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Locus of control and academic self-efficacy in university students: the effects of Self-concepts

Elisabetta Sagone^a*, Maria Elvira De Caroli^a

^a University of Catania, Department of Educational Sciences, via Casa Nutrizione, 95124 Catania, Italy

Abstract

This study explored the effects of Self-concepts on locus of control and academic self-efficacy in three groups of university students (Psychology, Medicine, and Law). Locus of Control of Behaviour Scale (Craig et al., 1984), Academic Self-efficacy Scale, and Semantic Differentials (Osgood et al., 1957) for the Actual and Future Self-concepts were used. Results demonstrated that the more the university students were likely to personally control the circumstances in their everyday life, the more they expressed a positive self-concept in the present and the future. The more they perceived themselves as academically efficient, the more they judged themselves more positively in the present and the future; in addition, the more the university students were likely to take under their control the everyday life circumstances, the more they perceived themselves as efficient in academic context.

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1. Introduction

The present study was aimed to explore the relationship between locus of control, academic self-efficacy, and self-concepts in university students attending Psychology, Medicine, and Law Degree Courses. The locus of control is defined as a personality trait referred to an individual's perception of the locus of events as internally determined by his or her own behavior versus fate, luck or external circumstances. It derived from the Social Learning Theory and is a belief about whether the outcomes of our actions are contingent on what we do (internal control orientation) or on events outside our personal control (external control orientation) (see Zimbardo, 1985). According to Rotter (1966), internality refers to the expectancy that one is in control or instrumental in obtaining rewards from one's environment, while externality refers to the belief that rewards are out of one's control and determined by luck.

The dimensions (internal vs. external) of locus of control were analysed in relation to the other important aspects in daily life of college and university students, such as academic achievement, self-esteem, academic procrastination, self-efficacy, optimism, self-concept, sense of mastery, and so on (Findley & Cooper, 1983;

^{*} Corresponding Elisabetta Sagone. Tel.: +39-095-2508021 *E-mail address*: esagone@unict.it

Abouserie, 1994; Park & Kim, 1998; Jansenn & Carton, 1999; Beck, Koons, & Milgrim, 2000; Jackson, Weiss, & Lundquist, 2000; Nilson-Whitten, Morder, & Kapakla, 2007). For example, Abouserie (1994) found significant and positive correlations between locus of control and sources of academic stress (measured by the Academic Stress Questionnaire and Life Stress Questionnaire), observing that university students with external beliefs were more stressed than those with internal locus of control. In addition, significant and negative correlations emerged between self-esteem and both academic and life stress, indicating that students with high self-esteem were less stressed than those with low self-esteem.

Park and Kim (1998) carried out two studies to examine the relationship between attributional style, locus of control, and academic achievement. The first study indicated that, compared to students on academic probation, honour students were more likely to score high on internal locus of control and to attribute their success to effort and the influence of other people; in addition, the honour students were less likely to attribute their failure to a lack of ability and lack of support from the others. The second study examined the relationship between the locus of control and academic achievement among Korean, Korean-Chinese, and Chinese university students, showing that the Korean students had the highest scores on internal locus of control, while the Korean-Chinese students reported the highest scores on external locus of control. For the Korean and Chinese sample, students with higher academic grades scored higher on internality and lower on externality than the others.

Nilson-Whitten, Morder, and Kapakla (2007) found significant relationships between locus of control, optimism, and academic success of students. More recently, Nwankwo and colleagues (2012) noted a significantly positive relationship between high levels of self-esteem and internal locus of control in a sample of well-functioning older adolescents. In addition, as reported in Jansenn and Carton (1999) and Beck et al.' study (2000), students with internal locus of control tended to procrastinate works and tasks less frequently than those with external locus of control: it meant that the students with internal locus of control were more able to begin a work with the aim of completing it than the others. Relevant differences for sex were observed in relation to the measures of locus of control: as found by Sherman and colleagues (1997), females tended to be more external than males. Males and females appeared to differ in the perception of control over interpersonal relationships and perception of control over essentially uncontrollable life events. Internality appeared to be more related to achievement for males than females and a better predictor of social adaptation for females than for males.

One of the protective factors for the academic achievement is self-efficacy as major component of the individual's ability to act successfully, referred to "beliefs in one's capabilities to organize and execute the courses of action required producing given attainments" (Bandura, 1977, p.3) and action-guiding aspect of the self-concept (Bandura, 1986; Pajares, 1996). Academic self-concept and self-efficacy were referred to the individuals' self-concept and self-efficacy beliefs that are formed specifically toward distinct academic domains. More specifically, academic self-concept refers to the individuals' knowledge and perceptions about themselves in achievement situations (Wigfield & Karpathian, 1991; Byrne, 1996), while academic self-efficacy consists of the individuals' conviction that they can successfully perform given academic tasks (Schunk, 1991). Little evidences were found about the relationship between the aforementioned psychological constructs in reference to the differences or similarities between university students attending degree courses characterized by different training pathways and this topic constituted the rationale for the current study.

The purpose of this study was to explore the relationships between self-concepts and locus of control, selfconcepts and academic self-efficacy, and locus of control and academic self-efficacy, in three groups of university students (Psychology, Medicine, and Law).

We predicted that university students who will adopt the internal locus of control will express a positive representation of actual and future self-concepts (H_1); university students who will perceive themselves as highly efficient in academic context will express a positive representation of actual and future self-concepts (H_2); finally, university students who will perceive themselves as highly efficient in academic context will adopt the internal locus of control (H_3). Differences for sex and type of degree course attended by university students will be analyzed.

2. Methodology

2.1. Participants

The sample of this study was composed by 267 Italian university students (96 boys and 171 girls), aged between 18 and 26 years (M=22,4, sd=2,7) and divided into three groups in relation to the degree course: the 34,1% attended the Medicine course (n=91), the 33,7% attended the Psychology course (n=90), and the 32,2% attended the Law course (n=86) at University of Catania, Sicily (Italy).

2.2. Measures and procedure

The Locus of Control of Behaviour Scale (LOC: Craig, Franklin, & Andrews, 1984) was applied to measure the internal and external locus of control in Italian university students. It included 17 items each valuable on a 6point Likert scale, ranging from zero (strongly disagree) to five intervals (strongly agree): e.g., "I can anticipate difficulties and take action to avoid them", "My mistakes and problems are my responsibility to deal with". The internal consistency reliability resulted to be satisfactory for the total scale (α =.60).

The Academic Self-efficacy Scale was created for the first time in the present study in order to explore the perceived self-efficacy in academic context and included 30 items each valuable on 7-point Likert scale, ranging from 1 (not at all efficient) to 7 intervals (completely efficient). This scale consisted of four factors obtained by means of factorial analysis with principal components method (Varimax rotation and eigenvalues greater than 1): "self-engagement" (α =.79), "self-oriented decision making" (α =.79), "others-oriented problem solving" (α =.80), and "interpersonal climate" (α =.67). The internal consistency reliability resulted to be satisfactory for the total scale (α =.88).

The Semantic Differential Technique (Osgood, Tannenbaum, & Suci, 1957) was used to analyze the representation of Actual (α =.82) and Future Self-concepts (α =.89). These two measures included 36 pairs of opposite adjectives for each concept (e.g., secure-unsecure, stable-unstable, fragile-resistant), and each opposite adjective was valuable on 7-point Likert scale.

2.3. Data analysis

The examination of data was carried out by means of the SPSS 15, using factorial analysis, linear correlations and multiple hierarchical regressions, One-way Anova, and t-tests. Sex and degree course were used as independent variables, while mean scores obtained on each factor of academic self-efficacy, semantic differentials, and locus of control were used as dependent variables.

3. Results

Data analyses showed that, without differences for sex and type of degree course, university students obtained mean scores of internal locus of control greater than those of external locus of control (M=25,1, sd=4,2 vs. M=17,6, sd=7,6; $t_{(266)}$ =13.01, p<.001). It meant that all university students believed that life events were under their control rather than under the positive effect of luck or fortune.

Regarding to the different domains of academic self-efficacy, factorial analysis for grouping the 30 items of scale was carried out with principal components analysis as extraction method, with Varimax rotation, and eigenvalues greater than 1 (two items were excluded by the total scale). The following four factors were obtained (Tab.1): the first factor, named "self-engagement", accounted for the 25,9% of the total variance and included seven items (1, 2, 6, 7, 9, 16, and 23); the second factor, called "self-oriented decision making", accounted for the 8,1% of the variance and consisted of seven items (3, 13, 17, 18, 20, 21, and 22); the third factor, termed "others-oriented problem solving", accounted for the 6,7% of the variance and was formed by seven items (4, 8, 10, 11,

14, 27, and 28); finally, the fourth factor, named "interpersonal climate", accounted for the 5,8% of the variance and included seven items (5, 12, 15, 24, 26, 29, and 30). The first factor is referred to the ability to overcome difficulties with personal involvement; the second factor is referred to the ability to solve problems using themselves as helping source; the third factor is referred to the ability to solve critical issues using other people as helping source; finally, the fourth factor is linked to the ability to create a prosocial and collaborative climate in interpersonal relationships.

Items of academic self-efficacy scale How much do you think you're able to	Factor 1	Factor 2	Factor 3	Factor 4
It.6 - Prepare the subjects expected in your training program	,68			
It.2 – Put in place strategies useful to learn subjects you never studied before	,66			
It.1 – Keep your attention during your teacher's lesson	,64			
It.7 – Link topics of different subjects between them	,61			
It.23 – Make an effort even in those subjects you don't like	,55			
It.9 – Not need help while studying	,51			
It.16 – Manage to achieve a fixed objective	,50			
It.22 - Avoid being influenced by others in your future decisions		,66		
It.13 – Manage a difficult situation		,64		
It.20 – Make your ambitions coincide with your professional choices		,62		
It.21 – Take a decision, with the risk to fail		,61		
It.18 - Reason out the situations and choose what is best for you		,56		
It.3 – React adequately facing a failure		,55		
It.17 - Avoid being caught in situations you disapprove		,33		
It.8 - Express disagreement with the ideas of your teachers			,73	
It.10 - Talk about your difficulties with your teachers			,70	
It.4 - Express doubts and uncertainties about the teacher's lesson			,61	
It.14 – Ask your teachers for help to solve a problem at the university			,59	
It.28 – Discuss an unjust evaluation			,55	
It.27 – Modify rules dictated by other people			,54	
It.11 – Understand the reasons of a failure			,50	
It.24 – Ask other people for help to overcome difficulties				,66
It.29 – Contribute to build a positive atmosphere in the relationships with your colleagues				,63
It.15 - Cooperate with your colleagues in group activities				,61
It.5 – Establish good relationships with your colleagues				,57
It.30 – Avoid to face a conflict				,52
It. $12 -$ Share with your parents the difficulties and problems you have at the university				,48
It.26 – Accept rules you don't agree with				,44

Table 1. Factorial analy	sis of academic self-efficacy	y scale

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Kaiser-Meyer-Olkin Measure of Sampling: ,856; Bartlett's test for Sphericity: Chi-Square=2574,34, df 378, p<.001

Significant differences for type of degree course were found (Tab.2): university students who attended the Medicine and Psychology degree courses perceived themselves as more efficient than the others in relation to the "self-engagement", the "others-oriented problem solving", and "interpersonal climate". This datum indicated that these university students considered themselves as more academically efficient than the others in the ability to overcome difficulties with personal involvement, to solve problems using other people as helping source, and to create a prosocial and collaborative climate in interpersonal relationships.

Furthermore, differences for sex were observed only for the factor of "others-oriented problem solving" $(t_{(265)}=3.82, p<.001)$: boys perceived themselves as more efficient than girls on the ability to solve problems in academic context using other people as helping source (M=31,8, sd=7,5 vs. M=28,1, sd=7,9).

Factors	Degree course	Ν	Mean	SD	One-way Anova	
Self-engagement	Medicine	91	37,92	6,98		
	Psychology	90	37,67	5,56	()7 **	
	Law	86	34,91	5,94	0,3/**	
	Total	267	36,87	6,32		
Self-oriented decision making	Medicine	91	38,80	6,51		
	Psychology	90	38,68	5,27	2.76	
	Law	86	36,91	6,05	2,76	
	Total	267	38,15	6,00		
Others-oriented problem solving	Medicine	91	31,24	8,07		
	Psychology	90	29,42	7,74	5 01 **	
	Law	86	27,51	7,69	5,01 **	
	Total	267	29,43	7,95		
Interpersonal climate	Medicine	91	34,97	7,10		
	Psychology	90	34,97	5,03	3,94 *	
	Law	86	32,63	6,77		
	Total	267	34,21	6,43		
Levels of significance for * $p < .05 ** p < .01$						

Table 2. Factors of academic self-efficacy: differences for type of degree course

Data analyses showed that university students expressed a more positive representation of future self than actual self (M=5,45, sd=,65 vs. M=4,89, sd=,57; $t_{(266)}$ =15.9, p<.001), with significant differences for sex and type of degree course only for the representation of future self: thus, girls expressed a more positive self-image than boys (M=5,55, sd=,54 vs. M=5,27, sd=,76; $t_{(265)}$ =3.48, p=.001) and university students attending the Medicine and Psychology degree courses represented themselves in the future more positively than the others (Med: M=5,46, sd=,74 vs. Psy: M=5,58, sd=,54 vs. Law: M=5,29, sd=,62; $F_{(2,264)}$ =4.57, p=.01).

3.1. Correlations and hierarchical regressions

Locus of control and Self-concepts. Data analyses showed positive correlations between internal locus of control and the representation of actual and future self-concepts: it meant that the more the university students obtained high scores on internal locus of control (that is, the belief to take under their own control the

circumstances in everyday life), the more they expressed a positive representation of self-concepts both in the present ($r_{(267)}$ =.39, p<.001) and in the future ($r_{(267)}$ =.36, p<.001). On the contrary, negative correlations were noted between external locus of control and actual and future self-concepts: thus, the more the university students obtained high scores on external locus of control (that is, the belief to attribute the outcomes of their own actions to luck or fortune), the less they expressed a positive image of themselves in the present ($r_{(267)}$ =-.23, p<.001) and in the future ($r_{(267)}$ =-.22, p<.001).

Academic self-efficacy and Self-concepts. Positive correlations between the factors of academic self-efficacy and actual and future self-concept were found, above all between the "self-oriented decision making", "self-engagement", and self-concepts. This datum pointed out that the more the university students perceived themselves as more efficient in the ability to make decisions on what to do in academic context, the more they positively judged their self-image both in the present ($r_{(267)}$ =.47, p<.001) and in the future ($r_{(267)}$ =.42, p<.001); in addition, the more the university students perceived themselves as more efficient in overcoming the difficulties with personal involvement, the more they positively represented themselves in the present ($r_{(267)}$ =.41, p<.001).

Locus of control and academic self-efficacy. In reference to the LOC, the factors of academic self-efficacy were positively related to internal locus of control, above all in relation to the "self-engagement" and the "self-oriented decision making". Specifically, it meant that the more the university students perceived themselves as more efficient in overcoming the difficulties with personal involvement ($r_{(267)}=.43$, p<.001) and making decisions on what to do in academic context ($r_{(267)}=.44$, p<.001), the more they believed to have under their own control the circumstances of their life. Positive but weak correlations were observed between the "interpersonal climate" ($r_{(267)}=.25$, p<.001), "others-oriented problem solving" ($r_{(267)}=.32$, p<.001), and internal locus of control.

The deepening of these relationships, carried out by means of multiple hierarchical regressions with enter method (Tab.3), showed that internal LOC and three factors of academic self-efficacy (that is, the "interpersonal climate", "self-oriented decision making", and "others-oriented problem solving") predicted a positive representation of actual self-concept; additionally, internal LOC and two factors of academic self-efficacy (that is, the "interpersonal climate") predicted decision making" and "interpersonal climate") predicted a positive representation of future self-oriented decision making" and "interpersonal climate") predicted a positive representation of future self-concept.

Models	Predictors	R	Adjusted R ²	ANOVA	Beta	t	Sig.
Actual Self-concept	Internal LOC	.59	.34	27.86 <i>p</i> <.001	.143	2.48	.014
	External LOC				190	-3.61	.000
	Self-oriented decision making				.252	4.09	.000
	Interpersonal climate				.211	3.80	.000
	Others-oriented problem solving				.139	2.31	.022
Future Self-concept —	Internal LOC	52	.26	24.23 <i>p</i> <.001	.162	2.69	.008
	External LOC				164	-2.99	.003
	Self-oriented decision making				.268	4.41	.000
	Interpersonal climate				.196	3.44	.001
Note: Statistical analyses for total sample ($n=267$)							

Table 3. Multiple hierarchical regressions: Self-concepts, locus of control, and academic self-efficacy

4. Discussion and conclusion

The current paper was focused on the comparison between locus of control, academic self-efficacy, and selfconcepts in three different groups of university students. As predicted in the first hypothesis (H₁), results confirmed that the university students, who believed to have under their own control the circumstances in everyday life, adopting the internal locus of control, expressed a positive representation of self-concept both in the present and in the future. According to the second hypothesis (H₂), the university students who perceived themselves as more efficient in academic context judged their self-image positively both in the present and in the future. Finally, as expected in the third hypothesis (H₃), results demonstrated that the university students who perceived themselves as highly efficient in academic context (that is, to overcome the difficulties with personal involvement and to make decisions on what to do in academic context) believed to have under their own control the circumstances in everyday life. In relation to the differences for degree course, university students attending the Medicine and Psychology degree courses perceived themselves as more efficient than the students attending the Law course in overcoming difficulties with personal involvement, in solving problems using other people as helping source, and in creating a prosocial and collaborative climate in interpersonal relationships. In addition, boys perceived themselves as more efficient than girls on the ability to solve problems in academic context using the others as helping source. Regarding to the self-concepts, girls expressed a more positive self-image than boys and university students attending the Medicine and Psychology degree courses judged themselves in the future more positively than the university students attending the Law degree course.

These findings could be considered useful to realize training pathways to help the university students to improve their self-efficacy and self-concepts in order to reduce the academic procrastination and drop out in all typologies of degree courses. Future research could deepen the relationship between locus of control and other psychological constructs, such as well-functioning, thinking styles, and resilience in university students.

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