The Long Wind of Change.

Educational Impacts on Entrepreneurial Intentions

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1. Introduction

In the United States, it seems that you cannot move without bumping into one; in Europe, they are fervently longed for; all over the world, universities are suspected of being their breeding ground—entrepreneurs, those mystical beings who are believed to have such a positive influence on innovation and economic growth—are enjoying a global demand. As to what drives the entrepreneur, Schumpeter quite romantically describes it as "the will to conquer," "the dream and the will to found a private kingdom," and "the joy of creating, of getting things done" (1912, p. 93). All well and good, but it does not explain where these Schumpeterian *entrepreneurial endowments* (cf. Lazear 2005) come from. In this paper, we shed some light on this crucial question.

Are entrepreneurs born or made? Is it nature or nurture that is responsible for entrepreneurial endowments? We argue that such endowments are the result of a combination of innate genetics as well as education, i.e. socialization, and schooling. In this article, we focus on the role of socialization and (pre-university) schooling, i.e., adolescents' education in a broader sense and, thus, focus on the early (in the lifecycle) formation of entrepreneurial endowments. Early entrepreneurial endowments, unfortunately, are not directly observable, so we look at something that is—the *entrepreneurial intentions* of university students, i.e., their desire to become an entrepreneur in future. In this context, Falck *et al.* (2009) show that entrepreneurial intentions expressed in adolescence strongly predict future *actual entrepreneurship*. We concentrate on university students, since this subject pool represents an important source for *innovative* entrepreneurship contributing to economic development. In this paper, we focus on some input factors for the production of academic entrepreneurs, i.e. on the entrepreneurial endowments of students when entering universities. These endowments represent the basis for further entrepreneurship education at universities, an issue that has become increasingly popular not only at business schools (Katz 2003).

To identify a causal effect of endogenous entrepreneurial endowments from socialization and schooling on entrepreneurial intentions, we exploit the 1990 (re-)unification of the Federal Republic of Germany (FRG) and the German Democratic Republic (GDR) as quasi-natural experiment. We compare German university students in reunified Germany who were educated in the East (former GDR) to those who were educated in the West (non-reunified FRG). These two

sets of students had radically dissimilar forms of socialization and schooling before 1990. Conditional on various background factors, we consider education under the East German system of a planned economy as socialist treatment. We assume that being treated with a socialist ideology in younger years "cured" any entrepreneurial inclination. Accordingly, *ceteris paribus*, university students raised and educated in the GDR should be less interested in becoming entrepreneurs than fellow students brought up in the market-based economy of the FRG.

We find, in a first step, significantly lower entrepreneurial intentions among the treatment group of East German university students after reunification. This result is robust with the inclusion of university fixed effects and various control variables. In a second step, we focus on a subsample of those students who finished secondary education while Germany was still divided. When comparing the entrepreneurial intentions of East German students who finished secondary education under the socialist regime with those of West German students, the treatment effect is even stronger. We cautiously interpret this as positive effect of a change in the schooling system on individual entrepreneurial endowments. These findings suggest that policy makers can influence entrepreneurial endowments via the school system. In a third step, we assess the problem of selection into universities by restricting our sample to students from either East or West Germany who are attending a West German university that is not located in the region where they received their secondary education. This procedure should avoid a bias that could arise from comparing mobile students from East Germany to students in West Germany who did not move because mobility is possibly related to the presence or absence of entrepreneurial characteristics, for example, attitudes toward risk. As the treatment effect of an education under a socialist regime remains significant, we are confident that we do indeed measure a causal effect.

The remainder of the paper is organized as follows. Section 2 reviews some major contributions that analyze the formation of entrepreneurial endowments prior to university education. Section 3 introduces our empirical strategy, and Section 4 describes our data set. In Section 5, we present our analyses of the impact of schooling and socialization on university student entrepreneurial intentions. Section 6 concludes by discussing the implications of our work and offers some suggestions for further research.

2. The formation of entrepreneurial endowments

Economic research on what drives the formation of cognitive and non-cognitive skills usually adopts a life-cycle perspective, that is, every individual has certain innate biological characteristics that influence his or her endowments. Nicolaou *et al.* (2008) and Nicolaou and Shane (2009) analyze this in the context of entrepreneurship and their results suggest that genetic factors are an important explanation of individual differences in ability to identify entrepreneurial opportunities and for an overall tendency to become an entrepreneur. With these characteristics as the foundation, socialization and schooling further contribute to the development of entrepreneurial endowments.

As for socialization influences, parental role models are first and foremost. The fact that young children spend most of their time with their parents helps to explain the strong impact of parental background on the predilection for a certain occupation; or, as Marshall (1920) put it, "as years pass on, the child of the working man learns a great deal from what he sees and hears going on around him." Following research by Aldrich *et al.* (1998), Dunn and Holtz-Eakin (2000), and Hout and Rosen (2000), entrepreneurial parents leave an especially pronounced mark on their children due to "their ability to provide contact between their children (while the children are relatively young) and the business workplace. … As the child receives continued exposure to the family business, he picks up, almost without realizing it, a working knowledge of how to run a business enterprise" (Lentz and Laband 1990: 564). Fairlie and Robb (2007) take this one step farther and directly attribute the "entrepreneurial" effect to adolescent work experience in the family business.

Children's peers also play an important role in the process of socialization (Banduras 1977) and could very well have an impact on the formation of entrepreneurial endowments (Falck *et al.* 2009). Let us assume that some of a child's peers think of themselves and others as future entrepreneurs, although perhaps not with that exact terminology. These peers believe it would be "cool" to be their own boss, run their own business, and not take orders from anyone else. These children are quite likely adventurous, fun to hang out with, and "leaders of the pack" (cf. Akerlof and Kranton 2002). And leadership, argues Baumol (1968), is one of the major ingredients of

entrepreneurial success.[1] A child's entrepreneurial peers may playfully reinforce entrepreneurial endowments, setting the stage for Schumpeter's "will to conquer" and "will to found a private kingdom."

There is not much literature directly on the influence of education on entrepreneurial endowments, aside from the now common idea that human capital has a positive impact on entrepreneurship (Evans and Leighton, 1989). However, following Lazear's (2005) idea of entrepreneurs being "jacks-of-all-trades" who possess a balanced portfolio of cognitive and non-cognitive skills, extra-curricular activities might be more conducive to entrepreneurial endowments than math or science.

Along this line, Falck and Woessman (2010) argue that competition between schools results in school administrators being innovative with regard to courses, teaching methods, and, especially, extra-curricular activities, and that these latter can complement student qualifications beyond baseline educational goals. Such extra-curricular activities are likely to encourage or enhance entrepreneurial endowments such as social skills, innovativeness, or the willingness to put ideas into action, all of which have the potential to shape student intention to become an entrepreneur. Consistent with their hypothesis, the authors find cross-country evidence for a positive effect of competition from private schools on system-wide student entrepreneurial intentions at the national level. In a similar study at the national level, Sobel and King (2008) observe that voucher programs in the United States create greater rates of youth entrepreneurship relative to traditional public schools without such programs.

These initial findings suggest that both socialization and schooling contribute to the development of those cognitive and non-cognitive skills and abilities generally falling under the rubric of entrepreneurial endowments. In the following section, we develop our empirical strategy to assess this issue and introduce our large sample of German university students. Based on this sample, we analyze the effect of socialization and schooling on individual entrepreneurial endowments. Specifically, we focus on how socialist education influences student desire to become an entrepreneur.

[1] The entrepreneur's job is "to locate new ideas and to put them into effect. He must lead, perhaps even inspire; he cannot allow things to get into a rut and for him today's practice is never good enough for tomorrow. … He is the individual who exercises what in the business literature is called 'leadership'" (Baumol 1968: 65).

3. Empirical strategy

Our empirical strategy for identifying the impact of schooling and socialization on individual entrepreneurial endowments is threefold. First, we analyze the joint pre-university impact of socialization *and* schooling by comparing university students who were raised in West Germany to university students who were at least partly raised in East Germany before reunification in 1990. Here, our identification is based on the fact that these two groups experienced different educational treatments. East German university students were (at least partly) treated with socialization and schooling in a planned economy; West German students were treated with socialization and schooling in a free market economy.[2]

In a second step, we restrict our sample to university students who completed their secondary education before reunification in 1990. In this sample, university students were completely socialized and schooled either in a planned economy or in a free market economy. To address the problem of selection into universities, we restrict, in a third step, our sample to mobile students at West German universities, that is, those who left their "familiar" environment in either West or East Germany to attend a university located in West Germany.[3] By focusing on mobile East and West German students, we deal with a potential bias that could arise from the fact that mobility might be related to the presence or absence of other entrepreneurial characteristics, for example, risk aversion.

This leaves us with the following estimation equation for the different samples of university students:

$$I_{imut} = \alpha + \alpha_m + \alpha_u + \alpha_t + \beta_1 D_{imut} + X_{imut}\beta_2 + \varepsilon_{imut}$$

where the dependent variable I_{imut} is a binary variable that equals unity if student *i* studying major *m* at university *u* in survey wave *t* reports that he or she certainly wants to become an entrepreneur and zero otherwise. University student entrepreneurial intention is our "as-close-as-possible" measure for entrepreneurial endowments. The explanatory variable D_{imut} is a dummy variable that equals unity if the university student was socialized and schooled in a German state

[2] Note that we exclude students who completed secondary school in a country other than Germany from the whole analysis.

[3] Note that West Germany is far from being equally familiar to West German students as there are considerable cultural differences between German regions, the result of Germany being heavily fragmented until 1870 (cf. Falck *et al.* 2010).

formerly belonging to the GDR and zero if he or she went to school in West Germany. The matrix X_{imut} includes a set of individual characteristics and family background variables (cf. Parker 2004 for an extensive overview). A detailed list of all control variables is provided in Table A1 of the Appendix. Finally, we include a whole set of major fixed effects α_m, university fixed effects α_u, and survey wave fixed effects α_t; ε_{imut} is an error term. As our outcome variable is binary, we use both probit and linear probability models. We cluster our standard errors at the university level (cf. Moulton 1986).

4. Data

The data for our empirical analyses are derived from a survey regularly conducted among university students in Germany. The survey is part of a research project on the situation of students at German universities (*Studiensituation und studentische Orientierung*). The project is based at the University of Konstanz and is supported by Germany's Federal Ministry of Education and Research. The entire dataset is comprised of 10 waves of recurring surveys of university students. The university panel started in the winter term 1982/83 and was repeated every second or third year, with the most recent wave carried out during the 2006/07 winter term. Overall, the survey has 87,946 observations from 29 German universities, technical universities, and universities of applied sciences and covers questions about the study progress, work and learning habits, leisure time activities, attitudes, and job preferences. Included questions provide information about student family background and schooling. Information about demographic variables, such as age or gender, is also available. Altogether, the survey thus draws a rich picture of the conditions and perspectives of students at German universities.

<< Insert Table 1 about here >>

We focus on the three waves (Wave 5–7) conducted after reunification in 1990, which were collected in winter terms 1992/93, 1994/95, and 1997/98, giving us 23,542 observations. We restrict our analysis to this period to ensure that students educated in East German schools experienced at least several years of organized socialist treatment. Since we want to exploit the rich portfolio of possible control variables, we address a number of missing values in our multivariate regressions by imputing missing values of the control variables; replace missing values with the variable mean in the case of metric variables; and creating an additional category

for missing values in the case of categorical variables. Values are not imputed for either our dependent variable or for our explanatory variable of interest: the East-West indicator or for the university site, which we use to calculate cluster-robust standard errors. As this procedure does not directly effect the estimations of the coefficients of the respective variables, it enables us to make use of the full sample. Descriptive statistics of our sample and the main variables of interest are provided in Table 1.

5. Results

Following the three-fold strategy introduced in Section 3, we initially estimate the effect of socialization and schooling in East and West Germany, respectively, where we consider being partly raised in East Germany before reunification as non-entrepreneurial treatment. The upper part of Table 2 provides our basic estimations where we stepwise include controls. All estimations include university fixed effects, survey wave fixed effects, and major fixed effects. We report both probit (Table 2a) and linear probability (Table 2b) specifications.

<< Table 2a and 2b about here >>

In both panels of Table 2, Column (1) considers only those individual characteristics related to demographic variables of the respondents. The results suggest that East German students are significantly less likely to report entrepreneurial intentions than their West German counterparts. In a next step, in Column (2), we add controls for the students' previous and current education. Among other things, we control for grades in the high school certificate, grades in intermediate examinations, and assess whether the respondents started their university studies immediately after finishing secondary school. In Column (3), we control for the student socialization. Specifically, we control for parental schooling and parental current occupation. In Column (4), we estimate a model containing control variables for the students' previous job experiences and future job prospects. For instance, we add a variable on prior occupation, current occupation, and topic of study, as well as perceived problems in the future job market. Finally, in Column (5), we estimate a fully specified model containing all the control variables mentioned above. Across all specifications, the treatment effect remains robust, i.e., it shows a significantly negative effect of socialist socialization and schooling on university student entrepreneurial intention.

In the bottom part of Table 2, we run the same regressions conducted in the upper part of the table, but focusing on the subgroup of students who completed secondary school while Germany

still was divided and thus received either pure socialist or pure libertarian schooling and socialization. We expect these results differ from the whole sample of students that also includes East German students who received a mixed education, or, in other words, who received at least some entrepreneurial treatment. Indeed, the impact of socialist education is stronger for those students who went to school exclusively in the GDR. Consequently the socialist treatment effect is smaller for those who at least had some years of schooling in reunified Germany.

In Table 3, we repeat the estimations from Table 2 for the subsample of students in West German university locations. Hence we exclude students at East German universities since the specific economic environment in the formerly socialist part of Germany might affect their entrepreneurial intentions. Moreover, we concentrate on those mobile students who finished school in East or West Germany and chose to attend a West German university located away from home. This procedure should mitigate the bias arising from comparing mobile students from East Germany to students in West Germany who did not move because mobility is possibly related to the presence or absence of certain entrepreneurial characteristics, for example, risk aversion. We use the full set of control variables for all specifications and report probit results (left panel) and linear probability model results (right panel) in Table 3. We consider different measures for mobility. Column (1) considers all mobile students at West German university locations who report that the university is not in their hometown. In a second step, we consider those students who report that they are at least 50 kilometers away from their hometown and, as shown in Column (2), the effect becomes stronger. In a third step, we retain only West German students who went to a different federal state to attend university (Column (3)). Here, we find an effect similar to that reported in Column (1).

Overall, the results do not significantly change with a focus on those students who completed a pure GDR socialist education before the 1990 reunification. The results are presented in the lower part of Table 3. For this group, the coefficients are again somewhat higher. Continuing to find significant effects of schooling and socialization in the subsample of mobile East and West German university students at the same West German university suggests that selection into universities is not predominant in our analysis.

Given that our results remain extremely robust to all specifications and control variables, we are confident that we can interpret the effect of being schooled and socialized in a non-

entrepreneurial environment as having a causal effect on the entrepreneurial intentions of university students. Being raised in a non-entrepreneurial environment decreases the likelihood of having entrepreneurial intentions between around 4 and 7 percentage points. Given that the mean share of students with entrepreneurial intentions is about 23 percent, this effect is economically important. Accordingly, we conclude that entrepreneurial education may indeed strengthen entrepreneurial endowments. When further distinguishing between the overall effect from socialization and the effect of schooling, we find that even a short period of schooling in a non-socialist regime increases the entrepreneurial intentions of university students, which again supports the idea that education in a market economy can have an impact on entrepreneurial intentions. Hence we conclude that education, either by parents, peers, or schools, can result in an enhancement of entrepreneurial endowments.

6. Conclusions

Our findings for a sample of German university students suggest that both socialization and schooling contribute to the development of entrepreneurial endowments that eventually impact on student intention to become an entrepreneur. In an attempt to learn more about the relative importance of socialization and schooling, we use the quasi natural experiment resulting from the years around German reunification to consider the affect of pre-university education on student entrepreneurial intention. Using surveys of university students who experienced at least part of their secondary education under the socialist GDR regime and students from West Germany who were schooled under an education system that embraced the values of a market economy, we find significant differences in entrepreneurial intentions. Furthermore, East German students completing their secondary education before reunification in 1990 have lower entrepreneurial intentions than those completing their secondary education after reunification. These results are robust for different specifications within groups of students at West German universities where we stepwise exclude less alike students and, thus, rule out selection into university and related biases.

Our findings suggest that entrepreneurial intentions are, to some extent, determined endogenously in the process of socialization and schooling. Our results further suggest that policymakers can influence entrepreneurial endowments via the schooling system. However, at this point, we can only confirm that changes in the education system might effect on

entrepreneurial endowments, but we cannot draw any conclusions about the most effective design for increasing these endowments. Determining this requires further empirical research.

The results from our study of the subsample of university students who finished their secondary education either in the GDR or in unified Germany, respectively, shows that teaching the values of a free market economy can affect the formation of entrepreneurial intentions, i.e., the interesting in becoming an entrepreneur. This initial finding makes us confident that a specialized entrepreneurship education could increase entrepreneurial endowments, i.e., develop the preconditions necessary for the development of this desire. However, work on how entrepreneurial courses at school influence individual entrepreneurial intentions does not go beyond case studies and thus there is great scope for future research. Furthermore, the impact of entrepreneurship courses at universities must be investigated much more thoroughly.

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Table 1: Descriptive statistics

	all students	raised in FRG	raised in GDR
Observations	23,543	17,953	5,514
share of students with entrepreneurial intentions	22.82	23.52	20.53
age (mean)	24.99	25.59	23.04
share of female students	41.22	38.95	48.58
average number of children	0.102	0.102	0.100
marital status			
married	7.3	7.56	6.44
single, with permanent partner	49.71	49.99	49.01
single, without permanent partner	42.23	41.63	43.94
widowed/divorced	0.77	0.82	0.60
share with at least one self-employed parent	24.47	25.81	20.22
term (mean)	6.442	6.880	4.989
Majors			
linguistic and cultural studies	2,950	2,367	570
psychology	420	324	95
pedagogic	1,653	1,226	422
sport	254	165	89
law	1,735	1,176	556
social sciences	545	435	107
economic sciences	3,582	2,691	879
mathematics & natural science	3,497	2,878	616
medicine	1,823	1,381	440
agronomy, forestry, nutrition science	480	341	135
engineering	5,700	4,259	1,427
arts	655	546	109
other	163	112	49
waves			
wave 5: 1992/93	8,709	6,610	2,053
wave 6: 1994/95	8,035	6,262	1,759
wave 7: 1997/98	6,799	5,081	1,702
universities			

U Berlin (TU)	1,556	1,230	324
U Bochum	1,548	1,524	20
U Essen	1,196	1,188	5
U Frankfurt	1,506	1,472	29
U Freiburg	1,779	1,744	31
U Hamburg	2,216	2,160	53
U Karlsruhe	1,842	1,815	24
U München (LMU)	2,059	2,036	22
UAS Coburg	421	364	57
UAS Essen	299	290	6
UAS Frankfurt	477	469	8
UAS Hamburg	874	852	18
UAS Kiel	494	476	17
UAS Koblenz	416	407	9
UAS München	1,201	1,179	15
U Dresden	1,115	106	1,005
U Leipzig	1,295	153	1,140
U Magdeburg	687	35	647
U Potsdam	435	99	334
U Rostock	526	94	432
UAS Erfurt	209	37	172
UAS Magdeburg	198	23	173
UAS Stralsund	149	18	128

Table 2a: Probit estimations for the whole sample

	(1)	(2)	(3)	(4)	(5)
All Students					
Raised in GDR	-0.052***	-0.050***	-0.054***	-0.044***	-0.042***
	(0.012)	(0.013)	(0.013)	(0.012)	(0.013)
Controls: Education	no	yes	no	no	yes
Controls: Socialization	no	no	yes	no	yes
Controls: Job Experience & Perspectives	no	no	no	yes	yes
Controls: Individual Characteristics	yes	yes	yes	yes	yes
No. of Obs.	22195	22195	22195	22195	22195
Pseudo R^2	0.056	0.076	0.071	0.070	0.105
All Students Who Finished School Before 1990					
Raised in GDR	-0.082***	-0.073***	-0.090***	-0.077***	-0.073***
	(0.019)	(0.017)	(0.019)	(0.018)	(0.016)
Controls: Education	no	yes	no	no	yes
Controls: Socialization	no	no	yes	no	yes
Controls: Job Experience & Perspectives	no	no	no	yes	yes
Controls: Individual Characteristics	yes	yes	yes	yes	yes
No. of Obs.	10733	10733	10733	10733	10733
Pseudo R^2	0.059	0.073	0.073	0.075	0.104

*Notes: The table reports probit models with marginal effects at the sample mean. The dependent variable, entrepreneurial intention, is unity if a student reports that he or she definitely wants to become a self-employed entrepreneur or freelancer, zero otherwise. All specifications include university fixed effects, survey wave fixed effects, and major fixed effects. The control variables are described in more detail in Table A1. Cluster (university) robust standard errors are reported in parentheses. *denotes 10% level of significance, **denotes 5% level of significance, ***denotes 1% level of significance.*

Table 2b: OLS estimations for the whole sample

	(1)	(2)	(3)	(4)	(5)
All Students					
Raised in GDR	-0.052***	-0.052***	0.054***	-0.045***	-0.045***
	(0.012)	(0.013)	(0.013)	(0.012)	(0.013)
Controls: Education	no	yes	no	no	yes
Controls: Socialization	no	no	yes	no	yes
Controls: Job Experience & Perspectives	no	no	no	yes	yes
Controls: Individual Characteristics	yes	yes	yes	yes	yes
No. of Obs.	22195	22195	22195	22195	22195
Pseudo R^2	0.059	0.075	0.076	0.074	0.106
All Students Who Finished School Before 1990					
Raised in GDR	-0.077***	-0.068***	-0.085***	-0.074***	-0.071***
	(0.017)	(0.015)	(0.018)	(0.017)	(0.016)
Controls: Education	no	yes	no	no	yes
Controls: Socialization	no	no	yes	no	yes
Controls: Job Experience & Perspectives	no	no	no	yes	yes
Controls: Individual Characteristics	yes	yes	yes	yes	yes
No. of Obs.	10733	10733	10733	10733	10733
R^2	0.062	0.074	0.077	0.079	0.105

*Notes: The table reports OLS estimation results where the dependent variable, entrepreneurial intention, is unity if a student reports that he or she definitely wants to become a self-employed entrepreneur or freelancer, zero otherwise. All specifications include university fixed effects, survey wave fixed effects, and major fixed effects. The control variables are described in more detail in Table A1. Cluster (university) robust standard errors are reported in parentheses. *denotes 10% level of significance, **denotes 5% level of significance, ***denotes 1% level of significance.*

Table 3: Probit and OLS estimations for the subsample of West German university locations

	Probit			OLS		
	(1)	(2)	(3)	(1)	(2)	(3)
Students in the West						
Raised in GDR	-0.062***	-0.072***	-0.063***	-0.063***	-0.073***	-0.063***
	(0.012)	(0.013)	(0.015)	(0.013)	(0.013)	(0.014)
Controls: Education	yes	yes	yes	yes	yes	yes
Controls: Socialization	yes	yes	yes	yes	yes	yes
Controls: Job Experience & Perspectives	yes	yes	yes	yes	yes	yes
Controls: Individual Characteristics	yes	yes	yes	yes	yes	yes
No. of Obs.	13033	7618	5340	13033	7618	5349
Pseudo R^2	0.099	0.102	0.110	0.100	0.104	0.111
Students in the West Who Finished School Before 1990						
Raised in GDR	-0.074***	-0.075***	-0.067***	-0.071***	-0.073***	-0.064***
	(0.018)	(0.020)	(0.020)	(0.018)	(0.019)	(0.019)
Controls: Education	yes	yes	yes	yes	yes	yes
Controls: Socialization	yes	yes	yes	yes	yes	yes
Controls: Job Experience & Perspectives	yes	yes	yes	yes	yes	yes
Controls: Individual Characteristics	yes	yes	yes	yes	yes	yes
No. of Obs.	6834	4114	3004	6834	4119	3009
(Pseudo) R^2	0.097	0.105	0.117	0.099	0.106	0.119

*Notes: Marginal effects are reported at the sample mean. The dependent variable, entrepreneurial intention, is unity if a student reports that he or she definitely wants to become a self-employed entrepreneur or freelancer, zero otherwise. All specifications include university fixed effects, survey wave fixed effects, and major fixed effects. The control variables are described in more detail in Table A1. Cluster (university) robust standard errors are reported in parentheses *denotes 10% level of significance, **denotes 5% level of significance, ***denotes 1% level of significance.*

Table A1: Detailed variable description

Category	Variable	Description
Dependent Variable	• Entrepreneurial intention	Question: *In which area do you want to be permanently employed in the future?* Option *self-employed (entrepreneur or freelancer).* Answers on a 4-point-scale. Variable is unity if respondent chooses *"yes, certainly"* and zero otherwise.
Explanatory Variable	• Raised in the GDR	Variable is unity if respondent graduated from school in East Germany (former GDR), zero otherwise.
Control: Individual characteristics	• Field of study	Thirteen categories indicating the respondent's major: linguistic and cultural studies; psychology; pedagogics; sport; law; social sciences; economic sciences; mathematics & natural science; medicine; agronomy, forestry, nutrition science; engineering; arts; other.
	• Wave	Wave 5: winter term 1992/93; Wave 6: winter term 1994/95, Wave 7: winter term 1997/98.
	•Kind of studies	Four categories indicating whether respondent is obtaining first degree, second degree, doctoral degree, or doing other postgraduate courses.
	•Term	Number of terms the respondent has already been studying his/her major.
	•Marital status	Four categories: married, not married but living with permanent partner, single without permanent partner,

		widowed/divorced.
	• Children	Number of children.
	• Age	
	• Sex	
	• University	Dummies for 23 German universities (universities, technical universities, and universities of applied sciences).
Control: Education	• Final degree aspired	Six categories indicating which degree the respondent finally wants to reach (Diploma, Magister Artium, state examination, etc.).
	• High school certificate	Demeaned variable indicating the grade reached in high school certificate.
	• Immediate start	Variable is unity if respondent started studies immediately after school, zero otherwise.
	• Intermediate examination	For categories indicating that intermediate examinations exist, whether the respondent has taken this examination and whether it was passed.
Control: Socialization	• School education father	Categorical variable indicating the level of school education for the respondent's father and mother separately. Discriminates secondary school (8^{th} grade), middle school (10^{th} grade), high school (12^{th}/13^{th} grade), and no graduation (less than 8^{th} grade).
	• School education mother	
	• Occupation father	Categorical variable indicating the actual occupation of the respondent's mother, respectively, father. Discriminates public officials, white-collar workers in the public
	• Occupation mother	

		sector, white-collar workers in the private sector, blue-collar workers in the public sector, blue-collar workers in the private sector, self-employed, and others.
Control: Job experience and perspectives	• Job experience • Student job • Decided • Job perspectives	Binary variable indicating whether respondent has been working before starting studies Binary variable indicating whether respondent has a student job Binary variable indicating whether respondent has yet decided on future occupation Categorical variable indicating the student‘s self-assessed job perspective