(***) [0.133]	-1.068(***) [0.132]	-1.136(***) [0.133]	-1.068(***) [0.132]
Job Loss/Lower Middle	-0.873(***) [0.150]	-0.855(***) [0.149]	-0.873(***) [0.150]	-0.855(***) [0.149]
Job Loss/Middle	-0.274 [0.176]	-0.292 [0.174]	-0.274 [0.176]	-0.292 [0.174]
Job Loss/Upper	0.320 [0.243]	0.298 [0.236]	0.320 [0.243]	0.298 [0.236]
Gender [Women]				
Men		-0.339(***) [0.070]		-0.339(***) [0.070]
Family Race [White]				
Black/African-American		-0.513(***) [0.098]		-0.513(***) [0.098]
Other, Multirace and Unknown		-0.513(***) [0.150]		-0.513(***) [0.150]
Year of Birth		0.026(***) [0.006]		0.026(***) [0.006]
Constant	13.976(***) [0.098]	-37.130(**) [12.545]	13.976(***) [0.098]	-37.130(**) [12.545]
DF	11	15	11	15
Observations	3,821	3,821	3,821	3,821
R <sup>2</sup>	0.146	0.170	0.146	0.170
Adjusted R <sup>2</sup>	0.144	0.167	0.144	0.167
BIC'	-10320	-16614	-10320	-16614

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. BIC' calculated as per Raftery (1995). Robust standard errors are presented in brackets.

**Table 2.A7. Results for OLS Regressions focused on parent education at birth**

	Weighted		Unweighted	
	<u>Interaction</u>	<u>Full Model</u>	<u>Interaction</u>	<u>Full Model</u>
Parent Education/Job Loss Interaction [No Job Loss,HS Diploma]				
Job Loss/Less than HS degree	-0.869(***) [0.150]	-0.769(***) [0.154]	-0.710(***) [0.101]	-0.600(***) [0.101]
No Job Loss/Less than HS Degree	0.757(***) [0.122]	0.744(***) [0.122]	0.774(***) [0.098]	0.740(***) [0.098]
Job Loss/HS Degree	1.731(***) [0.112]	1.638(***) [0.114]	1.853(***) [0.092]	1.734(***) [0.094]
Job Loss/Some College	-1.106(***) [0.113]	-1.062(***) [0.116]	-0.901(***) [0.087]	-0.843(***) [0.088]
No Job Loss/Some College	-0.448(***) [0.111]	-0.452(***) [0.110]	-0.308(***) [0.086]	-0.304(***) [0.085]
Job Loss/BA or Higher	0.234 [0.143]	0.203 [0.142]	0.260(*) [0.111]	0.228(*) [0.108]
No Job Loss/BA or Higher	1.104(***) [0.175]	1.059(***) [0.173]	1.230(***) [0.160]	1.161(***) [0.160]
Gender [Women]				
Men		-0.333(***) [0.066]		-0.418(***) [0.052]
Family Race [White]				
Black/African-American		-0.323(***) [0.089]		-0.313(***) [0.059]
Other, Multirace and Unknown		-0.461(**) [0.153]		-0.381(**) [0.125]
Year of Birth		0.009 [0.006]		0.009 [0.005]
Constant	13.290(***) [0.083]	-4.199 [12.206]	13.165(***) [0.061]	-4.655 [9.603]
DF	9	13	9	13
Observations	3,821	3,821	3,821	3,821
R-squared	0.236 0.234	0.250 0.247	0.226 0.224	0.245 0.242
	-14401	-22231	-13706	-21718

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. BIC' calculated as per Raftery (1995). Robust standard errors are presented in brackets.

Table 2.A8. Odds Ratios for the Propensity Score Matching Models

Income at Birth [Middle]		Head's Occupation		Head's Industry [Manufacturing]		Region of Birth	
Lowest	1.750(***)	Unknown	1.900	Unknown	0.410	Abroad or Unknow	1.252
	1.378 - 2.222		0.701 - 5.150		0.155 - 1.085		0.373 - 4.203
Lower Middle	1.216	Professional, Technical	0.642(*)	Agriculture, Forestry	0.647	New England	1.809(*)
	0.991 - 1.491		0.454 - 0.907		0.310 - 1.351		1.149 - 2.847
Upper Middle	0.825	Managers and Administration	1.056	Mining	1.211	Mid-Atlantic	2.772(***)
	0.654 - 1.041		0.760 - 1.468		0.626 - 2.342		2.065 - 3.720
Upper	0.588(***)	Sales Workers	1.122	Construction	1.395(*)	Mid-South Atlantic	1.000
	0.430 - 0.803		0.687 - 1.831		1.029 - 1.892		1.000 - 1.000
Parent Education [12th Years]		Clerical and Kindred	1.076	Transportation, Communicati	0.659(*)	South East	1.403(*)
Less than HS	1.289(*)		0.765 - 1.515		0.478 - 0.909		1.044 - 1.886
	1.050 - 1.582	Operatives, Except Transport	1.161	Wholesale and Retail	0.840	East South Central	1.849(***)
HS Graduate	0.815(*)		0.883 - 1.528		0.642 - 1.100		1.376 - 2.484
	0.677 - 0.982	Transport Equipment Operato	1.057	Finance, Insurance,	0.912	West South Centra	2.110(***)
Some College	0.519(***)		0.742 - 1.506		0.572 - 1.456		1.561 - 2.852
	0.404 - 0.666	Laborers, Except Farm	0.902	Business and Repair Service	0.957	MI-OH	2.474(***)
BA or Higher	0.411(***)		0.645 - 1.261		0.615 - 1.487		1.833 - 3.339
	0.294 - 0.574	Farmers and Farm Managers	0.967	Personal Services	0.807	IN, IL, WI	1.706(***)
Gender of Head [Male]			0.378 - 2.472		0.491 - 1.328		1.242 - 2.344
Female	1.116	Farm Laborers	1.207	Entertainment and Recreation	0.665	West North Centra	1.605(**)
	0.830 - 1.499		0.481 - 3.029		0.244 - 1.817		1.176 - 2.188
Unknown	0.964	Service Workers	1.020	Professional	0.599(**)	Mountain	1.856(**)
	0.738 - 1.258		0.732 - 1.423		0.430 - 0.832		1.215 - 2.836
Parent not Hea	1.301	Private Household Workers	0.704	Public Administration	0.377(***)	Pacific	2.095(***)
	0.942 - 1.798		0.325 - 1.525		0.261 - 0.545		1.543 - 2.845
Parents Own House [Rent]		Self Employment [not self employed]				Constant	0.411(***)
Unknown	1.427(*)	Unknown	0.460(***)				0.294 - 0.574
	1.049 - 1.941		0.327 - 0.649			N	3,821
Own Home	1.555(***)	Self Employed	0.615(***)	Notes: Logistic Regression model behind the results presented in Table 2.5.			
	1.324 - 1.826		0.462 - 0.818	See Table2. 5 for full notes.			

**Table A9. Alternative Propensity Score Models**

	N	ATT					ATU				ATE	
		Treated	Controls	Difference	SE	Sig.	Treated	Controls	Difference	SE	Difference	S.E.
Nearest Neighbor	3,821	12.97	13.24	-0.27	0.09	**	13.75	13.39	-0.36		-0.32	
Nearest Neighbor (10)	3,821	12.97	13.23	-0.25	0.07	***	13.75	13.40	-0.34		-0.30	
Nearest Neighbor (10) w Common Support (CS)	3,797	12.98	13.23	-0.25	0.07	***	13.74	13.40	-0.35		-0.31	
Nearest Neighbor (10) Logit	3,821	12.97	13.22	-0.25	0.07	***	13.75	13.41	-0.34		-0.30	
Nearest Neighbor (10) Logit Odds Ratios	3,821	12.97	13.22	-0.25	0.07	***	13.75	13.40	-0.34		-0.30	
Mahalanobis Logit Odds Ratio	3,821	12.97	12.75	0.22	0.55	n.s.	13.75	13.12	-0.62		-0.28	
Abadie & Imbens SE	3,821	12.97	12.75	0.22	0.30	n.s.	13.75	13.12	-0.62	0.32	-0.28	0.23
Abadie & Imbens Estimators	3,821	12.97	12.75	0.22	0.41	n.s.	13.75	13.12	-0.62	0.37	-0.28	0.28
Abadie & Imbens Estimators CS	3,797	12.98	13.26	-0.29	0.47	n.s.	13.74	14.80	1.06	0.43	0.51	0.32
Kernel Density (epanechnikov) Logit Odds	3,821	12.97	13.22	-0.25	0.07	***	13.75	13.40	-0.35		-0.31	
Kernel Density (uniform) Logit Odds	3,821	12.97	13.22	-0.25	0.07	***	13.75	13.39	-0.36		-0.32	
<i>Kernel Density (uniform) Logit Odds CS</i>	<i>3,797</i>	<i>12.98</i>	<i>13.24</i>	<i>-0.26</i>	<i>0.07</i>	<i>***</i>	<i>13.74</i>	<i>13.38</i>	<i>-0.36</i>		<i>-0.32</i>	

Notes: Individuals born into the PSID between 1968 and 1986, who experienced parental job displacement before age 18, with educational attainment measured at age 25 or 26. Unweighted propensity score matching estimates estimated using PSMATCH2 in Stata 12. All models allow for ties. The associated logistic regression model is presented in Table 2.A8.

Table 2.A10. Propensity Score Weighted OLS Regression Coefficients for Models Including All Children

	<u>Job</u>	<u>Individual</u>	<u>Job Loss &amp;</u>	<u>Parental</u>	<u>Family</u>	<u>Education</u>
	<u>Loss</u>	<u>Controls</u>	<u>Controls</u>	<u>Education</u>	<u>Income</u>	<u>and Income</u>
	<u>Only</u>					
Parental Job Loss [N	0.145		0.059	-0.204(**)	-0.115	-0.263(***)
Job Loss	[0.079]		[0.076]	[0.064]	[0.067]	[0.061]
Gender [Women]						
Men		-0.377(***)	-0.376(***)	-0.441(***)	-0.397(***)	-0.445(***)
		[0.082]	[0.082]	[0.074]	[0.078]	[0.073]
Family Race [White]						
Black		-0.856(***)	-0.849(***)	-0.336(***)	-0.446(***)	-0.181(*)
		[0.082]	[0.080]	[0.081]	[0.085]	[0.084]
All Other		-0.601(**)	-0.597(**)	-0.293	-0.316	-0.186
		[0.215]	[0.215]	[0.197]	[0.212]	[0.198]
Year Born		0.030(***)	0.030(***)	0.006	0.022(**)	0.006
		[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
Parental Education [High School Diploma]						
Less than HS				-0.587(***)		-0.517(***)
				[0.081]		[0.080]
Some College				0.677(***)		0.592(***)
				[0.091]		[0.089]
BA of Higher				1.549(***)		1.321(***)
				[0.137]		[0.140]
Family Income Quintile at Birth [Middle]						
Lowest					-0.774(***)	-0.396(***)
					[0.111]	[0.102]
Lower Middle					-0.382(***)	-0.111
					[0.107]	[0.098]
Upper Middle					0.354(*)	0.223
					[0.140]	[0.134]
Upper					0.848(***)	0.573(**)
					[0.204]	[0.196]
Constant	13.236(***)	-44.676(**)	-45.215(**)	1.189	-30.160(*)	2.587
	[0.044]	[13.949]	[14.039]	[13.284]	[13.474]	[13.143]
DF	1	5	6	8	9	12
Observations	3,797	3,797	3,797	3,797	3,797	3,797
R-squared	0.002	0.069	0.069	0.199	0.135	0.218
Adjusted R-squared	0.002	0.068	0.068	0.197	0.133	0.216
BIC'	-12	-2110	-2532	-10478	-7704	-17417

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26.

**Table A11. Propensity Score Weighted OLS Regression Results of Educational Attainment by Family Income Quintile**

	1st Quintile			2nd Quintile			3rd Quintile		
Job Loss [None]									
Job Loss	-0.005 [0.112]	-0.047 [0.112]	-0.151 [0.104]	-0.090 [0.120]	-0.077 [0.119]	-0.176 [0.111]	-0.168 [0.160]	-0.156 [0.158]	-0.359(**) [0.135]
Gender [Women]									
Men		-0.247(*) [0.110]	-0.287(**) [0.104]		-0.487(***) [0.117]	-0.462(***) [0.110]		-0.474(**) [0.176]	-0.440(**) [0.163]
Family Race [White]									
Black/African-American		-0.495(***) [0.141]	-0.185 [0.125]		-0.324(*) [0.127]	-0.113 [0.122]		-0.180 [0.195]	-0.014 [0.183]
All Others		-0.138 [0.338]	-0.125 [0.321]		-0.529(**) [0.202]	-0.386 [0.197]		-0.117 [0.742]	-0.007 [0.741]
Year of Birth		0.006 [0.009]	-0.011 [0.009]		0.027(**) [0.010]	0.016 [0.010]		0.016 [0.016]	0.005 [0.015]
Parent Education [HS Diploma]									
Less than High School			-0.396(***) [0.110]		-0.493(***) [0.140]			-0.612(**) [0.194]	
Some College			0.712(***) [0.170]		0.644(***) [0.147]			0.293 [0.168]	
BA or Higher			1.852(***) [0.399]		1.431(***) [0.286]			1.284(***) [0.249]	
Constant	12.585(***) [0.079]	0.318 [18.565]	34.803 [18.232]	13.104(***) [0.079]	-40.294(*) [20.437]	-18.511 [19.257]	13.609(***) [0.089]	-18.268 [31.377]	3.255 [29.709]
DF	1	5	9	1	5	9	1	5	9
Observations	944	944	944	976	976	976	807	807	807
R-squared	0.000	0.029	0.142	0.001	0.039	0.129	0.002	0.024	0.124
Adjusted R-squared	-0.001	0.024	0.134	0.000	0.034	0.121	0.001	0.018	0.114
BIC'	0	-179	-1681	-1	-252	-1575	-2	-124	-1214

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. BIC' calculated as per Raftery (1995).



**Table A11. Continued**

	<u>4th Quintile</u>			<u>5th Quintile</u>		
Job Loss [None]						
Job Loss	-0.309 [0.188]	-0.351 [0.184]	-0.531(**) [0.165]	0.087 [0.274]	-0.088 [0.256]	-0.151 [0.241]
Gender [Women]						
Men		-0.306 [0.224]	-0.399 [0.218]		-0.552 [0.361]	-0.902(*) [0.355]
Family Race [White]						
Black/African-American		-0.611(*) [0.262]	-0.267 [0.281]		-1.657(***) [0.412]	-0.783 [0.536]
All Others		0.457 [0.543]	0.767 [0.418]		-2.261(***) [0.525]	-1.502(*) [0.666]
Year of Birth		0.050(*) [0.021]	0.031 [0.022]		0.033 [0.033]	-0.001 [0.029]
Parent Education [HS Diploma]						
Less than High School			-1.099(**) [0.351]			-0.201 [0.697]
Some College			0.526(*) [0.220]			1.060(*) [0.443]
BA or Higher			0.913(**) [0.279]			1.811(***) [0.392]
Constant	14.126(***) [0.110]	-83.781(*) [42.203]	-47.309 [42.870]	14.345(***) [0.137]	-51.128 [65.618]	15.906 [57.178]
DF	1	5	9	1	5	9
Observations	665	665	665	405	405	405
R-squared	0.006	0.054	0.125	0.000	0.112	0.232
Adjusted R-squared	0.005	0.047	0.113	-0.002	0.101	0.215
BIC'	-5	-226	-980	0	-272	-1090

Notes, continued: Robust standard errors are presented in brackets. Tables 6 summarizes the results presented in this table.

**Table A12. Propensity Score Weighted OLS Regression Results of Educational Attainment by Pa**

	Parent Ed <HS			Parent Ed =HS		
Job Loss [None]						
Job Loss	-0.086 [0.122]	-0.105 [0.119]	-0.148 [0.113]	-0.142 [0.097]	-0.148 [0.097]	-0.208(*) [0.093]
Gender [Women]						
Men		-0.281(*) [0.116]	-0.279(*) [0.112]		-0.465(***) [0.095]	-0.443(***) [0.093]
Family Race [White]						
Black/African-American		0.119 [0.154]	0.197 [0.142]		-0.348(***) [0.098]	-0.132 [0.101]
All Others		0.218 [0.291]	0.208 [0.274]		-0.349 [0.240]	-0.216 [0.236]
Year of Birth		-0.003 [0.010]	-0.003 [0.010]		0.014 [0.009]	0.017 [0.009]
Family Income Quintile at Birth [Middle]						
Lowest			-0.447(*) [0.179]			-0.627(***) [0.133]
Lower Middle			-0.162 [0.199]			-0.241(*) [0.121]
Upper Middle			-0.201 [0.324]			0.306 [0.181]
Upper			0.299 [0.673]			0.110 [0.295]
Constant	12.370(***) [0.079]	17.372 [19.424]	17.961 [19.598]	13.070(***) [0.066]	-14.846 [18.439]	-19.856 [18.170]
DF	1	5	10	1	5	10
Observations	734	734	734	1,431	1,431	1,431
R-squared	0.001	0.014	0.034	0.002	0.036	0.070
Adjusted R-squared	0.000	0.007	0.021	0.001	0.033	0.063
BIC'	-1	-64	-316	-4	-360	-1423

Notes: Individuals born into the PSID between 1968 and 1986, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. BIC' calculated as per Raftery

**Table A12. Continued**

	<b>Parent Ed Some College</b>			<b>Parent Ed BA or higher</b>		
Job Loss [None]						
Job Loss	-0.201 [0.147]	-0.271 [0.143]	-0.314(*) [0.137]	-0.425(*) [0.187]	-0.378(*) [0.188]	-0.420(*) [0.177]
Gender [Women]						
Men		-0.676(***) [0.151]	-0.667(***) [0.147]		-0.251 [0.255]	-0.351 [0.259]
Family Race [White]						
Black/African-American		-0.569(***) [0.155]	-0.413(*) [0.165]		-0.384 [0.388]	-0.211 [0.404]
All Others		-0.366 [0.439]	-0.187 [0.463]		-0.469 [0.744]	-0.260 [0.764]
Year of Birth		-0.017 [0.015]	-0.018 [0.014]		0.030 [0.024]	0.022 [0.024]
Family Income Quintile at Birth [Middle]						
Lowest			-0.075 [0.229]			-0.042 [0.455]
Lower Middle			0.127 [0.198]			-0.060 [0.360]
Upper Middle			0.552(**) [0.207]			-0.057 [0.337]
Upper			0.789(*) [0.380]			0.602 [0.362]
Constant	13.813(***) [0.088]	48.690 [29.190]	49.578 [27.715]	14.904(***) [0.092]	-43.441 [48.194]	-29.485 [46.594]
DF	1	5	10	1	5	9
Observations	883	883	883	749	749	749
R-squared	0.003	0.068	0.093	0.009	0.027	0.050
Adjusted R-squared	0.002	0.063	0.083	0.008	0.020	0.038
BIC'	-3	-398	-1103	-8	-128	-432

Notes, continued: Robust standard errors are presented in brackets. Table 6 summarizes the results presented in this table.

**Table 2.B1. Results for OLS Regressions Focused on Children who Experienced Parental Job Loss**

	<u>Controls</u> <u>Only</u>	<u>Income</u>	<u>Income and</u> <u>Controls</u>	<u>Education</u>	<u>Education</u> <u>and Controls</u>	<u>Full Model</u>
Family Income Quintile at Birth [Middle]						
Lowest		-0.525(***) [0.146]	-0.396(**) [0.149]			-0.078 [0.146]
Lower Middle		-0.263 [0.144]	-0.196 [0.144]			-0.057 [0.140]
Upper Middle		0.599(**) [0.185]	0.563(**) [0.184]			0.363(*) [0.176]
Upper		1.193(***) [0.250]	1.126(***) [0.245]			0.736(**) [0.239]
Parent Education [HS Diploma]						
Less than High School				-0.658(***) [0.106]	-0.573(***) [0.109]	-0.523(***) [0.111]
Some College				0.682(***) [0.138]	0.646(***) [0.138]	0.590(***) [0.140]
BA or Higher				1.552(***) [0.171]	1.478(***) [0.170]	1.240(***) [0.177]
Gender [Women]						
Men	-0.236(*) [0.106]					
Family Race [White]						
Black	-0.732(***) [0.108]		-0.465(***) [0.115]		-0.379(***) [0.111]	-0.304(**) [0.113]
All Other	-0.665(***) [0.192]		-0.477(*) [0.186]		-0.483(**) [0.183]	-0.428(*) [0.183]
Year of Birth	0.039(***) [0.010]		0.032(***) [0.009]		0.016 [0.009]	0.014 [0.009]
Constant	-63.088(***) [18.888]	13.103(***) [0.114]	-49.658(**) [18.042]	12.842(***) [0.074]	-17.783 [17.623]	-14.827 [17.250]
Degrees of Freedom	4	5	10	4	9	13
N	1,569	1,569	1,569	1,569	1,569	1,569
R <sup>2</sup>	0.050	0.086	0.107	0.162	0.173	0.189
Adjusted R <sup>2</sup>	0.052	0.089	0.113	0.164	0.178	0.196
BIC'	-84	-214	-771	-290	-1112	-2067

Notes: These are weighted samples using listwise deletion. BIC' calculated as per Raftery (1995). Robust standard errors are presented in brackets.

**Table 2.B2. Results for OLS Regressions Focused on Children who Experienced Parental Job Loss (unweighted)**

	<u>Controls</u> <u>Only</u>	<u>Income</u>	<u>Income and</u> <u>Controls</u>	<u>Education</u>	<u>Education</u> <u>and Controls</u>	<u>Full</u> <u>Model</u>
Family Income Quintile at Birth [Middle]						
Lowest		-0.626(***) [0.115]	-0.530(***) [0.120]			-0.257(*) [0.118]
Lower Middle		-0.233 [0.122]	-0.164 [0.123]			-0.014 [0.119]
Upper Middle		0.455(**) [0.160]	0.405(*) [0.158]			0.245 [0.153]
Upper		0.957(***) [0.240]	0.857(***) [0.236]			0.538(*) [0.223]
Parent Education [HS Diploma]						
Less than High School				-0.592(***) [0.086]	-0.526(***) [0.090]	-0.468(***) [0.092]
Some College				0.568(***) [0.111]	0.527(***) [0.111]	0.467(***) [0.111]
BA or Higher				1.538(***) [0.160]	1.447(***) [0.161]	1.261(***) [0.168]
Gender [Women]						
Men	-0.339(***) [0.082]					
Family Race [White]						
Black	-0.531(***) [0.084]		-0.276(**) [0.089]		-0.215(*) [0.084]	-0.114 [0.087]
All Other	-0.659(***) [0.175]		-0.480(**) [0.172]		-0.421(*) [0.173]	-0.372(*) [0.170]
Year of Birth	0.038(***) [0.007]		0.032(***) [0.007]		0.017(*) [0.007]	0.016(*) [0.007]
Constant	-61.353(***) [14.417]	13.145(***) [0.097]	-50.300(***) [14.217]	12.857(***) [0.061]	-20.441 [14.067]	-19.661 [14.103]
Degrees of Freedom	4	5	10	4	9	13
N	1,569	1,569	1,569	1,569	1,569	1,569
R <sup>2</sup>	0.051	0.068	0.086	0.136	0.144	0.156
Adjusted R <sup>2</sup>	0.053	0.071	0.092	0.138	0.149	0.163
BIC'	-86	-168	-613	-240	-910	-1674

displacement before age 18, with educational attainment measured at age 25 or 26. These are unweighted samples using listwise deletion. BIC' calculated as per Raftery (1995). Robust standard errors are presented in brackets.

### **Paper 3**

#### **EXPOSURE TO PARENTAL JOB LOSS AND CHILDREN'S EDUCATIONAL ATTAINMENT**

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## SUMMARY

Building on the interdisciplinary research on childhood exposure to adverse events and adulthood outcomes, I examine the association between the amount of exposure to parental job loss and children's educational attainment. I focus on the impact of the number of parental job losses, the duration of parental unemployment spells and the interaction between number of job losses and the length of unemployment spells. I use a cohort of children from the Panel Study of Income Dynamics (PSID) to examine children who experience parental job loss(es) compared to those who do not, finding that the children who experience three or more parental job losses are less likely to graduate college than children who experience just one parental job loss. Children who experience two parental job losses have similar levels of educational attainment to those who experience one. Additionally, experiencing parental unemployment for a year or more is associated lower levels of educational attainment than children who experience a parental job loss with no unemployment; parental unemployment that lasts under a year is associated with similar education outcomes to those of children whose parent leaves the labor market after a job loss.

## INTRODUCTION

The intensity of consequences linked to adverse events (such as economic shocks) in children's lives generally varies with the exposure to the adverse event, including the duration and number of the spells (e.g, Heard 2007a; Kalmijn 1994; Wagmiller et al. 2006). For example, poverty research has found that if research only considers whether a child has *ever* lived in poverty, it provides only limited evidence about the consequences of poverty. Accounting for the number and duration of poverty spells adds necessary context for understanding the influence of poverty on a child. Thus researchers can say, for instance, that long exposures to poverty make children less likely to complete high school (Haveman, Wolfe, and Spaulding 1991; Wagmiller et al. 2006). Not all research on adverse events during childhood has explored the importance of the amount of exposure for children's outcomes.

Parental job loss is one such adverse event in children's lives. Approximately half of children experience a parent's job loss during their childhood (Kalil and Wightman 2011).<sup>28</sup> Prior research has found that experiencing parental job loss harms children's short- and long-term educational outcomes (Brand and Simon Thomas 2014; Kalil and Ziol-Guest 2008; Stevens and Schaller 2011; Wightman 2009). Yet, this research has done little to differentiate if, and how much, the amount of exposure to parental job loss<sup>29</sup> moderates educational consequences. The

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<sup>28</sup> The Bureau of Labor Statistics (BLS 2011) considers an individual unemployed when he or she is not currently working, looking for work and available for work. Unemployment importantly includes not just the event, but the time when someone is out of work. Job loss usually refers to an individual's involuntary departure from an employer or employment situation. Other reasons for parental job displacement, such as choosing to leave a job, are outside the scope of this project.

<sup>29</sup> In this paper, I refer to the number of the parental job losses and the duration of subsequent parental unemployment spells. Not all parents who experience a job loss become unemployed (as per the definition above). I use the more general "exposure to parental job loss" to refer to both the number and duration of parental unemployment spells.



paper considers the duration and incidence of these events to give a fuller picture of their effects on children's educational outcomes.

I focus on educational attainment for several reasons. First, because adverse events are often associated with lower long-term educational attainment (e.g. Fomby 2013). Additionally, educational attainment is associated with other adult outcomes such as income, occupational stability, health and family formation (e.g. Kingston, Hubbard, Lapp, Schroeder, and Wilson 2003; Mare 1991; Ross and Mirowsky 1999; Ross and Wu 1995; Sewell and Hauser 1975; Warren, Hauser, and Sheridan 2002) .

In this paper, I build on extant research to examine variables in the association between exposure to parental job loss and children's educational attainment. Specifically, I ask three questions. First, does the number of parental job loss spells affect the impact of parental job loss on children's educational attainment? Second, how does the total duration (or length) of parental unemployment spells moderate children's educational attainment? Finally, how do both aspects of exposure (number of parental job losses and duration of parental unemployment), taken together, moderate children's educational attainment? To answer these questions I use a cohort of children from the Panel Study of Income Dynamics (PSID), comparing children who experience parental job loss(es) to those who do not as well as within-group differences for children who have a parent lose a job.

The results I present compare the educational outcomes of children who experience a single parental job loss or a job loss with no unemployment, to both children who do not have a parent lose a job to those with the most exposure to job losses and unemployment. I find that even a single job loss is associated with lower levels of educational attainment compared to children who do not experience parental job loss. Additionally, for children with the most exposure to parental job loss, on average, have lower levels of education than those with less exposure to parental job losses and unemployment.

## REVIEW OF THEORETICAL AND EMPIRICAL LITERATURE

In the following pages, I discuss the theoretical reasons why exposure to parental job loss is important to examine and the prior research on parental job loss and children's educational outcomes. To do so, I draw on research from sociology, child development, public policy, education and economics.

### *Theories of Exposure*

Theories of exposure posit that individuals—in this case children—experience more or less harm with the amount of their exposure to a negative event (e.g. Brooks-Gunn and Duncan 1997; Timberlake 2007). That is, not all exposures to a negative event have similar average consequences; amount of exposure also factors into the average amount of consequences experienced. (Wagmiller et al. 2006). Thus the more times, or the longer, an individual experiences a negative event increases the consequences. For parental job loss, exposure includes both duration and number of spells/occurrences.

Research on childhood adverse events finds that instability is negatively associated with children's long-term outcomes. More transitions indicate less stability. For example, children in low-income households whose mothers have low employment stability (more employment transitions) are less likely to graduate from high school (Randolph, Rose, Fraser, and Orthner 2004). Children who experience more family transitions such as divorce and remarriage are less likely to attend and complete college (Fomby 2013).

Unlike other transitions, parental job loss and poverty occur as spells, with families moving into and out of the status. In addition to the *number* of transitions, the *length* of the spells also impacts children. Research on family poverty spells finds that the number of spells and duration of spells moderate the impact of poverty on children's outcomes (Brooks-Gunn and Duncan 1997; Wagmiller et al. 2006). Additionally, research on neighborhood poverty focuses on cumulative exposure, with a focus on duration (Timberlake 2007; Timberlake 2009). Yet, most research on parental job loss has overlooked the temporal aspects of exposure.

As features that may differentiate the impact of an event (Heard 2007a; Wagmiller et al. 2006), I expect that the duration, and number of parental unemployment spells will affect children's later educational attainment. Specifically, more exposure to parental unemployment will lead to lower educational attainment.

### *Educational Consequences of Parental Job Loss*

Prior research on the consequences of parental job loss has examined children's short- and long-term outcomes. Most of the research in this area defines parental job loss as the household head ever experiencing job loss (e.g. Kalil and Wightman 2011). Some research specifies which parent (usually the father in two-parent families and the mother in single-parent families) experiences the job loss (e.g. Kalil and Ziol-Guest 2005; Oreopoulos, Page, and Stevens 2008). Researchers also consider the mediating influences of household structure and access to resources in determining the detrimental impacts of job loss (Heeringa et al. 2011; Kalil and Wightman 2010).

In the short-term, parental unemployment causes delays in children's behavioral growth, cognitive development, self-concept, classroom behavior and educational progress (Farrell and Ortiz 1993; Hill, Morris, Castells, and Walker 2011; McLoyd 1989; McLoyd, Jayaratne, Ceballo, and Borquez 1994; Stevens and Schaller 2011). For example, 8th graders who experience parental job loss generally have lower test scores than their peers (Ananat, Gassman-Pines, Francis, and Gibson-Davis 2011). Mother's unemployment during preschool has been associated with children's problem behavior in late elementary school (Hill, Morris, Castells, and Walker 2011). These short-term consequences highlight the link between parental job loss and educational outcomes.

A parent's job loss shapes his or her children's social, developmental, and educational progress through several mechanisms, including by changing available resources, parent behavior, parent support and parent stress (Elder, Nguyen, and Caspi 1985; McLoyd, Jayaratne, Ceballo, and Borquez 1994). Parents, specifically fathers, provide less support to their children when unemployed, which impacts children's health (Bacikova-Sleskova et al. 2011). These

mechanisms provide additional context as to why a parent's job loss may harm children's long-term educational attainment.

Clearly, parental job loss has consequences n long after the unemployment spell ends. In the longer term, parental job loss during childhood or adolescence is associated with lower earnings between the ages 25 and 33 and with the number of months unemployed and/or receiving unemployment benefits as an adult<sup>30</sup> for men in Canada and Great Britain. (O'Neill and Sweetman 1998; Oreopoulos, Page, and Stevens 2008). In the United States, among middle-class children in the PSID, parent job loss during childhood is associated with a decreased likelihood of college attendance (Kalil and Wightman 2011).

Prior studies on job loss have tended to focus on whether or not children experience job loss. That is, it has been a "yes" or "no" question. Some newer studies focus on more contextual factors of job loss, such as whether and how the timing of job loss in children's lives or the context of the job displacement (recession vs non-recession) moderates the impact of job loss (Arbeit 2013; Brand and Simon Thomas 2014; Wightman 2009). These studies, however, insufficiently address whether the amount of exposure to parental job loss, calculated by including the duration of the unemployment spell, the number of spells and which parent experiences the job loss, moderates the documented associations between job loss and children's educational outcomes.

## DATA, MEASURES, AND METHODS

### *Data*

Using the PSID (2014), I examine educational attainment at age 25 or 26 for children born between 1968 and 1986. The PSID started in 1968 as a nationally representative sample with an oversample of low-income respondents (the Survey of Economic Opportunity, or SEO

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<sup>30</sup> The research from Canada and Great Britain on adult income and unemployment of children who experienced parental job loss has only looked at sons (O'Neill and Sweetman 1998; Oreopoulos, Page, and Stevens 2008).

sample). As children in PSID families start their own households, they continue to participate in the PSID as new households (Holland 1986). As of 2009, the PSID contained around 9,000 families (Killewald, Andreski, and Schoeni 2011). Because the PSID follows families over time, it provides information on parents' occupational trajectories as well as children's educational and occupational attainment. The University of Michigan collected data annually until 1997 and biannually thereafter.

The sample design, length of the survey, number of interview waves, and sample attrition require that I weight the data. Almost half of the PSID sample left the study between 1968 and 1989 (Fitzgerald, Gottschalk, and Moffitt 1998a). While the attrition looks uneven by race and class, the between-group differences are not statistically significant and the weighted data remain representative (Fitzgerald, Gottschalk, and Moffitt 1998a; Fitzgerald, Gottschalk, and Moffitt 1998b). The panel weights in the PSID are designed for analyses that take responses from multiple years.

The PSID contains extensive data on employment and unemployment, though from 1968-1978, this data is only consistently available for the head of household ("head"). As per PSID definitions<sup>31</sup>, the head is the husband or male domestic partner; when there is no eligible man present, there is a female head of household. Though it is a limited measure, I use the parental head of household's job loss status.

My sample contains 3,821 children born into the PSID between 1968 and 1987. In this sample, 1,569 young adults experienced job loss as children. This sample is consistent with the prior research in that examines only head job losses. I also run models limiting the sample to only children who experienced one or more parental job loss spells.

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<sup>31</sup> The PSID continues to use an outdated definition of head of household, where men are the default head of household.

## *Measures*

I use level of education at age 25 as the dependent variable, representing children's "long-term" educational attainment. While an imperfect measure of educational attainment, age 25 is a good age at which to measure educational attainment, as students over the age of 25 are considered "non-traditionally" students and have often exited and reentered education systems. I measure educational attainment based on the highest degree attempted/earned. The categorical measure of educational attainment contains four categories: Less than High School Diploma; High School Diploma or GED; Some College, less than BA<sup>32</sup>; BA or Higher. This measure is the outcome variable for the research questions.

In my models, I control for demographic and other family characteristics. These include child's gender, number of siblings, family race, parents' education at birth, family income quintile at birth and number of years in a single-mother household. The number of years in a single-mother household is a count of the number of years in which the PSID determined "head" was the child's mother. The number of siblings includes all full and half siblings identified by the PSID.

Family race is based on the race of the parents and includes three categories: black, white and other. "Other" includes multiracial families, Hispanic/Latino, Asian, American Indian and Pacific Islander families. While I would prefer to include more categories, there are not enough children in the PSID to do so. This lack of clarity is particularly noTable 3.for children from Hispanic or Asian families, because the PSID began before the sharp increase in Hispanics and Asians in the U.S. population.

The control variables of parental education level at birth and family income quintile at birth control for family socio-economic characteristics at birth. Parental education level is the highest level of education of either parent in the first year parental education was available

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<sup>32</sup> Due to sample size constraints, individuals with associates degrees are included in the "some college" category.

after the child was born. For most children, the data comes from the year after they were born. The categories are the same as for the dependent variable. For the income quintiles at birth, I used data from the IPUMS-CPS and constructed income quintiles for each year; I then constructed family income quintile by grouping family income in the year of birth into the correct CPS-based quintiles (King et al. 2010). The income quintile at birth contains the categories Low Income (bottom 20%), Lower-Middle (21-40%), Middle (41-60%), Upper-Middle (61-80%) and Upper (highest 20%). Even in the weighted sample, the income quintiles are slightly unbalanced.

I use the term “parental job loss” to refer to any situation in which a previously working parent (or parental head of household, depending on the analysis) reports an *involuntary* end of employment. This definition encompasses two primary reasons for job displacement: layoff (generally due to economic conditions, workplace restructuring or business closure) or firing (when an employee is let go due to job performance, behavioral issues or workplace politics).<sup>33</sup> When employees are laid off or fired, they generally have no choice as to whether and when they exit the company. They often have little warning.<sup>34</sup>

Duration of displacement refers to the length of time the parent reported being unemployed. This variable is constructed using self-reported data. Both employed and not employed members of the PSID were asked if they had, in the last year (or two-years in the later samples), changed jobs and why they left their last job. (The questions changed slightly over time.) Based on their responses, respondents were then asked about the duration between jobs or since they became unemployed. The measure I created to identify job loss spells is *only* based on the

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<sup>33</sup> Unfortunately, unless the firm closed, the PSID does not give detail about whether an individual was part of a larger layoff or was fired.

<sup>34</sup> I chose a definition of job loss that excludes time out of work caused by voluntary departures from a job because workers and their families have time to prepare for voluntary separations from work and thus may take steps to minimize the time unemployed (searching for jobs in advance) or may deliberately choose to leave a job for personal reason (family is moving). While interesting, unemployment due to a voluntary departure is outside the scope of this project.

reported reason for leaving the last job. Importantly, the PSID only asked individuals who indicated that they were unemployed (reason for leaving last job and actively looking for work) about the duration of unemployment. Not all individuals who experienced job loss (such as those who were considered to have exited the labor market because they were not actively looking for work) were asked how long they were not working.

To handle this, I created two measures of the duration of parental unemployment, one categorical and one continuous. For both measures of parental unemployment a child experienced, I added the length of all unemployment spells. I also created a dummy measure for no unemployment or unknown duration of unemployment that mainly includes parents who exited the labor force after a job loss. The continuous measure includes the number of weeks of parental unemployment and the dummy for children who experienced a parental job loss but no unemployment. I also created a categorical measure of duration of parental unemployment with five categories: no job loss; job losses to out of the labor force (OLF) or unknown; 1 to 25 weeks of unemployment; 26 to 51 weeks; more than 52 weeks of unemployment.

Finally, I created a categorical variable combining the number and duration of job losses. This variable contains seven categories: no job loss; job losses to out of the labor force (OLF) or unknown; one job loss with less than 26 weeks of unemployment; more than one job loss with less than 26 weeks of total unemployment; one job loss with 26-51 weeks of unemployment; more than one job loss with 26-51 weeks of total unemployment; and more than 52 weeks of total unemployment. This variable is basically an interaction term for the number of job losses and duration of unemployment variables.

### *Methods*

To examine the association between the exposure to parental job loss and children's educational attainment, I estimate models using ordinal logistic regression, which estimates a series of ordered logistic regression models (Long and Freese 2006). To account for the fact that children in the same families have similar family characteristics, I use clustered standard errors.



Educational attainment is ordered such that college graduation is dependent on attending (and completing some) college.

While I ultimately use ordered logistic regression in this paper, I do so after careful investigation of alternatives. Unweighted, my models violate the parallel regression assumption that independent variables do not have the same association with each level of the dependent variable educational attainment. Based on a Brant test, which identifies whether the parallel regression assumption is violated for the unweighted full sample, the parental education and job loss variables violate the parallel regression assumption (Long and Freese 2006). Examining the issue further, I modeled the results using the multinomial logistic regression and generalized ordered logistic regression<sup>35</sup>. Generalized ordered logistic regression is a modification of ordinal logistic regression that estimates independent variables that violate the parallel regression assumption separately for each level of the dependent variable (Williams 2006). I compared the results for the ordinal and generalized ordinal logistic regression models and found that, while the point estimates were slightly different (generally .01-.09), both sets of estimates led to consistent conclusions. For that reason, I present the ordinal logistic regression results for ease of interpretation.

In the discussion below, I consider the point estimates generated by the ordinal logistic regression analyses as marginal effects, a measure of the partial change in the predicted probability of the event, holding all other variables as an average of discrete changes across observations (Bartus 2005; Long 1997). As an alternative to reporting odds ratios, marginal effects provide an estimate which can be interpreted similarly to a probability, net of the control variable (Mood 2010). Marginal effects coefficients are easier to interpret and allow for comparison of point estimates across models. The reported marginal effects were estimated using the margins command with the dydx option in Stata 13 (Williams 2012).

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<sup>35</sup> See Tables A6 and A7 for the full Generalized Ordered Logit Models.

To evaluate model fit for the ordinal logistic regression models, I present the chi-squared, BIC' and two pseudo-r-squared values. I use the BIC', calculated using fitstat (Long and Freese 2006),<sup>36</sup> to compare nested models (to models of controls only) to those that include the controls and exposure variable(s) and models with only the exposure variable(s) to models that also include the controls. The comparisons clarify whether adding variables improves model fit (creates a better model for explaining educational attainment), regardless of the significance of the variables (Raftery 1995).

## RESULTS

### *Exposure to Parental Job Loss*

I begin by considering the research questions: how does the number of parental job loss spells a child experiences moderate the impact of parental job loss on children's educational attainment? What about the duration (length) of unemployment spells? Tables 1 and 2 present the descriptive statistics of the variables I use to examine these two questions.

On average, children in the PSID who experienced parental job loss attended one year less of school than their peers (Table 3.1). Additionally, a larger proportion of children who experienced parental job loss did not graduate high school (11%) or graduated high school but did not attend college (36%) than did young adults who did not experience parental job loss during childhood (6% and 21%, respectively). Thus, more young adults who did not experience parental job loss in childhood earn a BA or higher (42%) than their peers (21%). As noted earlier, a similar percentage of both groups attended but did not complete college, which serves as the base/reference category in the models.

Of young adults who had a parental head of household lose a job during childhood, over half experienced this event only once. Fourteen percent experienced three or more parental job

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<sup>36</sup> While I reference the text from the second edition of *Regression Models for Categorical Dependent Variables* using Stata, published 2006, I use the most recent version of *spost* (*spost13*, the add-on for *stata* 13), by the same authors, for the analyses presented here.

loss spells. On average, the children in the PSID experienced to 1.7 spells, with a standard deviation of one spell.

As mentioned earlier, measuring duration of parental unemployment is tricky, as there is not full information on duration for all parental job losses (parents may leave the labor force after a job loss).<sup>37</sup> Adding the length of all parental unemployment spells together, including the 24% of sample whose parents left the labor force (or had an unknown length of unemployment) counted as 0 weeks, the mean length of exposure was 18 weeks, with a standard deviation of 23. Alternately, for the young adults with information on the combined duration of parental unemployment spells, the average duration was 24 weeks with a standard deviation of 23. Half of the sample who experienced parental job loss did so for under 26 weeks.

Turning to the controls, I find that children who experienced at least one parental job loss came from less socioeconomically advantaged families (Table 3.2). Sixty-four percent of young adults who experienced at least one parental job loss did not have a parent who attended college, compared to 41% of those who did not experience parental job loss. One-fifth of young adults who experienced at least one parental job loss had parents who did not complete high school, compared to 10% of their peers. On average, children who experienced parental job loss spent almost four years living in single-mother households, compared to slightly over two years for those who did not experience a parental job loss.

Approximately 16% of the sample comes from black families; 17% of the children who experienced parental job loss come from black families. Children who experience parental job loss come from slightly larger families, by .1 child--a small and practically impossible, but statistically significant difference.

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<sup>37</sup> This variable is not a proxy for which parent lost his or her job. For example, approximately 28% of father's and 35% of mothers exited the labor market (were not officially unemployed) after their first job loss. Some of these are parents who exited the job market on purpose; others were employed quickly after losing their jobs, may not have looked for work, taken time off, or otherwise answered questions such that they were classified as out of the labor force and not unemployed.

### *Number of Parental Job Losses*

I start by examining educational attainment as predicted by ever experiencing a parental job loss (Table 3.3, top panel). As expected, the probability that children who experienced three or more job losses did not complete high school or ended their education after graduating high school was higher than for those who did not have a parent lose a job.

For the number of parental job losses, the comparison group is children who experienced one job loss. Consistent with the findings for the dichotomous measure, the children who did not have a parent lose a job were, net of controls, 2.3% less likely to drop out of high school and 4.2% less likely to end their education after graduating high school. Those who did not experience a parental loss were 6.5% more likely to graduate college than children who experienced one job loss, net of controls. Comparing to children who experienced one parental job loss to those who experienced two parental job losses, I found no significant difference in educational attainment, net of controls. The probability that children who experienced three or more job losses did not complete high school (3.7%) or ended their education after graduating high school (4.7%) was higher than for those who experienced only one job loss. The group with most job losses also had a lower probability of graduating college (7.1%). Thus, the children who experienced the most job losses had the lowest educational outcomes, net of controls.

### *Combined Length of Parental Unemployment Spells*

First, I examine parental unemployment spells as a continuous, linear variable of the number of weeks between jobs, with a dummy variable indicating whether a parental job loss did not lead to an unemployment spell (Table 3.3, bottom panel). For each week of parental unemployment experienced in childhood, the probability of not graduating high school or graduating high school but not attending college increased by 0.1, and the probability of graduating college declined by 0.2, net of controls. Thus, for each week of parental unemployment experienced by a child, their probability of graduating college declined a small amount; their probability of not graduating high school or ending their education with a high school degree increased by an even smaller amount.

Categorically, the results are similar to the number of job losses. The comparison group is children who had a parent lose a job, but leave the labor force (a change *not* considered an unemployment spell). Children who did not experience a parental job loss had lower probabilities of high school dropout (2.0) and ending their education with a high school degree (3.7) than children who experienced a parental job loss with no unemployment spell (Table 3.3). The group with no parental job losses had a higher probability (5.7) of completing a bachelor's degree, net of controls. There was no significant difference in the educational attainment of children who experienced a less than 26 weeks or 26-51 weeks of parental unemployment as compared to those who had a parental job loss with no unemployment spell. Children who had a parent unemployed for a year or more had a noticeably lower probability (11.9) of graduating from college with a BA and a higher probability of dropping out of high school (7.0) or graduating high school and not attending college (7.9). For the group who experienced the longest unemployment spell(s), average educational attainment at 25 was notably lower than for those who had a parent lose a job but not have an unemployment spell.

*Exposure: Number and Duration of Parental Job Losses*

Turning to my final research question, I look at the number of job losses and the duration of spells together (Table 3.4). As with the prior duration variable, the omitted category includes children who had a parent lose a job without experiencing an unemployment spell. The results from the categorical variable combining the number of parental job losses and the length of those job losses are relatively consistent with those above.

Only one group of children who experienced a job loss—those who experienced two or more job losses for 26-52 weeks of parental unemployment—had significantly different educational outcomes. Specifically, those who experienced two or more job losses for 26-52 weeks of parental unemployment were 5.4% more likely to drop out of high school and 6.7% more likely to earn a high school degree and 9.9% less likely to complete a bachelor's degree or higher than children who experienced a job loss but not unemployment. Interestingly, the group who expe-

rienced 52 weeks or more of parental unemployment did not have significantly different educational outcomes than the reference group.

### *Comparing Types of Exposure*

Table 3.5 presents the fit statistics for my models: controls only, number of job losses, cumulative duration of unemployment (continuous and categorical), number and duration together (categorical and interaction terms). The fit statistics summarize the relative efficacy of nested models and allow for comparisons across models.

Including a dummy variable identifying if the child ever experienced a parental job loss improves model fit compared to the controls-only model. All but one model, the continuous measure of weeks of unemployment, have more negative BIC' values compared to the controls-only model than the dichotomous measure of ever experiencing parental job loss. (Results of the full models are in Table 3.A7; Table 3.6 contains the fit statistics for all of the models.) Additionally, the model with the continuous measure of weeks of parental unemployment has lower pseudo-r-squared values. Thus, with the exception of the continuous measure of weeks of parental unemployment, all the models measuring exposure to parental job loss provide more information about children's educational attainment than a dichotomous measure of job loss. Context improves modeling.

Comparing the model with number of job losses to the model with the categorical duration of unemployment provides some evidence that the number of parental job losses is a better measure than the duration of parental unemployment. Considering the number of job losses along with the controls improves the BIC' compared to models containing just the controls and the categorical duration model. The pseudo-R-squared values are the same for both. A categorical combination of number of job losses and duration of spells has the most negative BIC' compared to the controls-only model. As before, the pseudo-R-squared show little improvement. Only the McKelvey & Zavoina R-squared is improved, and even then by only 0.001.

Model fit highlights the complexity of exposure to parental job loss. In attempting to understand the educational attainment of young adults who experienced parental job loss, both

the number and duration of unemployment improve model fit, though they yield little *predictive* insight (in terms of point estimates).

## DISCUSSION AND CONCLUSION

In this study, I find evidence that exposure to parental job loss in childhood is associated with lower educational attainment at age 25. Experiencing three or more parental job losses during childhood is associated with a lower likelihood of completing college and a slightly higher likelihood of graduating high school and not attending college and of not completing high school at all. Comparing different durations of parental unemployment to those who experienced a parental job loss but no unemployment spell (net of controls) predicts a decreased likelihood of earning a BA or higher and a higher likelihood of an individual ending her or his education after high school for those who had an unemployed parent for a year or more. Together, the results are slightly different, with those who have a parent unemployed for six months to a year over two or more job losses having a significantly different outcome than the omitted group. High levels of exposure to parental job loss differentiate the educational outcomes of children from others who experience parental job loss(es).

My findings that the two exposure measures (particularly the duration measure) may improve model fit but not yield many statistically significant estimates could be explained by sample size. While my sample has 3,800 children, it may not include enough who have experienced more than 26 weeks of parental unemployment or more than two job losses. The results indicate this is likely an issue; future study on the question of exposure to job loss can lead to more robust findings.

Other important limitations include that these results only reflect the labor market experiences of the parental head of household (usually the father or stepfather) and do not account for dual-earner households. Further, the PSID sample reflects the racial/ethnic the composition of the United States in 1968. It does not include enough Hispanic/Latino, Asian American or immigrant families to reflect those children's experiences with parental job loss. While

the PSID provides detailed family history information, for this cohort there, is limited data on children's characteristics prior to the parental job loss.

Though outside the scope of this paper, I foresee following several additional considerations in future research on parental job loss and children's educational attainment. First, more quantitative and qualitative research might look at measures of exposure to parental job loss on short- and long-term educational outcomes. Second, more research on potential moderators of the relationship between parental job loss and educational attainment would add to knowledge about which children are more or less impacted by unemployment spells.



**Table 3.1. Descriptive Statistics, Educational Attainment and Exposure to Parental Job Loss (Key Predictors)**

	No Job Loss	Job Loss	T/Z Test	All
Level of Education, Age 25				
No HS Diploma	6.3	11.2	***	8.2
<i>HS Grad (Diploma or GED)</i>	20.5	36.4	***	26.7
Attended Some College	30.9	31.1		31.0
BA or Higher	42.4	21.3	***	34.1
Years of Education, Age 25				
mean	14.0	13.1	***	13.6
sd	1.9	1.7		1.9
Total Number of Job Losses				
0	100.0	0.0		60.7
1	0.0	57.7		22.7
2	0.0	28.6		11.2
3	0.0	8.4		3.3
4	0.0	2.7		1.1
5 or more	0.0	2.7		1.1
mean	0.0	1.7		0.6
sd	0.0	1.0		1.0
Total Weeks of Job Losses				
No Job Loss	100.0	0.0		60.7
Job Loss to OLF	0.0	24.1		9.5
Under 26 Weeks	0.0	49.1		19.3
26-51 Weeks	0.0	18.0		7.1
52 weeks or more	0.0	8.9		3.5
mean	0.0	18.4		7.2
sd	0.0	22.6		16.8
mean (weeks of jl known)	0.0	24.2		--
sd (weeks of jl known)	0.0	23.0		--
Length of Longest Job Loss				
mean	0.0	13.8		7.2
sd	0.0	14.4		12.5
Weighted N	2319	1502		3821
Unweighted N	2252	1569		3821

Notes: Weighted proportions and means of individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Reference categories are denoted in italics. The t/z column compares the means/ proportions of those who experienced mother's, father's or both parent's displacement with those who did not.

**Table 2. Descriptive Statistics, Predictors of Educational Attainment by Parental Job Loss (Control**

	<u>No Job Loss</u>	<u>Job Loss</u>	<u>T/Z</u> <u>Test</u>	<u>All</u>
Parent Education Level				
No HS Diploma	9.5	20.9	***	14.0
<i>HS Grad (Diploma or GED)</i>	31.2	43.1	***	35.9
Attended Some College	25.4	23.1	**	24.5
BA or Higher	33.9	12.9	***	25.6
Gender				
<i>Women</i>	47.5	49.9		48.4
Men	52.5	50.1		51.6
Family Race				
<i>White</i>	80.6	75.3	*	78.5
Black	14.4	17.3	***	15.6
All Other	5.0	7.4	***	6.0
Years in Single Mother Household				
mean	2.4	3.7		2.9
sd	4.6	5.3		4.9
Number of Siblings				
mean	1.9	2.0	**	2.0
sd	1.2	1.2		1.2
Weighted N	2319	1502		3821
Unweighted N	2252	1569		3821

Notes: Weighted proportions and means of individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Reference categories are denoted in italics. The t/z column compares the means/ proportions of those who experienced mother's, father's or both parent's displacement with those who did not.

Table 3.3. Ordinal Logistic Regression Results of Highest Level of Education at Age 25 by Number and Length of Parental Job Losses, Presented as Marginal Effects (N=3821)

	Ever had a Parental Job Loss				Number of Parental Job Losses			
	<u>No HS Degree</u>	<u>HS Graduate</u>	<u>Some College</u>	<u>BA or Higher</u>	<u>No HS Degree</u>	<u>HS Graduate</u>	<u>Some College</u>	<u>BA or Higher</u>
Had Head Job Loss [None]	0.031*** [0.007]	0.053*** [0.012]	-0.002 [0.002]	-0.082*** [0.017]				
Number of Head Job Losses [One]								
None					-0.023** [0.007]	-0.042*** [0.013]	0.000 [0.002]	0.065*** [0.019]
Two					0.013 [0.012]	0.019 [0.017]	-0.004 [0.004]	-0.029 [0.026]
Three or More					0.037* [0.019]	0.047* [0.021]	-0.014 [0.009]	-0.071* [0.031]
	Duration of Parental Unemployment (Continuous)				Duration of Parental Unemployment (Categorical)			
	<u>No HS Degree</u>	<u>HS Graduate</u>	<u>Some College</u>	<u>BA or Higher</u>	<u>No HS Degree</u>	<u>HS Graduate</u>	<u>Some College</u>	<u>BA or Higher</u>
Job Loss to OLF (no unemployment)	0.015 [0.010]	0.024 [0.017]	0.000 [0.001]	-0.039 [0.027]				
Weeks of Unemployment	0.001*** [0.000]	0.001*** [0.000]	0.000 [0.000]	-0.002*** [0.001]				
Length of Unemployment [Job Loss, no unemployment]								
None					-0.020* [0.010]	-0.037* [0.017]	0.000 [0.002]	0.057* [0.026]
Less than 6 months					0.01 [0.012]	0.016 [0.018]	-0.002 [0.003]	-0.023 [0.027]
6 months to a year					0.028 [0.019]	0.04 [0.025]	-0.009 [0.008]	-0.059 [0.038]
Over a Year					0.070* [0.035]	0.079** [0.031]	-0.03 [0.021]	-0.119* [0.046]

Notes: All models include controls. 3821 individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Clustered standard errors in brackets, based on indicating family of origin (2126 families). Full Models in Tables 3.A2 and 3.A3. Reference categories are denoted in brackets. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 3.4. Ordinal Logistic Regression Results of Highest Level of Education at Age 25, P

	(Continuous)			
	<u>No HS Degree</u>	<u>Diploma or GED</u>	<u>Some College</u>	<u>BA or Higher</u>
Number and Duration Combined [Job Loss, no unemployment]				
No Job Loss	-0.020*	-0.037*	0.000	0.057*
	[0.010]	[0.017]	[0.002]	[0.026]
1 Job Loss, <26 Weeks	0.004	0.007	-0.001	-0.011
	[0.013]	[0.020]	[0.002]	[0.031]
More than 1, <26 Weeks	0.014	0.021	-0.003	-0.032
	[0.014]	[0.022]	[0.004]	[0.032]
1 Job Loss, 26-51 Weeks	0.011	0.016	-0.002	-0.025
	[0.028]	[0.041]	[0.008]	[0.061]
More than 1, 26-51 Weeks	0.054*	0.067**	-0.022	-0.099**
	[0.022]	[0.024]	[0.012]	[0.036]
Over a year	0.02	0.029	-0.006	-0.044
	[0.024]	[0.033]	[0.009]	[0.048]

Notes: All models include controls. 3821 individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Clustered standard errors in brackets, based on indicating family of origin (2126 families). Full Models in Table 3.A3. Reference categories are denoted in brackets. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 5. Fit Statistics for the Ordinal Logistic Regression Results of Highest Level of Education at Age 25 (N=3821)

	<u>Controls Only</u>	<u>Ever had a Job</u> <u>Loss</u>	<u>Number of Job</u> <u>Losses</u>	<u>Duration</u> <u>(continous)</u>	<u>Duration</u> <u>(Categorical)</u>	<u>Both</u> <u>(Categorical)</u>	<u>Both</u> <u>(Interaction)</u>
Degrees of Freedom	12	13	15	14	16	18	19
Log-Likelihood	-101350	-100787	-100679	-100967	-100685	-100623	-100642
Deviance	202700	201575	201358	201933	201370	201246	201283
chi2	551.2	611.4	612.1	567.6	625.5	618.2	.
Psuedo-R-Squared	0.116	0.121	0.122	0.119	0.122	0.122	0.122
McKelvey & Zavoina R-s	0.270	0.280	0.282	0.278	0.282	0.283	0.282
BIC'	-26460	-27576	-27777	-27210	-27756	-27864	.
Change in BIC'		-1116	-1317	-750	-1296	-1404	.

Notes: Ordinal logistic regression models of the educational attainment of 3821 individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. For the full results see Table 3.A4. These are weighted samples using listwise deletion. Confidence intervals in brackets, based on clustered standard errors indicating family of origin (2126 families). The psuedo-R-squared values presented are within .001 of the McFadden and Adjusted McFadden R-squared values for each model. All chi-square values are significant. Reference categories are denoted in brackets. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

**Table A1. Marginal Effects of the Ordinal Logistic Regression Models of Controls Only**

	<u>Did not</u>	<u>HS Diploma</u>	<u>Some</u>	
	<u>graduate high</u>	<u>or GED</u>	<u>College, no</u>	
	<u>school</u>		<u>BA</u>	<u>BA or Higher</u>
Gender [Women]				
Men	0.031***	0.051***	-0.001	-0.082***
	[0.006]	[0.009]	[0.002]	[0.014]
Family Race [White]				
Black/African-American	0.003	0.005	0.000	-0.008
	[0.009]	[0.015]	[0.000]	[0.024]
All Other	0.025	0.036	-0.004	-0.057
	[0.016]	[0.021]	[0.004]	[0.033]
Parent's Education at Birth [HS Graduate]				
Less Than HS Diploma	0.092***	0.104***	-0.084***	-0.112***
	[0.020]	[0.016]	[0.018]	[0.018]
Some College	-0.045***	-0.114***	0.010	0.149***
	[0.007]	[0.018]	[0.006]	[0.023]
BA or Higher	-0.068***	-0.208***	-0.049***	0.324***
	[0.007]	[0.018]	[0.013]	[0.029]
Family Income Quintile at Birth [Middle 41%-60%]				
Low Income (Lowest 20%)	0.011	0.018	-0.003	-0.026
	[0.010]	[0.017]	[0.003]	[0.024]
Lower-Middle (21-40%)	0.006	0.010	-0.001	-0.015
	[0.008]	[0.014]	[0.002]	[0.02]
Upper Middle (61-80%)	-0.025***	-0.050***	-0.003	0.077***
	[0.007]	[0.015]	[0.003]	[0.023]
Upper (Highest 20%)	-0.035***	-0.075***	-0.009	0.119***
	[0.008]	[0.018]	[0.006]	[0.029]
Number of siblings	0.006*	0.010*	0.000	-0.015*
	[0.003]	[0.005]	[0.000]	[0.008]
Years w/ Single Mother	0.003***	0.005***	0.000	-0.009***
	[0.001]	[0.001]	[0.000]	[0.002]

Notes: Ordinal logistic regression models, presented as marginal effects, of the educational attainment of 3821 individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Standard Errors in brackets, based on clustered standard errors indicating family of origin (2126 families). . Reference categories are denoted in brackets. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table A2. Ordinal Logistic Regression Results of Highest Level of Education at Age 25 by Number of Parental Job Losses, Presented as Marginal Effects (N=3821)

	<u>Ever had a Parental Job Loss</u>				<u>Number of Parental Job Losses</u>			
	<u>No HS Degree</u>	<u>HS Diploma or GED</u>	<u>Some College</u>	<u>BA or Higher</u>	<u>No HS Degree</u>	<u>HS Diploma or GED</u>	<u>Some College</u>	<u>BA or Higher</u>
Gender [Women]								
Men	0.032*** [0.006]	0.052*** [0.009]	-0.001 [0.002]	-0.083*** [0.014]	0.032*** [0.006]	0.052*** [0.009]	0.000 [0.002]	-0.084*** [0.014]
Family Race [White]								
Black/African-American	0.007 [0.009]	0.011 [0.015]	0.000 [0.001]	-0.017 [0.023]	0.006 [0.009]	0.009 [0.015]	0.000 [0.001]	-0.015 [0.023]
All Other	0.023 [0.016]	0.034 [0.021]	-0.003 [0.004]	-0.054 [0.033]	0.020 [0.016]	0.031 [0.021]	-0.002 [0.004]	-0.049 [0.033]
Parent's Education at Birth [HS Graduate]								
Less Than HS Diploma	0.085*** [0.018]	0.100*** [0.016]	-0.075*** [0.017]	-0.110*** [0.018]	0.085*** [0.018]	0.101*** [0.016]	-0.075*** [0.017]	-0.111*** [0.018]
Some College	-0.042*** [0.007]	-0.107*** [0.017]	0.008 [0.005]	0.140*** [0.023]	-0.042*** [0.007]	-0.105*** [0.017]	0.008 [0.005]	0.138*** [0.023]
BA or Higher	-0.065*** [0.007]	-0.195*** [0.018]	-0.043*** [0.012]	0.303*** [0.029]	-0.064*** [0.007]	-0.194*** [0.018]	-0.044*** [0.012]	0.303*** [0.029]
Family Income Quintile at Birth [Middle 41%-60%]								
Low Income (Lowest 20%)	0.007 [0.010]	0.011 [0.016]	-0.001 [0.002]	-0.017 [0.024]	0.005 [0.010]	0.009 [0.016]	-0.001 [0.002]	-0.013 [0.024]
Lower-Middle (21-40%)	0.003 [0.008]	0.006 [0.013]	-0.001 [0.002]	-0.008 [0.020]	0.001 [0.008]	0.002 [0.014]	0.000 [0.001]	-0.003 [0.020]
Upper Middle (61-80%)	-0.024** [0.007]	-0.046** [0.015]	-0.002 [0.003]	0.072** [0.023]	-0.024** [0.008]	-0.046** [0.015]	-0.002 [0.003]	0.072** [0.023]
Upper (Highest 20%)	-0.033*** [0.008]	-0.067*** [0.017]	-0.007 [0.005]	0.107*** [0.028]	-0.033*** [0.008]	-0.067*** [0.017]	-0.007 [0.005]	0.106*** [0.028]
Number of siblings	0.006* [0.003]	0.009* [0.005]	0.000 [0.000]	-0.015* [0.007]	0.006* [0.003]	0.009* [0.005]	0.000 [0.000]	-0.015* [0.007]
Years w/ Single Mother	0.003*** [0.001]	0.005*** [0.001]	0.000 [0.000]	-0.008*** [0.002]	0.003*** [0.001]	0.005*** [0.001]	0.000 [0.000]	-0.008*** [0.002]
Had Head Job Loss [None]	0.031*** [0.007]	0.053*** [0.012]	-0.002 [0.002]	-0.082*** [0.017]				

Table A3. Ordinal Logistic Regression Results of Highest Level of Education at Age 25, Presented as Marginal Effects for the Duration Measures of Parental Job Loss (N=3821)

	(Continuous)				(Categorical)			
	No HS Degree	HS Diploma or GED	Some College	BA or Higher	No HS Degree	HS Diploma or GED	Some College	BA or Higher
Gender [Women]								
Men	0.031*** [0.006]	0.052*** [0.009]	0.000 [0.002]	-0.083*** [0.014]	0.032*** [0.006]	0.052*** [0.009]	0.000 [0.002]	-0.083*** [0.014]
Family Race [White]								
Black/African-American	0.004 [0.009]	0.006 [0.015]	0.000 [0.000]	-0.009 [0.024]	0.006 [0.009]	0.009 [0.015]	0.000 [0.001]	-0.015 [0.024]
All Other	0.024 [0.016]	0.036 [0.021]	-0.003 [0.004]	-0.056 [0.033]	0.023 [0.016]	0.034 [0.021]	-0.003 [0.004]	-0.054 [0.033]
Parent's Education at Birth [HS Graduate]								
Less Than HS Diploma	0.083*** [0.018]	0.099*** [0.017]	-0.075*** [0.017]	-0.107*** [0.018]	0.082*** [0.018]	0.099*** [0.017]	-0.073*** [0.017]	-0.108*** [0.018]
Some College	-0.043*** [0.007]	-0.108*** [0.017]	0.009 [0.006]	0.141*** [0.023]	-0.042*** [0.007]	-0.106*** [0.017]	0.008 [0.005]	0.139*** [0.023]
BA or Higher	-0.066*** [0.007]	-0.200*** [0.018]	-0.046*** [0.012]	0.312*** [0.029]	-0.065*** [0.007]	-0.195*** [0.018]	-0.043*** [0.012]	0.303*** [0.029]
Family Income Quintile at Birth [Middle 41%-60%]								
Low Income (Lowest 20%)	0.006 [0.010]	0.011 [0.016]	-0.001 [0.002]	-0.016 [0.024]	0.005 [0.010]	0.009 [0.016]	-0.001 [0.002]	-0.013 [0.024]
Lower-Middle (21-40%)	0.003 [0.008]	0.006 [0.014]	-0.001 [0.002]	-0.009 [0.020]	0.002 [0.008]	0.004 [0.014]	0.000 [0.001]	-0.006 [0.020]
Upper Middle (61-80%)	-0.025*** [0.007]	-0.048** [0.015]	-0.002 [0.003]	0.076** [0.023]	-0.024** [0.008]	-0.046** [0.015]	-0.002 [0.003]	0.073** [0.023]
Upper (Highest 20%)	-0.034*** [0.008]	-0.071*** [0.017]	-0.008 [0.005]	0.112*** [0.028]	-0.033*** [0.008]	-0.067*** [0.017]	-0.007 [0.005]	0.106*** [0.028]
Number of siblings	0.006* [0.003]	0.009* [0.005]	0.000 [0.000]	-0.015* [0.007]	0.006* [0.003]	0.010* [0.005]	0.000 [0.000]	-0.015* [0.007]
Years w/ Single Mother	0.003*** [0.001]	0.005*** [0.001]	0.000 [0.000]	-0.008*** [0.002]	0.003*** [0.001]	0.005*** [0.001]	0.000 [0.000]	-0.008*** [0.002]



Job Loss to OLF (no unemployment)	0.015	0.024	0.000	-0.039				
	[0.010]	[0.017]	[0.001]	[0.027]				
Weeks of Unemployment	0.001***	0.001***	0.000	-0.002***				
	[0.000]	[0.000]	[0.000]	[0.001]				
Legnth of Unemployment [Job Loss, no unemployment]								
None					-0.020*	-0.037*	0.000	0.057*
					[0.010]	[0.017]	[0.002]	[0.026]
Less than 6 months					0.01	0.016	-0.002	-0.023
					[0.012]	[0.018]	[0.003]	[0.027]
6 months to a year					0.028	0.04	-0.009	-0.059
					[0.019]	[0.025]	[0.008]	[0.038]
Over a Year					0.070*	0.079**	-0.03	-0.119*
					[0.035]	[0.031]	[0.021]	[0.046]

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Notes: Ordinal logistic regression models, presented as odds-ratio, of the educational attainment of 3821 individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Confidence intervals in brackets, based on clustered standard errors indicating family of origin (2126 families). The psuedo-R-squared values presented are within .001 of the McFadden and Adjusted McFadden R-squared values for each model. All chi-square values are significant. Reference categories are denoted in brackets. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table A4. Ordinal Logistic Regression Results of Highest Level of Education at Age 25, Presented as Marginal Effects for the Combined Measure of Exposure (N=3821)

	HS Diploma or			
	No HS Degree	GED	Some College	BA or Higher
Gender [Women]				
Men	0.032*** [0.006]	0.052*** [0.009]	0.000 [0.002]	-0.083*** [0.014]
Family Race [White]				
Black/African-American	0.006 [0.009]	0.009 [0.015]	0.000 [0.001]	-0.014 [0.023]
All Other	0.021 [0.016]	0.032 [0.021]	-0.003 [0.004]	-0.050 [0.033]
Parent's Education at Birth [HS Graduate]				
Less Than HS Diploma	0.085*** [0.018]	0.101*** [0.017]	-0.075*** [0.017]	-0.111*** [0.018]
Some College	-0.041*** [0.007]	-0.104*** [0.017]	0.008 [0.005]	0.137*** [0.023]
BA or Higher	-0.064*** [0.007]	-0.194*** [0.018]	-0.044*** [0.012]	0.302*** [0.028]
Family Income Quintile at Birth [Middle 41%-60%]				
Low Income (Lowest 20%)	0.005 [0.010]	0.008 [0.016]	-0.001 [0.002]	-0.012 [0.024]
Lower-Middle (21-40%)	0.001 [0.008]	0.002 [0.014]	0.000 [0.001]	-0.003 [0.02]
Upper Middle (61-80%)	-0.024** [0.008]	-0.046** [0.015]	-0.002 [0.003]	0.072** [0.023]
Upper (Highest 20%)	-0.033*** [0.008]	-0.067*** [0.017]	-0.007 [0.005]	0.106*** [0.028]
Number of siblings	0.006* [0.003]	0.009* [0.005]	0.000 [0.000]	-0.015* [0.007]
Years w/ Single Mother	0.003*** [0.001]	0.005*** [0.001]	0.000 [0.000]	-0.008*** [0.002]
Number and Duration Combined [Job Loss, no unemployment]				
No Job Loss	-0.020* [0.010]	-0.037* [0.017]	0.000 [0.002]	0.057* [0.026]
1 Job Loss, <26 Weeks	0.004 [0.013]	0.007 [0.020]	-0.001 [0.002]	-0.011 [0.031]
More than 1, <26 Weeks	0.014 [0.014]	0.021 [0.022]	-0.003 [0.004]	-0.032 [0.032]
1 Job Loss, 26-51 Weeks	0.011 [0.028]	0.016 [0.041]	-0.002 [0.008]	-0.025 [0.061]
More than 1, 26-51 Weeks	0.054* [0.022]	0.067** [0.024]	-0.022 [0.012]	-0.099** [0.036]
Over a year	0.02 [0.024]	0.029 [0.033]	-0.006 [0.009]	-0.044 [0.048]

Notes: Ordinal logistic regression models, presented as marginal effects, of the educational attainment of 3821 individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Clustered standard errors in brackets (family of origin, 2126 families). Reference categories are denoted in brackets. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table A5. Ordinal Logistic Regression Results of Highest Level of Education at Age 25, Presented in Odds Ratios (N=3821)

	<u>Controls Only</u>	<u>Ever had a Job</u> <u>Loss</u>	<u>Number of Job</u> <u>Losses</u>	<u>Duration</u> <u>(continous)</u>	<u>Duration</u> <u>(Categorical)</u>	<u>Both</u> <u>(Categorical)</u>	<u>Both</u> <u>(Interaction)</u>
Gender [Women]							
Men	0.636*** [0.543-0.744]	0.628*** [0.537-0.735]	0.626*** [0.535-0.732]	0.631*** [0.539-0.738]	0.629*** [0.538-0.735]	0.628*** [0.537-0.734]	0.625*** [0.534-0.731]
Family Race [White]							
Black/African-American	0.957 [0.737-1.242]	0.909 [0.704-1.175]	0.919 [0.712-1.186]	0.946 [0.728-1.228]	0.92 [0.711-1.191]	0.922 [0.714-1.191]	0.924 [0.716-1.193]
All Other	0.723 [0.496-1.053]	0.735 [0.504-1.072]	0.758 [0.517-1.111]	0.727 [0.498-1.062]	0.735 [0.502-1.076]	0.75 [0.512-1.099]	0.756 [0.517-1.106]
Parent's Education at Birth [HS Graduate]							
Less Than HS Diploma	0.431*** [0.323-0.575]	0.447*** [0.336-0.593]	0.445*** [0.335-0.591]	0.455*** [0.342-0.606]	0.455*** [0.343-0.604]	0.444*** [0.334-0.590]	0.444*** [0.334-0.590]
Some College	2.121*** [1.698-2.651]	2.044*** [1.636-2.554]	2.026*** [1.622-2.531]	2.057*** [1.646-2.571]	2.036*** [1.630-2.544]	2.012*** [1.610-2.515]	2.017*** [1.615-2.520]
BA or Higher	4.505*** [3.478-5.835]	4.160*** [3.217-5.381]	4.154*** [3.214-5.370]	4.319*** [3.340-5.586]	4.162*** [3.216-5.386]	4.149*** [3.215-5.355]	4.151*** [3.213-5.363]
Family Income Quintile at Birth [Middle 41%-60%]							
Low Income (Lowest 20%)	0.863 [0.661-1.127]	0.91 [0.699-1.185]	0.93 [0.713-1.215]	0.917 [0.704-1.196]	0.93 [0.714-1.211]	0.933 [0.716-1.217]	0.941 [0.722-1.228]
Lower-Middle (21-40%)	0.923 [0.740-1.150]	0.955 [0.766-1.190]	0.982 [0.786-1.228]	0.956 [0.766-1.194]	0.967 [0.774-1.209]	0.982 [0.786-1.228]	0.988 [0.790-1.235]
Upper Middle (61-80%)	1.497*** [1.182-1.895]	1.462** [1.157-1.847]	1.466** [1.160-1.853]	1.493*** [1.180-1.890]	1.470** [1.162-1.859]	1.471** [1.162-1.861]	1.471** [1.163-1.861]
Upper (Highest 20%)	1.837*** [1.390-2.427]	1.748*** [1.329-2.300]	1.743*** [1.324-2.296]	1.796*** [1.363-2.366]	1.744*** [1.325-2.297]	1.745*** [1.325-2.299]	1.744*** [1.324-2.298]
Number of siblings	0.919* [0.847-0.998]	0.920* [0.849-0.998]	0.919* [0.847-0.996]	0.920* [0.848-0.998]	0.918* [0.846-0.995]	0.919* [0.847-0.996]	0.917* [0.845-0.994]
Years w/ Single Mother	0.953*** [0.933-0.973]	0.955*** [0.935-0.975]	0.954*** [0.934-0.975]	0.953*** [0.933-0.973]	0.956*** [0.936-0.976]	0.955*** [0.935-0.975]	0.955*** [0.935-0.976]

HadHead Job Loss [None]	0.634*** [0.529-0.761]		
Number of Head Job Losses [One]			
None	1.427*** [1.161-1.755]		1.439* [1.075-1.926]
Two	0.845 [0.628-1.136]		0.987 [0.632-1.542]
Three or More	0.651* [0.440-0.962]		0.576 [0.297-1.117]
Job Loss to OLF (no unemployment)		0.806 [0.599-1.084]	1.057 [0.733-1.524]
Weeks of Unemployment		0.989*** [0.984-0.995]	0.999 [0.982-1.016]
Legnth of Unemployment [Job Loss, no unemployment]			
None		1.365* [1.031-1.807]	
Less than 6 months		0.875 [0.645-1.187]	
6 months to a year		0.705 [0.452-1.100]	
Over a Year		0.472* [0.250-0.890]	
Number and Duration Combined [Job Loss, no unemployment]			
No Job Loss			1.364* [1.029-1.806]
1 Job Loss, <26 Weeks			0.941 [0.668-1.324]
More than 1, <26 Weeks			0.833 [0.577-1.203]
1 Job Loss, 26-51 Weeks			0.869 [0.435-1.736]
More than 1,26-51 Weeks			0.541** [0.344-0.850]
Over a year			0.774 [0.440-1.363]

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Interaction Terms							
No Job Loss							0.966 [0.932-1.002]
2 Job Losses and Weeks Unemployed							0.994 [0.974-1.015]
3 or more Job Losses and Weeks Unemployed							1.004 [0.983-1.025]
Cut Points							
1st	0.057*** [0.042-0.078]	0.046*** [0.033-0.063]	0.065*** [0.046-0.091]	0.051*** [0.037-0.070]	0.062*** [0.042-0.091]	0.062*** [0.042-0.091]	0.065*** [0.043-0.098]
2nd	0.470*** [0.356-0.619]	0.379*** [0.286-0.503]	0.541*** [0.397-0.736]	0.426*** [0.322-0.563]	0.521*** [0.362-0.750]	0.519*** [0.361-0.747]	0.545** [0.371-0.801]
Third	2.352*** [1.770-3.125]	1.932*** [1.449-2.576]	2.767*** [2.013-3.804]	2.154*** [1.619-2.865]	2.658*** [1.827-3.867]	2.657*** [1.828-3.863]	2.790*** [1.885-4.131]
N_clust	2126	2126	2126	2126	2126	2126	2126
df_m	12	13	15	14	16	17	19
Log-Likelihood	-101350	-100787	-100679	-100967	-100685	-100654	-100642
Deviance	202700	201575	201358	201933	201370	201309	201283
chi2	551.2	611.4	612.1	567.6	625.5	611.3	.
Pseudo-R-Squared	0.116	0.121	0.122	0.119	0.122	0.122	0.122
McKelvey & Zavoina R-squared	0.270	0.280	0.282	0.278	0.282	0.282	0.282
BIC'	-26460	-27576	-27777	-27210	-27756	-27864	.
Change in BIC'		-1116	-1317	-750	-1296	-1404	

Notes: Ordinal logistic regression models, presented as odds-ratio, of the educational attainment of 3821 individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Confidence intervals in brackets, based on clustered standard errors indicating family of origin (2126 families). The pseudo-R-squared values presented are within .001 of the McFadden and Adjusted McFadden R-squared values for each model. All chi-square values are significant. Reference categories are denoted in brackets. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

**Table A6. Generalized Ordinal Logistic Regression Results of Highest Level of Education at Age 25, Presented as Marginal Effects for the Controls only Model and Dichotomous Measure of Parental Job Loss (N=3821)**

	Controls Only				Ever had a Job Loss			
	No HS Degree	HS Diploma or GED	Some College	BA or Higher	No HS Degree	HS Diploma or GED	Some College	BA or Higher
Gender [Women]								
Men	0.030(***) [0.006]	0.053(***) [0.009]	-0.002 [0.002]	-0.081(***) [0.014]	0.031(***) [0.006]	0.053(***) [0.009]	-0.002 [0.003]	-0.082(***) [0.014]
Family Race [White]								
Black/African-American	0.003 [0.009]	0.006 [0.016]	-0.000 [0.001]	-0.009 [0.024]	0.006 [0.009]	0.011 [0.015]	-0.001 [0.001]	-0.017 [0.023]
All Other	0.022 [0.013]	0.038 [0.022]	-0.002 [0.002]	-0.058 [0.034]	0.021 [0.013]	0.036 [0.022]	-0.002 [0.002]	-0.055 [0.034]
Parent's Education at Birth [HS Graduate]								
Less Than HS Diploma	0.073(***) [0.013]	0.048(*) [0.024]	0.054 [0.035]	-0.176(***) [0.041]	0.075(***) [0.013]	0.037 [0.024]	0.054 [0.035]	-0.165(***) [0.040]
Some College	-0.051(***) [0.008]	-0.089(***) [0.013]	0.004 [0.004]	0.136(***) [0.020]	-0.048(***) [0.008]	-0.083(***) [0.013]	0.004 [0.004]	0.128(***) [0.020]
BA or Higher	-0.101(***) [0.011]	-0.178(***) [0.016]	0.008 [0.008]	0.271(***) [0.021]	-0.096(***) [0.011]	-0.165(***) [0.016]	0.008 [0.008]	0.253(***) [0.021]
Family Income Quintile at Birth [Middle 41%-60%]								
Low Income (Lowest 20%)	0.012 [0.009]	0.020 [0.016]	-0.001 [0.001]	-0.031 [0.025]	0.008 [0.009]	0.014 [0.016]	-0.001 [0.001]	-0.022 [0.024]
Lower-Middle (21-40%)	0.029(*) [0.012]	-0.027 [0.019]	0.006 [0.021]	-0.008 [0.024]	0.028(*) [0.012]	-0.034 [0.019]	0.007 [0.021]	-0.002 [0.024]
Upper Middle (61-80%)	-0.027(**) [0.008]	-0.048(***) [0.014]	0.002 [0.002]	0.073(***) [0.022]	-0.026(**) [0.008]	-0.044(**) [0.014]	0.002 [0.002]	0.068(**) [0.021]
Upper (Highest 20%)	-0.041(***) [0.010]	-0.072(***) [0.017]	0.003 [0.003]	0.110(***) [0.025]	-0.037(***) [0.010]	-0.064(***) [0.016]	0.003 [0.003]	0.099(***) [0.025]
Number of siblings	0.006(*) [0.003]	0.010(*) [0.005]	-0.000 [0.001]	-0.015(*) [0.007]	0.006(*) [0.003]	0.010(*) [0.005]	-0.000 [0.001]	-0.015(*) [0.007]
Years w/ Single Mother	0.003(***) [0.001]	0.006(***) [0.001]	-0.000 [0.000]	-0.009(***) [0.002]	0.003(***) [0.001]	0.005(***) [0.001]	-0.000 [0.000]	-0.008(***) [0.002]
Had Head Job Loss [None]					0.006 [0.011]	0.085(***) [0.018]	0.002 [0.019]	-0.093(***) [0.020]

Notes: Generalized ordinal logistic regression models. See Tables A1 & A2 for notes.

Table A7. Generalized Ordinal Logistic Regression Results of Highest Level of Education at Age 25, Presented as Marginal Effects for the Controls only Model and Dichotomous Measure of Parental Job Loss (N=3821)

	<u>Number of Job Losses</u>				<u>Duration (continous)</u>			
	<u>No HS Degree</u>	<u>HS Diploma or GED</u>	<u>Some College</u>	<u>BA or Higher</u>	<u>No HS Degree</u>	<u>HS Diploma or GED</u>	<u>Some College</u>	<u>BA or Higher</u>
Gender [Women]								
Men	0.031(***) [0.006]	0.054(***) [0.009]	-0.002 [0.003]	-0.083(***) [0.014]	0.030(***) [0.006]	0.054(***) [0.009]	-0.002 [0.003]	-0.082(***) [0.014]
Family Race [White]								
Black/African-American	0.006 [0.009]	0.010 [0.015]	-0.000 [0.001]	-0.015 [0.023]	0.004 [0.009]	0.007 [0.016]	-0.000 [0.001]	-0.011 [0.024]
All Other	0.019 [0.013]	0.032 [0.023]	-0.001 [0.002]	-0.050 [0.035]	0.021 [0.013]	0.037 [0.022]	-0.001 [0.002]	-0.057 [0.034]
Parent's Education at Birth [HS Graduate]								
Less Than HS Diploma	0.075(***) [0.012]	0.037 [0.024]	0.053 [0.035]	-0.166(***) [0.040]	0.068(***) [0.012]	0.043 [0.024]	0.056 [0.035]	-0.167(***) [0.040]
Some College	-0.048(***) [0.008]	-0.082(***) [0.013]	0.004 [0.004]	0.126(***) [0.020]	-0.048(***) [0.008]	-0.085(***) [0.013]	0.003 [0.004]	0.130(***) [0.020]
BA or Higher	-0.095(***) [0.011]	-0.164(***) [0.016]	0.007 [0.008]	0.252(***) [0.021]	-0.097(***) [0.011]	-0.172(***) [0.016]	0.006 [0.008]	0.263(***) [0.021]
Family Income Quintile at Birth [Middle 41%-60%]								
Low Income (Lowest 20%)	0.007 [0.009]	0.011 [0.016]	-0.000 [0.001]	-0.018 [0.025]	0.008 [0.009]	0.013 [0.016]	-0.000 [0.001]	-0.021 [0.025]
Lower-Middle (21-40%)	0.026(*) [0.012]	-0.037 [0.019]	0.009 [0.021]	0.003 [0.024]	0.027(*) [0.012]	-0.031 [0.019]	0.007 [0.021]	-0.003 [0.024]
Upper Middle (61-80%)	-0.026(**) [0.008]	-0.044(**) [0.014]	0.002 [0.002]	0.068(**) [0.021]	-0.027(**) [0.008]	-0.047(***) [0.014]	0.002 [0.002]	0.072(***) [0.022]
Upper (Highest 20%)	-0.037(***) [0.010]	-0.064(***) [0.016]	0.003 [0.003]	0.098(***) [0.025]	-0.039(***) [0.010]	-0.068(***) [0.017]	0.003 [0.003]	0.105(***) [0.025]
Number of siblings	0.006(*) [0.003]	0.010(*) [0.005]	-0.000 [0.001]	-0.015(*) [0.007]	0.006(*) [0.003]	0.010(*) [0.005]	-0.000 [0.000]	-0.015(*) [0.007]
Years w/ Single Mother	0.003(***) [0.001]	0.005(***) [0.001]	-0.000 [0.000]	-0.008(***) [0.002]	0.003(***) [0.001]	0.005(***) [0.001]	-0.000 [0.000]	-0.008(***) [0.002]

Number of Head Job Losses [One]								
None	0.002	-0.073(***)	-0.005	0.076(***)				
	[0.012]	[0.019]	[0.019]	[0.022]				
Two	0.012	0.020	-0.001	-0.032				
	[0.010]	[0.018]	[0.001]	[0.028]				
Three or More	0.030(*)	0.052(*)	-0.002	-0.081(*)				
	[0.014]	[0.024]	[0.003]	[0.037]				
Weeks of Unemployment					0.001(***)	0.001(***)	-0.000	-0.002(***)
					[0.000]	[0.000]	[0.000]	[0.001]
Job Loss to OLF (no unemployment)					0.005	0.009	-0.000	-0.014
					[0.010]	[0.017]	[0.001]	[0.027]
Length of Unemployment [Job Loss, no unemployment]								
None								
Less than 6 months								
6 months to a year								
Over a Year								
Number and Duration Combined [Job Loss, no unemployment]								
No Job Loss								
1 Job Loss, <26 Weeks								
More than 1, <26 Weeks								
1 Job Loss, 26-51 Weeks								
Over a year								

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Notes: Ordinal logistic regression models, presented as odds-ratio, of the educational attainment of 3821 individuals born into the PSID between 1969 and 1987, with educational attainment measured at age 25 or 26. These are weighted samples using listwise deletion. Notes continued on next page



Table A7, Continued

	<u>Duration (Categorical)</u>				<u>Both (Categorical)</u>			
	<u>No HS Degree</u>	<u>HS Diploma or GED</u>	<u>Some College</u>	<u>BA or Higher</u>	<u>No HS Degree</u>	<u>HS Diploma or GED</u>	<u>Some College</u>	<u>BA or Higher</u>
Gender [Women]								
Men	0.031(***) [0.006]	0.054(***) [0.009]	-0.002 [0.003]	-0.082(***) [0.014]	0.031(***) [0.006]	0.053(***) [0.009]	-0.002 [0.003]	-0.082(***) [0.014]
Family Race [White]								
Black/African-American	0.006 [0.009]	0.010 [0.015]	-0.000 [0.001]	-0.015 [0.023]	0.006 [0.009]	0.010 [0.015]	-0.000 [0.001]	-0.015 [0.023]
All Other	0.021 [0.013]	0.037 [0.023]	-0.002 [0.002]	-0.056 [0.035]	0.020 [0.013]	0.034 [0.023]	-0.002 [0.002]	-0.053 [0.035]
Parent's Education at Birth [HS Graduate]								
Less Than HS Diploma	0.071(***) [0.012]	0.037 [0.024]	0.059 [0.035]	-0.166(***) [0.040]	0.073(***) [0.012]	0.037 [0.024]	0.054 [0.035]	-0.164(***) [0.040]
Some College	-0.048(***) [0.008]	-0.083(***) [0.013]	0.004 [0.004]	0.128(***) [0.020]	-0.047(***) [0.008]	-0.082(***) [0.013]	0.004 [0.004]	0.125(***) [0.020]
BA or Higher	-0.095(***) [0.011]	-0.166(***) [0.016]	0.007 [0.008]	0.253(***) [0.021]	-0.095(***) [0.011]	-0.163(***) [0.015]	0.007 [0.008]	0.251(***) [0.021]
Family Income Quintile at Birth [Middle 41%-60%]								
Low Income (Lowest 20%)	0.007 [0.009]	0.013 [0.016]	-0.001 [0.001]	-0.020 [0.024]	0.007 [0.009]	0.011 [0.016]	-0.000 [0.001]	-0.017 [0.024]
Lower-Middle (21-40%)	0.028(*) [0.012]	-0.036 [0.019]	0.008 [0.021]	-0.000 [0.024]	0.028(*) [0.012]	-0.038 [0.019]	0.009 [0.021]	0.002 [0.024]
Upper Middle (61-80%)	-0.026(**) [0.008]	-0.045(**) [0.014]	0.002 [0.002]	0.069(**) [0.021]	-0.026(**) [0.008]	-0.045(**) [0.014]	0.002 [0.002]	0.070(**) [0.021]
Upper (Highest 20%)	-0.037(***) [0.010]	-0.065(***) [0.016]	0.003 [0.003]	0.099(***) [0.025]	-0.037(***) [0.010]	-0.064(***) [0.016]	0.003 [0.003]	0.099(***) [0.025]
Number of siblings	0.006(*) [0.003]	0.010(*) [0.005]	-0.000 [0.001]	-0.015(*) [0.007]	0.006(*) [0.003]	0.010(*) [0.005]	-0.000 [0.001]	-0.015(*) [0.007]
Years w/ Single Mother	0.003(***) [0.001]	0.005(***) [0.001]	-0.000 [0.000]	-0.008(***) [0.002]	0.003(***) [0.001]	0.005(***) [0.001]	-0.000 [0.000]	-0.008(***) [0.002]

Number of Head Job Losses [One]

None

Two

Three or More

Weeks of Unemployment

Job Loss to OLF (no unemployment)

Length of Unemployment [Job Loss, no unemployment]

None	0.016 [0.015]	-0.081(***) [0.023]	-0.012 [0.021]	0.076(**) [0.029]
Less than 6 months	0.009 [0.011]	0.016 [0.019]	-0.001 [0.001]	-0.024 [0.029]
6 months to a year	0.058(**) [0.020]	-0.009 [0.036]	-0.044 [0.039]	-0.005 [0.048]
Over a Year	0.063(**) [0.023]	0.111(**) [0.041]	-0.005 [0.005]	-0.170(**) [0.062]

Number and Duration Combined [Job Loss, no unemployment]

No Job Loss			0.010 [0.014]	-0.073(**) [0.022]	-0.012 [0.020]	0.074(*) [0.029]
1 Job Loss, <26 Weeks			0.004 [0.012]	0.007 [0.021]	-0.000 [0.001]	-0.010 [0.032]
More than 1, <26 Weeks			0.012 [0.013]	0.021 [0.023]	-0.001 [0.001]	-0.033 [0.035]
1 Job Loss, 26-51 Weeks			0.055 [0.030]	-0.038 [0.049]	-0.072 [0.059]	0.055 [0.062]
Over a year			0.034(*) [0.015]	0.059(*) [0.025]	-0.003 [0.003]	-0.091(*) [0.039]

Notes, continued: Confidence intervals in brackets, based on clustered standard errors indicating family of origin (2126 families). The pseudo-R-squared values presented are within .001 of the McFadden and Adjusted McFadden R-squared values for each model. All chi-square values are significant. Reference categories are denoted in brackets. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05

## CONCLUSION

In this project I brought a life course and a stratification perspective to research on parental job loss and children's educational attainment. In the three papers, I focused on the contexts of those job losses and their long-term effects by asking:

- *How does the timing of parental (mother's and/or father's) unemployment influence children's long-term educational attainment?*
- *How does family socioeconomic status moderate the impact of unemployment on children's educational outcomes?*
- *How does the amount of exposure (in terms of the number and duration of unemployment spells) to parental job loss affect children's educational attainment?*

In the body of this dissertation, three main findings emerged. First, I found little difference in siblings' educational attainment at age 25 based on children's age when the parent lost his or her job. Second, as a moderator of the relationship between parental job loss and children's educational attainment, family socioeconomic status primarily seemed to moderate the probability of experiencing parental job loss. Finally, children who experience the most parental job loss—specifically a parent who has lost a job on three or more occasions or has been unemployed for a year or more of childhood—have a lower likelihood of college completion and a higher likelihood of ending their education after graduating high school or entering, but not graduating from college.

Together, these findings lead to several larger conclusions. Parental job loss is similar to other adverse events in that the amount of exposure (as measured by both the timing and duration of jobless spells) to an adversity is associated with children's educational attainment. In other ways, parental job loss is unique in that the timing of the event in a child's life, and that family socioeconomic background, may not be a salient predictor of the long-term impact of the job loss.

As with all research, these conclusions have limitations. The first is that my results only reflect the labor market experiences of the parental head of household, usually the father or

stepfather, and do not account for dual-earner households. In the near future I hope to examine mother's and father's outcomes, but until the 2011 data were released last year there were not large enough numbers of children who had complete data on mother's and father's job loss. Second, my analyses are limited by a lack of information on children's abilities, achievement and social-psychological characteristics prior to, and post, unemployment. This means I cannot control for individual differences between children, to make my results more robust. Third, the PSID samples I utilized reflects racial/ethnic the composition of the United States in 1968. My results do not include enough Hispanic/Latino, Asian American, or immigrant families to reflect those children's experiences with parental job loss.

My project contributes to the sociological literature by applying the theories of timing, linked lives (Elder 1998) and cumulative disadvantage (O'Rand 1996), as well as theories of exposure to the effects of involuntary parental job loss on children's educational attainment. I find that parental job loss disrupts children's educational growth and thus constitutes a form disadvantage, even for children who were otherwise advantaged prior to their parent's job loss. The consequences of parental job loss vary based on the number of disruptions to the child's life and the duration of the resulting unemployment spell.

The findings also point to a number of research extensions. First, more quantitative and qualitative research might look at age and amount of exposure to parental job loss on short- and long-term educational outcomes, adding lived experience narratives to create a broader picture of this event. Second, more research on potential moderators of the relationship between parental job loss and educational attainment would add to knowledge about variations in the impact the former on the latter. These moderators may include differences between mother's and father's job losses; the exposure to and age at parental job loss as each affects short-term educational outcomes; and the relationship between parental job loss, subsequent changes in families and the combined effect on children's long- and short-term educational outcomes.

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