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Parental Entrepreneurial Role Model Influence on Male Offspring: Is It Always Positive and When Does It Occur?

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Parental self-employment has been shown to have a positive influence on offspring's subsequent choice of self-employment as a career. Previous studies have, however, not considered its dependence on parental performance in self-employment and at what stage of the offspring's development (late childhood, adolescence, or young adulthood) this influence is highest. This article uses social learning and career development theories to argue that first, parental influence may not exist in case of parents' economic failure in self-employment, and second, that when it does occur, it is more pronounced when the offspring is a young adult. Using the United States Panel Study of Income Dynamics data set, we find empirical support for our hypotheses.

Introduction

There has been abundant empirical evidence that parental self-employment has a significant positive influence on their offspring's propensity to become self-employed. In particular, individuals whose parents were in self-employment or owned a family business have a much higher propensity to become self-employed than those without such a background. Empirical evidence for this relationship has been found in many studies, including those from Britain (Taylor, 2001), Denmark (Sorenson, 2007), the United States (Dunn & Holtz-Eakin, 2000), and (West) Germany (Carroll & Mosakowski, 1987). A recent review of these empirical studies concluded that "entrepreneurs' children tend to both inherit family firms and are in general more willing to start up their own businesses" (Niittykangas & Tervo, 2005, p. 320).¹

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1. We use the terms offspring, child, and employee to refer to an individual in relation to their parents depending on the context.

Even though there is widespread agreement on the positive influence of parental self-employment on their offspring's subsequent entry to self-employment, debate on how this influence operates continues. Some studies argue that parental influence operates through "exposure" mechanisms in that children exposed to self-employed parents are more likely to look at self-employment as a legitimate "alternative to conventional employment" (Carroll & Mosakowski, 1987, p. 576). A different set of studies argues for the "closure" mechanisms in that self-employed parents may facilitate their children's access to financial capital and social capital, which in turn facilitate entry to self-employment (Sorenson, 2007). A few recent studies find support for the "exposure" but not the "closure" hypothesis (Hurst & Lusardi, 2004; Kim, Aldrich, & Keister, 2006).²

The debate on the "exposure" versus "closure" mechanisms is tied to a fundamental question in entrepreneurship: whether differences in individual propensity to enter self-employment reflect differences in access to entrepreneurial opportunities and resources, or differences in the ability and desire of individuals to pursue the opportunities that arise (Thornton, 1999). This article investigates *how* parental influence varies with parental performance in self-employment (Dunn & Holtz-Eakin, 2000; Hundley, 2006), and *when* the parental influence actually occurs, in contrast to *how* it manifests itself, which has been the main focus of prior studies.

Our first research question is motivated by studies within social learning theory on role models. These studies posit that it is not just the presence of role model parents but also how positively their status or performance is perceived that influences the offspring's intentions to follow the same career (Bandura, 1986; Krumboltz, Michael, & Jones, 1976). This rich literature in social learning theory has not yet led to the question of how parental failure in self-employment influences their offspring's propensity toward self-employment as a career. This is an important literature gap, given that most entrepreneurship, and by extension, self-employment activity, fails (Harting, 2005; Shepherd, 2003).

The second research question of this article relates to how the magnitude of parental self-employment influence varies with the offspring's developmental stage at the time the parent was self-employed. Career development studies have shown that parental influence on career choices varies with developmental stages (Johnson, 2002; Whiston & Keller, 2004). Existing studies in self-employment have failed to investigate whether there is an optimal developmental stage for which the parental self-employment influence is maximal. Our article tries to fill this gap.

The third research question in a way combines our first two research questions. Again, we build upon career developmental studies, which pinpoint the critical age of young adulthood during which the parental influence on their offspring career choices is maximal (Johnson, 2002; Whiston & Keller, 2004). Whereas these studies have mostly dwelt on influences that foster an offspring to take up a given career, our study seeks the opposite influence. We investigate whether parental economic failure in self-employment when an offspring is a young adult may reduce the offspring's propensity to become self-employed. In so doing, we separate the much-acknowledged positive influence of mere parental self-employment activity from the ignored possible negative influence which may arise from parental failure in self-employment. We use the United States Panel Study of Income Dynamics (U.S. PSID) data set to test the hypotheses arising from these research questions.

2. The fact that both exposure and closure mechanisms may be operational at the same time makes the issue of disentangling their separate influences empirically difficult (Sorenson, 2007).

Parents as Role Models in Self-Employment

Role models have been studied extensively under social learning theory, which proposes that one way by which learning can occur is through the observation of behaviors in others referred to as role models (Bandura, 1977). Having role models who exemplify possible career choices is a critical aspect of an individual's development (Krumboltz et al., 1976), including career choices (Miers, Rickaby, & Pollard, 2007; Schindehutte, Morris, & Brennan, 2003). Parents are most likely to serve as significant role models in their children's career choices (Barling, Dupre, & Hepburn, 1998) by influencing their offspring's aspirations and work values in adolescence and early adulthood (Halaby, 2003; Johnson, 2002).

Social learning theory argues that from a young age, children perceive their parents' work satisfaction and this perception affects their work beliefs and attitudes (Barling et al., 1998). In support of this argument, Dunn and Holtz-Eakin (2000, pp. 301–302), using “either time in self-employment, business income or business assets as a measure of success,” found that “sons of more successful entrepreneurs are more likely to enter self-employment than sons of less successful entrepreneurs.” Similarly, evidence from two U.S. representative samples, one based on the General Social Survey (GSS) and the other from the National Longitudinal Survey (NLS), found that the effects of self-employed parents on the propensity of their offspring to become self-employed are greater for those parents with larger, more successful businesses (Hundley, 2006). These studies make it interesting to investigate the possible influence of low performance and especially failure in parental self-employment on their offspring's propensity to become self-employed.

Influence of Parental Self-Employment Failure

The bulk of existing studies on role models focuses on how individuals adopt a given behavior by observing role models (Gibson, 2004; Ibarra, 1999). Recent studies in social learning theory, however, argue that a role model may sometimes discourage the observer from undertaking the behavior exhibited by the role model. These so-called “negative role models” inspire people “by highlighting mistakes that must be avoided so as to prevent them” (Lockwood, Jordan, & Kunda, 2002, p. 854). Examples of negative role models are victims of traffic accidents used in campaigns to promote safe driving as they represent “behaviors and attitudes that individuals should seek to avoid” (Gibson, p. 145).³

There is evidence to show that low parental performance in self-employment may have a “negative role model” effect in their offspring's choice of a self-employment career. Scherer, Adams, Carley, and Wiebe (1989), for example, found that children exposed to the low performance of a parent in self-employment developed negative attitudes toward an entrepreneurial career compared to children with no such role model. From these arguments, children of parents with low performance in self-employment

3. A reviewer highlighted to us the fact that we need to make our position consistent with the finding that children often copy the negative behaviors of their role models, for example, children of alcoholics are at greater risk of alcoholism (Bank et al., 1985; Barnes, Farrell, & Cairns, 1986). We would like to clarify that our article focuses on failure in self-employment as a negative outcome, and does not classify self-employment itself as positive or negative. Additionally, the major influence that alcoholic parents have on their offspring's behavior occurs through other mechanisms—such as physical and mental abuse (Bank et al.; Barnes et al.)—rather than through role model influence. Therefore, we believe that our role model arguments in the context of self-employment failure are not comparable with those of alcohol abuse.

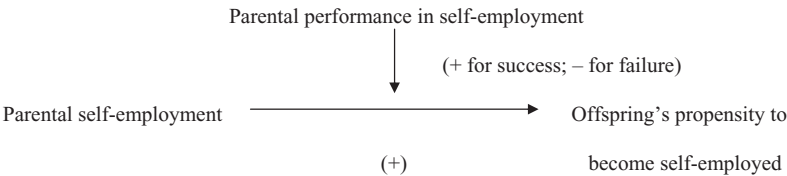
should then be expected to develop negative attitudes toward self-employment and hence have a lower propensity to join self-employment even after an initial period of organizational employment. However, whether the negative attitudes toward an entrepreneurial career translate into actual behavior remains an empirical question (Scherer et al.).⁴

Our literature review found no evidence of research on how parental failure in self-employment influences their offspring's propensity to take up an entrepreneurial career. This is an important literature gap, given that most entrepreneurial activity including self-employment fails (Harting, 2005; Shepherd, 2003). The few existing studies on self-employment failure show that such failure may have no long lasting impact on the family's economic well-being (Harting).⁵ However, the possible noneconomic impacts of self-employment failure, for example, on the offspring's propensity to become self-employed, have not yet been investigated.

There is evidence that business failure may have a noneconomic influence on the self-employed parents. First, "there appears to be an emotional relationship between the self-employed and their business" (Shepherd, 2003, p. 319). In case the business fails, this emotional relationship is likely to generate grief for the self-employed (Shepherd). Although not universally supported, there is strong evidence that children's perceptions of parental work attitudes and experiences shape the development of their own work beliefs and attitudes (Luther, 2000). Barling et al. (1998) found that parental experiences of layoffs and job insecurity significantly predicted late adolescents' perceptions of parental job insecurity which, in turn, predicted their own work beliefs and work attitudes. Similarly, a study based on 112 West German families found that family income loss was associated with pessimistic life outlook by the parents and with lower job success expectancy by their daughters (Galambos & Silbereisen, 1987). It is therefore reasonable to expect that children and especially young adults exposed to parental failure in self-employment may have a lower propensity to choose a self-employment career compared to children without such an exposure. Clearly, offspring's behavior is affected by how they *perceive* their parents to have performed, which may not be perfectly correlated with the actual performance of the parent (e.g., some parents may be better at ensuring that their business failures do not affect their interactions with their children). However, in the absence of direct measures of offspring's perceptions of parental performance, actual performance is a reasonable proxy measure.

Hypothesis 1: The positive influence of parental self-employment on their offspring's propensity to become self-employed will be moderated by the parents' performance in self-employment.

We represent this relationship graphically as follows:



4. Since our empirical data do not include a measure on the employees' attitudes toward self-employment, we are unable to answer this question in this study.

5. Similar bias against failure exists in studies on employee training (Joung, Hesketh, & Neal, 2006) and role models (Gibson, 2004).

When the Parental Influence Occurs

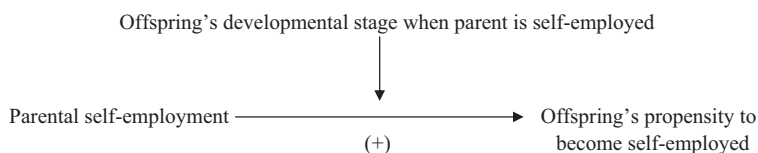
Previous studies in entrepreneurship have failed to investigate whether there is a critical age group within which parental entrepreneurial activity may have its highest impact. This is an important gap in the literature given that such parental influence only manifests itself after a time lag, i.e., mostly after an initial period of individuals being employed by existing organizations (Burton, Sorenson, & Beckman, 2002; Carroll & Mosakowski, 1987; Freeman, 1986). Previous researchers in entrepreneurship have advocated the view of entrepreneurial occupation as a career (Carroll & Mosakowski; Dyer, 1994). Therefore, we seek guidance from the career development literature to study the entrepreneurial decision to transition from organizational employment to self-employment and explore at which of the developmental stages of the offspring (late childhood, adolescence, or young adulthood) parental self-employment has the highest influence.

A seminal paper by Krumboltz et al. (1976) proposed a social learning theory on careers highlighting how educational and occupational preferences and skills are acquired and how selections of courses, occupations, and fields of work are made. More importantly, the article argued that parents were crucial role models in shaping the preferences of their children's career choices. Recent career theory studies argue that from as early as third and fourth grade, children are able to perceive their parent's job satisfaction (Barling et al., 1998, p. 112). Furthermore, parents are said to have their greatest influence on their children's values during adolescence and early adulthood (Turner & Lapan, 2002; Whiston & Keller, 2004). Based on these career development studies, we expect the influence of parental self-employment activity on the propensity of their children to become self-employed to be more pronounced if the parent was self-employed when the children were in the critical period of transition from adolescence to adulthood.

Studies in life course models also contribute in understanding the dynamics of workers' lives and experiences as they move from one life stage to another (Halaby, 2003; Johnson, 2002). From these studies, the usual age spread of the transition to adulthood starts in the ages of 19–20 years (Johnson). Halaby, on the other hand, takes the starting point of the transition to adulthood to be 18 years. There is growing evidence that occupational inspirations change considerably and work values undergo major changes beginning from this age (Johnson). In line with these studies, we define individuals with ages between 18 and 21 years as “young adults.”

Hypothesis 2: Parental self-employment will have a positive relationship on offspring's transition to self-employment. This relationship will be moderated by offspring's developmental stage at which the parent is self-employed, such that the impact of parental self-employment when offspring are young adults, age 18–21, will be stronger than at earlier stages.

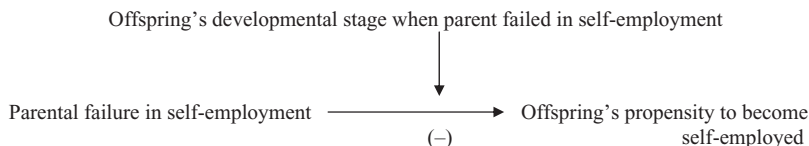
We represent this relationship graphically as follows:



Following the earlier discussion on the influence of parental self-employment failure on their offspring's transition to self-employment, we formulate hypothesis 3 as follows.

Hypothesis 3: Parental failure in self-employment will have a negative relationship with offspring’s propensity to transition into self-employment. This relationship will be moderated by offspring’s developmental stage at which the parent self-employment failure occurs, such that the negative impact of parental self-employment failure when offspring are young adults, age 18–21, will be stronger than at earlier stages.

We represent this graphically as follows:



Data Variables and Analysis

Data Description

To test the proposed hypotheses, we use data from the U.S. PSID, a longitudinal data set, available online from the University of Michigan’s Institute for Survey Research. The study collects financial, labor, family relations, and health data from almost 8,000 U.S. nationally representative families since 1968. The PSID data comes from families and split-off families related to a 1968 (1) original U.S. representative sample of about 3,000 families, normally called Survey Research Center (SRC) sample, and (2) secondary samples that have been added to the SRC sample over time to increase the representation of disadvantaged families in the United States like low-income families, Latinos, and immigrants. Probability-of-selection weights included in the PSID data set enable analysts to make estimates from the sample that are representative of the U.S. population. Since the manner of computing probability weights varies over different years, we restrict our analysis to the PSID SRC sample to ensure that our sample is representative of the U.S. population in each year of our data analysis.

The data analysis in this article is restricted to family heads since it is for them that most of the information needed is available.⁶ We split the PSID SRC sample into two groups to facilitate the intergenerational analysis necessary for our study. The first data set that we label “the parents’ group” uses data for the years from 1968 to 1992, while the second data set labeled “the offspring’s group” uses data from 1980 to 1993. We use the parents’ group to identify whether they were self-employed and also whether they had economic failure in self-employment. Following Harting (2005), an individual is said to have had an economic failure in self-employment if the cessation to be self-employed results in (1) business losses and/or (2) the individual rejoining the workforce at a lower wage (adjusted for inflation) than she earned in self-employment, and/or (3) the individual being unemployed.⁷

6. More information on the PSID is available from the documents section of the PSID website <http://psidonline.isr.umich.edu/> and especially the article “The Panel Study of Income Dynamics: Overview & Summary of Scientific Contributions After Nearly 40 Years—January, 2006.”

7. Ideally, a self-employed individual should be considered to have failed in self-employment if the difference in the present values of income streams between self-employment and the opportunity cost of self-

The offspring's group is made up of male family heads appearing in the SRC data sample between 1980 and 1993 and whose parents' information is available from the first group, the parents' group. We restrict this offspring's group to individuals who were in paid organizational employment in any of the years from 1980 to 1993. As Burton et al. (2002, p. 230) point out,

Organizations create their own competition by providing the skills and background that provide credibility for the entrepreneur. They provide the knowledge of opportunity by placing that person in a position to know about unserved or badly served markets (Freeman, 1986, p. 39).

We therefore use an offspring's transition from organization employment to self-employment as an indicator of the decision by the offspring to become self-employed (see also Carroll & Mosakowski, 1987, for the same argument).

The offspring's group comprises organizational employees who potentially could transition to become self-employed in each subsequent year, i.e., from 1981 to 1993. We take 1980 as our starting year to reduce the overlap between the offspring's group and the parents' group. We stop in year 1993 because it is the last year for which the full data required for the analysis was collected. Furthermore, starting 1994, the collection of the PSID data is biannual, which does not allow us to determine the actual year in which the transition occurred.

We carry out three data manipulations on the offspring's group data. First, we identify whether or not an individual transitioned from organizational employment to self-employment for the 13 pairs of years from 1980–1981 to 1992–1993. The first year of each pair is denoted year 1 while the second year is denoted year 2. An individual is deemed to have transitioned from organizational employment to self-employment if they report being employed by someone else (i.e., paid work) in year 1 and report being self-employed in year 2. This definition of transition has been used extensively in labor economics (Evans & Leighton, 1989) and entrepreneurship research (Amit, Muller, & Cockburn, 1995; Velamuri & Venkataraman, 2005). The second data manipulation involves linking each individual in the offspring's group to their parents' information contained in the parents' group. We use binary variables to indicate whether the parent was self-employed for each year as the offspring went through the developmental stages spanning the ages 8–22 years.⁸ We also use binary variables to indicate whether the parent had an economic failure in self-employment during the same developmental stages of the offspring.⁹

The third data manipulation involves identifying the developmental stages of offspring when the parent was self-employed. In a review and analysis of career development studies, Whiston and Keller (2004) identified four developmental stages (i.e., children, adolescents, college students/young adults, and adults). They identify some studies which classify children as being in the age bracket of 7–11 years (p. 522), adolescents as 13–21 years (p. 523), and adults as 18–25 years (p. 537). We take the three developmental stages of late childhood, adolescence, and young adulthood to be the ages from 8 to 11 years, 12

employment is negative. This definition, while conceptually sound, is very difficult to operationalize in practice, especially if research is being conducted with public data. We have used a definition that has been used before (Harting, 2005) and seems reasonable.

8. We use the FIMS tool available from the PSID website <http://simba.isr.umich.edu/FIMS/>, which generates an intergeneration file linking family heads with their parents.

9. We are grateful to Dr. Nicholas J. Cox, University of Durham, UK, for providing a key insight on how to perform this computation.

to 17 years, and 18 to 21 years, respectively.¹⁰ Our classification of developmental stages is therefore very similar to that of previous studies reviewed by Whiston and Keller.

Our data computations yielded a sample of 4,028 heads of households in the offspring's group. Based on a preliminary analysis of this sample, we found that 3,383 (i.e., 84%) of the offspring (or employees) were male. In line with previous studies using this data set (e.g., Fairlie, 1999), we restrict our data to male offspring only. Consequently, our final data set contains 3,383 unique male offspring with an average of 1,975 offspring for each of the 13 pairs of years (from 1980–1981 to 1992–1993) and a total of 896 transitions to self-employment.

It is worth pointing out that in our final data set, only the offspring data is restricted to males, not the parents' data. Further investigation on our sample of 3,383 revealed that 2,862 offspring had available the gender of their family head. Of these 2,862 offspring, 74% (2,128) had males as family head, while 26% (734) had females. The gender of the family heads for 521 of the offspring was not available. In addition, 84% of the offspring report having both parents in the family. However, the PSID data do not allow us to deduce which (or both) of the parents was self-employed when the family head was self-employed. Consequently, our study considers the influence of parental (both male and female) entrepreneurial activity on male offspring, but cannot differentiate the influence based on the gender of the parents. A future study can investigate whether parental influences differ depending on the gender of the parent involved in self-employment.

The computations for parental self-employment activity and failure start at the offspring's age of 8 years are based on career development studies which argue that children from this age onward are able to recognize and be influenced by their parents' work habits (Barling et al., 1998). Age 21 is chosen as the last year in our computations based on our definition of young adults (18–21 years). Further, parental influence beyond age 21 is likely to be confounded with influences arising from job market considerations and experiences (Johnson, 2002), and parental influences on offspring's career values are said to decline after teenage years (Halaby, 2003; Johnson).

Graphical Representation

To improve our understanding of the data, we first attempt a graphical representation of the propensity of offspring to transition from organizational employment to self-employment. This representation is broken down into the three developmental stages of the offspring (late childhood, adolescence, and young adulthood) when the parent was self-employed. Our objective is to understand how the parental self-employment influence varies with the offspring's developmental stage. For each of the 13 year pairs starting from 1980–1981 to 1992–1993, we obtain the number of offspring who transition from organizational employment to self-employment and whose parents were self-employed. For each such offspring we determine whether or not the parent was self-employed in each year as the offspring matured from 8 years to 22 years. Figure 1 shows the average proportion of offspring who transitioned and had self-employed parents when the offspring were of ages 8–22 years. We observe that parental self-employment influence varies with offspring age and reaches a maximum at the young adulthood stage, i.e., around age 19–20 years before declining at age 21.

10. In the U.S. education system, our developmental stages correspond to the time when the offspring are in upper primary school, high school, and university although there are some variances in a few states.

Figure 1

Proportion of Employees Who Transitioned From Organizational to Self-Employment and Had Self-Employed Parents at a Given Age



Table 1

Proportion of Employees Who Transitioned and Had Self-Employed Parents During Different Age Groups

Year pair	Total employee transitions	Employee age when parent was self-employed		
		8–11 years	12–17 years	18–21 years
1980–1981	8	.00	.21	.78
1981–1982	14	.02	.25	.46
1982–1983	8	.00	.21	.53
1983–1984	6	.04	.19	.63
1984–1985	5	.15	.40	.45
1985–1986	5	.20	.17	.40
1986–1987	10	.10	.37	.68
1987–1988	17	.24	.32	.47
1988–1989	9	.11	.26	.72
1989–1990	13	.08	.46	.46
1990–1991	5	.15	.47	.85
1991–1992	12	.17	.43	.69
1992–1993	9	.28	.65	.61
1993–1994	15	.22	.59	.58
Average	10	.12	.36	.59

We further summarize the offspring transition data based on three age groups. Table 1 shows the average proportion of offspring who transitioned to self-employment and who had been exposed to parental self-employment at each of the three developmental stages. Again, the parental influence reaches a maximum during the young adulthood stage.

Empirical Analysis

Dependent Variable. To empirically test the three hypotheses stated in this article, we use logistic regressions for grouped data (with the `xtlogit` function in STATA). We use moderated regressions in two of the models to test for the moderating effect of parental self-employment in each of the developmental stages. The dependent variable is the binary variable, *transition*, indicating whether the offspring transitioned or not from paid work to self-employment in moving from year 1 to year 2.¹¹ We use the values in year 1 to predict the influence of different independent variables on the decision of the employee to transition to self-employment in year 2.

For clarity, we distinguish between independent variables, which are the variables that are the focus of our study, and control variables, which are other independent variables whose influence has been established in previous related studies. Among the independent variables, we further distinguish between activity variables and failure variables. Activity variables relate to the influence of parental self-employment activity on their offspring, whereas failure variables, in contrast, relate to the influence of parental economic failure in self-employment on their offspring.

Independent Variables. Our hypothesis 1 aims to refine the well-accepted concept of positive self-employed parental influence on offspring's propensity to transition to self-employment after a period of organizational employment. The refinement focuses on the impact on the offspring of a parental economic failure in self-employment. First, we define the variable *late childhood to young adulthood*, which takes the value of the total number of years in which the family head had an economic failure in self-employment when the offspring was aged between 8 and 21 years (i.e., the age bracket spanning all three developmental stages of late childhood, adolescence, and young adulthood). Similarly, we define *late childhood to young adulthood failure*, which takes the value of the total number of years in which the family head had an economic failure in self-employment when the offspring was aged between 8 and 21 years (i.e., the age bracket spanning all three developmental stages of late childhood, adolescence, and young adulthood).

For our hypothesis 2, we determine whether the influence of the parent's self-employment varied depending on the three developmental stages of the offspring. We define the variables *late childhood activity*, *adolescence activity*, and *young adulthood activity* to take the values of the total number of years in which the parent was self-employed when the offspring was in the age groups from 8 to 11, 12 to 17, and 18 to 21 years, respectively.

For our hypothesis 3, we explore whether the possible negative impact of parental failure on the offspring's likelihood of transition into self-employment also varied as a function of the developmental stage of the offspring.

We define the variables *late childhood failure*, *adolescence failure*, and *young adulthood failure* to take the value of the total number of years the parent experienced an economic failure in self-employment activity when the offspring was aged 8–11, 12–17, and 18–21 years respectively.

Control Variables. We use the standard set of control variables drawn from previous studies in the entrepreneurship and labor economics literatures. A description of the

11. In this section, we use italics to denote the variable names appearing in empirical analysis results tables included in this article.

control variables and their basic statistics appear in Table 2. The average transition rate of 3.2% compares well with that of 3.4% obtained using the PSID data set from 1968 to 1989 (Fairlie, 1999). Table 2 shows that some parents were involved in self-employment activities for the entire 14 years from 1980 to 1993. However, the maximum number of failures reported by any one parent is two.¹² The average offspring's age is 36 years, having worked for 14 years. This implies that individuals start working at the age of 22 years on average, providing further credibility to the decision to limit the analysis of parental influence to the maximum offspring age of 21 years. The final data set contains 3,383 unique offspring with an average of 1975 offspring for each of the 13 pairs of years and a total of 896 transitions to self-employment.¹³

Although some entrepreneurship authors have used a binary indicator on parental self-employment activity, we opted to also use a measure of time in self-employment given the finding that "parents' time in self-employment has an independent and stronger effect on the likelihood of the son's transition than the simple exposure to self-employment" (Dunn & Holtz-Eakin, 2000, p. 301).

Table 3 shows the correlations between the different variables. We omit the six developmental stage variables for both activity and parental self-employment failure; i.e., late childhood, adolescence, and young adulthood for each of the two categories. By definition, each of the three variables is a subset and highly correlated with the corresponding variables *late childhood to young adulthood activity* and *late childhood to young adulthood failure*, respectively.¹⁴ The logit regression results discussed subsequently involve having the *transition* variable as the dependent variable. Our discussion focuses on the dependent variables and only highlights the control variables where necessary.

Moderated Regressions

We carry out moderated regressions (Aguinis, 1995; Cohen & Cohen, 1983) for two of our regression models. In the moderated regression technique, two separate regressions are run, the first with the two sets of independent variables, and the second with the two sets of independent variables and the interaction term (which is the product of the two independent variables). The two regressions can be represented as follows:

$$Y = a + b1X + b2Z + e$$

$$Y = a + b1X + b2Z + b3(X \times Z) + e.$$

The regression coefficients and their statistical significance are then compared to determine whether the moderator effect is larger and more statistically significant relative to the main effect (Aguinis, 1995; Cohen & Cohen, 1983).

To perform the moderated tests, we first define two binary variables. First, the *parental self-employment activity* variable indicates self-employment activity when the

12. This shows that those who fail are either unlikely to return to self-employment and if they do are unlikely to fail again. We leave the determination of which of the two explanations is correct for subsequent studies.

13. Offspring are included in any pair of years from 1980 to 1993 for which they are in organizational employment in the first year.

14. The minimum correlation of the three activity variables with *late childhood to young adulthood failure* was .61 while that of the failure variables with *late childhood to young adulthood failure* was .31.

Table 2

Descriptive Statistics

Variable name	Variable type	Observations	Mean	SD	Min	Max	Description
Dependent variable							
Transition (yes = 1)	Binary	27,648	0.032	0.18	0	1	Employee transition to self-employment
Hypothesis variables							
Number of years parent was involved in self-employment activity when offspring was in age group							
Childhood to adulthood	Discrete	27,648	0.54	1.90	0	14	When employee was of age 8–21 years
Late childhood	Discrete	27,648	0.06	0.40	0	4	When employee was of age 8–11 years
Adolescence	Discrete	27,648	0.24	0.98	0	6	When employee was of age 12–17 years
Young adulthood	Discrete	27,648	0.24	0.82	0	4	When employee was of age 18–21 years
Number of years parent failed in self-employment activity when offspring was in age group							
Childhood to adulthood	Discrete	27,648	0.04	0.20	0	2	When employee was of age 8–21 years
Late childhood	Discrete	27,648	0.00	0.05	0	1	When employee was of age 8–11 years
Adolescence	Discrete	27,648	0.01	0.11	0	2	When employee was of age 12–17 years
Young adulthood	Discrete	27,648	0.02	0.15	0	2	When employee was of age 18–21 years
Control variables							
Family business	Continuous	27,648	0.52	0.29	0	4.90	Total family income from labor, asset, and transfers/100,000
Family business squared	Continuous	27,648	0.36	0.54	0	24.05	Total family income squared (to test second-order effect)
Tenure	Discrete	15,094	6.07	6.18	0	38.83	Number of years employee has worked in current job
Tenure squared	Discrete	15,094	74.95	151.37	0	1,508	Tenure squared (to test second-order effect)
Labor market experience	Discrete	27,324	13.85	8.14	1	42	Number of years employee has worked since he was 18 years
Labor market experience squared	Discrete	27,324	258.15	284.62	1	1,764	Number of years employee squared (to test second-order effect)
Offspring's age	Discrete	27,648	36.33	8.44	22	60	Employee age in years
Offspring's age squared	Discrete	27,648	13.91	6.58	5	36	Age squared/100 (to test second-order effect)
Offspring's education	Discrete	15,637	13.32	2.41	0	17	Highest level of education achieved by employee
Father's education	Discrete	26,675	3.83	1.89	0	8	Employee's father's educational achievement
Family business	Binary	27,639	0.09	0.29	0	1	Report of family owned business at transition (true = 1)
Race	Binary	27,648	0.92	0.27	0	1	Employee race (white = 1)
Marital status	Binary	27,648	0.90	0.30	0	1	Employee marital status (married = 1)

Table 3

Correlation Matrix

	Transition	Age	Race	Marital status	Family business	Father's education	Offspring's education	Labor market experience	Tenure	Family income	Childhood to adulthood activity	Childhood to adulthood failure
Transition	1											
Age	-.01	1										
Race	.0206&	-.0241&	1									
Marital status	-.003	.1883&	.0333&	1								
Family business	.1531***	.0565***	.0621***	.0291***	1							
Father's education	.0379***	-.2362***	.1210***	-.1235***	.0262***	1						
Offspring's education	.0474***	-.004	.1170***	-.0477***	.1113***	.4043***	1					
Labor market experience	-.0116*	.9293***	-.0303***	.1643***	.0488***	-.2486***	-.0667***	1				
Tenure	-.0209*	.4810***	-.0564***	.0913***	.01	-.1645***	-.1395***	.4610***	1			
Family income	.0242***	.3950***	.1157***	.2058***	.1283***	.1013***	.3576***	.3471***	.1976***	1		
Childhood to adulthood activity	.0225***	-.2267***	.0541***	-.0875***	.01	.1074***	.0575***	-.2132***	-.0879***	-.0789***	1	
Childhood to adulthood failure	.01	-.1228***	.0385***	.002	.0349***	-.002	.01	-.1205***	-.0598***	-.0490***	.2901***	1

* $p < .10$, ** $p < .05$, *** $p < .01$.

offspring was in the age bracket of 7–21 years. This variable is coded 1 for self-employment activity and 0 otherwise. Second, we define *parental self-employment failure* variable indicating parental economic failure in self-employment activity when the offspring was in the age bracket of 7–21 years. This variable is again coded 1 for failure in self-employment activity and 0 otherwise.

In our case, the second set of independent activity variables, i.e., the number of years the parent is self-employed during each of the three developmental stages of the offspring, is the same as the interaction term (because the first independent variable is binary, coded 1 for self-employment activity and 0 otherwise), i.e., Z is the same as $X \times Z$. Therefore, we present the moderated regression with just the first two variables, X and Z .

We could not conduct a test of the moderator effect of parental failure in self-employment during the three developmental stages with respect to parental failure in self-employment (binary), due to multicollinearity. This is not a surprise given the definition of the failure variables. First, the parental failure in self-employment is a binary variable that takes the value 1 when a parent failed and 0 otherwise. From Table 2, the other three failure variables corresponding to the three developmental stages have a maximum value of 1. On analysis, we found that the Pearson's correlation coefficient between the parental self-employment failure with late childhood failure, adolescence failure, and young adulthood failure to be .76, .93, and .97, respectively. As recommended for such cases (Webb, Wilson, & Chong, 2004), we omitted the variable parental self-employment failure in our analysis.

Results

Influence of Parental Failure in Self-Employment

We start by replicating existing studies that argue and empirically show that parental self-employment increases the propensity of their offspring to become self-employed (Carroll & Mosakowski, 1987; Niittykangas & Tervo, 2005, p. 320; Sorenson, 2007; Taylor, 2001). Our base model in Table 4 shows that the coefficient of parental self-employment during late childhood to young adulthood is positive and significant (.0917, $p < .05$). Our results are therefore in conformity with prior studies that have argued for the positive influence of parental self-employment activity on their offspring's propensity to become self-employed. All control variables that are statistically significant have the expected sign.

Previous studies in entrepreneurship have failed to separate the positive influence of parental self-employment role model on their offspring's propensity to become self-employed from the possible negative influence arising from parental failure in self-employment. We attempt this separation by testing our hypothesis 1 in model 1 of Table 4. After controlling for parental self-employment influence, our results show that parental failure in self-employment has a negative and statistically significant (−.8705, $p < .10$) influence on the offspring's propensity to transition from organizational employment to self-employment. Further, controlling for parental failure on self-employment increases the magnitude of the positive influence of parental self-employment on their offspring's propensity to become self-employed (.111 in model 1 versus .0917 in the base model). The result implies that parental failure in self-employment reduces the positive influence of parental self-employment on the offspring's propensity to become self-employed. The result supports our hypothesis 1.

Table 4

Parental Self-Employment Activity and Failure Influence on Offspring Propensity to Self-Employment

Variables		Logistic regression models (dependent variable offspring's transition to self-employment)				
Group	Description	Base model	Model 1	Model 2 [†]	Model 3 [†]	Model 4 [‡]
Independent variables						
Influence of parent self-employment on offspring occurring	Childhood to adulthood	.0917**	.111**	-.8091	-.6387	.0109
	Late childhood			-1.2411	-1.7976	
	Adolescence			.0480	.0203	
Influence of parent self-employment failure on offspring occurring	Young adulthood			.6475***	.6845***	
	Childhood to adulthood		-.8705*			
	Late childhood				3.7921	
Control variables	Adolescence				1.2673	
	Young adulthood				-2.8054***	-2.1579
	Family income/100,000 (Family income/10,000) squared	-.9923 .7868***	-1.0419* .7987***	-1.3508 .9887***	-1.3087 .9631***	-1.0429 .753***
	Tenure (years)	-.0458	-.0478	-.0437	-.0517	-.0701**
	Tenure squared	.0022*	.0023*	.0022	.0025	.0029**
	Labor market experience	.0264	.0248	.0273	.0291	.0197
	Labor market experience squared	.0009	.0009	.0006	.0006	.0009
	Age	.0332	.063	.0179	.0342	.0817
	(Age squared)/100	-.1199	.0301	-.0880	-.1072	-.1665
	Education	.0588	-.1161*	.0820*	.0845*	.0525
	Father's education	.0804*	.0907*	.1172**	.1131**	.0722
	Family business (yes = 1)	2.4376***	2.4666***	2.9762***	2.9708***	2.5638***
	Race (white = 1)	.0631	.2906	.1413	.1411	.111
	Marital status (married = 1)	.2638	.0758	.3936	.3896	.0745
Model values						
	No. of observations	7187	7187	7187	7187	6792
	Wald χ^2 (df, <i>p</i>)	275.21 (17.0)	277.8 (18.0)	147.41 (20.0)	153.69 (23.0)	268.08 (18.0)

Notes: The sample consists of male nonagricultural workers of age 23–60 who are heads of families. All models include a constant term and region dummies. Family income is in constant 1993 dollars.

* $p < .10$. ** $p < .05$. *** $p < .01$.

† The variable childhood to adulthood is measured as binary variable taking value 1 if parent was self-employed at any time when the offspring was aged 8–21 years; otherwise the variable takes a value of 0.

‡ Reduced sample of employees whose parent failed in self-employment when employee was aged 18–21 years and employees whose parents were never self-employed.

Parental Influence and Offspring Developmental Stage

Model 2 (moderated regression) of Table 4 aims to test hypothesis 2, i.e., whether the positive impact of parental self-employment on the propensity of offspring to transition to self-employment is conditional upon the developmental stage of the offspring at which the exposure takes place. We control for the moderating influence of mere parental self-employment activity using the binary variable parental self-employment activity and focus on when the influence actually occurs. Our results show that parental self-employment during young adulthood is a stronger predictor of the transition to self-employment than mere parental self-employment as well as being highly significant statistically ($p < .01$). In contrast, parental self-employment (measured using a binary variable parental self-employment activity) is not a statistically significant predictor of the transition. Further, our results show that exposure to parental self-employment activity at earlier developmental stages does not have any impact on the offspring's propensity to become self-employed. The results are in support of our hypothesis 2.

In model 3 of Table 4, we investigate the influence of parental self-employment activity and failure in the three developmental stages corresponding to late childhood (8–11 years), adolescence (12–17 years), and young adulthood (18–21 years). Interestingly, both parental self-employment and parental failure in self-employment seem to have an impact on offspring's transition to self-employment only if they occurred during the young adulthood stage of the offspring. Compared to the results obtained in model 2, the positive parental self-employment influence on a young adult's propensity to become self-employed is higher in magnitude (.6845 versus .6475). However, for this same development stage of young adults, parental failure in self-employment has even a greater influence (–2.8054).

These results show that parental influence (both positive and negative) may be dependent on the age of the offspring when the parent was self-employed. In particular, our results indicate that the influence of parental self-employment and parental failure in self-employment may be more pronounced if the self-employment activity or failure occurs when the offspring is a young adult, i.e., 18–21 years. By taking into consideration the offspring's age when the parent was self-employed, our results show that the parental influence is strongly positive for the young adults, and not statistically significant for the other earlier two developmental stages. Previous studies that did not take into account the timing of parental self-employment activity may have underestimated the parental influence on the young adult age group and overestimated parental influence on the younger age groups. These results once again support our hypothesis 3.

It is worth noting that all the control variables that were significant in model 2 remain significant in model 3, with little change in their magnitudes indicating that the relationships between these and the dependent variable are relatively stable.

The results in model 3 make it interesting to investigate the resultant parental influences on an offspring whose parents were self-employed and failed in self-employment when the offspring was a young adult relative to an offspring whose parents were never self-employed. We test this in model 4 of Table 4. We eliminate from our sample data on offspring whose parent were self-employed but did not fail when the offspring were young adults. Consequently, in the reduced sample, parental self-employment activity concurrently implies parent self-employment failure when the offspring was a young adult.

The results of model 4 in Table 4 show that both the positive influence of parental self-employment activity and the negative influence of parental failure in self-employment are statistically nonsignificant. In effect, the results show that an offspring whose parents failed in self-employment when the offspring was a young adult are not better or worse

off, in terms of the transition from organizational to self-employment, than an offspring whose parents were never self-employed. The results of model 4 provide an indication that the influence of parental self-employment activity may not always be positive as has been argued in most previous studies. In particular, the much acclaimed positive influence of parental self-employment on their offspring's propensity to become self-employed may not exist if the parental self-employment is accompanied by failure when their offspring are in the young adult age group.

Discussion of Results

Previous studies have been unanimous that having self-employed parents increases the likelihood that the offspring will take up self-employment, i.e., that many entrepreneurs are family products (Athayde, 2009; Carroll & Mosakowski, 1987; Niittykangas & Tervo, 2005, p. 320; Sorenson, 2007; Taylor, 2001). Our study brings up two considerations on this acknowledged positive parental influence on their offspring's propensity to transition from organizational employment to self-employment.

First, our study tries to disentangle the positive influence of parental self-employment from the negative influence of parental self-employment failure. The results show that previous studies on transition to self-employment may have confounded the two influences. Parental failure in self-employment has a statistically significant negative impact on the offspring's propensity to become self-employed. We are not aware of prior studies that have shown such a negative impact.

Second, our study shows that the parental influence depends on the offspring's age when the parent was involved in self-employment activity. In particular, our study shows that parental influence may be heightened if the offspring is a young adult between 18 and 21 years of age. In the United States, this age bracket corresponds to the period of university education, and individuals may be more alert to career opportunities since they are just about to enter the job market. This may explain the higher significance of parental self-employment activity on their offspring during young adulthood.

Third, by controlling for the possible negative influence arising from parental failure in self-employment, our study shows that the famed positive influence from self-employed parents does not persist when considering offspring whose parents failed in self-employment when the offspring were young adults. However, our study also provides comforting information to such parents in that offspring whose parents failed in self-employment are not worse off than offspring whose parents were never involved in self-employment activity when it comes to transitioning from organizational employment to self-employment.

Finally, it is interesting to note that our two control variables for social capital, father's education and family business, are consistently positive (and in the case of the latter variable, highly statistically significant). This might be a strong indicator that "closure" measures are also at work.

Conclusions

Entrepreneurship studies have argued that organizational employment increases the probability that individuals will identify entrepreneurial opportunities by exposing them to unserved or poorly served customer needs (Burton et al., 2002; Freeman, 1986; Thornton, 1999). The consensus in these studies of entrepreneurs as "organizational products"

is that a parental background in entrepreneurship also increases an employee's propensity to become an entrepreneur. These studies have not considered how a background of parental failure in entrepreneurship may influence the propensity of an individual to become an entrepreneur. Our study shows that, in the United States from 1980 to 1993, the influence arising from parental self-employment was dependent on parental performance in self-employment. Whether an employee transitioned to self-employment even after identifying an opportunity was conditional on how the parent had performed in self-employment. In essence, our study indicates that the concept of "entrepreneurs as organizational products" may be endogenous to that of "entrepreneurs as family products." Our findings thus serve to reinforce the recommendations of Dyer (1994, 2003), who called for a more fine-grained understanding of entrepreneurial career cycles, starting with career choice and ending with career exit, and greater integration of the family in organizational research (Dyer, 2003).

Existing role model studies have focused on how individuals' current behavior is affected by role models, either current or those of the recent past (Gibson & Barron, 2003; Lockwood et al., 2002). Regarding work, there is still the pending "question on how the process that generated job values is distributed over the life cycle" (Halaby, 2003, p. 276). Our article provides an indication that, at least for self-employment, the young adult age group may be a crucial time for such influence to take place. Further, our study suggests that it is during this period of transition to adulthood when a possible negative influence is likely to occur if the offspring is exposed to failure in parental self-employment activity. We therefore contribute to the less studied influences of low performance role models in the context of self-employment (Gibson, 2004).

There are two implications and associated research questions that arise from our results. First, if the age group of 18–21 years is the most susceptible to parental role model influence, might it also be the most susceptible to entrepreneurship education? If this is the case, then universities would do well to offer entrepreneurship courses to undergraduate students in their junior and senior years. Several universities in the United States, Europe, and Asia do have entrepreneurship programs that are open to undergraduate students from all disciplines. Administrators have been particularly keen to expose computer science, engineering, and life sciences students to entrepreneurship, in the hope that this will lead to the creation of technology-oriented companies. Our findings suggest that this might be a fruitful path for all universities to follow.

Second, social theory posits that most human behavior is learned by observation through modeling (Bandura, 1986). If this is the case, might entrepreneurship education to youngsters in the 18–21 age group include systematic exposure to positive role models? This exposure might take the form of case discussions of successful entrepreneurs, invited talks by well-known entrepreneurs, and student internships in entrepreneurial ventures. By repeated exposure to such positive role models, youngsters could develop an appreciation for entrepreneurship as a viable career option.

One interesting question for future research that arises from our results is whether the offspring of parents who failed in self-employment would perform differently in self-employment compared to those whose parents did not fail. We have shown that offspring of parents who failed in self-employment are less likely to take up self-employment relative to those whose parents did not fail. Might it be the case that those that do take up self-employment subject opportunities to much more rigorous screening and, as a result, achieve better outcomes (performance)?

Our study also has some limitations. First, we only study the propensity to become self-employed of males. This is because the vast majority of the heads of household (on whom the most extensive data is collected in the PSID) are males. Considering the

changing nature of entrepreneurship, the ever greater propensity of women to take up this career (Aldrich & Cliff, 2003; Devine, 1994), and the particular problems faced by women in entering an entrepreneurial career (Marlow & Patton, 2005), it is necessary to replicate our results with a sample comprising both men and women to see whether the gender of the offspring plays a role in the influence of parental self-employment and in its timing. Second, while we argue that offspring perceive parental performance in self-employment, we have not been able to measure this perception directly; rather, we measure parental failure and the lack thereof and assume that this failure in self-employment will be perceived by their offspring. We take the subsequent transition decision of the offspring to self-employment as a confirmation of this perception.

Management studies are highly biased toward understanding how success is achieved. In entrepreneurship, since failure is such a common occurrence, studies on failure are at least as necessary (Shepherd, 2003). Our article contributes to the few studies on failure in self-employment and also provides the comforting information that parental failure in self-employment does not disadvantage their children's propensity to self-employment. Studies to replicate our results in different countries and using other measures of entrepreneurship can help to determine the robustness of our results.

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