anales de psicología, 2016, vol. 32, nº 1 (enero), 139-147
http://dx.doi.org/10.6018/analesps.32.1.188441

ISSN edición impresa: 0212-9728. ISSN edición web (http://revistas.um.es/analesps): 1695-2294

Self-talk and academic performance in undergraduate students

Flor Sánchez*, Fernando Carvajal y Carolina Saggiomo

Universidad Autónoma de Madrid (Spain).

Título: Autodiálogos y rendimiento académico en estudiantes universitarios.
Resumen: En este trabajo se identificaron los autodiálogos de un grupo de estudiantes en situaciones cotidianas y en situaciones académicas de evaluación. Posteriormente, se analizó la relación entre los autodiálogos y el rendimiento académico. Los resultados muestran que: (1) existe correlación entre las valencias del autodiálogo general y el autodiálogo académico; (2) los participantes muestran más autodiálogo positivo que negativo, tanto en su vida cotidiana como en situaciones académicas. En relación a estas últimas, los participantes informan más autodiálogo negativo y menos autodiálogo positivo ante la evaluación de una materia académica percibida como difícil que ante una percibida como fácil; (3) la valencia negativa de los autodiálogos (general y académico) correlacionó con los resultados académicos negativos anticipados por los estudiantes seis semanas antes de realizar el examen y (4) en el caso de la materia valorada como difícil, los resultados académicos obtenidos en el examen guardan una estrecha relación con el rendimiento anticipado. Encontramos en los resultados argumentos para reflexionar sobre la utilidad que podría tener el entrenamiento en el uso de autodiálogos adecuados para facilitar el afrontamiento de situaciones académicas percibidas como difíciles y mejorar el rendimiento de los estudiantes en tales situaciones.
Palabras clave: Autodiálogo; valencia emocional; rendimiento académico; estudiantes universitarios.

Abstract: The self-talk of a group of undergraduate students, both in general day-to-day and academic situations, was compiled and the effect on students' academic performances was analysed. The results show that: (1) there is a correlation between the valence of general self-talk and academic self-talk; (2) participants exhibit more positive than negative self-talk, although they report more negative self-talk when faced with a more difficult compared to an easier academic subject, while positive academic self-talk was higher in the easy than in the more difficult academic subjects; (3) the negative valence of self-talk (general and academic), is correlated with the negative results predicted by the students six weeks before doing the examination and (4) for the difficult academic subject, but nor for easier subject, students who suspend report using less positive academic self-talk and more negative academic self-talk than those who passes. These results to encourage for wondering about the utility of training in the use of appropriate self-talk for coping academic situations perceived as difficult and improve students performance in such situations.
Key words: Self-talk; valence; academic performance; undergraduate students.

Introduction

Andrea is preparing for a difficult exam. She suddenly hears herself saying "I'm not going to pass". Marta is preparing for the same exam and she tells herself "I think I'll get a good mark". Are these messages they are sending to themselves just this once or are they part of a pattern or tendency? Do these messages affect the academic results they obtain? Both of them have just engaged in a process of self-talk. This self-talk is a commonly used behaviour by 96% of adults and considered useful by 72% (Winsler, Feder, Way, & Manfra, 2006); according to some theoretical perspectives, such as The Cognitive Social Theory (Bandura, 1986) and The Self-Persuasion Theory (Aronson, 1999), self-talk is a basic process in the regulation of behaviour.

Individuals use these internal dialogues to interpret their feelings and beliefs and to give themselves instructions and encouragement (Hackfort & Schwenkmezger, 1993, cited in Hardy, 2006). Since this is a cognitive process that is repeated it could constitute a style of conversing with one-self. Research into the relationship between self-talk, thinking and behaviour began with the studies by Vigostky (1937/1987). He proposed that self-talk forms part of the developmental process of thinking in children who, by first speaking to themselves aloud (private speech), then afterwards in silence (inner speech) interiorize, by means of language, the knowledge learned socially. Instead of requiring orders from others to regulate their behaviour, children learn by using self-talk to organize themselves, as if they were talking to someone else (Vigotsky 1934/1987; Winsler, 2009). This verbal self-guidance reflects an important transformation in cognitive development, self-awareness and executive control: children talk to themselves to control their own behaviour.

In spite of its ubiquity and frequency, self-talk, a phenomenon that has been paid little interest by academic psychology receives considerable attention in applied settings because of the relationship it is credited to have with performance, whether this be academic (DeCaro, Rotar, Kendra, & Beilock, 2010; Winsler & Naglieri, 2003), work-related (Brown, 2003; Latham & Budworth, 2006), artistic (Broomhead, Skidmore, Eggett, & Mills, 2010) or, especially, in sport (Hardy, 2006; Hatzigeorgiadis, Theodorakis, & Zourbanos, 2004; Theodorakis, Weinberg, Natsis, Douma, & Kazakas, 2000). In the light of this evidence, research has steadily progressed towards identifying the functions and mechanisms underlying the effect of self-talk on performance (Hatzigeorgiadis, Zourbanos, Goltsios, & Theodorakis, 2008). In a recent study, after analysing empirical studies that would include at least one control group to compare the results, Dolcos, Wilson, Sánchez & Albarracín (in press) propose a model to study the role of attention, motivation, self-efficacy and affective processes as potential mediating mechanisms in the relationship between the self-talk and academic, sports or work performance.

*** Dirección para correspondencia [Correspondence address]:**
Flor Sánchez. Departamento de Psicología Social y Metodología. Ivan Pavlov, 6. Cantoblanco. CP 28049. Madrid (Spain).
E-mail: flor.sanchez@uam.es

Among the factors studied to understand the relationship and the effects of self-talk on performance (whether the self-talk is written or spoken, expressed audibly or in silence, if it is chosen by the individual or assigned by the researcher etc.), the valence of the self-talk is given particular importance. Valence refers to the emotional nature of the self-talk and can be interpreted as positive self-assessment (self-reinforcement, self-confidence etc) or constant self-criticism and negative self-assessment. In the studies carried out to date, most in the field of sport, although some authors found no evidence that performance is improved with the use of positive self-talk (Highlen & Bennett, 1983), findings, on the whole, suggest that positive self-talk, compared with negative or no self-talk, tend to improve performance in different sports (Dagrou, Gauvin, & Halliwell, 1992; Van Raalte, Brewer, Lewis, Linder, Wildman, & Kozimor, 1995). Nonetheless, it is noteworthy that the effects of positive self-talk on performance are more clearly seen in experimental studies than in field work (Hardy, 2006). In the latter, it is more complicated to make observations and compile data on the self-talk used although, by applying observation techniques specially designed for this purpose, Van Raalte et al. (1995) recorded in a tennis competition that the winners used less negative self-talk than the losers, although there were no differences between them in the use of positive self-talk. The authors suggest that this is perhaps because the positive self-talk would be more likely to be internalized and, therefore, not audible or measurable. This explanation would be supported by data that show that negative self-talk expressed openly could be associated with negative emotions, which are more frequent when one is failing at a task, in this case at a sport (Van Raalte, Cornelius, Brewer, & Hatten, 2000).

Self-talk and academic performance

Although not the main scope of studies that have focused on the relationship between self-talk and performance, the data available show that self-talk, whether it be of an instructional nature (to give guidance in a task) or motivational (to give encouragement and to maintain the level of effort) affects academic performance. Most studies have consistently supported a role for the use of positive self-talk compared to no self-talk (DeCaro et al. 2010; Emerson & Miyake, 2003). In fact, the suppression of self-talk, by making students perform another simple verbal task at the same time as the main task, can affect self-control, leading to a more impulsive behaviour (Tullett & Inzlicht, 2010) and decreasing performance in the task (Emerson & Miyake, 2003; Goschke, 2000; Miyake, Emerson, Padilla, & Ahn, 2004). On the other hand, there is some consensus that an important element to explain the effectiveness of self-talk in the acquisition of skills and performance is the difficulty or complexity of the task. Hence, self-talk is especially common in tasks individuals find difficult to perform (Duncan & Cheyne, 2001). In a study by Manning (1990), the children used more self-talk when they were weak at some verbal or mathematical skill; also, DeCaro et al. (2010) showed that saying aloud the steps required to resolve a difficult academic task when under pressure (instructional dialogue) helped students to control the anxiety and stress that affected their performance in the task. These self-instructions, used by the participants when switching tasks, tend to favour performance, suggesting that verbal self-guidance helps to increase executive control (Emerson & Miyake, 2003). Moreover, verbal labelling studies show that speaking a label aloud during a search task improves performance in the task (Lupyan & Spivey, 2010). Regarding the purpose of motivational self-talk, the self-affirmations expressed by students help them to maintain or improve their degree of motivation in academic situations by emphasizing the main objective or goal of their learning efforts and the reasons to persist in, or complete, the task (Wolters, 1999). It seems that instructional and motivational self-talk have complementary effects on academic performance since, as other authors point out (Schwinger, Steinmayr, & Spinmath, 2012), self-talk targeting performance boosts effort and achievement which, in turn, are reinforced by the achievement of objectives.

In the meta-analysis carried out by Dolcos et al. (in press), most studies have analysed the effects of the participants' self-talk, either induced or spontaneous, on the task assigned by the researcher, but no studies were found that analyzed the particular characteristics or style of the self-talk used in day-to-day life, or the possible relationship between this self-talk and the individual's health, satisfaction at work or academic performance. In this work, we have focused on the latter aspect and, for this purpose, have studied whether the self-talk that people use in different day-to-day situations, including academic ones, are related to their expectations and academic results.

Study objectives

We study the relationship between the type of self-talk used by a sample of university students and their academic performance. The first objective consists in trying to identify patterns or trends in the valence of the participants' self-talk. Given the composition of the sample, and taking into account the results found in previous studies with similar samples (Calvete et al., 2005*), we expect to find a dominance of positive rather than negative self-talk and consider this as our first study hypothesis.*

In accordance with the main objective of this work, among the day-to-day situations that the participants can encounter, we focus here on situations of academic evaluation. For this reason, the second objective was to analyse the existence of a possible relationship between the type of self-talk that the students use in daily situations, which we refer to as general self-talk, and the self-talk they use in situations of academic evaluation, which we call academic self-talk. To study this relationship, we considered academic situations of variable levels of difficulty. The *second hypothesis proposes that*

the valence of the general self-talk is related to the valence of the self-talk used in academic situations of varying degrees of difficulty.

The third objective of this study was to analyse the relationship between self-talk (general and academic) and the participants' academic qualifications. To do this, instead of giving the students sentences or words to repeat, which is the method followed in most of the reviewed studies, we asked them to repeat the self-talk that they themselves had reported using in situations of academic evaluation. *The third hypothesis, therefore, proposes that the valence of the self-talk reported by participants is related to the academic qualifications they expect to achieve.*

To complete the analysis of the relationship between real academic performance and self-talk, we consider it important to include the qualifications obtained by the participants some weeks after finishing the exams in the academic subjects studied and propose a *fourth hypothesis, that the students with a poorer academic performance (those who fail the subject) would report more negative general and academic self-talk than the students who obtain better results (those who pass).*

Method

Participants

The participants were 177 undergraduate students studying the first year of the Psychology Degree at the Universidad Autonoma de Madrid. The final sample was composed of 55 men and 122 women. The mean age was 19.14 years (*SD*=1.9).

Variables and Measures

General self-talk

We used the Self-Talk Inventory (STI) for young adults developed by Calvete et al., 2005 to identify and assess the positive and negative self-talk of university students and to analyse the relationship with affective problems. The STI consists of 52 items and two scales of 26 items, one to identify negative self-talk and the other to identify positive self-talk. To assess the self-talk, the inventory describes 10 imaginary situations of daily life and asks participants to record what they would think and say to themselves if any of the situations happened to them. The participants answered using a scale of 1 to 4 (1=very unlikely to 4= very likely). The sum of the scores assigned to the group of items in each scale can be used to obtain the value of positive and negative self-talk for each person. Application of this scale in the present study gives satisfactory values of reliability (Chronbach's Alpha), similar to those described in the original study. For the positive scale, a value of 0.78 was obtained (0.80 in Calvete et al., 2005) and a value of 0.90 for the negative self-talk in both studies. The correlation between both scales is close to zero (-.02 in our study and -.07 in the original), reflecting an independence between the positive and negative dimensions in the general self-talk.

Academic self-talk

Following Brown's procedure (2003) to analyze the relationship between self-talk and performance, we designed and applied the Self-Talk Academic Scale (STAS) composed of 6 items (Sánchez, Carvajal and Saggiomo, 2011). This was done by compiling conversations the students had had with themselves after doing the exam. These were then assessed by two independent judges who selected 3 items of a positive valence and 3 items of negative valence, which were then used to compose the scale. Using a 4-point scale (1= very likely to 4= very unlikely), the students had to anticipate the extent to which they would say to themselves what was indicated in each item if they were found in the two academic situations described. A high score in items 1, 4 and 6 implies the use of positive academic self-talk and a high score in items 2, 3, 5 negative academic self-talk. The items used in the scale and the instructions needed to complete it appear below:

The following day …… of ……. (month) you will have exam …… (easy or difficult academic subject). Imagine that the exam has finished. You would tell yourself:

1. I had prepared the subject matter and concepts systematically and in depth.
2. I haven't had all the time I needed to study
3. Unfortunately, this exam has been a wasted opportunity
4. I found the exam difficult
5. I felt terrible when I thought about having to do this exam.
6. I have invested a lot of interest and effort preparing for this exam and I expect to get a good mark.

This scale show acceptable reliability indices (measured by Cronbach Alpha) of .78 on the positive academic self-talk scale and .72 on the negative academic self-talk scale and a significant negative correlation between positive self-talk academic and the negative self-talk academic (r = -.24; p <.001).

Difficulty of academic subjects

On the basis of students' academic results for subjects in the year prior to the study on the first-year psychology syllabus, - two subjects with different levels of difficulty were chosen: Neuroscience and Behaviour I as the difficult subject (64% pass rate, average mark = 5.47; SE = 1.96), and Introduction to Psychology I as the easy subject (92% pass rate, average mark = 6.79, SE = 1.38). The academic results for both these subjects were different in relation to the percentage of students passing the subjects in the first sitting ($\chi^2(1, N = 73) = 72.64$, $p < .0001$), and in the average mark obtained ($t(72) = 6.72$; $p < .0001$).

Academic performance: expected and empirical

To measure this variable, data were recorded of the expected and the real performances of students in the easy and difficult academic subjects.

Negative expected academic performance. This was measured on the basis of the answers participants gave to the item "I'm definitely going to fail" six weeks before taking the exam. Response to this item was given on a 4 point scale (1= very unlikely, 2= quite unlikely, 3= quite likely, 4= very likely).

Empirical academic performance. This was assessed by considering the percentage of students who passed or failed the easy and difficult subjects and the marks they obtained.

Procedure

Together, students completed the Self-Talk Inventory for young adults (Calvete et al., 2005) and the scale specifically designed to measure self-talk in academic situations (STAS). Data were collected six weeks before the exam dates for selected academic subjects, this included the holiday period and was chosen for being a time when the students would be familiar with the subjects, classes would have finished and students would probably also have formulated expectations and predictions about their results. Participation in the study was voluntary; students signed the informed consent and received no direct benefit or financial compensation for carrying out the task, which took around 15 minutes to complete. In accordance with the objectives of the work, after finishing the exams, the qualifications obtained by the students for each subject were included in the analysis. Approval to carry out the study was granted by the Ethical Committee of the Universidad Autónoma de Madrid.

Results

General and Academic self-talk

As can be observed in Table 1, the results show that, as expected, the participants significantly report a greater use of positive than negative self-talk in daily life. A similar pattern appears in the self-talk used in academic situations, in which students also report a significantly greater use of positive than negative self-talk.

Table 1. Reported self-talk (Descriptive Statistics in percentage).

	General (STI)		Academic (STAS)		Academic in difficult subject		Academic in easy subject	
Self-Talk Valence	Positive	Negative	Positive	Negative	Positive	Negative	Positive	negative
Mean	62.67	50.69	31.48	25.18	29.92	26.17	32.84	24.26
SD	8.64	11.77	6.04	6.07	6.84	7.02	7.01	6.38

Using the data about the self-talk used in relation to the difficult and easy subjects, a two factors difficulty of subject (difficult vs easy) x valence of self-talk (positive vs negative) ANOVA of repeated measures was computed.This revealed the main effect of the difficulty of the subject ($F(1,176) = 14.75$, $p < .0001$) and self-talk valence ($F(1,176) = 80.86$, $p < .0001$); there was also a significant interaction effect between both factors ($F(1,176) = 24.06$, $p < .0001$). Subsequent analyses (Bonferroni, $p < .0001$) showed that while the percentage of positive academic self-talk was higher in the easy than in the more difficult academic subject ($p < .0001$), the percentage of negative self-talk was higher in the more difficult than in the easier subject ($p < .05$).

A significant correlation was found between positive general self-talk and positive academic self-talk both for the easy and the difficult academic subjects ($r = .35$ and $.29$; $p < .0001$). There was also a significant correlation between negative general self-talk and negative academic self-talk in both subjects ($r = .41$ and $.32$; $p < .0001$). Similarly, a significant correlation was found between academic self-talk in the two subjects, both when the valence was positive ($r = .53$; $p < .001$) and also when it was negative ($r = .66$; $p < .0001$). The data also indicate a degree of independence between positive and negative academic self-talk for the easy subject ($r = -.12$; $p = .09$). By contrast, a significant negative correlation was obtained between both types of academic self-talk in the case of the difficult subject ($r = -.27$; $p < .0001$).

Relationship between self-talk and expected negative academic performance

This relationship was studied by considering participants' response in the item "*I'm definitely going to fail*", with scores ranging from 1 (very unlikely) to 4 (very likely). More specifically, they were asked to predict what they would say to themselves 6 weeks later, when they took the exams in the easy and difficult subjects.

In the case of the difficult subject, 69 students said that it was very unlikely that they would fail six weeks later; 80 that it was quite unlikely, 15 that it was quite likely and 13 that it was very likely. For the easy subject, the answers ranged from 91 very unlikely, 63 quite unlikely, 17 quite likely and 6 very likely. Both distributions were different ($\chi^2(3, N = 177) = 18.31$, $p < .0001$), in that students marked the categories very unlikely to fail or quite unlikely to fail more often in the easy than in the difficult subject (χ^2 (1, N = 177) = 10.95 y 7.12, $p < .01$), there were no differences in the frequency with which the participants selected the quite likely to fail category in the two subjects ($\chi^2(1, N = 177) = 0.26$, $p = .61$), and more students chose the category very likely to fail in

the difficult than in the easy subject ($\chi^2(1, N = 177) = 8.45$, $p < .01$).

Given that in both subjects the categories quite likely to fail and very likely to fail were chosen by few students, we decided to group these together; so, three levels were established: very unlikely (score 1), quite unlikely (score 2) and quite or very likely (scores 3 and 4) and the analytical tests were applied to the data.

Table 2 shows the means and standard deviations of the scores in the general self-talk and in the academic self-talk in relation to the predictions made by students about the likelihood that they would fail the exam they were to take 6 weeks later. Four ANOVAs of one factor (the probability of failing the subject) were carried out: the first for positive self-talk and the second for negative self-talk in the difficult subject; and the other two analyses were carried out on the easy subject, once again the first for positive self-talk and the second for negative self-talk.

For the difficult subject, the ANOVA was not significant in the case of positive general self-talk ($F(1,176) = 1.86$, $p = .15$), although it was in the case of negative general self-talk ($F(1,176) = 5.21$, $p < .01$); subsequent tests showed that students who say that it is quite or very likely that they will fail report using more negative general self-talk than those that say it is quite unlikely or very unlikely that they will fail (Tukey a, $p < .05$). For academic self-talk, the comparisons were significant both in the case of positive academic self-talk ($F(1,176) = 19.61$, $p < .0001$) and negative academic self-talk ($F(1,176) = 43.77$, $p < .0001$); subsequent tests showed that students who say that it is quite or very likely that they will fail the difficult subject have less positive academic self-talk than those who say it is quite or very unlikely that they will fail the difficult subject (tukey a, $p < .0001$). Similarly, students who considered it quite or very likely that they would fail reported more negative academic self-talk than those who considered it to be quite unlikely and these, in turn, report using more negative academic self-talk than those who said it was very unlikely that they would fail (tukey a, $p < .05$).

The results obtained with the easy subject were similar to those obtained with the difficult subject. Specifically, the ANOVA for positive general self-talk was not significant ($F(1,176) = 2.17$, $p = .12$) but it was significant for negative general self-talk ($F(1,176) = 12.06$, $p < .0001$), positive academic self-talk ($F(1,176) = 6.73$, $p < .01$) and negative academic self-talk ($F(1,176) = 20.44$, $p < .0001$). The subsequent analytical tests showed that students who say that it is quite or very likely that they will fail difficult subjects report more use of negative general self-talk than those who say it is quite or very unlikely (tukey a, $p < .01$); those who say that they are quite or very likely to fail the difficult subjects have less positive academic self-talk than those who say that it is quite or very unlikely that they will fail (tukey a, $p < .01$), and those who consider it quite or very likely that they will fail report using more negative academic self-talk than those who say that it is quite unlikely and these, in turn, report using more negative self-talk than those who say that it is very unlikely that they will fail (tukey a, $p < .05$).

Table 2. Reported Self-Talk and estimated probability of failing.

			Estimated probability of failing					
			Very unlikely		Quite unlikely		Quite or very likely	
Subject	Self-Talk	Self- Talk Valence	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Difficult	General	Positive	62.07	8.04	63.60	8.98	60.28	8.70
		Negative	48.68	11.28	50.48	11.10	57.86	14.02
	Academic	Positive	31.96	6.68	30.32	5.86	23.21	6.10
		Negative	21.64	5.22	26.44	6.18	33.61	5.82
Easy	General	Positive	62.32	8.03	63.92	8.51	59.86	10.61
		Negative	47.80	11.08	51.60	10.26	60.54	15.12
	Academic	Positive	30.70	7.32	30.42	5.04	25.20	7.52
		Negative	22.52	5.70	27.28	6.92	31.65	7.26

Relationship between expected academic performance and the real qualifications obtained

From the descriptors appearing in Table 3, the relationship was studied between the likelihood that students considered they would fail the subject and the academic results obtained six weeks later; and two types of analyses were performed. The first was composed of two single-factor ANOVAs (one for the easy and one for the difficult subject) in which the factor was the mark obtained; the second consisted in comparing the distribution of passes and fails.

Table 3. Relation between probability of failing and academic results.

	Materia Difícil			Materia Fácil		
Expected probability of failing	*M*	*DT*	Fail/Pass [a]	*M*	*DT*	Fail/Pass [a]
Very unlikely	6.19	1.90	18/82	7.95	1.47	5/95
Quite unlikely	5.21	2.14	35/65	7.18	1.43	5/95
Quite or very likely	4.89	1.89	58/42	6.51	1.65	18/82

[a] Percentage of students who pass the subject.

The ANOVAs were significant for both the difficult subject ($F(1,176) = 5.76$, $p < .01$) and the easy subject ($F(1,176) = 4.01$, $p < .05$). The analyses carried out later on showed that for the difficult subject students who considered they were very unlikely to fail achieved higher marks than those who considered they were quite likely or very likely to fail (tukey a, $p < .05$). Also, for the easy subject, those who considered they were very unlikely to fail achieved higher marks than those who considered they were quite likely or very likely to fail (tukey a, $p < .05$); there were no differences between the group who considered they were quite unlikely to fail in comparison to the other two groups.

For the difficult subject, the percentage of fails was higher in students who considered it quite likely or very likely they would fail than in those who considered they were quite unlikely to fail (χ^2 (1, N = 28) = 6.08, $p < .05$) and these, in turn, showed a higher percentage of fails than those who had said six weeks previously that they were very unlikely to fail (χ^2 (1, N = 80) = 13.70, $p < .0001$). For the easy subject, the percentage of fails was higher in students who thought they were quite or very likely to fail compared to those who considered they were quite unlikely or very unlikely to fail (χ^2 (1, N = 23) = 8.56 and 6.58, $p < .05$), but there were no differences between the latter two groups (χ^2 (1, N = 63) = 0.64, $p = .81$).

Self-talk and empirical academic performance

To test the hypothesis about the relationship between real academic performance and the style of general self-talk and academic self-talk, students were placed into two groups according to whether they had passed or failed the subjects considered (see Table 4). A total of 57 students (32%) failed and 127 students (68%) passed the difficult subject, while for the easy academic subject 11 students (6%) failed and 166 passed (94%), showing that more students failed the difficult than the easy subject (χ^2 (1, N = 177) = 50.76, $p < .0001$), and verifying the difference in difficulty between the subjects.

Table 4. Self-Talk reported (in percentage) by participants who have passed or failed the easy or difficult subject.

			Fails		Passes	
	Self-Talk	Self-Talk valence	*M*	*DT*	*M*	*DT*
Subject difficult	General	Positive	63.01	9.01	62.21	8.63
		Negative	51.66	13.21	51.46	11.57
	Academic	Positive	26.41	7.08	31.73	6.35
		Negative	28.49	7.30	23.75	6.55
Subject easy	General	Positive	60.86	8.78	62.44	8.27
		Negative	54.78	17.23	50.68	11.40
	Academic	Positive	28.06	6.06	29.40	6.89
		Negative	27.06	7.98	25.90	7.01

For the difficult subject, the data showed that students who had passed reported a similar positive and negative general self-talk to those who had failed (t(175) = 0.52 and 0.19, $p = .60$ and .84). By contrast, when academic self-talk was assessed, students who failed the difficult subject reported using less positive academic self-talk (t(175) = 3.05, $p < .01$) and more negative academic self-talk than those who passed (t(175) = 2.35, $p < .05$). Regarding the easy subject, there was no difference between scores for positive or negative general self-talk in students who passed or failed (t(175) = 0.60 and 1.10, $p = .54$ and .27), or in positive or negative academic self-talk (t(175) = 1.09 and 0.85, $p = .27$ and .39).

Conclusions

The data obtained suggest that students in the sample use both positive and negative self-talk in daily life, but with a predominance of positive self-talk, as proposed by the first hypothesis. This would be in line with previous studies conducted in subjects without any clinically significant emotional imbalance (Calvete et al., 2005). Although we could not identify a personal style of self-talk, the data support a transversality of the self-talk valences. On the whole, the results also support the second hypothesis proposed here. Hence, academic self-talk tends to follow the same pattern as that used in daily situations: people who use positive self-talk in some situations also tend to use it in others. However, one distinguishing factor corresponding to the self-talk associated with academic situations considered to be difficult is that in these cases, participants report less positive and more negative self-talk.

The studies reviewed appear to verify the effects of self-talk on performance when the evaluation is preceded by the use of instructional self-talk compared with when self-talk is suppressed (DeCaro et al., 2010), or by the use of positive compared to negative self-talk (Cumming, Nordin, Horton, & Reynolds, 2006). In these works, and in many others, self-talk is contingent upon performance of the task. The study design we have used here permits us to verify that the valence of the self-talk that people assume to use spontaneously and frequently in situations of academic evaluation are related to the results that they expect to obtain in a task they will perform several weeks later. More important still, the valence of the self-talk is a predictive factor for the qualifications obtained 6 weeks later; findings that coincide with the proposal made in the third hypothesis. This predictive nature of self-talk was dismissed in a study carried out in the field of sport, which used very different tasks (Van Raalte et al., 2000). With the type of study carried out here it is not possible to analyse the possible existence of a causal relationship between self-talk, the expected results and the real qualifications obtained. However, the data do support a relationship between self-talk and academic performance, in this case, conditioned by the valence of the self-talk. Re-

garding the fourth hypothesis, the data support it in part, as students who obtain a poorer academic result (the ones who fail), especially in the difficult subject, had reported more negative academic self-talk than the students with better results (the ones who pass), although there are no differences in relation to general self-talk. These findings show that academic self-talk has very specific effects on performance in evaluation situations. Given the practical implications of this, these effects should be analysed in studies of a much more specific nature since, in some students, negative academic self-talk is yet one more factor that can contribute to academic failure.

It is interesting to note that a significant percentage of students who reported negative self-dialogue expected negative results (they thought they were going to fail) and, finally, actually did obtain negative results (they failed); although a small percentage of students who had used negative self-talk, finally passed the subject. How can the different results in both groups be explained? We will endeavour here to provide some possible explanations. Regarding the students who obtained negative results, predicted by their self-talk, we can hypothesize that expression of the self-talk reported in the task they had to perform could make them aware of it and result in them projecting an image of themselves in accordance with the direction, valence and contents of their self-talk. This negative image (a negative evaluation of the strategies followed to prepare for the exam, the emotions felt before and during the exam, expectations of self-efficacy) could have an unfavourable effect on their expected and real performance if there is no intervention, external or initiated by them, to counteract these effects. The recreation of a negative image of oneself can be disabling and can reduce self-efficacy (Cumming et al., 2006). Several authors agree that when someone's belief in their own self-efficacy is weakened, this has a negative effect on academic performance (Galicia-Moyeda, Sánchez-Velasco & Robles-Ojeda, 2013), as also occurs with other indicators of interpersonal perception (Andrés, Solanas, & Salafranca, 2012). Regarding the students who gave negative reports about their strategies and expectations of self-efficacy but finally passed the subject, one could think that, at some time, they could have reacted against the negative image they projected of themselves, making it positive, and have implemented effective strategies to prepare for the exam. This reaction could be related to an improvement in their affective state in relation to the exam, their self-efficacy expectations and, finally, their performance.

Although we consider that this must be addressed in more specific studies, the plausibility of the explanations could be endorsed by the results of multiple studies that have identified negative self-talk associated with a given task or situation and, following methodologies such as that of Michembaum (1977), have transformed it into positive self-talk, resulting in improved performance in sports activities and at work (Brown, 2003). In our study, we have only worked with positive and negative self-talk associated with the evaluation of some academic subjects, but have not intervened in any way to correct this self-talk or its possible consequences.

Limitations of the study and new research developments

The self-talk identified here for academic situations was obtained by asking students to imagine what they would say to themselves having just done an exam. We consider that this would be very similar to the self-talk that would be obtained at this specific moment in time, because university students are very familiar with these situations. However, it would be desirable to verify this by working with the students at the actual time of the evaluation to ensure that the relationship between the imagined self-talk and predicted performance is maintained when the self-talk is contingent upon the real evaluation situation.

In this study, we did not establish whether the self-talk used in daily life reported by the students was audible or silent, nor if this distinction affected the results. Another important aspect would be to analyse the possible effects on academic performance of the instructional and motivational components of the academic self-talk that students use. Both of these points have been extensively reviewed previously. However, unlike previous studies that have not focused on the spontaneous self-talk that students tend to use in the academic setting, in our work this type of self-talk constituted the main study object.

As mentioned previously, in our study it is not possible to analyse the existence of a causal relationship between the style of self-talk and the academic results obtained, although we do consider that our results support this relationship. However, to study this in greater depth we consider it necessary to carry out further studies to, among other purposes, rule out the influence of personal and contextual variables that the literature consistently relates to academic performance. In our opinion, designs and methodologies are required that have more control over the variables that can affect the academic results and over the study conditions. Moreover, in a line of research on which we are already working, we consider it recommendable to broaden and diversify the sample of participants in the studies, to include students of both sexes, and of other university and non-university disciplines. Finally, it has yet to be demonstrated whether the negative effects that negative self-talk has on academic performance can be reversed, by carrying out interventions

similar to those proposed by Meichenbaum (1977) and, as mentioned, have given such good results in non-academic settings. This could possibly orientate future research into the effects of the conversations we often have with ourselves on academic performance.

Acknowledgments: This study hás been conducted within the framework of the Project DEP2011-27282. Ministerio de Educación y Ciencia

References

Andrés, A., Solanas, A., & Salafranca, L. (2012). Interpersonal perception, personality, and academic achievement: a dyadic approach for the study of undergraduate performance. *Anales de Psicología*, *28*, 97-106. Recuperado de http://revistas.um.es/analesps

Aronson, E. (1999). The power of self-persuasion. *American Psychologist*, *54*, 875–885.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood, NJ: Prentice Hall.

Broomhead, P., Skidmore, J., Eggett, D., & Mills, M. (2010). The Effect of Positive Mindset Trigger Words on the Performance Expression of Non-Expert Adult Singers. *Contributions to Music Education 37*, 2, 65-86.

Brown, T. (2003). The effect of verbal self-guidance training on collective efficacy and team performance. *Personnel Psychology, 56*, 935-964.

Calvete, E., Estévez, A., Landín, C., Martínez, Y., Cardeñoso, O., Villardón, L., & Villa, A. (2005). Autodiálogo and affective problems in college students: Valence of thinking and cognitive content specificity. *The Spanish Journal of Psychology, 8*, 56-67.

Cumming, J., Nordin, S. M., Horton, R., & Reynolds, S. (2006). Examining the direction of imagery and Self-Talk on dart-throwing performance and self- efficacy. *The Sport Psychologist, 20*, 257-274.

Dagrou, E., Gauvin, L., & Halliwell, W. (1992). Effets de langage positif, negatif et neuter sur la performance motrice. Effects of positive, negative and neutral self-talk on motor performance. *Canadian Journal of Sport Science, 17*, 145–147.

DeCaro, M., Rotar, K., Kendra, M., & Beilock, S. (2010). Diagnosing and alleviating the impact of performance pressure on mathematical problem solving. *The Quartely Journal of Experimental Psychology, 63*, 8, 1619-1630.

Dolcos, S., Wilson, K, Sánchez, F. &, Albarracín, D. (in press). The Inner Speech of Self-Regulation: Meta-Analysis of the Experimental Evidence on the Behavioral Effects of Self-Talk.

Duncan, R. M., & Cheyne, J.A. (2001). Private speech in young adults: Task difficulty, self-regulation and psychological predication. *Cognitive Development, 20*, 367-383.

Emerson, M. J., & Miyake, A. (2003). The role of inner speech in task switching: A dual-task investigation. *Journal of Memory and Language, 48*, 148-168.

Galicia-Moyeda, I., Sánchez-Velasco, A. y Robles-Ojeda, F. (2013). Autoeficacia en escolares adolescentes: su relación con la depresión, el rendimiento académico y las relaciones familiares. *Anales de Psicología, 29*, 491-500. doi:10.6018/analesps.29.2.124691

Goschke, T. (2000). Intentional reconfiguration and involuntary persistence in task set switching. In S. Monsell & J. Driver (Eds.), *Attention and performance XVIII: Control of cognitive processes* (pp. 331–355). Cambridge, MA: MIT Press.

Hardy, J. (2006). Speaking clearly: A critical review of the self-talk literature. *Psychology of Sport and Exercise, 7*, 81-97.

Hatzigeorgiadis, A., Theodorakis, Y., & Zourbanos, N. (2004). Self-Talk in the Swimming Pool: The Effects of Self-Talk on Thought Content and Performance on Water-Polo Tasks. *Journal of Applied Sport Psychology, 16*, 138-150.

Hatzigeorgiadis, A., Zourbanos, N., Goltsios, C., & Theodorakis, Y. (2008). Investigating the functions of self-talk: The effects of motivational self-talk on self-efficacy and performance in young tennis players. *The Sport Psychologist, 22*, 458-471

Highlen, P. S., & Bennett, B. B. (1983). Elite divers and wrestlers: A comparison between open and closed skill athletes. *Journal of Sport Psychology, 1*, 390–409.

Latham, G. P., & Budworth, M. H. (2006). The effect of training in verbal self-guidance on the self-efficacy and performance of Native North Americans in the selection interview. *Journal of Vocational Behavior, 68*, 516-523. doi:10.1016/j.jvb.2005.11.005

Lupyan, G., & Spivey, M. J. (2010). Redundant spoken labels facilitate perception of multiple items. *Attention, Perception and Psychophysics, 72*, 2236-2253. doi:10.3758/APP.72.8.2236

Manning, B.H. (1990). A categorical analysis of children´s self-talk during independent school assignments. *Journal of Instructional Psychology, 17*, 208-219.

Meichenbaum, D. (1977). *Cognitive behavior modification: An integrative approach*. New York, NY: Plenum Press.

Miyake, A., Emerson, M. J., Padilla, F., & Ahn, J. (2004). Inner speech as a retrieval aid for task goals: The effects of cue type and articulatory suppression in the random task cuing paradigm. *Acta Psychologica, 115*, 123-142. doi:10.1016/j.actpsy.2003.12.00

Sánchez, F., Carvajal, F., & Saggiomo, C. (2011). Self-Talk and academic performance. Paper presented at the Xll European Congress of PsychoIogy. JuIy 4-8. Istanbul.

Schwinger, M., Steinmayr, R., & Spinath, B. (2012). Not all roads lead to Rome—Comparing different types of motivational regulation profiles. *Learning and Individual Differences, 22*, 269-279. doi:10.1016/j.lindif.2011.12.006

Theodorakis, Y., Weinberg, R., Natsis, P., Douma, I., & Kazakas, P. (2000). The effects of motivational versus instructional self-talk on improving motor performance. *Sport Psychologist, 14*, 253-271.

Tullet, A., & Inzlicht, M. (2010) The voice of self-control: Blocking the inner voice increases impulsive responding. *Acta Psicológica, 135*, 252-256. Recuperado de doi:10.1016/j.actpsy.2010.07.008

Van Raalte, J. L., Brewer, B. W., Lewis, B. P., Linder, D. E., Wildman, G., & Kozimor, J. (1995). Cork! The effects of positive and negative self-talk on dart throwing performance. *Journal of Sport Behavior, 18*, 50–57.

Van Raalte, J. L., Cornelius, A. E., Brewer, B. W., & Hatten, S. J. (2000). The antecedents and consequences of self-talk in competitive tennis. *Journal of Sport and Exercise Psychology, 22*, 45–356.

Vigotsky, L. (1934/1987). *Pensamiento y Habla*. Colihue Clásica. Buenos Aires. (Trabajo original publicado en 1934).

Winsler, A., & Naglieri, J. (2003) Overt and Covert Verbal Problem-Solving Strategies: Developmental Trends in Use, Aware-

ness, and Relations With Task Performance in Children Aged 5 to 17. *Child Development, 74,* 659-678.

Winsler, A. (2009). Still talking to ourselves after all these years: A review of current research on private speech. In A. Winsler, C. Fernyhough & I. Montero (Eds.), *Private speech, executive functioning, and the development of verbal self-regulation (pp. 3-41)*. New York, NY: Cambridge University Press.

Winsler, A., Feder, M., Way, E. L., & Manfra, L. (2006). Maternal beliefs concerning young children's private speech. *Infant and Child Development, 15*, 403-420.

Wolters, C. A. (1999). The relation between high school students' motivational regulation and their use of learning strategies, effort, and classroom performance. *Learning and Individual Differences, 11*, 281-299.

(Article received: 11-12-2013; revised: 05-04-2015; accepted: 17-04-2015)