Affections in learning situations: a study of an entrepreneurship skills development course

Sonia Maria Guedes Gondim and Clara Mutti
Federal University of Bahia, Salvador, Brazil

Received 14 July 2009
Revised 6 December 2009
27 April 2010
1 August 2010
28 November 2010
Accepted 28 December 2010

Abstract

Purpose – This paper aims to present the results of a study whose general objective is to characterize the affective states experienced in response to different teaching activities used in a workshop for developing entrepreneurial skills. It seeks to answer the following question: how affections and experiential learning strategies interrelate in the development of entrepreneurial skills?

Design/methodology/approach – The study included 126 people enrolled in EMPRETEC, a nine-day course with a behavioral and experiential approach which aims to develop entrepreneurs' behavioral aspects. The affective states experienced by the participants were assessed on 13 moments during the workshop using the time-sampling method.

Findings – The results suggest that the structure of the course favored the predominance of affective states such as joy, excitement, pleasure, and pride (categorized as affective states indicating motivation). Activities similar to real situations (as opposed to fictitious ones) generate greater emotional impact. It was also found that indirect learning activities (less similar to real situations) and interactive (team) activities are associated with lower levels of anxiety.

Research limitations/implications – Being an exploratory study on a particular case, these results cannot be generalized, suggesting the need for further in-depth studies.

Practical implications – These results are an important guide for instructional planning in contemporary society that values the use of teaching methods that are experiential, collaborative, and encourage learner autonomy.

Originality/value – This paper offers to extend the discussion about emotions in the workplace and specifically their relationship to learning, a subject still little explored in recent literature.

Keywords Affective psychology, Experiential learning, Adult education, Workplace learning, Brazil

Paper type Research paper

1. Introduction

Scholars of adult learning adopt as one of its basic principles the importance of learning through action, valorizing the learner's participation and involvement in all stages of the process (Rogers, 1969; Knowles, 1984; Boud and Walker, 1990; Boud, 1994; Jarvis, 2006). This same principle has also been directed at learning in the working world, turning the learner much more active in the development of labor skills and abilities (Beckett, 1999; Billet, 1999). One alternative to make the learner more active in the process of learning is to transform this same process into an experience that enables critical self-reflection and, consequently, self-correction.

Affective states are mobilized in this process of critical self-reflection and play a role in learning, promoting or hindering the achievement of the instructional goals. Based on his belief in the importance of emotion in the learning process, Jarvis (2006) proposed a theoretical model based on an experiential, existential, and humanistic

Journal of Workplace Learning
Vol. 23 No. 3, 2011
pp. 195-208

1366-5626
DOI 10.1108/13665621111117224

approach that places the action, cognition, and emotion of the learner as central to learning.

Although the Jarvis theoretical model points to the relevance of emotion in the teaching-learning process, seeing it as capable of transforming the experience and motivating the learner to change one's prior knowledge structures and behaviors, it tells little about the antecedents and consequences of affective states in learning situations, which would require new empirical studies to understand the relationship between affections and learning.

A brief review of the literature on the relationship between affective states and learning signals clearly that, until the 1990s, the role of affective states in learning was largely ignored, with rare exceptions, such as a number of studies on anxiety prior to taking tests and examinations, which began in the 1930s (Hembree, 1988; Zeidner, 1998), and on the background attributes of affective states related to success or failure in learning (Weiner, 1985). Reflecting on the progress and key issues in research on affective states in education, Pekrun (2005) states that this is a recent issue and that, starting in the 1990s, scholars in Europe, the US and Australia began to examine the multiple dimensions of the affective states of teachers and students and their functional importance for learning and for the success of students (Pekrun and Frese, 1992; Pekrun *et al.*, 2002). At that time, publications on the findings of neuroscience about the emotions (Damásio, 1996) demonstrate the strong connection between cognition and emotion, revealing the importance of understanding the relationship between affections and learning. Studies on affective states in adult learning and workplace learning, however, are yet more recent, and mostly of an exploratory nature.

Because of the lack of available studies found in the literature on the relationship between affective states and learning which could serve as a reference, the exploratory study reported in this article had as its main goal to characterize the affective states of the learner in different teaching strategies used in an entrepreneurial skills development workshop. The aim was therefore to identify the predominant affective states in learning situations, trying to relate them to the characteristics of the teaching activities and to their application context, helping to produce knowledge about the complex relationships between affections and learning, and also assisting in the development of instructional plans and workplace training.

2. Affective states in learning

For most authors, emotions can be conceived as a wider process that includes physiological (body reactions and neurophysiological path), behavioral (action tendencies and emotional, facial and gestural emotional expressions), cognitive (subjective experience of perception and evaluation), social and interpersonal aspects (learned by social and cultural norms). However, Damásio (1996) suggests that for greater accuracy of emotions as a scientific object, it is important to distinguish emotions from feelings. The author defines emotions as the neurophysiological changes triggered by an external or internal object and feelings as the perception of these emotions in association with the subject or context in which it occurs. In 2000, he raises the need for greater differentiation between the concepts, distinguishing three different stages involved in emotional experience: emotions, which constitute the non-conscious neurophysiological changes regarding an object, feelings that would be the conversion of body changes in mental images, and feeling a feeling (core

consciousness) that would be the perception of body changes in association with the perception of the object that triggered. He stresses the importance of this distinction in neurological patients by observing independence between these three elements.

Another possible differentiation is between emotions and other affective states such as mood and temperament. Based on the distinction proposed by Gray and Watson (2001), the affections are a broad category that includes emotion and humor. For these authors, the factors that differentiate emotion, mood and temperament are: length, object and state. With regard to emotion, it is a state of short duration, only a few seconds, and focuses on a specific object and its status is short. When it comes to humor, it is considered something that can last from minutes to days, it is not directed at a specific object, and its condition is considered long term. In temperament, its duration takes months to years, it depends on personal characteristics that manifest themselves in different contexts and is therefore considered lasting.

While recognizing how important these differentiations are to the improvement of neuroscience, this study uses this knowledge in an applied way and is based on the participants' self-reports, which does not allow such distinction. Considering that we are embracing emotions, feelings, core consciousness and even moods, in this article we use the term "affective states" to refer to the emotional experiences reported by participants.

To delineate the subject of this study, the concept of the affective domain of learning must be introduced. This is one of three main areas of learning outcomes, and refers to the internalization of values, attitudes, biases, and interests expected of learners. This differs from the cognitive domain (information assimilation and accommodation) and the psychomotor (muscular, motor, and action skills) (Bloom *et al.*, 1972).

The affective domain of learning is different from the affective states in learning, the focus of this study, because it refers to affective positioning, i.e. favoring or against a particular subject as a result of a learning situation. Instead, affective states in learning refers to the experience of affections in the learning process.

Considering the emphasis given to experience and action in adult learning, a theoretical model derived from experiential learning will be used to address the affective state-learning relationship. The one that best addresses the role of affective states is proposed by Jarvis (2006). This is an elaboration of his original model proposed in 1987.

In his new model Jarvis seeks to overcome the limitations of the former, adding in the possibility of learning not only through reflection (cognition), but also through practice (action) and emotion, to take into account the different results of learning. In this new model, emotion assumes the same status as cognition and action in the experiential transformation in learning.

According to this model, we must consider that action, emotion, and cognition will constantly interact to generate the final result of learning, which is the transformation of the individual. The interplay between affective states and cognition has been discussed by many authors (Damásio, 1996; Lazarus, 1991; Phelps, 2006; Schachter and Singer, 1962; Zajonc, 1980, 1984, 1998). Despite the debate about the independence or interdependence of these two psychological processes, the consensus is that most of the affective states are influenced by a cognitive assessment that informs about the relevance of the situation for the welfare of the individual and about the rules of emotional expression and previous experience associated with the context. It is argued,

too, on the other hand, that the affective component influences cognition, either in the selection of what will be perceived and stored, or in the assessment of the learning experience as good-bad, pleasant-unpleasant, of great-little importance.

Recent findings in neuroscience suggest an overlapping relationship between the brain regions involved in the processing of emotions and cognitive processes such as memory, decision making, and creativity (emotional thought), attaining influence on rational thinking (Immordino-Yang and Damásio, 2007). These findings are likely to have significant repercussions in the educational environment because affections in learning situations fulfill two important roles: in the learning of social and cultural norms and in the transfer of the content learned to the real world.

Wosnitza and Volet (2005) propose that the theories of evaluation are the biggest contributors to the understanding of how people feel in learning situations. For these authors, the evaluation of the event or activity by the degree of challenge and familiarity, in addition to its relevance to the achievement of personal goals, causes learners to experience boredom or indifference, anxiety or excitement. This evaluation-affective state combination can contribute to a greater or lesser motivational investment in the task, and may lead to the engagement or the abandonment of learning.

Dealing with adult learning, some exploratory studies have been conducted (Antonacapoulou and Gabriel, 2001; Askham, 2001; Short and Yorks, 2002). Briefly, one can state that these scholars contend the predominance on the one hand, of affective states such as fear and anxiety, and on the other, motivation and affective engagement, as contributing factors that facilitate or hinder the learning process.

Anxiety may be generated in adult learning situations by different factors. This appears to be associated with the assumption of the new learner role (Barnett, 1999; Askham, 2001), the threat that new knowledge can pose to existing knowledge (Antonacapoulou and Gabriel, 2001; Askham, 2001), the uncertainty with respect to one's abilities to perform the tasks, and finally, the memory of past negative learning events (Antonacapoulou and Gabriel, 2001; Short and Yorks, 2002).

It should be noted that anxiety is not always detrimental to learning. Askham (2001) and Jarvis (2006) argue that to some degree, it can help generate curiosity and exploration, turning into fear and withdrawal only when excessive in degree.

Regarding motivation, some theorists (Csikszentmihalyi and LeFevre, 1989) agree that the affective states experienced in challenging tasks are related to the perception of their difficulty and required personal competence to face them. When the two components are in balance, intrinsic motivation emerges as a strong driving force for achieving a level of excitement that affords positive affective states, leading to success in learning.

Askham (2001) suggests that the learner's personal characteristics affect the positive or negative reaction to learning situations. These attitudes could be related to fragile identity (negative attitude) and capable identity (positive attitude), influencing the way of evaluating learning events and thus altering the affective state experienced in response to the learning event.

Another aspect to be taken into consideration is the learning context. The literature indicates that contexts where activities appear challenging (Reeve, 2006) combined with the presence of feedback from tutors and colleagues (Askham, 2001), promote

feelings of confidence. The inclusion of time, in instructional planning, for learners' feelings to be expressed and considered also supports learning (Short and Yorks, 2002).

Considering the theoretical model of Jarvis (2006), as well as the arguments of the other authors mentioned above, there is a clear interaction of cognition, emotion, and action in situations of experiential learning. The proposed study aims to answer the following question: how the affections and experiential learning strategies are interrelated in the development of entrepreneurial skills?

3. Method

This is an exploratory study with the overall objective of characterizing the affective states of the learner in the various teaching strategies used in an entrepreneurial skills development course. The specific objectives of the study were:

- a comparative analysis of the emergence of affective states in the participants at the beginning, middle and end of the course; and
- to relate the affective states to the characteristics of the activities planned to achieve the instructional objectives of the course.

The study was divided into two stages. The first stage was preparatory, and involved participative observation in a course class, interviews with its facilitators, and the conducting of an open-ended questionnaire with the participants. The objective of observation and the interviews with the facilitators was to identify the activities of greatest emotional impact on the learner, to then finally decide on which moments in the course the affective states would be measured. The questionnaires asked the participant about affective states experienced during the course and served as the basis for the choice of affective states to be included in the measuring instrument. The second stage involved the measurement of the affective states in 13 moments in the course and was carried out with five course classes, totaling 126 participants.

3.1 Research context

This research was conducted between the months of September and December 2007, in five classes from an entrepreneurial skills development workshop called EMPRETEC. This is an initiative of the United Nations Development Program (UNDP) with the objective of contributing to economic growth in developing countries. As part of this program, EMPRETEC aims to develop ten entrepreneurial competencies (e.g. calculated risk-taking, goal setting). Each competency was defined operationally in terms of expected behaviors to be tested and concurrently developed in practical activities carried out over the nine-day workshop duration. The workshop has three instructors working in rotation. Guided by the perspective of experiential learning (Kolb, 1984), the workshop is structured so that skills and expected behaviors are described in detail to the learner before undertaking the activities, in order to present, at their completion, quantitative and qualitative parameters as inputs to the learner's self-reflections on the results, and to point out personal development needs.

3.2 Data collection

For the quantitative phase, the focus of this article, the time-sampling method was used, which consists of measuring and recording the affective states of participants right after the event. This method is being adopted in research on affective states as a

way to reduce inaccuracy related to the fact that individuals themselves have difficulty interpreting their emotions, tending to reconstruct their previous affective state based on their momentary mood (e.g. Csikszentmihalyi and LeFevre, 1989; Volet, 1997).

The 126 participants (see Table I) were asked to record their affective states at the end of activities previously selected by the instructors as having greater emotional impact. In some activities that lasted more than one day, participants were also asked to do so at their start. In such cases, we used the terms "opening" and "closing" to refer to different moments of the same activity (see Table II). Overall, affective states were mapped on 13 moments during the workshop through a structured questionnaire with 22 affective states, 11 pleasant (joy, contentment, relief, pleasure, pride, etc.) and 11 unpleasant (discouragement, fear, insecurity, frustration etc.) where the respondent was asked to score on a scale from 0 to 10 the intensity of the experience of each state.

The 13 moments refer to the nine activities, whose principal characteristics analysis is described in Table III. The activities were grouped according to levels of personal

		%
Class location (cities of the northeast of Brazil. Three workshops in Salvador, the capital of Bahia)		
Feira de Santana		24.6
Salvador 1		19.8
Salvador 2		14.3
Salvador 3		23.0
Juazeiro		18.3
Sex		
Female		37.3
Male		62.7
Age	M = 36 (DP = 9.32)	
Education		
Elementary incomplete		0.8
Elementary complete		0.8
Secondary incomplete		1.6
Secondary complete		21.4
College incomplete		20.6
College complete		29.4
Post-graduate		25.4
Occupation		
Business executive		62.4
Potential executive		4.8
Professional		8.8
Government employee		3.2
Private company employee		16.0
Student		2.4
Unemployed		0.8
Other		1.6

Note: $n = 126$

Table I.
Demographic characteristics of research participants

Moment in the workshop	Day
Moment 1 – Entrepreneurship building opening	1st day
Moment 2 – Ring game	2nd day
Moment 3 – Lost on the moon	3rd day
Moment 4 – Information search	4th day
Moment 5 – Persistence	
Moment 6 – Efficiency	5th day
Moment 7 – Stamp book opening	
Moment 8 – Video presentation opening	6th day
Moment 9 – Power (this activity was ignored in the study)	7th day
Moment 10 – Shoes	
Moment 11 – Video presentation closing	8th day
Moment 12 – Stamp book closing	
Moment 13 – Entrepreneurship building closing	9th day

Table II.
Distribution of structured questionnaire application times

Direct learning activities	
Individual or interpersonal	Entrepreneurship building
Individual	Stamp book
	Video presentation
Interactive	Information search
Indirect learning activities	
Individual	Rings game
	Persistence
Interactive	Lost on the moon
	Efficiency
	Shoes

Table III.
Grouping of activities according to the characteristics proposed in the analytical model of the study

interaction, being performed individually, in pairs, or in groups of three or more people. Another grouping criterion was the level of simulation divided into:

- indirect learning strategies, which differ from the real work situation, and where learning takes place only by analogy with the real situation; and
- direct learning strategies, which more closely approximate the actual work situation, requiring participant behaviors much closer to those required in routine situations.

In other words, the relationship of learning and its application in everyday reality is more evident. For more details, see Mutti (2008).

For purposes of this study we expected to see the results:

- show a predominance of affective states related to anxiety at the beginning of new activities rather than the end, because anxiety is predicted during initial contact with the learning topic (Barnett, 1999; Askham, 2001);
- find variations in affective states related to the characteristics of the activities (type of interaction and level of simulation), since group interaction and experiential strategies have been considered more favorable to learning (Boud, 1994; Beckett, 1999; Billet, 1999; Jarvis, 2006); and

- find variations in pleasant and unpleasant affective states depending on the success or failure in performing each activity (Csikszentmihalyi and LeFevre, 1989; Reeve, 2006).

4. Presentation and discussion of results

The first objective of the study was to characterize the affective states experienced before, during, and at the end the course. In order to group into categories the 22 affective states mapped during the course, principal axis factoring (PAF) with Varimax rotation was performed for each of the 13 evaluation moments. The results showed a clustering tendency of the affective states on three factors that are repeated in most of the 13 moments.

Thus it was seen that the affective states of pleasure, enthusiasm, pride, well-being, contentment, gratification, achievement, determination, joy, and pleasant surprise (factor loading range from 0.54 to 0.92) appear as the primary factor in almost all moments, except for the initial moment of the course. In accordance with the literature (Antonacapoulou and Gabriel, 2001; Askham, 2001; Short and Yorks, 2002), the affective states associated with motivation and engagement are among the most common in learning situations, and will henceforth be called affective states indicating motivation.

The affective states of fear, anguish, anxiety, embarrassment, and insecurity appear grouped in the same factor in eight moments (factor loading range from 0.45 to 0.86). Considering the attention given to the study of anxiety in learning situations, this factor was called affective states indicating anxiety.

With some minor variations in some affective states, the remaining affective states: regret, sadness, frustration, relief, anger, discouragement, and unpleasant surprise (factor loading range from 0.47 to 0.82) appear grouped in a third factor that was called affective states of derived from the process, for being affective states sustaining the highest variation over the course of the activities.

Analysis of the intensity of the affective states in three factors throughout the course revealed that at the beginning of the workshop there was a predominance of affective states indicating anxiety, gradually replaced by affective states indicating motivation as the workshop progressed and approached the end. This result can be better visualized in Figure 1.

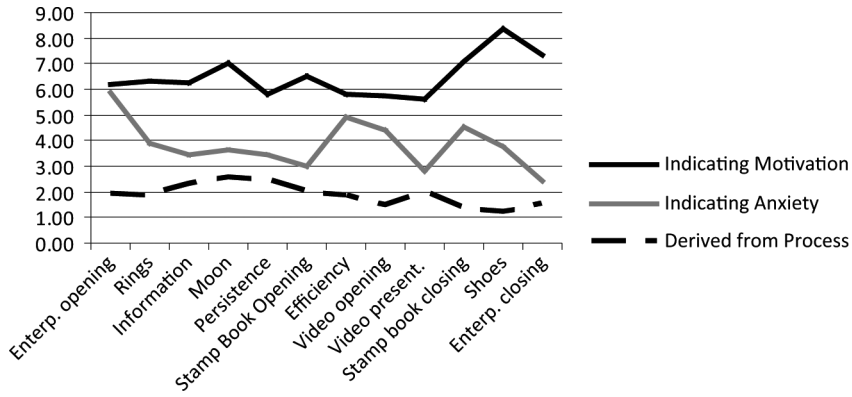

Figure 1.
Oscillation of affective states by factor during the workshop

Affective states related to anxiety, although more intense in the initial phase, maintain a presence during the workshop, but lose their strength to the affective states indicating motivation, which are high from the beginning and growing in importance throughout the workshop. Affective states derived from the process, in turn, remain constant throughout the course, without appearing central at any time. These results indicate the ability of participants to stay motivated throughout the course, regardless of their results in the activities, as they obtained as many positive as they did negative results, the expectation being more balance between the intensities of pleasant and unpleasant affective states in the process.

One possible explanation for the sustained high motivational levels despite the results obtained, and that must be tested in the future, may be in the course design that provides continuous feedback to the learner, encouraging self-analysis of mistakes and successes, leading the learner to remain confident of achieving better results in the future.

The coexistence of affective states indicating anxiety and those indicating motivation seems to contribute to learning, as some scholars (Knowles, 1984; Jarvis, 2006) indicate that some degree of anxiety or tension in relation to knowledge already structured is necessary to awaken the desire to learn and keep the attention focused (Phelps, 2006).

The second objective of the study was to relate the affective states experienced by the learners to the characteristics of activities. To meet this, we compared the emotional impact and the variation in affective states in each assessment moment.

To gauge the emotional impact of each teaching activity, the overall average of emotional intensity, by activity measured, was calculated. Activities of greater emotional impact were those whose averages showed a statistically significant increase in relation to the test value, which was the overall average intensity of affective states in the activities (4.62). Those considered of lesser emotional impact, in turn, were those that had a significant decrease in relation to this value. The results are shown in Table IV.

The averages held around 5.00 (on a scale of 1 to 10), but we must be aware that, as stated in the previous section, during the workshop, the affective states indicating motivation register as more intense than affective states indicating anxiety and derived from the processes, which undoubtedly affects the value of the average. Even recognizing this limitation, the analysis followed.

It is perceived that the activities of greater emotional impact were the entrepreneurship building opening, the information search activity, the video

Activity	Mean	T	Df
Entrepreneurship building opening	4.91*	2.454	124
Information search	4.95*	2.614	117
Persistence	4.31*	−2.209	112
Stamp book opening	4.28*	−2.833	121
Shoes	3.97**	−4.693	112
Video presentation closing	4.90*	2.426	115
Stamp book closing	5.34**	5.117	115

Notes: Test value *t*: 4.625; $^{*}p < 0.05$; $^{**}p < 0.001$, Df = degree of freedom

Table IV.
Variation in emotional intensity by activity

presentation closing, and the stamp book closing. All are characterized as direct learning activities, contrasting with indirect learning, which suggests that the first tends to generate more emotional intensity than the second. The activities of lesser emotional impact, in turn, were persistence, shoes, and the stamp book opening, the first two activities being of indirect learning and the third only the opening (explanation and detail) of an activity that would occur in the upcoming days.

To compare the intensities of the affective states by factor (indicators of motivation, anxiety, and process derivatives), the cutoff point for the *t*-test was defined as the average obtained in each factor, throughout the workshop, trying to identify the cases that showed statistically significant results above or below this average. Thus, the comparison value was 6.50 for affective states indicating motivation, 3.84 for affective states indicating anxiety, and 1.87 for affective states derived from the process.

Table V presents the results, from a statistical point of view, found in activities considered to be direct learning.

In some activities the mapping of affective states occurred in the opening and closing of the activity. This mapping, in two different moments of the same activity, led to a greater understanding of the oscillation of the affective state types within the same activity. In the entrepreneurship building, the stamp book, and the video presentation we could verify a significant increase in affective states indicating anxiety at their opening, and an increase of affective states indicating motivation at closing.

The literature review allows that this anxiety, at the beginning of the tasks, may be related to an assessment that the task is challenging or difficult for the learners' capabilities. Although Askham (2001) and Jarvis (2006) argue that the answers to this type of evaluation may be pessimistic, creating insecurity and fear, or optimistic, generating determination and engagement in the task, the workshop evaluated for the purposes of this study seems to succeed in awakening optimism.

Activity	Moment	Factor: affective state	Mean	TV	*t*	Df
Entrepreneurship building	Opening	Indicating anxiety	5.88**	3.84	9.124	120
	Closing	Indicating motivation	7.42**	6.50	3.794	115
	Closing	Indicating anxiety	2.41**	3.84	−7.805	122
	Closing	Derived from process	1.51*	1.87	−1.995	114
Stamp book	Opening	Indicating motivation	5.72**	6.50	−3.369	115
	Opening	Indicating anxiety	4.41*	3.84	2.391	120
	Opening	Derived from process	1.47*	1.87	−2.414	110
	Closing	Indicating motivation	8.34**	6.50	10.110	103
	Closing	Derived from process	1.21**	1.87	−3.722	94
Video presentation	Opening	Indicating motivation	5.84*	6.50	−3.224	108
	Opening	Indicating anxiety	4.89**	3.84	4.381	114
	Closing	Indicating motivation	7.06*	6.50	2.525	102
	Closing	Indicating anxiety	4.51*	3.84	2.717	114
	Closing	Derived from process	1.34*	1.87	−3.004	111
Information	–	Indicating motivation	7.02*	6.50	2.475	107
Search	–	Derived from process	2.52*	1.87	3.046	101

Table V.
Oscillation of affective states grouped in direct learning activities

Notes: $^{*}p < 0.05$; $^{**}p < 0.001$; TV = Test Value; Df = degree of freedom; Opening is the time when the activity was presented to the learner, and closing the time that closure occurred, with presentation of the instructors' feedback

It is also possible to observe that, in the openings of the stamp book and the video presentation, the increase of affective states indicating anxiety is accompanied by a reduction in the intensity of affective states indicating motivation. These data indicate that these affective states tend to show up more at the end of the activities than at the beginning, which is consistent with the assertion that positive affective states emerge due to the results achieved in challenging activities (Reeve, 2006).

Table VI presents the significant results found in activities considered indirect learning activities. The affective states indicating anxiety have intensities significantly below the average in the efficiency and shoes activities that, in addition to being indirect learning activities, require team level of interaction, which suggests that these characteristics help reduce the level of anxiety.

A reduction in the intensity of affective states indicating motivation is seen in the persistence and the shoes activities. In these, the learners reported negative feedback given by the instructors. The feedback may also have contributed to the increase of affective states derived from the process, identified in the persistence and the lost on the moon activities.

5. Final considerations

One of the conclusions of the study was that affective states indicating motivation remained high throughout the course. The main difference between the affective states at the beginning and end of the course was the reduction in the affective states indicating anxiety, signaling that after overcoming the initial period of uncertainty, the learner gains confidence.

These results are consistent with those expected and discussed in the specialized literature, namely that affective states indicating anxiety emerge more strongly at the beginning of the course and the activities (Antonacapoulou and Gabriel, 2001; Askham, 2001; Short and Yorks, 2002). It should be noted, however, that anxiety remained at a relatively intermediate level throughout the course, which may suggest that it fulfills some function in the learning process that merits in-depth research.

From the preparatory stage of analysis of the course it was found that while in some activities it was more common to obtain positive results, in others negative outcomes predominated. In line with the theoretical proposal of Csikszentmihalyi and LeFevre (1989) it was expected that the emergence of affective states indicating motivation would be associated with obtaining positive results. In this light, one important conclusion is that although the activities vary in degree of difficulty, affective states indicating motivation remained high, contradicting this prediction. The emergence of

Activity	Factor: affective state	Mean	TV	t	Df
Persistence	Indicating motivation	5.79*	6.50	−2.965	101
	Derived from process	2.49*	1.87	2.880	102
Lost on the moon	Derived from process	2.27*	1.87	1.984	109
Efficiency	Indicating anxiety	3.02**	3.84	−3.956	121
Shoes	Indicating motivation	5.59**	6.50	−3.542	103
	Indicating anxiety	2.82**	3.84	−4.569	111

Notes: *$p < 0.05$; **$p < 0.001$; TV = Test value; Df = degree of freedom

Table VI.
Oscillation of affective states grouped in indirect learning activities

affective states indicating motivation even in the face of negative results is a datum to be investigated in future research. It is proposed that this may be related to the use of strategies of self-regulation of the affective state in learning situations (for details, see Mutti, 2008).

Finding variations in affective states depending on the characteristics of the teaching activities (level of simulation and level of required interaction) was also expected. In this regard, the conclusion is that direct learning activities increased emotional intensity, suggesting that the more closely the experience approximates the more concrete situation, the greater the emotional impact on the learner.

Another conclusion derived from the study is that affective states indicating anxiety are associated with indirect and team learning activities. However, new studies are needed to explore these relationships.

Finally, it is important to note that the results presented here cannot be generalized to other situations, as they were the product of a single case study. Also, the data from this study were collected by self-reporting measures (self-applied questionnaires), and it must be recognized that people tend to reinterpret their experiences in light of their current feelings, i.e. if successful, they tend to lessen the weight of unpleasant affective states during the workshop, and if unsuccessful, do not. However, the study has the merit of addressing the difficulties of studying a phenomenon as complex and multifaceted as the affective states in the process of formal learning. The study opens up many more paths to a research trajectory instead of aiming to make conclusions about the interlinked relationship between emotions and learning.

References

Antonacapoulou, E.P. and Gabriel, Y. (2001), "Emotion, learning and organizational change: towards an integration of psychoanalytic and other perspectives", *Journal of Organizational Change Management*, Vol. 14 No. 5, pp. 435-51.

Askham, P.L. (2001), "The feeling's mutual: excitement, dread and trust in adult learning and teaching", PhD dissertation, Education Department, Sheffield Hallam University, Sheffield.

Barnett, R. (1999), "Learning to work and working to learn", in Boud, D. and Garrick, J. (Eds), *Understanding Learning at Work*, Routledge, London, pp. 29-44.

Beckett, D. (1999), "Past the guru and up the garden path: the new organic management learning", in Boud, D. and Garrick, J. (Eds), *Understanding Learning at Work*, Routledge, London, pp. 83-97.

Billet, S. (1999), "Guided learning at work", in Boud, D. and Garrick, J. (Eds), *Understanding Learning at Work*, Routledge, London, pp. 151-64.

Bloom, B., Krathwohl, D. and Masia, B. (1972), *Taxonomia de Objetivos Educacionais: domínio afetivo*, Editora Globo e UFRS, Porto Alegre.

Boud, D. (1994), "Conceptualising learning from experience: developing a model for facilitation", pp. 49-54, 35th Adult Education Research Conference, Knoxville, University of Tennessee, Tennessee.

Boud, D. and Walker, D. (1990), "Making the most of experience", *Studies in Continuing Education*, Vol. 12 No. 2, pp. 61-80.

Csikszentmihalyi, M. and LeFevre, J. (1989), "Optimal experience in work and leisure", *Journal of Personality and Social Psychology*, Vol. 56 No. 5, pp. 81-822.

Damásio, A.R. (1996), *O erro de Descartes: emoção, razão e o cérebro humano*, Companhia das Letras, São Paulo, p. 391.

Gray, E. and Watson, D. (2001), "Emotions, mood, and temperament similarities, differences and synthesis", in Payne, R.L. and Cooper, C.L. (Eds), *Emotions at Work: Theory, Research and Applications for Management*, John Wiley & Sons, Chichester, pp. 21-44.

Hembree, R. (1988), "Correlates, causes, effects, and treatment of test anxiety", *Review of Educational Research*, Vol. 58, pp. 47-77.

Immordino-Yang, M.H. and Damásio, A. (2007), "We feel, therefore we learn: the relevance of affective and social neuroscience to education", *Mind, Brain and Education*, Vol. 1 No. 1, pp. 3-10.

Jarvis, P. (2006), *Towards a Comprehensive Theory of Human Learning: Lifelong Learning and the Learning Society*, Routledge, London, p. 218.

Knowles, M. (1984), *Andragogy in Action: Applying Modern Principles of Adult Learning*, Jossey-Bass Publishers, London, p. 480.

Kolb, D. (1984), "The process of experiential learning", *Experiential Learning: Experience as the Source of Learning and Development*, Prentice Hall, Upper Saddle River, NJ, pp. 20-38.

Lazarus, R.S. (1991), "Progress on a cognitive-motivational-relational theory of emotion", *American Psychologist*, Vol. 46 No. 8, pp. 819-34.

Mutti, C. (2008), "Emoções e aprendizagem em um curso para o desenvolvimento de competências empreendedoras", Masters Dissertation, Postgraduate Program in Psychology, Universidade Federal da Bahia, Salvador.

Pekrun, R. (2005), "Progress and open problems in educational emotion research", *Learning and Instruction*, Vol. 15 No. 5, pp. 497-506.

Pekrun, R. and Frese, M. (1992), "Emotions in work and achievement", in Cooper, C.L. and Robertson, I.T. (Eds), *International Review of Industrial and Organizational Psychology*, Wiley, Chichester, pp. 153-200.

Pekrun, R., Goetz, T., Titz, W. and Perry, R.P. (2002), "Academic emotions in students' self-regulated learning and achievement: a program of quantitative and qualitative research", *Educational Psychologist*, Vol. 37, pp. 91-106.

Phelps, E.A. (2006), "Emotion and cognition: insights from studies of the human amygdala", *Annual Review of Psychology*, Vol. 57, pp. 27-53.

Reeve, J. (2006), "Necessidades Psicológicas", in Reeve, J. (Ed.), *Motivação e Emoção*, LTC, Rio de Janeiro, pp. 64-81.

Rogers, C.R. (1969), *Liberdade para aprender*, Belo Horizonte, Interlivros, p. 330.

Schachter, S. and Singer, J. (1962), "Cognitive, social, and physiological determinants of emotional state", *Psychological Review*, Vol. 69 No. 5, pp. 379-99.

Short, C.D. and Yorks, L. (2002), "Analysing training from an emotions perspective", *Advances in Developing Human Resources*, Vol. 4 No. 1, pp. 80-96.

Volet, S. (1997), "Cognitive and affective variables in academic learning: the significance of direction and effort in students' goals", *Learning and Instruction*, Vol. 7 No. 3, pp. 235-54.

Weiner, B. (1985), "An attributional theory of achievement motivation and emotion", *Psychological Review*, Vol. 92, pp. 548-73.

Wosnitza, M. and Volet, S. (2005), "Origin, direction and impact of emotions in social online learning", *Learning and Instruction*, Vol. 15 No. 5, pp. 449-64.

Zajonc, R.B. (1980), "Feeling and thinking: preferences need no inferences", *American Psychologist*, Vol. 35 No. 2, pp. 151-75.

Zajonc, R.B. (1984), "On the primacy of affect", *American Psychologist*, Vol. 39 No. 2, pp. 117-23.

Zajonc, R.B. (1998), "Emotions", in Gilbert, D.S.F. and Lindzey, G. (Eds), *Handbook of Social Psychology*, Vol. 1, Oxford University Press, New York, NY, pp. 591-632.

Zeidner, M. (1998), *Test Anxiety: The State of the Art*, Plenum, New York, NY, p. 462.

Further reading

Bosse, T., Jonker, C.M. and Treur, J. (2008), "Formalisation of Damásio's theory of emotion, feeling and core consciousness", *Consciousness and Cognition*, Vol. 17, pp. 94-113.

Damásio, A.R. (2000), *O mistério da consciência: do corpo e das emoções ao conhecimento de si*, Companhia das Letras, São Paulo, p. 474.

Gondim, S.M.G. and Alvaro, J.L. (2008), "Naturaleza y cultura en el estudio de las emociones", *RESociologia*, Vol. 13 No. 1, pp. 31-47.

Gondim, S.M.G. and Siqueira, M.M.M. (2004), "Emoções e Afetos no Trabalho", in Zanelli, J.C., Borges-Andrade, J.E. and Bastos, A.V.B. (Eds), *Psicologia, Organizações e Trabalho no Brasil*, Artmed, Porto Alegre, pp. 207-36.

Mayer, J.D. and Salovey, P. (2007), "Qué es inteligencia emocional?", in Navas, J.M.M. and Berrocal, P.F. (Eds), *Manual de inteligência emocional*, Pirâmide, Madrid, pp. 25-45.

About the authors

Sonia Maria Guedes Gondim is an Associate Professor of Federal University of Bahia, Brazil. She has a PhD in Social Psychology from Federal University of Rio de Janeiro. Her researches have been focused on emotions in context of workplace, emotional self-regulation, emotional labor, attribution of emotions on supervisors and employees, management and emotions, relations between learning and emotions, professional and social identity, management competences, and qualitative methods of research.

Clara Mutti is a Substitute Professor of Federal University of Bahia, Brazil. She has a Master's degree in Organizational Psychology from Federal University of Bahia. Her researches have been focused on relations between learning and emotions, especially in adult learning. Other researches are on emotions in context of workplace, attribution of emotions on supervisors and employees, and case studies. Clara Mutti is the corresponding author and can be contacted at: caumutti@yahoo.com.br