



Measuring Enterprise Potential in Young People

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As young people increasingly become the target of entrepreneurial and enterprise policy initiatives and enterprise education in schools increases, so does the need to effectively measure the impact these programs have. A research instrument was designed to measure “enterprise potential” in young people using attitudes toward characteristics associated with entrepreneurship. A control-group cross-sectional design was used to investigate the impact of participation in a Young Enterprise Company Program, which is based on the U.S. Junior Achievement model, in six secondary schools in London, United Kingdom. The study found that participation in a Company Program can foster positive attitudes toward self-employment and that participants displayed greater enterprise potential than nonparticipants. Demographic differences also emerged in enterprise potential between ethnic groups. Young Black people were more positive about self-employment and displayed greater enterprise potential than either White or Asian pupils. A family background of self-employment had a positive influence on pupils’ intentions to become self-employed. Finally, the research raises a conceptual issue concerning the multidimensionality of the construct of “enterprise potential.”

Industrialized countries around the world recognize the contribution made by small firms to a diverse and dynamic economic environment, to creating new employment opportunities, and to making a significant contribution to international trade (OECD, 1998). The Global Entrepreneurship Monitor classifies the United Kingdom overall as having a medium level of entrepreneurial activity¹ compared with other countries worldwide, though greater than other European countries such as France, Germany, and Italy (Harding & Bosma, 2006). Entrepreneurial activity is lowest among young people under 25, who also consider themselves most lacking in enterprise skills (Harding & Bosma). Entrepreneurship in young people under 25 therefore represents a relatively, as yet, untapped source of new business start-ups and economic growth. Governments are increasingly targeting enterprise policies at young people in order to unlock this potential resource (Hytti & O’Gorman, 2004).

A widespread increase in enterprise education has not been accompanied by independent research into the impact it has on young people and the benefits, if any, they may derive from taking part (Davies, 2002; Peterman & Kennedy, 2003). Part of the problem is the lack of clarity with which the many aims of enterprise policies are specified, and a lack of independent evaluations (Storey, 2003). This paper contributes to the debate over

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1. GEM measures total entrepreneurial activity including nascent enterprises.

the efficacy of enterprise education in schools by reporting on independent empirical research of an enterprise program in secondary schools in London. It also presents a specially designed research instrument to measure pupils' attitudes toward enterprise (ATE test).

The main focus of the study was the attempt to measure the effect of participation in a Young Enterprise (YE) Company Program on young people's attitudes toward starting a business and on their enterprise potential. YE in the United Kingdom is modeled on the U.S. Junior Achievement programs for young people. During Company Program 15–19-year-olds set up and run their own enterprise in school over the course of one academic year. The research comprises two studies, both of which are reported in this paper. Study 1 involves the development of a reliable and valid instrument (ATE test), and study 2 is the findings of empirical research in schools, using the refined instrument.

Conceptual Framework for the Research

A review of previous research designed to measure “enterprise” was carried out and a number of different models used to conceptualize “enterprise” were considered. Following an early review of the literature Caird (1991) developed the General Enterprise Tendency Test, a psychometric instrument designed to measure five key entrepreneurial traits: calculated risk taking; creative tendency; high need for achievement; high need for autonomy; and an internal locus of control (Caird). The use of such personality traits as a basis for developing a model of entrepreneurship, however, has suffered from conceptual and methodological problems. Personality traits are static and theories based solely on traits underestimate the influence of specific situational factors on actions (Ajzen & Fishbein, 1977). Moreover, such studies have demonstrated neither discriminant nor convergent validity (McCline, Bhat, & Baj, 2000; Robinson, Stimpson, Huefner, & Hunt, 1991). According to Gibb (1993, 2000), enterprise skills are not fixed personality traits but can be learned and developed through experience. In light of these limitations of personality trait theory, this research focused on attitude theory by building on the Entrepreneurial Attitude Orientation Scale (EAO) (Robinson et al., 1991) and subsequent work by McCline et al. (2000).

Attitude Theory

Robinson et al. (1991) based their design of the EAO instrument on a tripartite model of attitudes. Developments in social psychology have led to a definition of “attitude” as a predisposition toward a particular object (which includes abstract constructs) (Ajzen & Fishbein, 1977). The concept of “attitude” is more dynamic than that of “trait” as attitudes are responsive to external objects, and are capable of change. An “attitude” is also a much richer concept by being manifest in three ways: cognitive (beliefs), affective (emotions), and behavioral (actions) (Rust & Golombok, 1989).

As Robinson et al. (1991, p. 19) have noted “attitudes do not exist in isolation,” and rather one has an attitude toward an object. The EAO scale was developed to measure attitudes toward four dimensions associated with entrepreneurship: achievement *in business*; self-esteem *in business*; personal control *of business outcomes*; and innovation *in business*. The ATE test was designed to measure young people's attitudes toward a similar collection of dimensions associated with entrepreneurship. The final selection of

dimensions, selected for this study, was slightly different from that used by Robinson et al. to take into account the need to design an instrument to measure enterprise “potential” in young people still at school rather than actual, adult entrepreneurs.

Defining “Latent” Enterprise Potential

The next step was to find a method to conceptualize “enterprise potential” in a way that would be appropriate for young people still at school, who were unlikely to have immediate “intentions” to become entrepreneurs. Here, the model developed by Krueger and Brazeal (1994) provided the starting point. Using Shapero’s (1984) displacement model of the “entrepreneurial event,” Krueger and Brazeal distinguished between the latent entrepreneurial “potential” of individuals from the “intention” to become entrepreneurial, which is a reaction to a displacement event (something which occurs to cause a change in behavior). Peterman and Kennedy (2003) used Shapero’s model to measure school pupils’ attitudes to business start-up. According to Peterman and Kennedy, attitudes to business start-up are influenced by: perceived desirability, perceived feasibility, and the propensity to act. Using a pre-test and post-test control group design, the researchers found that the entrepreneurial experience at school had a positive impact on pupils, who recorded significant changes in their perceptions toward starting a business after taking part.

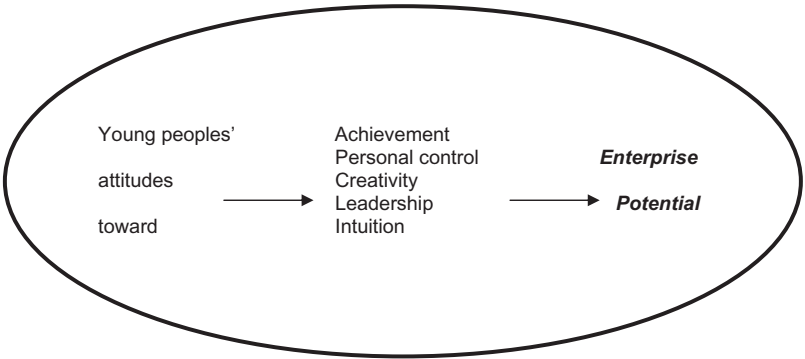
Dimensions of the Entrepreneur

Definitions of the successful entrepreneur often center on a collection of behaviors underpinned by certain skills and attributes, which include creativity; autonomy (personal control); achievement; leadership; and, less commonly, coping with uncertainty and ambiguity (Gibb, 1987, 1993, 2000, 2002). Attempts to measure the risk-taking propensity of entrepreneurs have had mixed results. Whereas studies such as Brockhaus (1976, 1980) and Peacock (1986) found no differences in risk taking between successful and unsuccessful entrepreneurs and the general population, Carland, Carland, Carland, and Pearce (1995) and Stewart, Watson, Carland, and Carland (1998) found that entrepreneurs had a greater propensity for risk taking than managers. These mixed findings and the difficulties of conceptualizing and operationalizing “risk taking” for young people at school, led to the decision to omit this dimension from the measure. “Self-esteem,” included in the Robinson et al. (1991) study, was excluded because of its complexity, particularly in relation to children and the difficulty of operationalizing this dimension.

Dimensions were selected for inclusion in the measure based on certain criteria. According to these criteria a dimension should: consistently be associated with theories of entrepreneurship and have been measured in empirical studies to assess entrepreneurship. Based on these criteria five dimensions of latent enterprise potential were selected: achievement, personal control, creativity, leadership, and intuition. It needs to be made clear, however, that it is not the dimension itself that is to be measured (e.g., respondents’ “achievement”) but rather attitudes associated with enterprise such as “achievement” and the other dimensions. Latent enterprise potential was therefore operationalized as a constellation of attitudes toward certain characteristics associated with entrepreneurship (Figure 1). These characteristics, it is argued, combine to represent the essence of what it takes to become an entrepreneur given favorable situational factors, such as access to resources and market conditions.

Figure 1

Model of Enterprise Potential in Young People



Development of the Measure of Attitudes Toward Enterprise for Young People: ATE Test

The instrument design was based on procedures for the development of attitude tests, including Rust and Golombok’s (1989) blueprint for defining constructs (dimensions), and Cronbach’s (1990) “essentials” for testing. The design was also informed by paradigms for scale development used in the field of marketing (Churchill, 1979; Gerbing & Anderson, 1988). Like Ajzen and Fishbein (1977), Churchill emphasizes the importance of specifying the “domain” of a construct, and therefore previous research on entrepreneurship was taken as the starting point for developing test items.

The design of the items was based on the definition of the domain of each of the five dimensions selected for inclusion. For each entrepreneurial dimension items were designed to reflect one of three dimensions of an attitude: beliefs (cognitive), emotions (affective), and behaviors (behavioral). Eighteen items were created for each construct that reflected cognitive, affective, and behavioral manifestations, making a total of 90 items. There follows a description of the domain for each construct, with examples of test items.

Creativity

Timmons and Spinelli (2004) argue that creativity is central to the concept of entrepreneurship and is particularly relevant in the teaching of entrepreneurship. The concept in “entrepreneurship” has been measured in a number of studies (Caird, 1991; Gelderen, 2000; Louw, van Eeden, Bosch, & Venter, 2003; McCline et al., 2000; Robinson et al., 1991; Thomas & Mueller, 2000). According to Schumpeter’s (1950) often cited dynamic model of “creative destruction,” competition arises where some companies gain competitive advantage through innovation. Personal creativity, it is argued, is the precursor of innovative behavior and therefore “creativity” is a central dimension of “enterprising potential” in individuals. More recent definitions of entrepreneurship have also emphasized the central role of creativity in the innovatory process that leads to economic activity (Curran & Burrows, 1986; Morrison, 1998).

Test items were designed to measure pupils' attitudes toward the importance of creativity, how they felt about creativity, and whether they thought they themselves were creative.

Examples of test items for creativity in the ATE test:

I believe a good imagination helps you do well at school. (cognitive)

I enjoy lessons where the teacher tries out different ways of teaching. (affective)

I can often find better ways of doing things in class. (behavioral)

Personal Control

Previous research has found a significant relationship between the Protestant work ethic (PWE) and an internal locus of control (Furnham, 1990), where "locus of control" is the extent to which a person believes they have control over their life. Some studies in the field of entrepreneurship have been equivocal about the concept of "locus of control" given the limitations of "trait theory" (Robinson et al., 1991). The concept of "personal control" as an attitude, used by Robinson et al. and others, is therefore more appropriate as a central dimension in theories of entrepreneurship.

Personal control can be viewed as a prerequisite for action and Shapero (1984) and Krueger and Carsrud (1993) propose that "propensity to act" is an essential disposition for new venture creation. Personal control has also been found to be a key factor in enterprise education programs. Bonnett and Furnham (1991) found that young people on an enterprise program had a greater degree of personal control than nonparticipants. Hansemark (1998) also discovered that participation in an enterprise program significantly increased the personal control of students compared with a control group.

Examples of test items for personal control in the ATE test:

I believe my successes at school are down to my own determination. (cognitive)

I prefer to figure things out on my own than rely on a teacher to explain. (affective)

I usually get on with things in class rather than wait for everyone else. (behavioral)

Achievement

The link between entrepreneurs and achievement motivation has been found by several studies (Caird, 1991; Durand & Shea, 1974; Morris & Fargher, 1974; Robinson et al., 1991). Achievement has been conceptualized and measured in many different ways. One study, for instance, looked at the "goal-setting," "perseverance," "drive," and "energy levels" of undergraduates (Louw et al., 2003). In developing a domain of enterprising behaviors of ordinary people, Gelderen (2000) included "being active," "busy," and "initiative."

Participants in an enterprise program for young people were found to have higher levels of achievement orientation than nonparticipants (Hansemark, 1998). Young people on a YE program were also found to hold stronger beliefs in "hard work" than nonparticipants (Bonnett & Furnham, 1991).

Examples of test items that measure achievement in the ATE test:

I have a lot more energy than most people at school. (cognitive)

I like to get work finished properly in class. (affective)

When we do a school project I'm always at the centre of things. (behavioral)

Intuition

The concept of “intuition” has been less commonly associated with entrepreneurship than others. “Intuition” is a dimension that can be associated with the ability to cope with uncertainty and unstable circumstances, which are often associated with enterprise creation (Gibb, 1987). Entrepreneurs can exploit opportunities others may miss because their cognitive abilities enable them to operate effectively even when faced with ambiguity and uncertain environments (Alvarez & Barney, 2002; Krueger & Brazeal, 1994).

Using the cognitive style index, Allison, Chell, and Hayes (2000) found that successful entrepreneurs were more intuitive in their cognitive style than managers. This underlines the importance of intuition in entrepreneurial activity and in particular intuitive approaches to information processing.

Examples of test items to measure intuition in the ATE test:

Making mistakes is a good way to learn. (cognitive)

I don't like making decisions unless I have all the facts. (affective)

I'll have a guess at a solution to a problem rather than give up. (behavioral)

Leadership

Vecchio (2003) identifies “leadership” as an important factor in entrepreneurship, but notes that it has received more attention so far within the general field of management. In a review of studies on entrepreneurial characteristics Vecchio (2003) argues that “entrepreneurship” can be viewed as a type of leadership, which occurs in a specific setting (i.e., a small business). This argument makes “leadership” a key dimension in the process of “entrepreneurship.” According to Covin and Slevin (2002), effective entrepreneurial leaders encourage a culture where resources are managed strategically and opportunities are exploited.

Timmons and Spinelli (2004, p. 250) identify “leadership” as one of the six key themes needed for new venture creation, and list skills such as “team building,” building “trust,” and being a “self-starter.” Gibb (1993) classes behaviors as enterprising, which seek to “persuade others” using skills and attributes such as “persuasiveness,” “negotiation,” “planning,” and “decision taking.” Grouped together these skills and attributes characterize part of what “leadership” embodies.

Examples of test items for leadership in the ATE test:

I believe I can easily carry my friends with me when I have an idea. (cognitive)

I enjoy talking the class round to my point of view. (affective)

I'm good at motivating my classmates. (behavioral)

The Research Questions

The research questions focus on the impact of participation in a YE Company Program on young people's attitudes to starting a business and on their enterprise “potential.” Gibb (1993, 2000) argues that enterprise skills are not fixed personality traits, but can be learned and developed through experience, which is a tacit premise of all experiential learning-based enterprise programs. Support for this argument is found in Littunen's (2000) study. Littunen highlighted the contingent nature of entrepreneurial characteristics, such as “personal control,” which he found are developed through the entrepreneurial process. Based on these findings therefore, the first two hypotheses to be tested were:

Hypothesis 1: Participants in a YE Company Program are more likely than nonparticipants to want to run their own business in future.

Hypothesis 2: Participants' ATE test scores will be higher than nonparticipants'.

The next set of hypotheses was concerned with differences in responses by demographic group. For example, national statistics show a gender difference in self-employment rates, with men more likely to be self-employed than women (Harding & Bosma, 2006). Previous research found that pupils at private schools were more positive about self-employment in the future than pupils attending state schools (Curran & Blackburn, 1990). There is also evidence that points to the positive influence of a family background of self-employment on young people's decisions to become self-employed (Curran & Blackburn; Davies, 2002). Finally, young Black people in the United States showed more desire for self-employment than other ethnic groups (Walstad & Kourilsky, 1998), and Black undergraduates have been found to display stronger entrepreneurial traits than White or Asian undergraduates (Louw et al., 2003). Based on these demographic differences, the following hypotheses were tested:

Hypothesis 3: Young men and women will differ in their desire for business ownership.

Hypothesis 4: Pupils at private schools and those at state schools will differ in their desire for business ownership.

Hypothesis 5: Pupils with a self-employed parent and those with none will differ in their desire for business ownership.

Hypothesis 6: There will be differences in the desire for business ownership between pupils from different ethnic backgrounds.

Hypothesis 7: ATE test scores will differ between young men and young women.

Hypothesis 8: ATE test scores will differ between pupils at private and state schools.

Hypothesis 9: ATE test scores will differ between pupils with a self-employed parent and pupils with none.

Hypothesis 10: ATE test scores will differ between pupils from different ethnic backgrounds.

Study 1: Testing the Reliability and Validity of the ATE Test

Evaluations of enterprise programs are necessary to provide evidence on their effectiveness to policy makers and to guide future enterprise policy direction. To be effective and provide accurate information, evaluations need to be rigorous and meet certain necessary conditions (Peterman & Kennedy, 2003; Storey, 1999, 2003; Westhead, Storey, & Martin, 2001). Independent academic evaluations are more likely to be rigorous and therefore recommended (Curran, 1996; Storey, 1999, 2003). Despite the widespread increase in enterprise programs internationally, there is an acknowledged lack of such evaluations that meet the necessary conditions. Most program evaluations are simple monitoring exercises carried out as feedback for providers and funding agencies.

Storey (1999) and Westhead et al. (2001) recommend that the design of training evaluations meet certain basic standards. They make four main recommendations. First, a

Table 1

Sample Profile (Study 1)

Characteristics	Number (%) (N = 196)	Number (%) (N = 196)
Company Program	Participants 89 (45.4)	Nonparticipants 107 (54.6)
Gender	Male 98 (50)	Female 98 (50)
Type of school	Independent 94 (48)	State 102 (52)
Highest qualification expected	Degree 167 (85.2)	Other 27 (13.9) [†]

[†] 2 not answered.

representative sample of participants should be used; second, matched control groups need to be incorporated; third, pre and post (program participation) testing should be carried out; and finally, objective as well as subjective outcomes should be measured.

In this study, the first two standards were met. The research design incorporated a representative sample and matched control groups, but the other conditions relating to longitudinal design were not adhered to. This was due to difficulties over gaining access to the subjects over the year-long period of the YE program.²

Method

Sample and Procedures. The ATE test was designed to measure the entrepreneurial “potential” of young people, and study 1 involved procedures to establish the underlying structures of the constructs and reliability of the test, and then its validity.

The ATE test was administered, as a paper-and-pencil test, to 196 young people aged 16–19 who took part in two Young Enterprise Entrepreneurship Masterclasses in central London. Almost half the sample had participated in a YE Company Program (Table 1). The sample was fairly evenly divided into pupils attending independent and state schools, and exactly half the sample was female and half was male.

A short 6-item PWE measure (Warr, Cook, & Wall, 1979) was used to test for validity of the ATE test.

Reliability Testing. Two tests of reliability were used: exploratory factor analysis (EFA) and Cronbach’s alphas. According to Hair, Anderson, Taltham, and Black (1998), EFA is designed to extract latent factors or a set of common underlying dimensions of the overall construct. Items in the same common underlying dimension will show high correlation with each other, but low correlation with other items loading on different dimensions. An EFA was performed to discover whether items in each construct loaded only on that construct.

2. Based on the goodwill developed through this study, however, future testing of the ATE test will use pre and post testing and, where possible, some objective measures.

Table 2

Exploratory Factor Analysis (Varimax) for the Attitude Toward Enterprise Test (N = 196)

Items	Leadership scale	Creativity scale	Achievement scale	Personal control scale
1. I enjoy talking the class round to my point of view.	.715	—	—	—
2. I usually take the initiative on any project I'm involved in.	.708	—	—	—
3. I think I can easily carry my classmates with me when I have an idea.	.680	—	—	—
4. I enjoy talking responsibility for things in the classroom.	.662	—	—	—
5. I like taking the lead in projects at school.	.646	—	—	—
6. When we do a school project I'm right there at the centre of things.	.567	—	—	—
7. I believe that a good imagination helps you do well at school.	—	.827	—	—
8. I enjoy lessons where the teacher tries out different ways of teaching.	—	.717	—	—
9. Being creative is an advantage in lessons.	—	.716	—	—
10. I like lessons that really stretch my imagination.	—	.703	—	—
11. I have a lot more energy than most people at school.	—	—	.723	—
12. I like to get things off the ground when we're doing a project.	—	—	.720	—
13. I'm usually the "driving force" among my friends.	—	—	.608	—
14. I like to have a role at the margins of a project. [†]	—	—	.593	—
15. I like to get on with things in class rather than be taken through step-by-step by the teacher.	—	—	—	.800
16. I usually get on with things in class rather than wait for everyone else.	—	—	—	.682
17. I don't like lessons where we are left on our own to get on with our work. [†]	—	—	—	.582
18. I prefer to figure things out on my own rather than rely on a teacher to explain everything.	—	—	—	.504

[†] Scores reversed for these items.

The Kaiser–Myer–Olkin value was acceptable at .823, as was the significance of the Bartlett test at .00. Each construct began the process with 18 items and many of these loaded onto more than one factor, indicating redundant items. After an iterative process of removing items and performing factor analyses a solution was found that identified four factors, whose items loaded only on that factor (Table 2). It was not possible to find a solution that included the “intuition” construct and therefore this construct was omitted from the measure.

Internal consistency is the extent to which each item correlates with the rest, and how well it correlates, with the total item pool in the subscale. Cronbach’s (1990) coefficient alphas were calculated for the remaining items in each construct.

There is some debate about what constitutes an acceptable alpha score. A summary of over 800 articles of empirical studies using Cronbach’s alphas found that reported coefficients ranged from .6 to .99 (Peterson, 1994). Malhotra (1993) and Tull and Hawkins (1993) recommend .6. whereas Churchill (1979), on the other hand, recommends .7. In

Table 3

Cronbach's Alpha Scores for Main
Constructs (N = 196)

Construct	Number of items	Cronbach's coefficient alpha
Self-perceptions of ability to lead others	6	.8097
Perceptions of creativity	4	.7528
Achievement orientation	4	.7501
Perceived personal control	4	.7250
Protestant work ethic	6	.7004
ATE test (overall alpha)	17	.8292

ATE, attitude toward enterprise.

this study, .7 was used as the benchmark and all four constructs passed this threshold (Table 3).

Validity Testing. To test the validity of the measure, a similar already published measure, based on the PWE scale, was used. The similarities between the achievement ethic of entrepreneurs and the PWE led to the choice of the latter to test the validity of the ATE test (Bonnett & Furnham, 1991; Furnham, 1990). A short 6-item test designed to measure "work ethic," and with language easily understood by 16–19 year olds, was selected (Warr et al., 1979). An EFA showed that the PWE test was unidimensional (Table 4), and the Cronbach's alpha score showed that it was internally reliable (Table 3).

According to Churchill (1979) and subsequent researchers (e.g., Hair et al., 1998, p. 118), a scientific method for establishing the validity of a new measure is the extent to which it correlates with other similar measures (convergent validity) and the extent to which it can be discriminated from other measures (discriminant validity). Discriminant validity proves that the measure is indeed testing different (new) constructs.

To establish discriminant validity the measure of average variance extracted (AVE) (Fornell & Larcker, 1981) was used. A correlation matrix was calculated for the four ATE constructs: personal control, achievement, leadership, and creativity; and the PWE scale (Table 5). For discriminant validity to be established a construct's AVE should be greater than .50 and the square root of the AVE higher than the corresponding bivariate correlation. Both these criteria were met by this exercise.

"Achievement," "leadership," and "personal control" were all positively correlated with the PWE scale. "Creativity," however, was negatively correlated with the PWE scale, indicating that this construct is not related to PWE. Moreover, "achievement," "leadership," and "personal control" were all correlated with each other; however, correlations with "creativity" for each construct was low. This may highlight limitations of the meta-construct of entrepreneurial "potential," which the overall ATE test was designed to measure.

Having established that the ATE test was reliable and valid, the remaining hypotheses were tested using the refined measure comprising 18 items. Hypotheses 7–10 were

Table 4

Exploratory Factor Analysis of the Protestant Work Ethic Scale (N = 196)

Items	Factor loadings
19. Even if I won a great deal of money on the lottery I would continue to work.	.677
20. If unemployment benefit was really high I would still prefer to work.	.659
21. I would hate to live off benefits.	.658
22. Having a job is very important to me.	.610
23. The most important things that happen to me involve work.	.533
24. I would soon get very bored if I had no work to do.	.521

Source: Protestant work ethic (Warr et al., 1979).

Table 5

Correlation Matrix Showing Discriminant Validity of Subscales (N = 196)

Subscale	CONTROL	ACH	LEAD	CREATE	PWE
Perceived personal control (CONTROL)	.714 [†]				
Achievement orientation (ACH)	.4094	.751 [†]			
Self-perceptions of ability to lead others (LEAD)	.4313	.5524	.758 [†]		
Perceptions of creativity (CREATE)	.1375	.2814	.2110	.849 [†]	
Protestant work ethic (PWE)	.3251	.4838	.4001	-.0029	.515 [†]

[†] $\sqrt{\text{of the average variance extracted.}}$

designed to investigate the impact of a range of demographic factors on enterprise potential as measured by the ATE test.

Study 2: The Influence of Demographic Characteristics on Enterprise Potential

Method

Sample and Procedures. The sample was drawn from 3 state schools, 1 of which was a single sex girls' school, and 3 private schools, 1 of which was a single sex boys' school (Table 6). There were 122 male and 127 female respondents ranging in age from 15 to 20 with a median age of 17. A total of 109 pupils had participated in the YE Company

Table 6

Sample Profile Study 2

Characteristics	Total	Company Program participant	Nonparticipant (control group)
Type of school			
Private	122	60 (55.5%)	62 (44.3%)
State	127	49 (45.0%)	78 (55.7%)
Total	249	109 (100%)	140 (100%)
Gender			
Boys	122	52 (47.7%)	70 (50.0%)
Girls	127	57 (52.3%)	70 (50.0%)
Total	249	109 (100%)	140 (100%)
Ethnic background			
Asian [†]	64	29 (26.6%)	35 (25.0%)
Black	85	33 (30.3%)	52 (37.1%)
White	100	47 (43.1%)	53 (37.8%)
Total	249	109 (100%)	140 (100%)
Self-employed parent			
Yes	100	47 (43.1%)	53 (37.9%)
No	149	61 (56.9%)	87 (62.1%)
Total	249	109 (100%)	140 (100%)

[†] The Asian category in particular is a very broad one encompassing a range of British Asians along with respondents from India, Pakistan, and Bangladesh, and therefore caution needs to be used when interpreting these findings.

Program and there was a matched control group of 140 pupils who had not participated. The control group was drawn from the same schools as participants, and was matched in terms of type of school attended, gender, age, and parents' self-employment status.

Employment Choices and the Desire for Self-Employment. The first hypothesis concerns the impact of participation in a YE Company Program on young people's desire for future self-employment. Respondents were asked to indicate on a scale of 1–4 how likely it was that they would be employed in one of five options in 6 years time. The five options were:

1. Work for a large organization.
2. Work for a small business.
3. Be self-employed/run own business.
4. Professional occupation.
5. Unemployed.

Hypotheses 3, 4, 5, and 6 were designed to investigate the impact on the desire for self-employment of four demographic characteristics: gender, type of school, having a self-employed parent, and ethnic background. In order to test the relative strength/weakness of each independent variable on the dependent variable—choice of future employment—a multiple analysis of variance was calculated.

Only two of the independent variables, participation in Company Program and having a self-employed parent, were significant at the .05 level overall in the choice of future employment options (Table 7). Looking at each employment option individually

Table 7

Significance of Demographic Variables on Anticipated Career in 6 Years Time:
Tests of Between Subjects Effects (Multiple Analysis of Variance)

	Company Program	Gender	Self-employed parent	Type of school	Ethnic background	Levene's test	Eta squared
Dependent Variables	Overall <i>p</i> = .029**	Overall <i>p</i> = .192	Overall <i>p</i> = .011**	Overall <i>p</i> = .075*	Overall <i>p</i> = .058*		
	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
Work for a large organization	.197	.059*	.127	.821	.030**	.129	.197
Work for a small business	.042**	.076*	.036**	.303	.699	.225	.201
Be self-employed	.040**	.058*	.025**	.761	.049**	.320	.193
Professional	.075*	.493	.054*	.075*	.048**	.193	.223
Unemployed	.733	.459	.235	.326	.072*	.341	.317

* significant at .10 level; ** significant at .05 level.

participants in a Company Program were more inclined to aspire to future self-employment than nonparticipants (*p* = .040). Interestingly, they were also *less* likely to want to work for a small business.

Pupils with a self-employed parent were significantly more likely to opt for self-employment than pupils with no self-employed parents (*p* = .043). They were also more likely to consider working in a small business (*p* = .036).

Ethnic background and type of school attended were approaching statistical significance (*p* < .10). Black pupils were more likely to consider self-employment in the future than either Asian or White pupils (*p* = .051), though they were also more likely to envisage unemployment as a possibility than either of the other two groups (*p* = .072), suggesting that self-employment may be a “negative” choice for some of these pupils, motivated by “push” rather than “pull” factors.

Asian pupils were more likely to see themselves working for a large organization than White or Black pupils, and White pupils were more likely than Asian or Black pupils to envisage working in a small business. On the other hand, Asian pupils were more likely to aspire to a professional occupation than either White or Black pupils.

Type of school attended was also approaching statistical significance (*p* < .10). Pupils at private independent schools were more likely to opt for a professional occupation than pupils at state schools.

Gender was not significant overall, though for each of the three options of being self-employed (*p* = .058), working for a small firm (*p* = .042), or being employed in a professional occupation (*p* = .075), boys were more likely to make a positive choice than were girls.

The Enterprise Potential of Young People. These hypotheses concern the entrepreneurial “potential” of young people taking into account participation in the Company Program

Table 8

Analysis of Variance Results for Attitude Toward Enterprise (ATE) Test Scores (N-249)

	Dependent variable				
	Ethnic background	Type of school	Company Program	Gender	Self-employed parent
Mean ATE test scores	Significance .000**	Significance .001**	Significance .002**	Significance .075*	Significance .228
	Black 72.0	Private 69.2	Participant 69.0	Male 66.8	Yes 68.1
	Asian 65.4	State 65.3	Nonparticipant 65.5	Female 64.1	No 66.7
	White 64.4				

* significant at .10 level; ** significant at .05 level.
ATE, attitude toward enterprise.

and four demographic variables: ethnic background, type of school, gender, and having a self-employed parent. An analysis of variance was calculated using these five factors as the independent variables, and ATE test scores as the dependent variable (Table 8).

All the independent variables apart from having a self-employed parent were significant for ATE test scores (Table 8). Participants in the Company Program scored significantly higher on the ATE test than nonparticipants. Black pupils scored significantly higher than either Asian or White pupils. Pupils attending private schools scored higher than pupils attending state schools. Finally, boys scored higher than girls (approaching statistical significance $p < .10$). Given these differences in scores between demographic subgroups, it was decided to investigate the impact of participation in the Company Program at group level using bivariate analysis. As having a self-employed parent was not significant, this category was omitted.

Impact of Company Program on Demographic Subgroups. Demographic subgroups were categorized by gender, ethnic background, and type of school attended. *T*-tests were calculated to estimate whether any differences in scores between participants and non-participants in the Company Program were significant.

Participants in all subgroups scored higher on the ATE test than nonparticipants (Table 9). Black girls and Asian boys, who participated, scored significantly higher than their counterparts in the control group who did not participate. Participant boys at private schools and at state schools, and participant girls at state schools also scored significantly higher than similar pupils who did not participate.

Discussion

Implications of the Research

A refined version of the ATE test was found to be reliable and valid, which lends some weight to the reported findings. Like previous studies (notably Peterman & Kennedy,

Table 9

Independent Samples Tests for Attitude Toward Enterprise (ATE) Test Scores by Participation

Demographic subgroups	Mean scores		Significance
	Participants	Nonparticipants	
All boys (n = 122)	68.0	65.8	.522
Black boys (n = 38)	71.4	69.7	.697
Asian boys (n = 29)	70.1	61.0	.000**
White boys (n = 55)	68.1	65.6	.561
All girls (n = 127)	66.7	61.9	.003**
Black girls (n = 46)	73.8	62.6	.056*
Asian girls (n = 33)	68.4	63.8	.310
White girls (n = 48)	63.0	60.8	.301
Private school boys (n = 66)	72.2	67.0	.039**
State school boys (n = 56)	67.2	63.2	.066*
Private school girls (n = 55)	65.2	63.2	.411
State school girls (n = 72)	68.0	60.9	.002**

* significant at .10; ** significant at .05.

2003) this research found that participation in an enterprise program positively influenced the desire for self-employment. Peterman and Kennedy investigated the impact of a Young Achievement Australia program similar to the YE Company Program, which is also derived from the U.S. Junior Achievement model.

Six of the proposed hypotheses of the study were statistically significant and four were not. From the range of demographic factors hypothesized to influence either a desire for self-employment or enterprise potential, “ethnicity,” “having a self-employed parent,” “type of school attended,” and “participation in an enterprise program” proved to be significant.

The enterprise “potential” of young people, as measured by the ATE test, was increased by participation in the Company Program. Therefore, evidence is accumulating that this model of enterprise program in secondary schools can have a positive impact on fostering self-employment in young people. Further studies are needed to test the impact of other similar programs.

Desire for self-employment was also found to be related to demographic characteristics, such as ethnic background, gender, and having a self-employed parent. Pupils with Black ethnic backgrounds were more likely to envisage self-employment for themselves in the future than either of the other ethnic groups. A large-scale survey of attitudes to self-employment in the United States found that young Black people showed a high level of interest in business ownership, though this was not mirrored by an equally high rate of existing business ownership among the Black population (Walstad & Kourilsky, 1998). Louw et al. (2003) found that Black undergraduates scored consistently higher for entrepreneurial characteristics such as risk taking and taking initiative.

According to the Global Entrepreneurship Monitor (GEM) survey, entrepreneurial activity in the United Kingdom (including nascent enterprises) is highest among mixed

Black Caribbean/White, Black Caribbean, and Black African (Harding & Bosma, 2006). Many people who are considering starting a business (nascent entrepreneurs), however, do not actually do so (SBS, 2005). The actual rate of self-employment in the United Kingdom is highest among Asian groups and Asian British groups (14%) compared with Black or Black British groups (7%), while rates among White groups are 11% (Whitehead, Purdy, & Mascarenhas-Keyes, 2006).

The findings of this study suggest a similar gap between the aspirations of young Black people for self-employment and the reality of attaining this goal. This study found that young Black people were significantly more positive about future self-employment than either White or Asian pupils. Black pupils also scored significantly higher on the ATE test and therefore displayed greater enterprise potential than either White or Asian pupils. It is possible that as in the United States a lack of positive Black role models in business and a lack of business knowledge may hold back young Black people from becoming self-employed (Walstad & Kourilsky, 1998). If this is the case, then enterprise education in schools needs to be targeted at young Black people in particular, alongside more promotion of successful Black business owners, if they are to attain their employment aspirations.

Limitations of the Research

This study set out to investigate the impact of participation in a YE Company Program on young people's desire for self-employment and on their "enterprise potential" as measured by the ATE test. There are a number of limitations though, which indicates that more work is needed on the ATE test and the methodologies for its use.

As a cross-sectional design was used, this study needs to address the possibility of self-selection bias in the sample of participants and nonparticipants. The GEM study (Harding & Bosma, 2006) found that voluntary training increases the likelihood of someone thinking of starting a business considerably more than compulsory training. Therefore, though there may be some self-selection bias in the sample, this does not undermine the potential of participation in the Company Program to positively influence attitudes toward enterprise. In future studies, pre and post testing would eliminate the effect of self-selection by participants and better isolate, and so test, the impact of the Company Program.

The ATE test was designed to assess latent enterprise "potential" in pupils by measuring "attitudes" toward achievement, personal control, creativity, leadership, and intuition. These constructs, it was argued, combine to represent the essence of what it takes to become an entrepreneur, given favorable situational factors. However, procedures for identifying underlying structures, reliability, and validity tests exposed weaknesses in the concept of "enterprise potential" and in the measure.

"Creativity" was found to be correlated only weakly with the other constructs and was negatively correlated with the PWE scale. Nevertheless, a concept of creativity is historically intrinsic to theories of entrepreneurship. Therefore, either the items for this construct were badly designed or there is a conceptual problem with a meta-construct of "enterprise potential" which includes creativity. Reliability test scores for creativity were similar if not higher than some of the other constructs; therefore, the design is sound. We are left with the possibility that the meta-construct of "enterprise potential" is in fact a multidimensional construct comprised of five constructs that cannot be measured by one single-attitude test. "Achievement," "leadership," and "personal control" hang together as constructs, which describe a person who "strives" toward their goals. "Creativity" is clearly not in the same mold and therefore a unique attitude scale may be needed to

measure it. Further research, both conceptual and empirical, is needed to develop a more coherent multidimensional construct for “enterprise potential.”

“Intuition” was omitted from the measure after EFA showed it was not a unidimensional factor, but had items that loaded on other factors. The importance of “intuition” to theories of entrepreneurship is gaining recognition and it would be worthwhile for future studies to continue to attempt to develop this construct. More work needs to be done, in particular, to specify the domain of “intuition,” to enable the development of better test items. As with “creativity” it may prove to be the case that a separate scale is needed to measure “intuition.”

This study has shown that it is possible to design a test based on attitude theory and using scale development techniques, to measure a concept defined as “enterprise potential” in school-aged young people. Such a test can be used in independent evaluations of enterprise education programs, which can take account of a range of other influences on young people’s attitudes toward enterprise. The ATE test could be improved by refinements to some of the underlying constructs and to the test itself, by wider application during further research.

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