

Promoting entrepreneurial potential in adolescents: A pilot study based on intergenerational contact

A. Fumero*, A. de Miguel and F.J. García-Rodríguez

University of La Laguna, Psychology Department,
Campus de Guajara, 38200 La Laguna, Santa Cruz de Tenerife, Spain

*To whom all correspondence should be addressed
afumero@ull.es

Recently there has been an increasing interest in promoting entrepreneurship among undergraduates, however, there have been few studies focusing on adolescents. The two aims of this research were to demonstrate the reliability and validity of the Attitudes to Entrepreneurship (ATE) test with a sample of Spanish adolescents, and to study the effect of using an intervention based on intergenerational contact on the entrepreneurial potential of young people. Two studies were carried out with these objectives. The results from Study 1 confirmed the reliability of the ATE test; entrepreneurial potential was related to achievement motivation and affected by gender. In Study 2, we used an experimental and control groups design and pre and post-test measures. In the classroom context, older adults were interviewed by students about their life and work experiences. Entrepreneurship was increased by the intergenerational contact in the experimental group, specifically, in the Leadership, Creativity and Achievement factors, in boys. Achievement motivation in the academic context also was increased. The intergenerational contact based on emotional implications and active participation promotes latent entrepreneurship and academic interest.

Introduction

Entrepreneurial spirit has long been considered a function of individuals' personalities (Kuratko, 2007; McKenzie, Ugbah & Smothers, 2007; Okhomin, 2010). However, the definition of entrepreneurial potential, and the kind of activities that make up entrepreneurial behaviour have been the subject of some controversy (Busenitz, West, Shepherd, Nelson, Chandler & Zacharakis, 2003; Chell, 2008; Hisrich, Langan-Fox & Grant, 2007). Certain aspects of entrepreneurial activity and behavior have been repeatedly studied in the literature, for example, the recognition and exploitation of opportunities, and innovation and creation of businesses (Gartner, 1988; Kuratko, 2007; McKenzie *et al.*, 2007; Shane & Venkataraman, 2000). This potential has commonly been conceptualized as the creation of a business (see Gartner, 1988; Shane, 2008), and this has been criticized by numerous authors as being too narrow and de-contextualized (McKenzie *et al.*, 2007). There was a similar debate related to entrepreneurial activities and/or behaviour (Kuratko, 2007; Morris, Kuratko & Covin, 2008), since they do not have to imply business activity, as in the case of social entrepreneurship (Mair & Martí, 2006; Tracey & Phillips, 2007). It seems, therefore, that though the creation of a business can be one of the relevant aspects of entrepreneurial potential, it is neither an essential nor a sufficient one (McKenzie *et al.*, 2007).

In general, the study of entrepreneurial behaviour must incorporate variables from three areas, concretely, individual personality traits, entrepreneurial behaviour, and the positive influence of a supportive environment.

The individual traits and motivations may be used by schools, and career counsellors to identify individuals that may be suited to undertake and succeed in entrepreneurial ventures. However, despite the potential importance of individual characteristics, there are some unanswered questions regarding the role that motivation and personal characteristics play in entrepreneurial activity (Shane & Venkataraman, 2000).

McClelland (1961) suggested that need of achievement (nAch) plays an important role in engaging people in energetic and innovative activities. The key result was that high nAch scores were related to being attracted to and to performing well in entrepreneurial jobs.

A meta-analysis study which analyzed research about achievement motivation and entrepreneurship behaviour (Collins, Hange & Locke, 2004) found that the choice of an entrepreneurial career and the entrepreneurial performance were significantly correlated with nAch. These relationships do not vary depending on how researchers have defined entrepreneurial behavior in their study. Achievement motivation can be modified by education programs, but cultural background also has a role in what it is valued by students (De Pillis & DeWitt, 2008).

The impact of business education on the attitudes and perceptions of entrepreneurial potential has not been reliably demonstrated (Honig, 2004; Krueger & Brazeal, 1994). This was despite recognizing that the ideal stage to acquire basic knowledge and to promote a positive attitude is childhood and adolescence (Filion, 1994), and that prior educational experiences influence attitudes towards starting up a

business. However, other studies (Bécharde & Grégoire, 2005; Gorman, Hanlon & King, 1997) which reviewed literature on education related to entrepreneurial potential, companies and small businesses, concluded that more rigorous studies are required. In addition, Peterman and Kennedy (2003) suggested that stricter methods should be employed for testing hypotheses: methods that involve larger samples and control groups, and over a longer period of time. Therefore, the panorama that these works depicted has suggested that there was not a conclusive relationship between education and entrepreneurship (entrepreneurial spirit) (Athayde, 2009; Peterman & Kennedy, 2003; Souitaris, Zerbinati & Al-Laham, 2007).

The influence that educational and business experiences can have on attitudes towards starting up a business has been recognized, however, certain aspects such as the impact that the perception of entrepreneurial potential has on these attitudes has yet to be confirmed.

Intervention programs aimed at encouraging this potential have attempted to cover a wide range of initiatives and pedagogical methods to promote entrepreneurial competencies among students (Greene, Katz & Johannisson, 2004). Among these initiatives, there have been observational approaches, such as presentations, guest speakers or field trips to companies, as well as more 'experiential' ones that include simulations, writing business plans and even the creation of a business (Gartner & Vesper, 1994; Hills, 1988; Kuratko, 2005; Solomon, Duffy & Tarabishy, 2002). It is often argued that the most successful entrepreneurship education should require a more experiential and active approach (Aronsson, 2004; Gendron, 2004; Honing, 2004; Solomon *et al.*, 2002). These approaches encourage students to face the real practice of starting up and running a business and provide students with a learning experience that may be easier to internalize. This approach can be summed up with the idea that the greater the entrepreneurial experience is, the greater will be the intentions of student entrepreneurs, the perceived desirability and feasibility, the propensity to act, the creativity, and the attitudes towards business people. However, regardless of the pedagogical approach adopted, Souitaris *et al.* (2007) demonstrated individual benefits arise from entrepreneurship education programs.

In recent years, a study (Lepoutre, Van den Berghe, Tilleuil & Crijns, 2010) investigated, using a sample of adolescents, whether entrepreneurship education programs have a positive effect on entrepreneurial intentions, the creativity and the attitude towards business owners. It also studied whether this effect manifested itself in different ways depending on the chance to experience being an entrepreneur from close up. The results showed, tentatively, that these programs do have an impact, as significant differences exist between their pre- and post-stages when retrospectively analyses are made. Thus, it seems to be confirmed that entrepreneurial intentions are modified significantly as a result of education programs focusing on entrepreneurship, just as previous studies have shown (Athayde, 2009; Charney & Libecap, 2000; Peterman &

Kennedy, 2003; Souitaris *et al.*, 2007; Wilson, Kickul & Marlino, 2007). However, bearing in mind that the research design did not include a control group, it could be argued that these significant retrospective differences between the pre- and post-test stages could be due to natural progress made by students during their school years (Hill & Betz, 2005). The analysis made by Lepoutre *et al.* (2010) on the differences between entrepreneurship programs, indicated that those that took longer and were more experiential were the most effective in increasing perceived desirability, perceived feasibility and creativity. Nonetheless, these programs were not as important when it came to entrepreneurial intentions and the propensity to act. To sum up, as it has been pointed out by various studies (Aronsson, 2004; Izquierdo, 2008; Kuratko, 2005; Solomon *et al.*, 2002), education that is aimed at entrepreneurial attitudes is particularly more successful when it focuses on a practical and experiential approach.

Another interesting finding from the study of Lepoutre *et al.* (2010) refers to the fact that participants' assessment of the entrepreneurial education program turned out to be the most significant indicator of change produced in interesting variables. This highlights the importance of adapting these programs so that students find them enjoyable and relevant. Particularly, passion and emotion have been recognized as playing a vital role in various aspects of entrepreneurship (Baron, 2008; Cardon, Wincent, Singh & Drnovsek, 2009). The focus on emotional aspects of business start-ups could well make a significant contribution to entrepreneurship research (Souitaris *et al.*, 2007).

Intergenerational contact as an educational strategy

Early research on the contacts between young and old people had a wide range of methodological and theoretical inadequacies (Fox & Giles, 1993). However, in recent years the activity of intergenerational programs has increased in European, Asian and American contexts. Their objectives have been to interact, stimulate, educate, support and provide care for one another. These initiatives in intergenerational engagements have reinforced the educational curriculum and have contributed to student learning.

Intergenerational contact is a strategy that has favored the development of emotional aspects in an academic context. Research into intergenerational relationships has provided positive results for both the young and the older adults. In the case of young people, the benefits were shown by an improvement in social skills, communication skills, problem solving, greater self-esteem and the promotion of friendships (Rosebrook, 2007), as well as better academic performance (Rebok, Carlson & Glass, 2004; Teale, 2003;) and even a reduction in alcohol and drug consumption (Tierney, Grossman & Resch, 1995). Links to curricular areas has been one of the primary objectives of school-based intergenerational programs (Kaplan, 2002) in the areas of history, urban studies, math, geology, economics, and so on.

This idea of connecting the academic context with emotional aspects has led us to consider the possibility that an intergenerational program could motivate both entrepreneurship and academic performance in young people in compulsory education. Specifically, in the last two years, after which students have to decide whether to continue with their education at university, undergo vocational training or leave education completely.

These young people are focused more on their immediate education, and thus manifest a latent 'entrepreneurial potential', which is different to the 'intention' to become an entrepreneur shown by people who have finished their academic/vocational training.

Empirical work

To measure enterprise 'potential' of school-aged young people, Athayde (2009) designed ATE test (*Attitudes toward Enterprise*) to assess attitudes towards psychological characteristics associated with entrepreneurship. These characteristics represent the essence of what it takes to become an entrepreneur given favourable situational factors, such as market conditions and access to resources. The ATE test is made up of four factors: Creativity (innovation and imagination), Personal Control (propensity to act), Achievement (energy, hard work), and Leadership (persuasiveness, decision taking). This test was used in independent evaluations of entrepreneurship education programs. Its total score was sensitive to changes produced by these programs (Athayde, 2009).

This study has two main aims: first, to test the reliability and validity of the ATE test with a Spanish sample. Second, to find out if ATE scores can change as an effect of an intervention program based on the exposure to the expertise of older adults; this program can be considered an intergeneration contact with clear emotional implications. We propose four hypotheses to be tested.

A test should have an adequate goodness of fit. As we are going to use the ATE test in a Spanish context, the first two questions concern its internal consistency (Athayde, 2009) and its convergent validity with achievement motivation (Collins *et al.*, 2004).

Hypothesis 1: Reliability and validity indexes of the ATE test will be adequate when using a Spanish sample.

Furthermore, various studies have demonstrated a difference between men and women when it comes to starting up a business activity (Brush, 1997; De Tiene & Chandler, 2007; Gatewood, Carter, Brush, Greene & Hart, 2003; Gupta, Turban, Arzu Wasti & Sikdar, 2009; Reynolds, Bygrave & Autio, 2004; Ruiz, Camelo, de la Vega, Coduras & Justol, 2010). This fact is regardless of geographical setting, as shown by Minniti, Arenius and Langowitz (2005) using data from the Global Entrepreneurship Monitor Project, they found that in the 70 countries analysed the ratio between the percentage of female and male entrepreneurs is significantly

unfavourable in terms of female participation. In the specific case of Spain, there is also clear evidence of this, with a worsening of the situation since 2009 (Ruiz *et al.*, 2010; Ruiz, Camelo, de la Vega & Coduras, 2012).

This may be caused, at least in part, because starting up businesses tends to be largely associated with masculine rather than feminine roles (Baron & Ensley, 2006; Gupta, Turban & Bhawe, 2008). Similarly, some studies have shown that women reject the idea of starting up a new business due to a perception that they lack the necessary skills (Chen, Greene & Crick, 1998; Kickul, Wilson, Marlino & Barbosa, 2008; Mueller & Conway Dato-On, 2008; Wilson *et al.*, 2007). It should also be taken into account that Athayde (2009) confirmed a higher global score in the ATE among men than women, consequently:

Hypothesis 2: There will be gender differences in the ATE test with young men scoring higher than young women.

Intergenerational contact has been useful to improve curricular performance in young people (Kaplan, 2002). We want to promote entrepreneurship potential in this specific group using an experimental design that includes a control group.

Hypothesis 3: In the experimental group, ATE test scores will be higher than in the control group after the intervention program.

If ATE test factors are correlated with academic motivation (hypothesis 1), a psychological intervention, which increases entrepreneurship potential (hypothesis 3), will indirectly affect motivation.

Hypothesis 4: Academic motivation will be affected by the intervention program.

Research methodology: Study 1

Testing reliability and validity of the ATE test for a Spanish sample

Participants

A total of 145 adolescents from the 3rd and 4th Secondary School courses, in Tenerife (Spain), participated voluntarily in the study. The group was made up of 66 girls and 79 boys with an average age of 16.84 and standard deviation of 3.14.

Instruments

ATE test (*Attitudes toward Enterprise*; Athayde, 2009) is a measurement of entrepreneurial potential among young people. It's a pencil and paper test with 21 multiple-choice items and a 7-point Likert scale (1 = totally disagree, 7 = totally agree). The test measures Leadership, Creativity, Achievement, and Personal Control factors. A total score can also be used, whose reliability was 0.83 (Athayde,

2009). Back translation of the test was made by two bilingual university teachers.

The Spanish version of the HSPQ-A (*Personality Questionnaire for Adolescents*, Cattell & Cattell, 1989) has shown factorial validity, although with quite low internal consistency coefficients that range between 0.20 and 0.43. We have only selected factor H: Shy-Venturesome, which has 10 items with a 3 point answer scale.

Academic Motivation and Anxiety (MA, Pelechano, 1989) is a multidimensional measurement of the need of achievement in academic contexts, created for Spanish adolescents. This instrument has 36 items (YES/NO answer), which assess four factors labelled Extreme self-concept, Academic test anxiety, Lack of interest to study, and Self-exigency to study. Internal consistency indexes range from 0.48 to 0.77 (Navas, 1994).

Procedure

The three tests were put together in a booklet containing other scales aimed at collecting information under a wider research project. The booklet was given to the students in their classrooms, after obtaining consent from the teachers. The tests were self-administered in groups and participants received neither a reward nor payment for filling-in the questionnaire, but a few words of thanks were given to them.

Results

Hypothesis 1 raised the question of reliability and validity of the ATE test. Table 1 presents the main statistics for each of the factors included in the ATE scale. Cronbach’s alpha for the total score was 0.80, a value close to that obtained in the original study by Atahyde (2009).

Table 1: ATE test factors’ means and standard deviations, and gender differences in Study 1

	Total group		Girls		Boys		t	p	d
	M	SD	M	SD	M	SD			
Leadership	24.20	7.95	23.73	8.12	24.60	7.83	-0.64	.524	.11
Creativity	22.06	4.77	21.25	5.38	22.71	4.13	-1.77	.080	.31
Achievement	15.25	4.31	14.60	4.52	15.9	4.04	-2.12	.036	.36
Personal Control	16.35	4.64	16.27	5.09	16.43	4.27	-0.20	.840	.03
Total score	77.53	15.55	76.42	16.29	78.40	15.01	-0.71	.482	.13

Note. M = mean; SD = standard deviation; t = Student t; d = Cohen’s d; p = signification

With the aim of confirming whether the entrepreneurial factors showed any differences between genders, an analysis of independent sample t-test was carried out. The results indicated gender differences in the Achievement factor (a moderate Cohen’s d): boys scored significantly higher than girls ($t_{143}=2.12, p<.04$). However, no significant gender differences appeared in the other three factors on the ATE scale or in the total score (see table 1).

Next, the convergent validity of ATE factors of personality and motivational factors were studied. The correlational analysis between ATE factors and Shy-Venturesome personality factor showed significant relationships with Leadership ($r_{109}=.35, p<.001$) and Achievement ($r_{109}=.28, p<.01$) factors, and ATE total score ($r_{109}=.27, p<.01$).

In addition, entrepreneurial factors were correlated with motivational ones. The ATE factors and the total ATE score correlated positively with the motivational factors of Extreme self-concept, and Self-exigency to study (see table 2), but not for the MA factor and Achievement, which only reached a marginal level of significance ($p<.06$).

Therefore, hypothesis 1 is confirmed with respect to internal consistency and partially confirmed regarding convergent validity. Hypothesis 2 only received partial support from the ATE Achievement factor.

Table 2: Correlation matrix among ATE factors and HSPQ-H and MA factors

	HSPQ-H	MA			
		Extreme self-concept	Academic test anxiety	Lack of interest to study	Self-exigency to study
Leadership	.35**	.34***	-.12	-.18*	.19*
Creativity	.09	.31***	-.01	-.15	.22*
Achievement	.28**	.30***	-.07	-.02	.17
Personal Control	.01	.37***	-.07	-.02	.26**
Total score	.27**	.43***	-.05	-.14	.26**

Note. HSPQ-H: Shy – Venturesome; MA: Academic Motivation and Anxiety; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Research methodology: Study 2

Impact of an intergenerational contact program on entrepreneurship

Curricular diversification is a different and exceptional way of studying the last two years of compulsory education in Europe (de Prada, 2002), and specifically in Spain (BOE, 2006). It involves a final effort in favor of those students who for various reasons had serious learning problems. The aim is that these students do not miss the opportunity to achieve a basic level of education and obtain the qualification of Graduate in Secondary Education. Therefore, alternatives to traditional education programs need to be proposed which incorporate curricular diversification and achieve an improvement in the academic performance of these students.

The second aim of this paper is to analyse whether intergenerational contact can encourage the entrepreneurial potential of students by using an experimental design involving two groups (control and experimental groups).

Participants and instruments

The control group was made up of 55 teenagers (23 girls and 32 boys) with an average age of 16.53 years old and standard deviation of 1.82. The experimental group consisted of 31 girls and 24 boys with an average age of 16.09 years old and standard deviation of 0.38. They were all studying their last two years of compulsory secondary education in Tenerife (Spain). The experimental group undertook the curricular diversification course, while the control group undertook the normal curricular course. The selection of the control group attempted to match as closely as possible the experimental one with regard to the relevant demographic variables. There were no significant inter-group differences in the gender and age variables.

Both experimental and control groups completed the ATE and MA instruments at two different times.

Procedure

The intervention consisted of a structured interview based on a prior general interview that required the older adults to provide information about their first work experience, difficulties that had to be overcome, requirements needed to obtain a job or begin a business, etc. These questions were

personalized according to the life and work experience of each of the older adult participants.

A support person helped the older adults in the intergenerational contact, asking the first question and motivating students to participate with at least one question. An example of the prior basic interview can be requested from the authors.

Each interview was given 60 minutes of class time and took place in the classroom where students normally received their classes and with the presence of their teacher.

The experimental group attended five sessions, one per week, with an average duration of sixty minutes for each session, in which one or two older people participated. During these five weeks, there was no contact between the control group and the researchers or older adults. For both groups, the pre-test assessment took place two weeks before the intervention program and the post-test two weeks after the last interview. Statistical analyses were carried out to test the hypotheses about the possible increase in entrepreneurial factor scores of the experimental group compared to the control group, as well as to detect any intra-group differences.

Finally, differences between pre-and post-test phases in the area of motivation were calculated and the possibility that differences in relevant variables could be affected by gender.

Results

Inter- and intra-group differences between pre- and post-test phases

Table 3 shows the differences between the control and experimental groups before and after the intervention regarding entrepreneurial factors. In the pre-test phase, the control group scored significantly higher in the Leadership factor than the experimental one. In the other factors, no significant differences were shown, although it should be noted that the control group achieved higher scores in all of them. They also had a higher total ATE score than the experimental group: all of which justifies the fact that the latter group were the ones to undertake curricular diversification. In addition, it highlights the differences between the groups that are expected to be eliminated through the intergenerational intervention program.

Table 3: ATE test factors: Control group vs. Experimental group on pre- and post-test

	Pre-test				Post-test			
	Control <i>M (SD)</i>	Experimental <i>M (SD)</i>	<i>t</i>	<i>d</i>	Control <i>M (SD)</i>	Experimental <i>M (SD)</i>	<i>t</i>	<i>d</i>
Leadership	25.63 (7.21)	21.51 (8.10)	2.65**	.54	26.06 (7.25)	24.23 (8.22)	1.20	.24
Creativity	22.67 (4.30)	21.52 (4.84)	1.29	.25	22.73 (4.39)	22.88 (3.90)	-.19	.04
Achievement	15.55 (3.66)	14.43 (4.31)	1.45	.28	15.68 (3.27)	16.00 (4.35)	-.42	.08
Personal Control	16.74 (4.06)	15.42 (4.52)	1.60	.31	17.51 (3.21)	16.33 (4.09)	1.67	.32
Total score	79.82 (13.5)	72.29 (16.06)	2.48*	.51	82.12 (12.6)	79.9 (16.0)	.77	.16

Note. *M* = mean; *SD* = standard deviation; *t* = Student *t*; *d* = Cohen's *d*; * $p \leq .05$; ** $p \leq .01$

In the post-test phase, the experimental group improved their scores in each of the entrepreneurial factors, though the difference with the control group was not statistically significant. The control group continued to have higher scores than the experimental one, although not statistically significant, in the factors of Leadership and Personal Control. It is worth noting the lack of differences in the total scores following the program of intergenerational contact. Both groups, which started with clear differences in their entrepreneurial potential, now appear similar.

In the control group, there were no significant differences between the pre- and post-test phases (see table 4). However, the experimental group, following the intervention, showed statistically significant increases in their scores in all the ATE factors except in the Personal Control factor.

Table 4: ATE test factors: Paired-comparison t-test

	Control		Experimental	
	<i>t</i>	Sig.	<i>t</i>	Sig.
Leadership	.79	ns	2.11	.040
Creativity	.04	ns	2.41	.020
Achievement	.19	ns	1.96	.053
Personal Control	1.23	ns	1.05	ns
Control Total score	.34	ns	3.05	.004

Note. *t* = Student's *t*; ns: no significant difference

Gender differences affected by the intervention program

Given that in the pre-test there were significant differences in entrepreneurship related to gender, an analysis was carried out to confirm these differences after the intervention (see table 5).

Table 5: ATE test factors: Paired-comparisons t-test by gender for control and experimental groups

	Girls					Boys				
	Pre-test		Post-test		<i>t</i>	Pre-test		Post-test		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Control group										
Leadership	23.47	7.01	26.42	5.72	2.63*	26.50	7.06	25.80	8.30	ns
Creativity	21.76	4.30	22.43	3.61	ns	23.29	4.33	22.87	4.94	ns
Achievement	14.30	3.78	15.85	2.72	ns	16.33	3.31	15.54	3.64	ns
Personal Control	15.55	3.98	16.80	2.28	ns	17.50	3.96	17.81	3.60	ns
Total score	76.35	14.4	81.70	9.38	2.63*	81.85	11.5	79.37	13.2	ns
Experimental group										
Leadership	23.14	8.07	24.61	9.45	ns	19.75	7.84	23.95	6.52	2.16*
Creativity	21.11	5.46	23.11	4.04	2.26*	22.00	4.31	22.86	3.82	ns
Achievement	14.44	3.81	14.41	4.40	ns	14.87	4.47	17.35	3.41	2.92**
Personal Control	16.42	4.30	16.22	4.29	ns	14.48	3.27	16.48	3.89	2.13**
Total score	75.05	14.5	78.73	19.3	ns	70.15	17.4	80.89	14.2	3.59**

Note. *M* = mean; *SD* = standard deviation; *t* = Student's *t*; ns: no significant difference; * *p* ≤ .05; ** *p* ≤ .01

In the analysis of these intra-group gender differences, the girls in the control group improved their leadership and total scores, whereas the boys in this group did not significantly modify their scores in any of the factors.

In contrast, the girls in the experimental group only showed a significant increase in creativity, whereas the boys significantly increased their scores in leadership, creativity and personal control and their total score.

Impact of the intervention on motivation

The results of the differential analysis in the case of motivational factors (table 6) reflect a significant increase in extreme self-concept in the control group. In the experimental group, there was a significant increase in self-exigency after the intergenerational contact.

Table 6: MA factors: Paired-comparison t-test for control and experimental groups

	Pre-test		Post-test		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Control group					
Extreme self-concept	.37	.20	.42	.19	-2.01*
Academic test anxiety	.56	.22	.55	.26	ns
Lack of interest to study	.48	.26	.43	.23	ns
Self-exigency to study	.18	.20	.18	.22	ns
Experimental group					
Extreme self-concept	.35	.21	.40	.19	ns
Academic test anxiety	.70	.23	.72	.22	ns
Lack of interest to study	.53	.20	.55	.26	ns
Self-exigency to study	.19	.22	.29	.24	-3.13**

Note: *M* = mean; *SD* = standard deviation; *t* = Student's *t*; * *p* ≤ .05; ** *p* ≤ .01; ns: no significant difference

Discussion and implications

This study had two aims: first, to demonstrate the reliability and validity of the ATE test with a Spanish sample and, second, to study the effect of using an intervention based on intergenerational contact on the entrepreneurial potential of young people. The suitability of the scale used as a way of measuring entrepreneurial potential in a Spanish sample was confirmed. We also confirmed that entrepreneurial potential converges with motivation for academic achievement and the personality factor Shy-Venturesome. Therefore, the data support the hypothesis 1.

Our results confirm those of previous studies in relation to the possible modulation of gender on entrepreneurship in the sense that boys achieve higher scores in Leadership and Achievement than girls before the intervention. Furthermore, the intergenerational contact program achieved positive changes among the boys but not among the girls. Thus, hypothesis 2 is partially supported.

Using an intervention program, in the form of a pilot study, we attempted to solve various problems mentioned in the literature directly related to the promotion of entrepreneurship and curricular diversification using a control and experimental group.

With this aim, an experimental approach was adopted by taking prior and posterior measurements to the intervention in which information was also gathered on a control group that was similar to an experimental one, and in which the later was characterized by its need for curricular diversification.

A personalized interview was the strategy used to implement the intervention in which the students actively participated and from which information was obtained about the life and working experiences of an older person. The interviews were not only focused on aspects related to knowledge but also on the emotional component.

The results show that though significant differences between the experimental and control groups do not exist following the intervention, the experimental group does significantly improve scores in the majority of entrepreneurial factors, leadership, creativity and achievement, mainly in the case of the boys. Thus, the differences between the group with the normal curriculum and the diversified curriculum prior to the intervention disappear.

This means that although we cannot state that hypothesis 3 has been supported, perhaps this is due to an error in the way it was proposed. Prior to the intervention, the control group had a higher entrepreneurial potential than the experimental group, and afterwards the groups were similar. Furthermore, the control group did not change over the nine-week study period, whereas the experimental group increased its potential significantly following the intergenerational contact. Therefore, hypothesis 3 should have been proposed in the following form: after the

intervention, differences between control and experimental group in entrepreneurial potential will disappear.

Finally, academic motivation, as stated in hypothesis 4, was also affected by the intervention. Self-exigency in the study increased in the experimental group, which we consider a side effect of the intergenerational contact and its relationship to entrepreneurial potential.

However, this study has certain limitations with respect to the sample used and the prior differences between the groups, despite these differences favoring the control group and subsequently disappearing after the intervention. The results that compare the groups after the intervention are not definitive. Nevertheless, they are interesting given that they provide empirical support and are particularly informative as they endorse the modifications made. This will be useful for the development of future intervention programs focusing on the components that are more specific, as well as clarifying questions relating to the generalization of these results.

This work should be considered a pilot study to explore the effectiveness of intergenerational contact to develop entrepreneurial potential and improve academic motivation. Our future objective is to advance along this line of research by proposing an active work project between adolescents and older adults. These students will be advised by the older adult on how to carry out this project from start to finish. This goal will be linked to the content of different subjects in the academic curriculum. To develop this research a similar procedure, using a rigorous experimental method, will be adopted.

References

- Aronsson, M. 2004. 'Education matters - But does entrepreneurship education? An interview with David Birch', *Academy of Management Learning & Education*, **3**(3): 289-292.
- Athayde, R. 2009. 'Measuring enterprise potential in young people', *Entrepreneurship Theory and Practice*, **33**(2): 481-500.
- Baron, R.A. 2008. 'The role of affect in the entrepreneurial process', *Academy of Management Review*, **33**: 328-340.
- Baron, R.A. & Ensley, M.D. 2006. 'Opportunity recognition as the detection of meaningful patterns: evidence from comparisons of novice and experienced entrepreneurs', *Management Science*, **52**(9): 1331-1344.
- Béchar, J.P. & Grégoire, D. 2005. 'Entrepreneurship education research revisited: The case of higher education', *Academy of Management Learning & Education*, **4**(1): 22-43.
- BOE, 2006. [online] URL:<http://www.boe.es/boe/dias/2006/05/04/pdfs/A17158-17207.pdf>.
- Brush, C. 1997. 'Women-owned businesses: Obstacles and opportunities'. *Journal of Developmental Entrepreneurship*, **2**(1): 1-24.

- Busenitz, L.W., West, G.P., Shepherd, D., Nelson, T., Chandler, G.N. & Zacharakis, A. 2003. 'Entrepreneurship Research in Emergence: Past Trends and Future Directions', *Journal of Management*, **29**(3): 285-308.
- Cardon, M.S., Wincent, J., Singh, J. & Drnovsek, M. 2009. 'The Nature and Experience of Entrepreneurial Passion', *Academy of Management Review*, **34**(3): 511-532.
- Cattell, R.B. & Cattell, M.B. 1989. *HSPQ. Cuestionario de personalidad para adolescentes [HSPQ. Personality Questionnaire for Adolescents]*. Madrid: TEA Ediciones.
- Charney, A. & Libecap, G.D. 2000. *The Impact of Entrepreneurship Education: An Evaluation of the Berger Entrepreneurship Program at the University of Arizona, 1985-1999*. Arizona: University of Arizona.
- Chell, E. 2008. *The entrepreneurial personality: A social construction*, 2nd edition. London: Routledge.
- Chen, C.C., Greene, P.G. & Crick, A. 1998. 'Does entrepreneurial self-efficacy distinguish entrepreneurs from managers?', *Journal of Business Venturing*, **13**: 295-316.
- Collins, C.J., Hanges, P.J. & Locke, E.A. 2004. 'The relationship of achievement motivation to entrepreneurial behavior: a meta-analysis', *Human Performance*, **17**(1): 95-117.
- De Pillis, E. & De Witt, T. 2008. 'Not worth it, not for me? Predictors of entrepreneurial intention in men and women', *Journal of Asia Entrepreneurship and Sustainability*, **IV**(3): 1-13.
- De Prada, M.D. 2002. 'Diversidad y diversificación en la educación secundaria obligatoria: tendencias actuales en Europa', *Revista de Educación*. **329**: 39-65.
- DeTienne, D.R. & Chandler, G.N. 2007. 'The role of gender in opportunity identification', *Entrepreneurship Theory and Practice*, **31**(3): 365- 386.
- Filion, L.J. 1994. 'Entrepreneur, organisation et apprentissage: nécessité de s'aménager un espace de soi, partie 2: entrepreneur, organisation et entreprise', *Organisation*, **3**(1): 47-55.
- Fox, S. & Giles, H. 1993. 'Accommodating intergeneration contact: a critique and theoretical model', *Journal of Aging Studies*, **7**(4): 423-451.
- Gartner, W.B. & Vesper, K.H. 1994. 'Experiments in entrepreneurship education: successes and failures', *Journal of Business Venturing*, **9**: 179.
- Gartner, W.B. 1988. 'Who is an entrepreneur is the wrong question', *American Journal of Small Business*, **13**: 11-32.
- Gatewood, E.J., Carter, N.M., Brush, C.G., Greene, P.G. & Hart, M.M. 2003. *Women entrepreneurs, their ventures, and the venture capital industry: An annotated bibliography*. Stockholm: ESBRI.
- Gendron, G. 2004. 'Practitioners' perspectives on entrepreneurship education: An interview with Steve Case, Matt Goldman, Tom Golisano, Geraldine Lay Bourne, Jeff Taylor and Alan Webber', *Academy of Management Learning and Teaching*, **3**(3): 302-314.
- Greene, P.G., Katz, J.A. & Johannisson, B. 2004. 'Entrepreneurship education', *Academy of Management Learning & Education*, **3**: 238-241.
- Gorman, G., Hanlon, D. & King, W. 1997. 'Some research perspectives on entrepreneurship education, Enterprise education and education for small business management: a ten-year literature review', *International Small Business Journal*, **15**(3): 56-79.
- Gupta, V.K., Turban, D.B. & Bhawe, N.M. 2008. 'The effect of gender stereotype activation on entrepreneurial intentions', *Journal of Applied Psychology*, **93**(5): 1053-1061.
- Gupta, V.K., Turban, D.B., Arzu Wasti, S. & Sikdar, A. 2009. 'The Role of Gender Stereotypes in Perceptions of Entrepreneurs and Intentions to Become an Entrepreneur', *Entrepreneurship Theory and Practice*, **33**(2): 397- 417.
- Hill, L.G. & Betz, D.L. 2005. 'Revisiting the retrospective pretest', *American Journal of Evaluation*, **26**(4): 501-517.
- Hills, G.E. 1988. 'Variations in university entrepreneurship education: an empirical study of an evolving field', *Journal of Business Venturing*, **3**(1): 109-122.
- Hisrich, R., Langan-Fox, J. & Grant, S. 2007. 'Entrepreneurship research and practice: A call to action for psychology', *American Psychologist*, **62**(6): 575-589.
- Honig, B. 2004. 'Entrepreneurship education: Toward a model of contingency-based business planning', *Academy of Management Learning & Education*, **3**(3): 258-273.
- Izquierdo, E.E. 2008. *Impact assessment of an educational intervention based on the constructivist paradigm on the development of entrepreneurial competencies in university students*. Unpublished dissertation, Ghent: Ghent University.
- Kaplan, M.S. 2002. 'Intergenerational programs in schools: considerations of form and function', *International Review of Education – Internationale Zeitschrift für Erziehungswissenschaft – Revue Internationale de l'Education*, **48**(5): 305-334.
- Kickul, J., Wilson, F., Marlino, D. & Barbosa, S.D. 2008. 'Are misalignments of perceptions and self-efficacy causing gender gaps in entrepreneurial intentions among our nation's teens?', *Journal of Small Business and Enterprise Development*, **5**(2): 321-335.
- Krueger, N.F. & Brazeal, D.V. 1994. 'Entrepreneurial potential and potential entrepreneurs', *Entrepreneurship Theory and Practice*, **18**(3): 91-104.
- Kuratko, D.F. 2005. 'The emergent of entrepreneurship education: development, trends, and challenges', *Entrepreneurship Theory and Practice*, **29**(5): 577-598.
- Kuratko, D.F. 2007. 'Entrepreneurial leadership in the 21st century', *Journal of Leadership and Organizational Studies*, **13**(4): 1-11.
- Lepoutre, J., Van den Berghe, W., Tilleuil, O. & Crijns, H. 2010. *A new approach to testing the effects of entrepreneurship education among secondary school pupils. Vlerick Leuven Gent Working Paper Series 2010/01*. Leuven, Belgium: Autonomous Management School.

- Mair, J. & Martí, I. 2006. 'Social entrepreneurship research: A source of explanation, prediction, and delight', *Journal of World Business*, **41**(1): 36-44.
- McClelland, D.C. 1961. *The achieving society*. Princeton, NJ: Van Nostrand.
- McKenzie, B., Ugbah, S. & Smothers, N. 2007. 'Who is an entrepreneur' is still the wrong question?', *Academy of Entrepreneurship Journal*, **13**: 23-43.
- Minniti, M., Arenius, P. & Langowitz, N. 2005. *2004 Global entrepreneurship monitor special topic report: women and entrepreneurship*. Babson Park, MA: Center for Women's Leadership at Babson College.
- Morris, M.H., Kuratko, D.F. & Covin, J.G. 2008. *Corporate entrepreneurship & innovation, entrepreneurial development within organizations*. Mason, OH: Thomson South-Western.
- Mueller, S.L. & Conway Dato-On, M. 2008. 'Gender-role orientation as a determinant of entrepreneurial self-efficacy', *Journal of Development Entrepreneurship*, **13**(1): 3-20.
- Navas, L. 1994. *Hacia un modelo causal del rendimiento académico desde la teoría atribucional y el análisis de las expectativas de los alumnos*. Madrid: Universidad Nacional de Educación a Distancia.
- Okhomina, D. 2010. 'Entrepreneurial orientation and psychological traits: the Moderating influence of supportive environment', *Journal of Behavioral Studies in Business*, **2**: 1-16.
- Pelechano, V. 1989. 'Informe sobre los determinantes del rendimiento educativo en la Comunidad Autónoma de Canarias', *Análisis y Modificación de Conducta*, **15**.
- Peterman, N. E. & Kennedy, J. 2003. 'Enterprise education: Influencing students' perceptions of entrepreneurship', *Entrepreneurship Theory and Practice*, **28**(2): 129-144.
- Rebok, G.W., Carlson, M. & Glass, T.A. 2004. 'Effect of Experience Corps Baltimore participation on young children, teachers, and schools: Results from a randomized pilot trial', *Journal of Urban Health*, **81**: 79-93.
- Reynolds, P.D., Bygrave, W. & Autio, E. 2004. *GEM 2003 Executive report*. Babson Park, MA: Babson College.
- Rosebrook, V. 2007. 'Intergenerational personal/social skills development study', *Childhood Education*, **83**.
- Ruiz, J., Camelo, C., De la Vega, I. & Coduras, A. 2012. 'Mujer y desafío emprendedor en España. Características y determinantes', *Economía Industrial*, **383**: 13-22.
- Ruiz, J., Camelo, C., De la Vega, I., Coduras, A. & Justo, R. 2010. *Mujer y desafío emprendedor en España*. Universidad de Cádiz-Instituto Empresa, Business School.
- Shane, S. 2008. *Illusions of entrepreneurship: The costly myths that entrepreneurs, investors, and policy makers live by*. New Haven: Yale University Press.
- Shane, S. & Venkataraman, S. 2000. 'The promise of entrepreneurship as a field of research', *Academy of Management Review*, **25**: 217-226.
- Solomon, G.T., Duffy, S. & Tarabishy, A. 2002. 'The state of entrepreneurship education in the United States: a nationwide survey and analysis', *International Journal of Entrepreneurship*, **1**(1): 1-22.
- Souitaris, V., Zerbini, S. & Al-Laham, A. 2007. 'Do entrepreneurship programmers raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources', *Journal of Business Venturing*, **22**(4): 566-591.
- Teale, W.H. 2003. 'Reading aloud to young children as a classroom instructional activity: Insight from research and practice'. In A. van Kleeck, S.A. Stahl & E.B. Bauer (Eds.), *On reading books to children: Parents and teachers*. Mahwah, NJ: Erlbaum.
- Tierney, J.P., Grossman, J.B. & Resch N.L. 1995. *Making a difference: An impact study of big brothers/ big sisters*. Philadelphia: Public/Private Ventures.
- Tracey, P. & Phillips, N. 2007. 'The distinctive challenge of educating social entrepreneurs: A postscript and rejoinder to the special issue on entrepreneurship education', *Academy of Management Learning and Education*, **6**(2): 264-271.
- Wilson, F., Kickul, J. & Marlino, D. 2007. 'Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: Implications for entrepreneurship education', *Entrepreneurship Theory and Practice*, **31**(3): 387-406.

