

Motivational Profiles of Adult Learners

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Abstract

This study investigated profiles of autonomous and controlled motivation and their effects in a sample of 188 adult learners from two Portuguese urban areas. Using a person-centered approach, results of cluster analysis and multivariate analysis of covariance revealed four motivational groups with different effects in self-efficacy, engagement, and learning. The study showed that groups of learners who have high autonomous motivation in the beginning of a course score higher in self-efficacy and later on in behavioral engagement and use of deep-learning strategies, whereas those who have controlled motivation alone or low levels of both types of motivation have worse results. Additionally, the study showed motivational differences according to adult learners' gender, educational level, and occupational status. The influence of the Portuguese adult education system on the results and the implications of the study for the practice of adult education are also discussed.

Keywords

motivational profiles, autonomous/controlled regulation, adult education, learning/engagement variables, self-efficacy

Motivation is a key element to understand students' engagement, satisfaction, and level of achievement in learning (Eccles & Wigfield, 2002; Wentzel & Wigfield, 2009). While there is a considerable amount of research on the motivation of traditional students (i.e., students younger than 25 years), adult or nontraditional learners' motivation for learning is still a scarcely studied subject under the framework of contemporary theories of motivation like *self-determination theory* (SDT).

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One of SDT's core assumptions is that motivation is not only a matter of *quantity* (being more or less motivated) but also of *quality*—that is, that there are different types of motivation and that some types are considered to lead to better outcomes than others (Deci & Ryan, 2000, 2002; Lemos, Gonçalves, Lens, & Rodrigues, 2014; Lens, Vansteenkiste, & Matos, 2009). Because in the same individual, different motives for learning can coexist (e.g., interest in the subject, desire of getting good grades, wanting to please other people), in recent years, some studies under SDT's framework are using a *person-centered approach* to identify different profiles of motivation in students (i.e., different combinations of motives), as well as relating these profiles to learning and outcome variables in order to understand their differences in quality (e.g., Boiché & Stephan, 2014; Hayenga & Corpus, 2010; Kusrurkar, Croiset, Galindo-Garré, & Cate, 2013; Ratelle, Guay, Vallerand, Larose, & Senecal, 2007; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009; Wormington, Corpus, & Anderson, 2012). Whereas most quantitative research uses a dimensional or variable-centered approach, in which the level of analysis is the variable and the goal is to describe associations between variables, in person-centered analyses, the level of analysis is the individual by means of grouping individuals into categories (e.g., cluster analysis; Gore, 2000) based on similar profiles of variables (Magnusson, 1998; Magnusson & Cairns, 1996). In other words, the assumption in person-centered analyses is that there are differences among individuals with respect to how the predictors operate on the outcomes. The person-centered approach in quantitative research is likely to yield complementary information to the variable-centered approach by offering a more holistic view of individuals, yet is still much less used, namely in motivational research (Vansteenkiste et al., 2009).

Since a very limited number of studies used a person-centered approach to investigate profiles of motivation in adult learners, the purpose of this study was to explore these profiles and relate them to learning, engagement, academic self-concept, and self-efficacy. We also wanted to explore the effect of adult learners' gender and educational level on their profiles of motivation.

Literature Review

Self-Determination Theory

SDT's most basic distinction is between *intrinsic motivation* and *extrinsic motivation* (Deci & Ryan, 1985). Intrinsic motivation refers to the performance of an activity that is rewarding on its own, for instance, learning about something because we find it interesting. Extrinsic motivation relates to the performance of an activity for the consequences or rewards that come out of it (e.g., higher grades, honors, money) and/or to avoid negative outcomes (e.g., punishments, criticism). Intrinsic motivation is considered a better form of motivation, developing from the basic human needs for competency, autonomy, and relatedness (Deci & Ryan, 1985). SDT also maintains that extrinsic rewards have an undermining effect on intrinsic motivation, that is, that when given rewards for the performance of an activity, the reward

becomes the main focus and individuals lose interest in the activity itself (Deci, Koestner, & Ryan, 2001).

Although research on education showed that intrinsic motivation related to more positive educational attitudes and outcomes than extrinsic motivation, results did not consistently demonstrate that extrinsic motivation was always linked to negative outcomes (Reeve, Deci, & Ryan, 2004), which hinted at the existence of diverse types of extrinsic motivation, with different effects. Hence, SDT's authors developed a sub-theory, referred to as *organismic integration theory*, that considers four different types of progressively more self-integrated extrinsic motivation. Within this new formulation, the most important distinction is between *autonomous regulation* and *controlled regulation*.

Autonomous regulation refers to activities that are volitional, that is, initiated by the individual; it includes intrinsic motivation, the most "pure" form of self-determined behavior, and *internalized extrinsic motivation*—including identified and integrated regulation—that refers to externally controlled motives that have become integrated in the individual's values system, so although externally generated, these motives are now personally meaningful (e.g., a learner who studies hard to get a job in an field that fulfills him). Controlled regulation, on the other hand, is present in two types of externally generated and controlled types of motivation: *External regulation* that refers to behaviors ruled exclusively by the anticipation of rewards and *introjected regulation* that refers to reasons and behaviors that have been partially assimilated by the individual but whose importance has not been really integrated, so they are still a source of internal pressure or conflict to the self (e.g., an adult learner who studies to achieve a high school equivalency diploma and thus avoid feelings of shame and inferiority in his workplace).

Research on autonomous regulation in education has globally validated its connection with outcome variables like engagement, deep-learning strategies, and higher grades (for a review, see Reeve et al., 2004), as well as relating it to other motivational and self variables like perceived self-efficacy (Alivernini & Lucidi, 2011) and academic self-concept (Ahmed & Bruinsma, 2006; Coetzee, 2011). On the contrary, controlled regulation related to test anxiety (Vansteenkiste, Zhou, Lens, & Soenens, 2005), superficial cognitive processing (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005), and procrastination (Vansteenkiste et al., 2009).

Although the majority of research supports SDT's viewpoint on the superior quality of autonomous motivation as opposed to controlled motivation, its perspective on the debilitating effects of controlled motivation remains controversial, as some studies failed to find these negative effects (e.g., Ratelle et al., 2007; Wormington et al., 2012). Other critical points of the theory are the claim that extrinsic rewards undermine intrinsic motivation, which was questioned by a meta-analysis that showed that this effect was minimal (Cameron & Pierce, 1994), and the cross-cultural generalizability of the need for autonomy in Eastern cultures (Markus, Kitayama, & Heiman, 1996).

SDT argues that it is better for a student to show autonomous motivation alone (i.e., studying because one finds it interesting and important), than having both autonomous and controlled motivation (studying out of interest/importance and also because we

feel pressured to do it). Complementary, SDT assumes that having low levels of both types of motivation is better than having only controlled motivation. Profile analysis is useful to identify groups of students with these different profiles of motivation and to examine their proposed differences in quality.

Motivational Profiles

One of the main advantages of a person-centered approach is that it allows to explore, at the individual level, naturally occurring combinations of motivational dimensions, combinations that can be termed “motivational profiles.” Few studies have used a person-centered approach to study autonomous and controlled motivation in education. Existing studies are with middle school students (Hayenga & Corpus, 2010), or with high school and younger than 25-year-old college students (Boiché & Stephan, 2014; Kusurkar et al., 2013; Ratelle et al., 2007; Vansteenkiste et al., 2009; Wormington et al., 2012). There is no research on the profiles of autonomous/controlled motivation of nontraditional students (i.e., adults older than 24 years). An exception (albeit not within the SDT framework) is Beder and Valentine’s (1990) study on the reasons why low-literate adults participate in Adult Basic Education. In this study, cluster analysis revealed six distinct subgroups of students (with motives for attendance including family responsibility, self-improvement, literacy development, and economic reasons), and the authors draw implications to differentiated marketing strategies according to each group’s motivations.

Theoretically, in accordance with SDT, it would be expected the existence of four qualitatively different motivational groups with different effects on learning and achievement: a group with high autonomous and low controlled motivation (good-quality motivation); a group with high autonomous and high controlled motivation (high-quantity motivation); a group with low autonomous and low controlled motivation (low-quantity motivation); and a group with low autonomous and high controlled motivation (poor-quality motivation).¹ Hayenga and Corpus (2010), Kusurkar et al. (2013), Vansteenkiste et al. (2009), and Wormington et al. (2012) replicated this four-group structure, while Ratelle et al. (2007) identified a differentiated three-group structure in their two studies: In the first study, with two high school’s samples, all motivational groups emerged except for the good-quality motivation group; in the second study, with a college’s sample, all groups were identified but for the poor-quality motivation group. These studies also examined differences in group assignment according to gender and found that female students tended to be overrepresented in the good-quality group and/or in the high-quantity group—that is, in the groups with high autonomous motivation—and underrepresented in the poor-quality group (Boiché & Stephan, 2014; Ratelle et al., 2007; Vansteenkiste et al., 2009; Wormington et al., 2012). These results are in accordance with previous research that shows that girls tend to be more intrinsically motivated than boys, especially toward specific subject areas like reading and writing (Guay et al., 2010; Lange & Adler, 1997). As to SDT’s predictions about the quality of motivation, while Hayenga and Corpus (2010) and Vansteenkiste et al. (2009) found that the good-quality motivation group

scored significantly higher than the three other groups in grade point average (and also, in Vansteenkiste and colleagues' study, significantly lower in test anxiety, procrastination, and cheating behavior), and that the poor-quality motivation group had lower scores than the three other groups in the aforementioned variables—thus supporting SDT's predictions—Kusurkar et al. (2013), Ratelle et al. (2007), and Wormington et al. (2012) did not find significant differences in achievement between the good-quality motivation group and the high-quantity motivation group, although these two groups did perform better than the two groups with low autonomous motivation. In all, these results clearly place autonomous motivation as a decisive factor accounting for engagement and achievement in education, but indicate that more research is needed to understand the effects of controlled motivation.

Adult Learners' Motivation

Studying adult learners' motivation is worthwhile because this population has specificities that set it apart from traditional students. For one, most adults enroll voluntarily in educational programs and besides, adults are usually part-time students who have to balance education with other life tasks like work and family, which means that they are often more at risk of dropping out from education and training (McGivney, 2004).

Comparative research shows that nontraditional students tend to be more intrinsically motivated and mastery-oriented than younger students (Archer, Cantwell, & Bourke, 1999; Bennett, Evans, & Riedle, 2007; Bye, Pushkar, & Conway, 2007; Donohue & Wong, 1997; Murphy & Roopchand, 2003), they use more deep-learning strategies (Jacobson & Harris, 2008; Justice & Dornan, 2001; Richardson, 1995) and they also tend to have better academic performances (Eppler, Carsen-Plentl, & Harju, 2000; Carney-Crompton & Tan, 2002; Hoyert & O'Dell, 2009; Morris, Brooks, & May, 2003). Other studies also found that adult students show general high levels of self-efficacy and engagement (Beder, Tomkins, Medina, Riccioni, & Deng, 2006; Harkins, 2009).

Empirical results concerning adult learners' motivation are consistent with foundational adult education models like andragogy and self-directed learning that assume adults to be purposeful, self-directed learners, led by internal rather than external factors (Knowles, 1980). They can also be read in the light of personality development theories (e.g., Erikson, 1963; Sheldon, Houser-Marko, & Kasser, 2006), and SDT's organismic-integration theory (Deci & Ryan, 1991), that argue that adults' maturity and life experiences help them assimilate the noninternalized parts of themselves into a more coherent whole and become more autonomous and self-determined.

The fact that adults use more deep-learning strategies and have better academic performances can be explained by adult cognitive development models like Kramer's (1983) and Sinnott's (1984) model of postformal relativistic/dialectic that states that cognitive development goes on through adulthood and that mature adults are more capable than younger ones of using relativistic/dialectical thought and metacognition.

It is important to highlight that comparative research between traditional and non-traditional students refers to students attending college, and that adults' *level of education* seems to play a differential role in the quantity and quality of their motivation. Adults with higher education levels participate more, and also state primarily intrinsic, knowledge-related motives for attending (Pires, 2009; Vertongen, Nils, Bourgeois, de Viron, & Traversa, 2009), although these are followed closely by job-related reasons. Adults with lower educational levels state more extrinsic motives, especially job-related motives, for participation (Carré, 2001; Daehlen & Ure, 2009; Ferreira, 2010; Konrad, 2005), but they are also more motivated to attend for social reasons like meeting new people (Carré, 2001; Daehlen & Ure, 2009) and to improve their self-esteem (Valentine, 1990). Adults with lower educational levels also tend to show lower levels of perceived self-efficacy for the course (Carré, 2001; Ferreira, 2010).

As it happens with younger students, *gender* usually plays a differential role in adults' motivation—research shows that female students tend to be more self-determined and intrinsically motivated than male students (Carré, 2001; Justice & Dornan, 2001; Murphy & Roopchand, 2003).

The Purpose of the Study

As mentioned before, scarce research exists on adult learners' motivation using SDT as a theoretical framework and no study to our knowledge has yet used a person-centered approach to investigate profiles of autonomous and controlled regulation in adult, nontraditional learners. Therefore, at a theoretical level, the study allows to examine the relevance of SDT's theoretical model to the adult learners' population. Studying adult learners' motivation can also have important implications for practice, namely, assisting adult education institutions in developing educational programs that appeal to adult learners' different types of motivations, thus contributing to better learning and achievement results, less dropout rates, and a higher specialization. Additionally, teachers and other education professionals can improve their pedagogical orientation and support according to their students' type of motivation, and they can also come to value motivation as an end in itself, that is, help learners become more self-motivated and self-regulated in their learning.

So at a *general level*, this study aimed to contribute to a better understanding of adult learners' motivation by characterizing the motivation of a sample of adult learners and verify if, as expected according to research and theory, they would show high levels of self-determination for learning, as well as high levels of engagement and self-efficacy. By using sociocognitive models of motivation to better understand the learning processes of adults, ultimately it was also our goal to give a contribution to the adult education field. At a more *specific level*, our goals were (1) to identify adult learners' profiles of autonomous and controlled motivation using a person-centered approach, and specifically, to test the emergence of four qualitatively different groups expected according to SDT, hence replicating previous research with younger students; (2) to explore the effect of adult learners' individual background variables (gender and educational level) in their motivational group membership; and (3) to test

SDT's assumptions on the differential effects of the motivational profiles on self-efficacy, academic self-concept, learning, and engagement.

Context of the Study and Selected Courses

This study was conducted in Portugal, a country that has a relatively low percentage of secondary- and tertiary-educated adults when compared with other Organisation for Economic Co-Operation and Development (2015) countries. After the Portuguese democratic revolution of 1974, the massification of the access to education made a gap emerge between a young, more qualified generation, and an older generation that had less access to education, so much so, that one can talk about a “generational injustice” in Portugal with regard to educational opportunities (Rothes, 2003). In the past 15 years, however, rates of secondary education attainment in Portugal among the adult active population (25-64 years old) have had a significant increase: from 19.2% in 2000 to 45.1% in 2015 (Statistics Portugal, 2015b). Public investment in Adult Education (by means of national and EU funds) resulted in programs like the “New Opportunities” and the “Cursos EFA—Adult Education and Training Courses” that give a chance to adults who have dropped out of school early to complete the basic or secondary level of education. EFA courses may also have a vocational training component (“double certification EFA courses”) and they have a modular structure that allows students to enroll in a limited number of modules if they wish to (“short-term training modules”). Courses are free and “double certification EFA courses” may offer scholarships if students are unemployed and do not receive unemployment allowance. Other important features of EFA courses is that they rely partially on the recognition and validation of adults’ previously acquired informal and nonformal learning and that the contents of the subjects relate to adults’ everyday experience. For example, in basic education EFA courses (for adults who have not completed the ninth grade), the discipline of Mathematics is called “Math for Life” and contents and examples are drawn from the use of Math in everyday life situations (Ordinance No. 230/2008, 2008).

Higher education attainment rates of the Portuguese active population have also had a significant increase, from 8.8% in 2000 to 22.9% in 2015 (Statistics Portugal, 2015a). Public educational policies like the “Maiores de 23” (“Over 23”) law that allow any adult older than 23 years, regardless of his or her previous educational level, to apply to Higher Education by means of specific exams and an evaluation of life experience, have influenced positively adults’ demand for higher education. Despite the overall positive trend in the qualification levels of the adult population, some critical perspectives warn that the Portuguese adult education system may be too focused on formal qualification and certification, neglecting a more critical and community development-oriented kind of education (Lima, 2007).

We selected for our study representative educational programs of the Portuguese adult education system, namely, Cursos EFA, basic or secondary education courses that may also have a vocational training component besides the academic one; CET [technological specialization courses], postsecondary vocational courses with an advanced technical training level; short-term training modules of 25 to 175 hours

length in various fields; and higher education courses from two polytechnic institutes (Porto and Viana do Castelo Polytechnic Institutes). All courses with the exception of the latter were free and held in secondary schools (EFA courses) or vocational training centers (short-training courses, CET course) in Porto (Portugal's second largest city, sited in the northwest region of the country).

Method

According to the goals previously outlined, the present study examined the following specific research questions in relation to adult learners' motivation: (1) How can participants be characterized with regard to self-regulation of motivation, self-efficacy, academic self-concept, engagement, and learning? Do participants show interindividual differences in these variables according to gender, educational level, and occupational status? (2) Can participants be classified into different profiles of autonomous and controlled motivation, more specifically, into four motivational profiles expected according to SDT? (3) Do background variables (like gender and educational level) affect participants' motivational profile membership? What are the links of the different profiles to the outcome variables (self-efficacy, academic self-concept, engagement, learning)? To answer these questions, first, means and standard deviations were calculated and independent samples *t*-test analyses were used. After classifying participants into profiles based on cluster analysis, the effect of background variables on group membership was examined by means of a chi-square test and the relations of the different profiles to the outcome variables were analyzed through multivariate analysis of covariance (MANCOVA).

Participants and Procedure

Participants were 188 Portuguese adults (50.5% male) with ages ranging from 25 to 64 years ($M = 37.7$, $SD = 9.43$), enrolled in short-term training modules (36.2% of the total sample), vocational EFA and CET courses (42% of the total sample), and higher education courses (21.8% of the total sample). Short-term training modules included five classes attending ICT (175 hours), Health and Safety at Work (75 hours), Time Management (25 hours), and Spanish (50 hours). EFA courses included six classes training part-time in one of these areas: Tourism, Cookery/Pastry-Making, Electronics, Photovoltaic Solar Systems (from 1½ year to 2 years length, plus traineeship in work context). The CET course was 1 night class of mechanical technology (1 year length, plus traineeship in work context). The higher education sample was collected from four different courses (all first-year students): Basic Education, Sports, Social Education, and Artistic Management.

Educational level was differentiated: 89 participants had at least completed secondary education and 99 participants had less than the secondary education degree. With regard to occupational status, 121 participants were unemployed, 62 were employed, 3 were full-time students who had never worked before, and 2 were retired.

Questionnaires were administered in two periods: the *Self-Regulation Questionnaire—Learning, Academic Self-Description Questionnaire—III*, and *Academic*

Self-Efficacy Scale were administered in the beginning, generally during the first week after the courses had started, to capture students' initial motivation; the *Adult Learning Strategies Evaluation Scale* and the *Self-Reported Engagement Scale* were answered 3 months later, after the students were already involved in course activities. Due to the use of this specific procedure, only 93% of the original sample (i.e., 175 participants) answered the scales that were administered later. To check for the potential effects of attrition, we compared students who participated both at T1 and T2 and students who dropped out from T1 to T2, both on demographic variables and motivational measures, and no differences were found between the two samples.

At least one researcher was present during data collection. Students completed the surveys in approximately 15 minutes. Participation was voluntary and anonymity was guaranteed.

Measures

Learning Self-Regulation Questionnaire (Williams & Deci, 1996). SRQ-L belongs to a group of scales developed within SDT. It measures two factors: autonomous regulation and controlled regulation. There are three groups of items (A, B, C), each with four items (12 in total), and participants score them in a 4-point scale. Values of internal consistency were .84 for the autonomous regulation subscale and .65 for the controlled regulation subscale. Because the original scale was designed for medical students, we adapted the content of the items, but we kept its original sense, that is, autonomous regulation items included statements like, "I enrolled in this course because it is a way of improving my knowledge in various subjects" and "I am going to commit to this course because it is important to me to do well at this" and controlled regulation items included "I am going to commit to this course because it is a way of getting higher grades" and "I am going to commit to this course because I would feel guilty if I did not do so."

Self-Description Questionnaire-III (Marsh, 1992). SDQ-III is designed to measure multiple dimensions of self-concept in college students and other adults, and because the subscales are well differentiated, they can be used separately. For the purposes of this study, we were mainly interested in the effects of *academic* self-concept, so we used the academic subscale of SDQ-III, which includes statements like "I learn quickly in most academic subjects." For conciseness reasons, of the total of 10 items of the original subscale, four items representing the main features of interest for our study, liking/interest and competence, were selected. After the internal consistency analysis, one of the four items was excluded because it lowered Cronbach's alpha significantly. Final alpha value was .75. Participants rated their agreement with each item in a 4-point scale (1 = *totally disagree* to 4 = *totally agree*).

Academic Self-Efficacy Scale (Midgley et al., 2000). We used the academic self-efficacy scale of Patterns of Adaptive Learning Scales, which is a five-item scale measuring students' beliefs about their competence to learn and to do their class work. In the original study, the

scale had a Cronbach's alpha of .78 and in our study this value was of .88. Adults rated their agreement with each item in a 4-point scale (1 = *not at all true* to 4 = *very true*).

Adult Learning Strategies Evaluation Scale. This 10-item self-rated scale was developed by us to evaluate the use of deep-learning strategies by adult learners. Some items were adapted from the *Motivated Strategies for Learning Questionnaire* (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991), from the following subscales: critical thinking subscale (two items), metacognitive self-regulation subscale (one item), elaboration subscale (one item), and organization subscale (one item). MSLQ is a widely used questionnaire for the measurement of learning strategies, namely in nontraditional students (e.g., Jacobson & Harris, 2008; Justice & Dorman, 2001). The additional five items were based on two of the main theoretical positions about learning behaviors of postsecondary students—the learning and study strategies and the student approaches to learning (Entwistle & Ramsden, 1983). These items assess students' receptivity to, attitudes toward, and interest in learning ("Frequently, outside the course, I think about what we talked about during class"); skills and thought processes related to identifying, acquiring, and constructing meaning for new information and ideas ("I can get the main ideas of what is taught in class"; "With this course, I have reflected on things I have never thought about before"; "I apply what I learn in the course to real-life situations"); and being motivated intrinsically to learn and attempting to comprehend underlying meanings of a learning task ("In class, I expose my ideas related to the subject at hand"). Values of internal consistency were good ($\alpha = .88$). Adults rated their agreement in a 4-point scale (1 = *not at all true* to 4 = *very true*).

Self-Reported Engagement (Miserandino, 1996). It measures two dimensions of engagement: a behavioral dimension (e.g., "I am very focused when in class") and an emotional dimension (e.g., "When I am in class, I feel happy"). For parsimony reasons, of the total of 55 items of the original scale, we adapted 28: 17 behavioral and 11 emotional. The two subscales showed good values of internal consistency— $\alpha = .85$ (behavioral dimension) and $\alpha = .80$ (emotional dimension). Adults rated their agreement in a 4-point scale (1 = *not at all true* to 4 = *very true*).

Teacher-Rated Student Engagement Scale (Wellborn, 1991). This nine-item scale is filled by teachers who report participants' behavioral engagement (e.g., "When in class, this student participates in class discussions") and emotional engagement (e.g., "When in class, this student seems happy"). Engagement is measured as a global factor (for our study, Cronbach's alpha values were of .92). For each item, teachers are asked to select the statement that better describes the student. Statements are rated afterward by researchers using a 3-point scale (0-2), for instance, "When in class, this student . . . works as much as he or she can (2); does just enough to pass the course (1); does not come prepared (0)." Because in higher education courses classes' large size prevented teachers from knowing all their students, we only collected these data from short courses and long vocational courses (for a total of 124 participants).

The scales' factorial structure was tested by means of a confirmatory factor analysis (CFA). CFA confirmed the factorial structures of all the scales, with fit values meeting

Table 1. Descriptive Statistics and Correlations for All Measured Variables.

Variables	Mean	SD	1	2	3	4	5	6	7	8
1. Autonomous regulation	3.44	0.43	1	.10	.34**	.17*	.45**	.37**	.18*	.08
2. Controlled regulation	2.42	0.49	—	1	-.14	-.14	-.01	-.01	.03	-.16
3. Self-efficacy	3.09	0.49	—	—	1	.45**	.40**	.29**	.21**	.17
4. Academic self-concept	3.00	0.45	—	—	—	1	.22**	.17*	.13	.22*
5. Learning strategies	3.04	0.48	—	—	—	—	1	.48**	.24**	.16
6. Behavioral engagement	3.39	0.34	—	—	—	—	—	1	.57**	.25**
7. Emotional engagement	3.35	0.40	—	—	—	—	—	—	1	.17
8. Teacher-reported engagement	1.75	0.41	—	—	—	—	—	—	—	1

Note. All variables measured in a 4-point scale, except teacher-reported engagement which was measured in a 3-point scale (0-2).

* $p < .05$. ** $p < .01$.

the cutoff criteria based on comparative fit index greater than .90 and root mean square error of approximation less than .10 (Kline, 2013). Fit values did not meet the criteria only for the Learning Self-Regulated Questionnaire. When this was investigated by means of an exploratory factor analysis, we found that instead of two factors (autonomous regulation, controlled regulation), the scale had a tripartite structure: The first factor matched autonomous regulation, but controlled regulation was subdivided in two factors that matched external regulation (Items 2 and 12—see Appendices A and B) and introjected regulation (Items 4, 6, 8, and 10). Although conceptually this is an interpretable structure within SDT, in the present study, we followed the recommendation of the scale’s authors to use only two “super” categories of regulation.

Results

Descriptive Statistics and Effects of Gender, Educational Level, and Occupational Status

Means and standard deviations were calculated for all the measured variables (see Table 1). Mean scores of most self-reported variables were high, especially the score of autonomous regulation—which was more than one point above the mean score for controlled regulation—and the scores of self-reported behavioral and emotional engagement and teacher-reported engagement.

Independent *t* tests showed that men had significantly lower levels of autonomous regulation than women, and participants below the secondary education level had significantly higher levels of controlled regulation than participants above the secondary level.

Table 2. Gender, Educational Level, and Occupational Status Differences in All the Studied Variables.

Variables	M	F	t Test	<12	≥12	t Test	Emp.	Une.	t Test
1. Autonomous regulation	3.36 (0.41)	3.51 (0.43)	-2.45*	3.42 (0.42)	3.46 (0.44)	ns	3.52 (0.38)	3.40 (0.45)	1.93 [†]
2. Controlled regulation	2.48 (0.44)	2.35 (0.52)	ns	2.61 (0.38)	2.20 (0.50)	6.14***	2.41 (0.49)	2.43 (0.49)	ns
3. Self-efficacy	3.10 (0.46)	3.07 (0.51)	ns	3.02 (0.52)	3.16 (0.43)	ns	3.11 (0.50)	3.07 (0.48)	ns
4. Academic self-concept	3.04 (0.89)	3.03 (0.47)	ns	2.89 (0.45)	3.20 (0.90)	-3.09**	3.06 (0.49)	2.97 (0.44)	ns
5. Learning strategies	3.01 (0.50)	3.08 (0.48)	ns	2.97 (0.56)	3.13 (0.39)	-2.17*	3.06 (0.49)	3.03 (0.50)	ns
6. Behavioral engagement	3.36 (0.33)	3.42 (0.35)	ns	3.37 (0.37)	3.41 (0.31)	ns	3.37 (0.30)	3.40 (0.36)	ns
7. Emotional engagement	3.35 (0.37)	3.34 (0.42)	ns	3.35 (0.39)	3.34 (0.41)	ns	3.35 (0.39)	3.34 (0.40)	ns
8. Teacher-reported engagement	1.73 (0.40)	1.76 (0.42)	ns	1.71 (0.41)	1.86 (0.39)	ns	1.82 (0.27)	1.73 (0.43)	ns

Note. M = male participants; F = female participants; <12 = below secondary degree; ≥12 = equal or above secondary degree; Emp. = employed; Une. = unemployed; ns = nonsignificant. Values in parentheses are standard deviations.

[†] $p = .055$. * $p < .05$. ** $p < .01$. *** $p < .001$.

The group below the secondary educational level also scored lower in academic self-concept and learning strategies. No significant differences were found in any of the variables between employed and unemployed participants; however, the difference in autonomous motivation was almost statistically significant ($t = 1.93$; $p = .55$), with employed participants showing higher levels of autonomy than the unemployed (Table 2).

Cluster Analysis

We used cluster analysis to generate motivational profiles. Cluster analysis groups the motivational scores on the basis of multiple characteristics so as to maximize between-group heterogeneity and within-group homogeneity and thereby capture the multivariate interactions of the motivational dimensions. Using a two-step approach, we combined hierarchical and nonhierarchical clustering methods, as recommended, for instance, by Hair, Anderson, Tatham, and Black (1998). The hierarchical method allows to test a range of solutions (possible number of clusters), and to choose a final solution that explains a significant percentage of variance in the dimensions, at least 50% (Hair et al., 1998). We began by standardizing the variables and checking for outliers, because hierarchical clustering methods tend to be very sensitive to extreme data. No univariate outliers (i.e., 3 SD above or below the mean) or multivariate outliers (using Mahalanobis D^2) were identified. We then started hierarchical clustering method using Ward's Method with Squared Euclidian Distance (Hair et al., 1998). Analyses of variance were performed in the different possible solutions and we came to a four-cluster solution that explained 68% of the total variance. A three-cluster solution explained only 54% and collapsed two theoretically distinct groups (a high

Table 3. z Scores for the Four-Cluster Final Solution, Mean Values for External Variables, Together With F Values and Effect Sizes.

Clusters	Good-quality motivation (n = 41)	High-quantity motivation (n = 55)	Low-quantity motivation (n = 26)	Poor-quality motivation (n = 66)	F	η ²
<i>Dimensions</i>						
Autonomous regulation	.82304 ^a	.87119 ^a	-1.25111 ^b	-.74774 ^c	219.837***	.78
Controlled regulation	-.99231 ^a	.87809 ^b	-1.04787 ^a	.28161 ^c	99.854***	.62
Self-efficacy	3.32 ^a	3.16 ^{a, b}	3.03 ^{b, c}	2.89 ^c	8.834***	.12
Academic self-concept	3.16 ^a	3.11 ^a	3.18 ^a	2.84 ^a	2.696*	.04
Learning strategies	3.28 ^a	3.22 ^a	2.84 ^b	2.84 ^b	11.709***	.17
Behavioral engagement	3.50 ^a	3.50 ^a	3.23 ^b	3.31 ^b	6.764***	.11

Note. Cluster means are significantly different if they have different superscripts.
* $p < .05$. *** $p \leq .001$.

autonomous, high controlled motivation group and a low autonomous, high controlled motivation group). Afterward, a nonhierarchical method (k-means) was used to fine-tune this initial cluster solution. After the k-means procedure, the final solution of four clusters explained 69% of the total variance.

The four final groups matched SDT’s proposition and were as follows: (1) a group with low values of autonomous motivation and low values of controlled motivation (low-quantity motivation group, $n = 26$); (2) a group with high values of autonomous motivation and high values of controlled motivation (high-quantity motivation group, $n = 55$); (3) a group with high values of autonomous motivation and low values of controlled motivation (good-quality motivation group, $n = 41$); (4) a group with low values of autonomous motivation and high values of controlled motivation (poor-quality motivation group, $n = 66$).

To make sure the four clusters were clearly differentiated we performed a one-way analysis of variance (ANOVA) with Tukey HSD (honest significant difference) test for multiple mean comparisons, with the four-cluster solution as factor and the original variables (autonomous and controlled motivation) as dependent variables (Pestana & Gageiro, 2000). For autonomous motivation, all differences were significant at the $p < .001$ level except for the high-quantity and the good-quality motivation groups, which did not differ significantly in this dimension. As for controlled motivation, all groups differed significantly for a p value $< .001$ except for the good-quality and low-quantity motivation groups, which did not differ significantly in this dimension (see Table 3, upper rows).

Effects of Gender and Educational Level in Group Membership

Based on our preceding ANOVA and consistent with previous research (Ratelle et al., 2007; Vansteenkiste et al., 2009; Wormington et al., 2012), we expected that there would be differences in the way gender and educational level would be distributed across the four clusters. Indeed, chi-square testing revealed a significant Cluster Assignment \times Group Effect, both for gender, $\chi^2(3) = 10.875, p < .05$, and educational

level, $\chi^2(3) = 13.816, p < .01$. A closer inspection of the percentages revealed that females were overrepresented in the good-quality motivation group (they were 68.3% of the total percentage of the cluster) and students with a secondary degree or more were 68% and 63.4%, respectively, of the total percentage of the low-quantity motivation group and good-quality motivation group, that is, the groups with lower controlled motivation.

Motivational Profiles and External Variables

To understand the effects of the four motivational profiles in the external variables (self-efficacy, academic self-concept, learning strategies, and engagement), we first checked the correlations between all measured variables. Autonomous regulation had significant positive linear relations with all the external variables except for teacher-reported engagement, especially with learning strategies, behavioral engagement, and self-efficacy, while controlled regulation had no significant linear relations with the latter (see Table 1).

We then performed a MANCOVA, using cluster membership as independent variable, self-efficacy for the course and academic self-concept as dependent variables, and gender, type of course, and level of qualification as covariates. Because the self-reported behavioral and emotional engagement scales and the learning strategies scale were answered later and by a smaller sample, we performed a separate MANCOVA for these variables.

As for the motivational variables (self-efficacy for the course and academic self-concept), Wilks's lambda indicated a significant multivariate effect of cluster membership— $F(6, 358) = 5.305, p < .001, \eta^2p = .082$ —and in addition, a multivariate effect was found of educational level— $F(2, 179) = 5.568, p < .01, \eta^2p = .059$. As for the engagement and learning variables, the Wilks's lambda of cluster membership— $F(9, 399.284) = 4.539, p < .001, \eta^2p = .076$ was significant. Follow-up univariate F values, eta-square, and pairwise comparisons (using Tukey HSD test) are reported in Table 3, bottom part.

The good-quality motivation group scored significantly higher than the poor-quality motivation group and the low-quantity motivation group in three dependent variables—self-efficacy, learning strategies, and self-reported behavioral engagement—whereas, the high-quantity motivation group also had significantly higher values than the latter groups in learning strategies and behavioral engagement, but not in self-efficacy. However, no significant differences were found between the good-quality/high-quantity groups (i.e., groups with high autonomous motivation) and between the poor-quality/low-quantity groups (i.e., groups with low autonomous motivation). Also, post hoc tests did not reveal significant differences between any of the groups in academic self-concept. Univariate ANOVA also did not reveal any significant effects of cluster membership on teacher-reported engagement.

Discussion

Our first aim in this study was to characterize the motivation of a sample of adult learners. In general, adult learners scored much higher in autonomous regulation than they did in controlled regulation, which may be explained by cognitive and personality

development that occurs with aging and that allows adults to assimilate the noninternalized parts of themselves into a more coherent whole and make more self-appropriate, autonomous choices (Deci & Ryan, 1991; Sheldon et al., 2006). Our sample also showed high levels of engagement and self-efficacy, which matched results found in other studies with adult students (Beder et al., 2006; Harkins, 2009) and is a positive indicator that students will likely persist and complete their courses. The Portuguese adult education system may also contribute for students' high levels of autonomous motivation, engagement, and self-efficacy. Despite its emphasis in schooling (Lima, 2007), educational programs and practices for adults in Portugal are innovative and specific for this population: There is a system of recognition and validation of previously acquired informal and nonformal learning in the basic and secondary education levels (EFA courses), and in Higher Education, professional experience in a given area helps a person's application to a course in the same field or in a related one ("Over 23" law). Seeing that what they learned in informal and nonformal settings is relevant and can be validated by the formal education system probably helps boosting students' confidence and perceptions of self-efficacy for the courses. Other important feature, particularly of EFA courses and short-term training courses, is that educational contents and the examples used by teachers relate and can be applied to adults' everyday life and experiences, even in more "theoretical" disciplines like Mathematics. According to the principles of Andragogy (Knowles, 1980), adults have accumulated a reservoir of life experiences that is a rich resource for learning, and they are problem-centered and interested in immediate application of knowledge. The format and "andragogical" approach of these courses may contribute therefore to the high levels of engagement of these students 3 months after they started the courses.

With regard to background characteristics, our findings that men, and to a smaller extent the unemployed, had lower autonomous motivation, and students below the secondary level had higher controlled motivation, support previous research (Carré, 2001; Daehlen & Ure, 2009; Ferreira, 2010; Guay et al., 2010; Konrad, 2005; Lange & Adler, 1997). The autonomous/intrinsic motivation of unemployed participants may be undermined by the expectancy of an external reward after the course, like finding a job. As stated by SDT, when individuals are given (or expect) rewards for the performance of an activity, the reward becomes the main focus and they lose interest in the activity itself (Deci et al., 2001). Likewise, students with less formal education may come from more disadvantaged social contexts that make studying less of a personal, meaningful choice and more a result of coercive circumstances like low income or unstable professional situations. Adults below the secondary education level also showed lower levels of academic self-concept and use of deep-learning strategies, which are probably explained by their shorter academic careers and even, for some of them, history of academic failure. These results highlight the importance of educators promoting the motivation, learning processes, and academic success of learners with low educational levels. Autonomous motivation can be promoted by helping adults grasp the meaning of education and its relation to their other goals and values, as well as by providing learners with a sense of choice and volition (e.g., help them chose an educational program in a field that truly fulfills them and encouraging

their participation and suggestions in the classroom). It is also important to encourage these students' use of deep-learning strategies (like critical thinking, metacognition, elaboration), and to reinforce their efforts and achievements as a way of improving academic self-concept and self-efficacy.

Using a person-centered approach, the study also intended to explore combinations of autonomous and controlled motivation in naturally occurring groups (i.e., motivational profiles), and results showed that the best solution for our sample was a four-cluster solution: a high-quantity motivation group, a good-quality motivation group, a low-quantity motivation group, and a poor-quality motivation group. This result is consistent with previous research with traditional students (Hayenga & Corpus, 2010; Vansteenkiste et al., 2009; Wormington et al., 2012) and suggests that a four-profile structure is adequate for nontraditional learners as well.

Gender and education level influenced group membership, as women and students above the secondary level were overrepresented in the good-quality profile. As mentioned before, research showed that female students tend to be more intrinsically motivated than male students (Guay et al., 2010; Lange & Adler, 1997), a difference that may be explained by cultural stereotypes and gender roles that are inculcated in children from an early age by parents, school, and mass media (Meece, Glienke, & Burg, 2006). Results relating to individuals with higher educational levels being less externally controlled than participants with lower educational levels were also expected according to previous research (Daehlen & Ure, 2009; Konrad, 2005).

Finally, this study aimed to investigate the effects of the motivational profiles in self-efficacy, academic self-concept, and students' later engagement (behavioral and emotional) and use of learning strategies (including critical thinking, elaboration and organization skills, metacognitive self-regulation, interest in learning, construction of meaning for new information, and attempting to comprehend underlying meanings of a learning task). The good-quality and the high-quantity motivation groups had higher scores on learning strategies and behavioral engagement than the low-quantity and the poor-quality motivation groups, and the good-quality group also scored higher than the latter groups in self-efficacy, but there were not significant differences between the two groups (good-quality/high-quantity) in either of the external/outcome variables. These results matched similar research (Kusurkar et al., 2013; Ratelle et al., 2007; Wormington et al., 2012) and support SDT's proposition about the good quality of autonomous motivation and its pivotal role in learning and engagement; the role of controlled regulation, on the other hand, seems more neutral, as with the exception of self-efficacy, the good-quality group did not distinguish itself positively from the high-quantity group in any of the outcome variables.

There may be some reasons for the fact that our study failed to find the negative effects of controlled motivation. First, we have only tapped desirable outcomes, but controlled motivation may be a positive predictor of undesirable outcomes (e.g., in Vansteenkiste et al.'s [2009] study, it predicted test anxiety, procrastination, and cheating), rather than a negative predictor of desirable outcomes. Second, data were collected within a relative short time frame, but the negative effects of controlled motivation may show up only after a longer period of time (Vallerand, Fortier, & Guay, 1997).

In all, results give support to SDT's assumptions that autonomous motivation should be stimulated in educational contexts, while controlled motivation should be discouraged—but the nature and effects of the latter must also be more thoroughly investigated, namely, in adult educational contexts.

Limitations and Future Research Directions

A number of limitations in this study should be taken into account. The controlled regulation subscale had rather low values of internal consistency ($\alpha = .65$), which may be due to the fact that the subscale is a composite of two constructs (external motivation and introjected motivation, as was also suggested by the exploratory factor analysis in this study). In the future, a more thorough study of the scale will be necessary, using larger samples, to explore its content validity. Another possible limitation was the sample's heterogeneity with regard to the various educational programs attended and to education level: While this diversity allowed us to explore differences in contrasting groups, it could also have masked effects that might have emerged in a more homogeneous sample. Future research should thus seek to replicate these findings in larger and ideally more homogeneous samples of adult students. It is especially important to increase research on learners with low educational levels, as this seems to be a particularly vulnerable group. Finally, the almost exclusive use of self-reported questionnaires might have artificially boosted the strength of the relationship between variables through common method bias. Results from the only non-self-report scale (the Teacher-Reported Students' Engagement Scale) did not yield significant results, which may be an indication that it is not appropriate for the adult learners' population. Future research should also use other teacher-reported learning and achievement variables, like grade point average, as well as dropout rates. Although there was a time lag between the two moments of data collection, a more multiple moments longitudinal research method will also be needed, in the future, in order to have a more robust basis to infer causal relationships between the variables.

Conclusion

The present study aimed to characterize the motivation of a sample of adult learners and explore the existence of different profiles of motivation and their effects on learners' self-efficacy, academic self-concept, learning, and engagement, thus testing SDT and also contributing to the scholarship of adult education.

Results showed that adults attend courses mainly because they find them interesting and important (autonomous motivation), but some do it also because of various types of *pressure*—by others, by the need to get/keep a job, or by their own feelings of guilt and shame if they do not engage (controlled motivation). The study gave partial support to SDT because it showed that having autonomous reasons for participating in educational activities is critical to students' learning, engagement, and self-efficacy, but it did not fully evidence that having controlled reasons is negative, as long as they are combined with autonomous reasons.

By examining naturally occurring motivational profiles, this study highlighted that autonomous and controlled reasons may be predominant or may be combined at the individual level, thus suggesting a more complex and idiosyncratic dynamics of motivation. Because most of the activities people do are not, strictly speaking, intrinsically motivated, it is not unexpected that in many adult learners the instrumental value of education (to get a better job, improve life conditions, etc.) may be present as one of the reasons to engage, even in highly autonomous individuals. On the other hand, even when they are driven mostly by external reasons, adults who attend nonmandatory educational programs presumably will have, to a certain extent, a feeling of choice and personal endorsement, thus some degree of autonomy.

Findings of this study showing the positive effects of an autonomous motivation profile on adults' self-efficacy, use of learning strategies, and behavioral engagement emphasize the importance of facilitating the *progressive internalization* of learners' controlled motivation. These results justify pointing out some guidelines for practice. Educators should create a learning environment that is *autonomy-supportive*, that is, one in which learners are given choices (e.g., more alternative educational paths and options), as well as opportunities to participate and share experiences; adults do not come to education as a blank canvas, they have previous experiences and knowledge that should be looked into by educators and validated if they are relevant for the subject at hand. It is important that educators provide a *meaningful rationale* to educational activities, especially to those that are less intrinsically interesting; many topics learners have to study and assignments they have to do, can be considered uninteresting or dull, and it is the role of educators to make students integrate the relevancy and purpose of such topics. It is also essential, as a way to fulfill the learners' need for feeling competent, that educators of adults provide tasks and activities that have an *optimal challenge/difficulty level* and that they give *effective feedback*, that is, one that provides helpful information on how to master a task, while norm-based evaluation should be avoided. Finally, because people also have a need for relatedness, it is critical to create a *friendly class environment* in which the learners feel respected and connected to each other and to the teacher. To optimize the learning experience, educators of adults should also help learners grasp the significance and worth of lifelong education, so that the latter becomes a meaningful goal.

In Portugal, current adult education programs and courses have addressed some issues regarding the motivation of learners by having a system that allows for the recognition and validation of previously acquired learning, as well as by having educational contents and pedagogical approaches that are specific for the adult population. Nevertheless, due to budget restrictions, the number and diversity of public-funded educational offers (including EFA courses and short-term training modules) has been significantly reduced in recent years, giving fewer options to potential learners and, thus, less support for autonomous motivation. Because adult education has multiple benefits—not only social but also economic ones (Ferrer & Riddle, 2010)—it is crucial to have public policies directed specifically toward creating a diversified number of educational offers for adults that contemplate professional training and literacy/schooling but also other kinds of apprenticeships and skills (e.g., social, artistic, citizenship-related).

Where Do We Go From Here?

We feel that it is important to continue studying the motivation of adult learners and its connection with educational outcomes like learning and achievement, and also with satisfaction and well-being. It is also pertinent to explore how (autonomous) motivation evolves along a course and what specific pedagogical approaches help sustaining (or hindering) it. We believe the role of teachers and counselors is essential in maintaining motivation but it should be better understood. This study used a quantitative methodology, but future studies on the subject should also employ qualitative research methods like interviews, focus groups, and/or case studies for a more in-depth understanding of motivational processes in adult education.

Appendix A

Learning Self-Regulation Questionnaire

The following questions relate to your reasons for attending this Course.

There are three groups of items, and those in each group pertain to the sentence that begins that group.

Please indicate how true with each reason by using the following scale:

	1	2	3	4
	Not at all true	Not true	True	Very true
A. I enrolled in this course:				
Auton.	1.	Because it is a way of improving my knowledge in various subjects.	1	2 3 4
Exter.	2.	Because I feel pressured by others to do so.	1	2 3 4
Auton.	3.	Because improving my skills is important for my personal evolution.	1	2 3 4
Exter.	4.	Because I would feel bad with myself if I did not do it.	1	2 3 4
B. I am going to commit to this course:				
Auton.	5.	Because it is a way of learning more about interesting matters.	1	2 3 4
Exter.	6.	Because this way I will get higher grades.	1	2 3 4
Auton.	7.	Because it is important to me to do well at this.	1	2 3 4
Exter.	8.	Because I would feel guilty if I did not do so.	1	2 3 4
C. I will go on studying in the future:				
Auton.	9.	Because it makes me evolve as a person.	1	2 3 4
Exter.	10.	Because it helps me to keep my job or get a new job.	1	2 3 4
Auton.	11.	Because I have curiosity for the field I want to study.	1	2 3 4
Exter.	12.	Only if I am forced by external motives will I go on studying.	1	2 3 4

Note. Auton. = autonomous regulation; Exter. = external regulation.

Academic Self-Concept (SDQ-III)/Academic Self-Efficacy (PALS)

The following sentences describe you as a student. Please indicate how true each sentence is for you by encircling a number between 1 (*not at all true*) and 4 (*very true*).

1. I learn quickly in most academic subjects.	1	2	3	4
2. I like most academic subjects.	1	2	3	4
3. I'm good at most academic subjects.	1	2	3	4
4. I'm interested in most academic subjects.	1	2	3	4
5. I'm certain I can master the skills taught in this Course.	1	2	3	4
6. I'm certain I can figure out how to do the most difficult class work.	1	2	3	4
7. I can do almost all the work in class if I don't give up.	1	2	3	4
8. Even if the topics are hard, I can learn them.	1	2	3	4
9. I can do even the hardest work in this class if I try.	1	2	3	4

Self-Reported Engagement Scale

The following sentences relate to your behavior and emotions in this Course. Please indicate how true each sentence is for you by encircling a number between 1 (*not at all true*) and 4 (*very true*).

Behav. 1. I listen carefully in class.	1	2	3	4
Behav. 2. I try very hard in this course.	1	2	3	4
Behav. 3. When the teacher talks about a new topic, I listen very carefully.	1	2	3	4
Behav. 4. I work hard when we start something new in class.	1	2	3	4
Behav. 5. I pay attention in the course.	1	2	3	4
Behav. 6. When I have a hard question or problem in class, I don't even try.	1	2	3	4
Behav. 7. When I'm in the course, I work very little.	1	2	3	4
Behav. 8. If a topic is really hard, I keep working at it.	1	2	3	4
Behav. 9. If a problem is really hard, I just quit working.	1	2	3	4
Behav. 10. When I'm in the course, I usually think about other things.	1	2	3	4
Behav. 11. My mind wanders when the teacher/trainer starts a new topic.	1	2	3	4
Behav. 12. I never seem to pay attention when we start a new subject.	1	2	3	4
Behav. 13. When I can't solve a problem right away, I won't figure it out.	1	2	3	4
Behav. 14. I participate when we discuss new material.	1	2	3	4
Behav. 15. I participate in class discussions.	1	2	3	4
Behav. 16. When I'm in the course, time goes by really slowly.	1	2	3	4
Behav. 17. When I run into a difficult question, I try even harder.	1	2	3	4
Emo. 18. When I'm doing my work in the course, I feel interested.	1	2	3	4
Emo. 19. When the teacher/trainer first explains new material, I feel relaxed.	1	2	3	4
Emo. 20. When I'm in the course, I feel happy.	1	2	3	4
Emo. 21. When I'm in the course, I feel fine.	1	2	3	4
Emo. 22. When a teacher/trainer explains new material, I feel scared.	1	2	3	4

(continued)

Appendix A (continued)

Emo. 23. When I'm in the course, I feel unhappy.	1	2	3	4
Emo. 24. When I'm doing my work in the course, I feel bored.	1	2	3	4
Emo. 25. When a teacher/trainer explains the material, I feel worried.	1	2	3	4
Emo. 26. When I'm working in the course, I feel tired.	1	2	3	4
Emo. 27. When I can't solve a question or problem in the course, I feel angry.	1	2	3	4
Emo. 28. When I can't solve a question or problem in course, I feel worried.	1	2	3	4

Note. Behav. = behavioral engagement; Emo. = emotional engagement. Items in bold are reverse-scored.

Appendix B

Adult Learning Strategies Evaluation Scale

Please indicate how true each sentence is for you by encircling a number between 1 (*not at all true*) and 4 (*very true*).

1. With this Course, I have reflected on things I have never thought about before.	1	2	3	4
2. I relate what I learn in the Course to what I already know on the subject.	1	2	3	4
3. I can get the main ideas of what is taught in class.	1	2	3	4
4. Frequently, outside the Course, I think about what we talked about during class.	1	2	3	4
5. I make simple charts, diagrams, or tables to help me organize Course material.	1	2	3	4
6. I often find myself questioning things I hear or read in the Course.	1	2	3	4
7. I try to develop my own ideas about what I learn in the Course.	1	2	3	4
8. I apply what I learn in the Course to real-life situations.	1	2	3	4
9. In class, I expose my ideas related to the subject at hand.	1	2	3	4
10. When I become confused about something I'm reading for the Course, I go back and try to figure it out.	1	2	3	4

Teacher-Reported Student Engagement Scale

Please answer this questionnaire regarding your students from _____ (name of the course).

For each item, please mark with a cross the box belonging to the sentence that better suits the case of student _____ (name of the student).

I. When in class, this student . . .		
(a) works as much as he/she can.		(2)
(b) does just enough to pass the course.		(1)
(c) does not come prepared.		(0)

(continued)

Appendix B (continued)

- 2. When we start a new topic in class, this student . . .**
- (a) participates in class discussions. (2)
 - (b) does not pay attention. (0)
 - (c) is easily distracted. (0)
- 3. When we start a new activity in class, this students looks . . .**
- (a) relaxed. (2)
 - (b) bored. (0)
- 4. In my class, this students looks . . .**
- (a) happy. (2)
 - (b) enthusiastic. (2)
 - (c) depressed. (0)
 - (d) anxious. (0)
 - (e) angry. (0)
- 5. When we work in class, this student appears . . .**
- (a) involved. (2)
 - (b) worried. (0)
 - (c) frustrated. (0)
- 6. In my class, this student . . .**
- (a) starts working by himself/herself. (2)
 - (b) needs to be stimulated to start working. (1)
 - (c) starts working only after great insistence. (0)
 - (d) avoids starting to work. (0)
- 7. The student . . .**
- (a) finishes the tasks he/she is given. (2)
 - (b) almost never finishes the tasks he/she is given. (0)
- 8. In class, this student . . .**
- (a) likes to make discoveries and explore new topics. (2)
 - (b) prefers just doing what is necessary. (1)
 - (c) avoids all subjects that are complementary. (0)
- 9. When faced with a difficult assignment or task, the student . . .**
- (a) tries actively to overcome the difficulty. (2)
 - (b) tends to give up. (0)
-

Note. Scores are not available to teachers in the original form.

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Note

1. We use here the same denominations for the groups as those used by Vansteenkiste et al. (2009).

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