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THE EFFECT OF BUSINESS OR ENTERPRISE TRAINING ON OPPORTUNITY RECOGNITION AND ENTREPRENEURIAL SKILLS OF GRADUATES AND NON-GRADUATES IN THE UK

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ABSTRACT

This paper attempts to overcome methodological challenges in demonstrating the effect of enterprise training on opportunity perception and entrepreneurial skills perception of trainees. A large scale sample of individuals in the UK, part of the 2007 GEMUK database, is utilised. Logistic regression shows that controlling for demographic effects, experience and attitudes, different types of training had different effects on opportunity perception and entrepreneurial skills perception. The results suggest that a combination of college-based training and work placements may provide a better all-round entrepreneurial capability for both graduates and non-graduates.

INTRODUCTION

Researchers have suggested that education and training for entrepreneurship should positively impact entrepreneurial activity by enhancing instrumental skills required to startup and grow a business (Honig 2004), by enhancing cognitive ability of individuals to manage the complexities involved in opportunity recognition and assessment (DeTienne and Chandler 2004), and by affecting their cultural attitudes and behavioral dispositions (Peterman and Kennedy 2003).

Demonstrating these effects, however, has been a challenge. First, there may be considerable self-selection into entrepreneurship education. Secondly, the effects may be long term rather than instantaneous. For example, in the short term, graduates of entrepreneurship education may recognise the need to amass specific knowledge (Fiet and Pankaj, 2008) and decide to defer action. Thirdly, there is the need for adequate control groups to demonstrate effects. Fourthly, individuals may receive such education and training at several points in their lives, such as at school, university, or after formal education, and it may take the form of traditional learning or experiential immersion in the phenomenon, through a placement, for example.

As a result of these issues, large-scale evidence concerning the influence of entrepreneurship training and education on entrepreneurial activity is still lacking (Béchard and Grégoire, 2005).

In this paper, we focus on the effects of enterprise education and training on the necessary antecedents of entrepreneurial activity (Reynolds et al., 2005): start-up skills perception and opportunity recognition. We suggest that if training has primed individuals to be more aware of opportunities as they present themselves, and if those individuals believe they have the knowledge, skills and experience to start a business, then they are more likely to start a business. However, in this paper, we only examine the first part of this model.

In the next section, we briefly review the literature on enterprise training, opportunity recognition and entrepreneurial skills perception, and derive our two principal hypotheses. Then,

we outline the methodology used to test the hypotheses and the database we drew on. In our results section, we summarise the results of logistic regressions as formal tests of our hypotheses. Finally, we discuss the results, note limitations of the study, draw implications for enterprise training and recommend further research.

THEORY AND HYPOTHESES

The potential impact of enterprise training on the supply of entrepreneruship in a country has long been recognized. For example, Liebenstein (1968, p.82) noted that "…training can do something to increase the supply of entrepreneurship …since entrepreneurship requires a combination of capacities, some of which may be vital gaps in carrying out the input-completging aspect of the entrepreneurial role, training can eliminate some of these gaps." In the UK, the issue of enterprise training features prominently in enterprise policy, particularly for graduates. For example, the National Council for Graduate Entrepreneurship was set up in 2004 to increase graduate entrepreneurship through the provision of more and better enterprise training in UK institutes of higher education (www.ncge.com).

In developing a model of the effect of enterprise training on entrepreneurial activity, we have utilized the Global Entrepreneurship Monitor (GEM) model (Levie and Autio, 2008) which suggests that the effect of enterprise training on allocation of effort into entrepreneurial activity (as opposed to other economic activity, such as being an employee) will be fully mediated by its influence on opportunity perception, on the one hand, and entrepreneurial skills perception, on the other. This justifies a study of the effect of enteprise training on opportunity and skills perception.

Several authors have argued that enterprise training and education enhances the cognitive abilities required for the discovery of market opportunities (DeTienne and Chandler, 2004). It may do this is several ways. One way is through providing examples of the process of entrepreneurship, with role models that trainees can identify with. These examples show trainees what is possible, and together with useful theory and techniques, can equip students to recognise,assess and shape opportunities (Fiet, 2000). While superior training may well lead to superior entrepreneurship, it seems plausible that any form of enteprise or business training may lead to a heightened awareness of entrepreneneurship as an economic option, particularly in a country like the UK, where entrepreneurial activity rates are low compared to the US and where relatively few people know someone who has started a business recently (Bosma et al., 2009). This leads us to the first hypothesis:

Hypothesis 1: Individuals are more likely to perceive opportunities for starting a business in their environment if they have undertaken enterprise or business training, ceteris paribus.

Several authors have argued that entrepreneurs need a broad set of enterprise and business skills of they are to succeed (Lazear, 2004; Michelacci, 2003), and indeed that the belief one possesses such skills is a key determinant of propensity to engage in entrepreneurial activity (Boyd and Vozikis, 1994). We therefore propose that not just enteprise training but general business training may enhance an individual's self-belief in their own ability to start a business. We express this formally as Hypothesis 2:

Hypothesis 2: Individuals are more likely to believe they have the knowledge, skills and experience to start a business if they have received enterprise or business training, ceteris paribus.

These two hypotheses are silent on the quality of training received. This is deliberate. We suggest that it is more useful initially to look for effects of training, ceteris paribus, than to try to decipher the effect of a training method (such as business plan writing, for example) in a research design in which self-selection and unrepresentative samples can obscure the effect of the method. However, we do recognise that training may take place in different contexts and at different times of life, such as in school, in college or university, in work through a work placement for example, or on government-sponsored schemes.

METHODOLOGY AND DATA

We used data from a Global Entrepreneurship Monitor survey of almost 5,000 adults aged 18 to 44 across the United Kingdom in 2007 to test for the independent effects of four different types of business or enterprise training on subsequent individual propensity to recognise business opportunities and to believe that one has the skills, knowledge and experience to start a business. This age group was chosen because previous GEM surveys had shown that very few individuals over the age of 44 had ever taken part in business or enterprise training.

The survey was conducted by a reputable market research company that is regularly retained by the UK government to undertake household surveys of this type. They used a stratified random sampling method to locate adults in households in each of 12 government office regions of the UK with a fixed telephone line using random digit dialing according to strict guidelines laid down by the GEM consortium and supervised by the GEM international data manager (Reynolds et al., 2005; Levie, 2007). Numbers were called up to eight times before being abandoned and residents within the household were sampled using the "next birthday" method. The raw survey data was cleaned and harmonized first by the survey vendor, then by the GEM international data manager, then again by the UK GEM team.

The training types were: business or enterprise training at school, at college or university, placements in small or medium-sized businesses whilst at school or college/university, or in government programmes. We controlled for self-selection by asking each individual if the training was voluntary or compulsory, if they answered "yes" to any of the four training types. We examined graduates and non-graduates separately because of their different education experience, and their likely different career trajectory. We controlled for demographic characteristics of the individuals, including age, gender, employment status, education level at a finer grained level than graduate/non-graduate, ethnicity, migrant status, entrepreneurial attitudes including fear of failure, and an entrepreneurial networking measure (knowing a recently started entrepreneur). We controlled for experience with a dummy variable labelling individuals who had ever started a business. We used logistic regression to estimate the independent effect of different forms of business or enterprise training on individuals' propensity to recognise opportunities and believe they had the skills necessary to start a business.

Our dependent variables were operationalized as follows. All respondents who agreed they were trying to start a business or running their own business, and a random half of respondents who were not, were asked the following questions:

"In the next six months will there be good opportunities for starting a business in the area where you live?"

"Do you have the knowledge, skill and experience required to start a new business?"

Respondents were asked to answer yes, no, or don't know and were given the option to refuse to answer. Refusals were very low at 0.05% of respondents asked these questions. Only 2.5% of respondents answered "don't know" to the skills question, but 17.9% answered "don't know" to the opportunity perception question. Previous UK GEM surveys have found similar levels of"don't know" responses, and in multivariate analyses, those answering "don't know" tend to behave from an entrepreneurship perspective in a similar fashion to those who answer "no". Thus it may not be appropriate to eliminate this group from analysis; "don't know" is a legitimate response to this question (Levie, 2007).

Approximately fifty percent of respondents were under the age of 45, and all these were asked a battery of questions on business or enterprise questions from a total sample of 42713 adults aged between 16 and 64. Specifically, respondents were asked:
"Have you ever taken part in any of the following?
(i) Business or enterprise training at school?
(ii) Business or enterprise training at college or university?
(iii) Work experience in a small or medium sized business whilst at school or college?
(iv) A Government or public sector training course in business or enterprise skills?"
For each type of training, respondents who answered "yes" were asked:
"Was this training (specific type described) compulsory or did you choose to take it?"

The sample was further reduced as the dependent variable questions were only asked of 50% of the non-entrepreneurially active respondents. (Derivative variables were created for these and other attitudinal variables that randomly sampled from the entrepreneurially active respondents in proportion with their relative size in the sample as a whole.) Although refusal and don't know responses were low for all dependent variables except household income (9.2% refusal rate), they were widely distributed and the effect of this was to reduce the sample size for which all required variables were answered by respondents to around 7,500. Finally, the sample was split into graduates and non-graduates, for sample sizes of around 2,400 and 5,000 respectively.

Before conducting a logistic regression on the sample, a list-wise correlation matrix was constructed that included all the variables to be entered in the regression. The highest correlation was between occupation and gender at .313. Accordingly, no problems of multi-collinearity appear to exist. Copies of the matrix are available on request.

RESULTS

Tables 1 to 4 show the final, most parsimonious models of direct effects of business or enterprise training, where all four types of training were entered simultaneously with control demographic, experience and attitudinal variables. Diagnostics are provided at the bottom of each table. The cutoff has been adjusted to maximise the ability of the model to predict both ones and zeros, bearing in mind the unbalanced nature of some of the samples in relation to the dependent variable. The predictive ability of the models is not high, at around 65% for opportunity perception and around 70% for skills perception. However, the Hosmer and Lemeshow tests suggest that the models appear to have a reasonable fit and in three of the models, very few outliers were detected despite the large size of the samples. In the case of non-graduates and skills perception, 55 outliers were identified which suggests that there are either other significant unmeasured variables or that undetected interactions may exist between the independent variables.

Considering the control variables first, all variables appear to be in the expected direction, with higher opportunity and skills perception among males, among the wealthy, those with business experience, and those with positive entrepreneurial attitudes. There were some differences between graduates and non-graduates. Age had no effect on opportunity perception, and had different effects on graduates and non-graduates, while migrant status had no effect among non-graduates. Ethnicity had no significant effect in any model and was omitted from the final models. The effect of startup and business experience was noticeably higher on skills perception than on opportunity perception.

Turning to the training variables, the results suggest that enterprise education and training at school has no significant effect on opportunity recognition or skills perception of graduates. College or university enterprise education has the strongest effect of the four types tested, and has a stronger effect on skills perception than knowing a recent startup entrepreneur (a proxy for social networks that include entrepreneurs).

Among graduates, government programmes only had a significant (but weak) effect on skills perception of volunteers but not of those who had to take the programmes. Effects on opportunity recognition were weaker, except for work placement, and again compulsory government programmes of enterprise education or training had no significant effect. It appears that work placement has a significant and positive effect on both opportunity and skills perception, in about equal measure, and that this is true for both compulsory and voluntary programmes. “Sandwich” and other courses at school or college that have built-in work placements appear to make a real, if limited, difference to the entrepreneurial capacity of students who become graduates. In relation to opportunity perception, they have about the same effect as previous experience in starting or running a business.

Among non-graduates, enterprise training in schools did have a significant effect on skills, but only if it was voluntary. Both voluntary and compulsory attendance at training programmes in college also had significant and positive effects on skills perception, but not on opportunity perception. Voluntary and compulsory placement in small and medium-sized businesses had around the same positive and significant effect on the odds of an indidual perceiving opportunities to start a business locally as it had on graduates. Voluntary participation in government programmes had a positive effect on skills self-perception but not on opportunity perception.

DISCUSSION AND CONCLUSIONS

These results have implications for enterprise education and training policy. They suggest that government-run start your own business programmes in which participants feel compelled to attend have no effect on either opportunity recognition or skills self-perception for either graduates or non-graduates. However, enterprise education and training at college or university (or at school for non-graduates) does have a discernable positive effect on skills self-perception, while work placement whilst at school or college had a significant effect on both opportunity perception and skills self-perception. This suggests that a combination of enterprise classes in formal education and placements could make a measureable difference to the entrepreneurial capacity of the nation.

Although every effort has been made to control for issues that have plagued those who have tried to measure the impact of entrepreneurship education and training on attitudes and activity, such as self-selection, small, unrepresentative samples, and the time it can take for training to affect attitudes or action, this study has several limitations. One is that the “family effect” of having parents who ran their own business is not fully controlled for in this study. In the 2008

GEMUK survey, this was addressed, and respondents were also asked if they had worked in their parents' business. In addition, a wider range of types of enterprise education was included, and the training referred to was more specifically about starting a business. We propose to compare the results of this study with the 2008 survey results, to investigate these issues further.

The pattern of effects of enterprise training in college should be of interest to entrepreneurship educators. It appears that training in college, as opposed to work placements, does not enhance opportunity perpeption, but it does enhance skills perception, even if the training was compulsory. This would be in line with a view that, as a group, UK entrepreneurship educators spend too much time on technical skills such as business plan writing and financial forecasting and not enough on encouraging students to spend time in the market, engaging with potential customers on the issues they are facing (Levie, 2006). Work placement may be providing this "face-time" in a way that class-based training fails to do. When it comes to skills, however, class-based training in college has a stronger effect than work placements. This again suggests that a combination of types of training is superior to one or the other.

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Table 1: Logistic regression of effects of business or enterprise training on opportunity perception among graduates

	B	S.E.	Wald	df	Sig.	Exp(B)
gender (male)	.327	.095	11.848	1	.001	1.387
migrant status (life long regional residents are ref. group)			14.671	2	.001	
migrant status (regional in-migrants, born in UK)	.299	.096	9.717	1	.002	1.348
migrant status (immigrants)	-.135	.144	.880	1	.348	.874
occupation (in full-time work is ref. group)			9.593	2	.008	
occupation (in part-time work)	.403	.130	9.579	1	.002	1.496
occupation (not in work)	.063	.155	.162	1	.687	1.065
income (over 50k sterling)	.287	.093	9.587	1	.002	1.332
ever started or currently running a business (yes)	.441	.122	12.992	1	.000	1.555
know someone who started a business in last 2 years (yes)	.717	.093	59.882	1	.000	2.048
business or enterprise training at school (none is ref. group)			1.012	2	.603	
compulsory business or enterprise training at school	-.100	.187	.284	1	.594	.905
voluntary business or enterprise training at school	.107	.140	.579	1	.447	1.113
business or enterprise training at college (none)			3.351	2	.187	
compulsory business or enterprise training at college	.305	.171	3.187	1	.074	1.356
voluntary business or enterprise training at college	.097	.125	.607	1	.436	1.102
work experience in a SME while at school/college (no)			15.505	2	.000	
compulsory work experience in a SME	.331	.108	9.338	1	.002	1.393
voluntary work experience in a SME	.400	.118	11.489	1	.001	1.492
government business/enterprise skills training course (no)			3.376	2	.185	
compulsory government-run training course	.292	.262	1.238	1	.266	1.339
voluntary government-run training course	.235	.151	2.415	1	.120	1.265
Constant	-1.476	.112	175.039	1	.000	.228

-2 Log likelihood = 2956.769 Nagelkerke R squared = .107
Hosmer & Lemeshow test statistic Chi-square = 5.947, d.f. = 8, sig. = .653
% of no or don't know responses predicted correctly on a cutoff of .4 = 68.2
% of yes responses predicted correctly = 55.3
Overall percentage predicted correctly = 63.2
Final N with all variables included: 2354. Number of positive cases: 920

Table 2: Logistic regression of effects of business or enterprise training on opportunity perception among non-graduates

	B	S.E.	Wald	df	Sig.	Exp(B)
gender (male)	.325	.073	19.959	1	.000	1.384
education level (reference group is no qualifications)			12.541	4	.014	
education level (A levels or equivalent)	.268	.150	3.216	1	.073	1.308
education level (GCSE or equivalent)	.038	.147	.067	1	.796	1.039
education level (vocational qualifications)	.236	.167	1.992	1	.158	1.266
education level (other qualifications)	-.176	.231	.584	1	.445	.838
income (over 50k sterling)	.190	.096	3.897	1	.048	1.210
ever started or currently running a business (yes)	.410	.097	17.862	1	.000	1.506
know someone who started a business in last 2 years (yes)	.760	.078	95.722	1	.000	2.139
have knowledge, skills, experience to start a business (yes)	.482	.078	38.260	1	.000	1.619
business or enterprise training at school (none is ref. group)			.317	2	.853	
compulsory business or enterprise training at school	.007	.169	.002	1	.965	1.007
voluntary business or enterprise training at school	.072	.128	.317	1	.574	1.075
business or enterprise training at college (none)			1.703	2	.427	
compulsory business or enterprise training at college	.220	.184	1.426	1	.232	1.246
voluntary business or enterprise training at college	.076	.114	.443	1	.506	1.078
work experience in a SME while at school/college (no)			24.032	2	.000	
compulsory work experience in a SME	.282	.086	10.809	1	.001	1.326
voluntary work experience in a SME	.445	.098	20.573	1	.000	1.561
government business/enterprise skills training course (no)			3.466	2	.177	
compulsory government-run training course	.115	.248	.213	1	.644	1.121
voluntary government-run training course	.215	.117	3.361	1	.067	1.240
Constant	-1.653	.086	369.489	1	.000	.191

-2 Log likelihood = 4747.951 Nagelkerke R squared = .130
Hosmer & Lemeshow test statistic Chi-square = 9.611, d.f. = 8, sig. = .293
% of no or don't know responses predicted correctly on a cutoff of .3 = 68.8
% of yes responses predicted correctly = 58.7
Overall percentage predicted correctly = 65.8
Final N with all variables included: 4269. Number of positive cases: 1247

Table 3: Logistic regression of effects of business or enterprise training on entrepreneurial skills perception among graduates

	B	S.E.	Wald	df	Sig.	Exp(B)
age	.037	.008	22.530	1	.000	1.038
gender(male)	.314	.094	11.158	1	.001	1.369
migrant status (life long regional residents are ref. group)			15.748	2	.000	
migrant status (regional in-migrants, born in UK)	-.183	.101	3.312	1	.069	.833
migrant status (immigrants)	-.587	.149	15.565	1	.000	.556
ever started or currently running a business (yes)	1.531	.158	94.092	1	.000	4.621
income (over 50k sterling)	.324	.097	11.051	1	.001	1.382
know someone who started a business in last 2 years (yes)	.620	.098	39.677	1	.000	1.859
afraid to start a business in case it might fail (yes)	-.471	.092	25.953	1	.000	.624
business or enterprise training at school (none is ref. group)			3.965	2	.138	
compulsory business or enterprise training at school	.243	.199	1.496	1	.221	1.276
voluntary business or enterprise training at school	.263	.152	2.996	1	.083	1.301
business or enterprise training at college (none)			62.999	2	.000	
compulsory business or enterprise training at college	.834	.187	19.806	1	.000	2.302
voluntary business or enterprise training at college	.994	.138	52.089	1	.000	2.701
work experience in a SME while at school/college (no)			15.625	2	.000	
compulsory work experience in a SME	.368	.115	10.264	1	.001	1.445
voluntary work experience in a SME	.409	.126	10.557	1	.001	1.505
government business/enterprise skills training course (no)			7.162	2	.028	
compulsory government-run training course	.190	.291	.427	1	.514	1.209
voluntary government-run training course	.466	.177	6.938	1	.008	1.594
Constant	-1.958	.286	46.857	1	.000	.141

-2 Log likelihood = 2786.783 Nagelkerke R squared = .256
Hosmer & Lemeshow test statistic Chi-square = 8.137, d.f. = 8, sig. = .420
% of no responses predicted correctly on a cutoff of .5 = 71.2
% of yes responses predicted correctly = 65.1
Overall percentage predicted correctly = 68.0
Final N with all variables included: 2379. Number of positive cases: 1247

Table 4: Logistic regression of effects of business or enterprise training on entrepreneurial skills perception among non-graduates

	B	S.E.	Wald	df	Sig.	Exp(B)
age	.188	.046	16.892	1	.000	1.207
agesquared	-.002	.001	10.018	1	.002	.998
gender(male)	.709	.073	93.474	1	.000	2.032
education level (reference group is no qualifications)			35.129	4	.000	
education level (A levels or equivalent)	.512	.151	11.531	1	.001	1.669
education level (GCSE or equivalent)	.268	.146	3.358	1	.067	1.307
education level (vocational qualifications)	.793	.168	22.407	1	.000	2.210
education level (other qualifications)	.714	.224	10.138	1	.001	2.043
income (over 50k sterling)	.308	.101	9.255	1	.002	1.360
ever started or currently running a business (yes)	1.723	.115	225.821	1	.000	5.599
know someone who started a business in last 2 years (yes)	.620	.083	55.214	1	.000	1.859
opportunities to start a business locally (yes versus no/dk)	.478	.080	35.925	1	.000	1.613
afraid to start a business in case it might fail (yes)	-.557	.074	56.570	1	.000	.573
business or enterprise training at school (none is ref. group)			6.702	2	.035	
compulsory business or enterprise training at school	.277	.178	2.406	1	.121	1.319
voluntary business or enterprise training at school	.309	.137	5.065	1	.024	1.361
business or enterprise training at college (none)			41.478	2	.000	
compulsory business or enterprise training at college	.946	.199	22.514	1	.000	2.576
voluntary business or enterprise training at college	.579	.120	23.354	1	.000	1.785
work experience in a SME while at school/college (no)			26.198	2	.000	
compulsory work experience in a SME	.338	.089	14.325	1	.000	1.402
voluntary work experience in a SME	.466	.103	20.282	1	.000	1.593
government business/enterprise skills training course (no)			17.622	2	.000	
compulsory government-run training course	-.160	.258	.386	1	.534	.852
voluntary government-run training course	.533	.130	16.805	1	.000	1.705
Constant	-5.495	.744	54.507	1	.000	.004

-2 Log likelihood = 4701.464 Nagelkerke R squared = .308
Hosmer & Lemeshow test statistic Chi-square = 11.209, d.f. = 8, sig. = .190
% of no responses predicted correctly on a cutoff of .45 = 79.4
% of yes responses predicted correctly = 61.2
Overall percentage predicted correctly = 71.7
Final N with all variables included: 4269. Number of positive cases: 1802