

THE ACADEMIC MOTIVATION SCALE: A MEASURE
OF INTRINSIC, EXTRINSIC, AND AMOTIVATION
IN EDUCATION

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A new measure of motivation toward education has been developed in French, namely the Echelle de Motivation en Education (EME). The EME is based on the tenets of self-determination theory and is composed of 28 items subdivided into seven sub-

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scales assessing three types of intrinsic motivation (intrinsic motivation to know, to accomplish things, and to experience stimulation), three types of extrinsic motivation (external, introjected, and identified regulation), and amotivation. The purpose of this investigation was to cross-culturally validate in English the EME. The EME was translated in English through appropriate methodological procedures and completed by university students. Results revealed that the English version of the scale renamed the Academic Motivation Scale (AMS), has satisfactory levels of internal consistency (mean alpha value = .81) and temporal stability over a one-month period (mean test-retest correlation = .79). In addition, results of a confirmatory factor analysis (LISREL) confirmed the seven-factor structure of the AMS. Finally, gender differences obtained with the EME were basically replicated with the AMS. In sum, the present findings provide adequate support for the factorial validity and reliability of the AMS and support its use in educational research on motivation.

ONE of the most important psychological concepts in education is certainly that of motivation. Indeed, much research has shown that motivation is related to various outcomes such as curiosity, persistence, learning, and performance (for a review of the literature see Deci and Ryan, 1985). In light of the importance of these consequences for education, one can easily understand the interest of researchers for motivation in educational settings.

Several conceptual perspectives have been proposed in order to better understand academic motivation (see *The Educational Psychologist*, 1991, Issue 4, for a complete number devoted to academic motivation). One useful perspective posits that behavior can be intrinsically motivated, extrinsically motivated, or amotivated (Deci and Ryan, 1985, 1991). This theoretical approach has generated a considerable amount of research and appears rather pertinent for the field of education (see Deci and Ryan, 1985; Deci, Vallerand, Pelletier, and Ryan, 1991). This approach is detailed below.

Intrinsic Motivation

In general, intrinsic motivation (IM) refers to the fact of doing an activity for itself, and the pleasure and satisfaction derived from participation (Deci, 1975; Deci and Ryan, 1985). An example of IM is the student that goes to class because he or she finds it interesting and satisfying to learn more about certain subjects. Deci and Ryan posit that IM stems from the innate psychological needs of competence and self-determination. Thus, activities that allow individuals

to experience such feelings will be engaged in again freely out of IM.

While most researchers posit the presence of a global IM construct, certain theorists (Deci, 1975) have proposed that IM might be differentiated into more specific motives. Unfortunately, these authors have not indicated which types of IM follow from the more general IM construct. More recently, a tripartite taxonomy of intrinsic motivation has been postulated (Vallerand, Blais, Brière, and Pelletier, 1989). This taxonomy is based on the IM literature which reveals the presence of three types of IM that have been researched on an independent basis. These three types of IM can be identified as IM to know, to accomplish things, and to experience stimulation. These types of IM are described more fully below.

Intrinsic motivation to know (IM-to know). This type of IM has a vast tradition in educational research. It relates to several constructs such as exploration, curiosity, learning goals, intrinsic intellectuality, and finally the IM to learn (e.g., Gottfried, 1985; Harter, 1981). To the above perspectives which are more specific to the realm of education, may be added others that are more global such as that of the epistemic need to know and understand, and that of the search for meaning (see Vallerand et al., 1989). Thus, IM-to know can be defined as the fact of performing an activity for the pleasure and the satisfaction that one experiences while learning, exploring, or trying to understand something new. For instance, students are intrinsically motivated to know when they read a book for the sheer pleasure that they experience while learning something new.

Intrinsic motivation toward accomplishments (IM-to accomplish things). This second type of IM has been studied in developmental psychology as well as in educational research under concepts such as mastery motivation (Harter, 1981). In addition, other authors have postulated that individuals interact with the environment in order to feel competent, and to create unique accomplishments (Deci, 1975; Deci and Ryan, 1985, 1991). Finally, to the extent that individuals focus on the process of achieving rather than on the outcome, achievement motivation can be seen as being subsumed under the umbrella of IM-to accomplish things. Thus, IM-to accomplish things can be defined as the fact of engaging in an activity for the pleasure and satisfaction experienced when one attempts to accomplish or create something. Students who extend their work beyond the requirements of a term paper in order to experience pleasure and satisfaction while attempting to surpass themselves display IM toward accomplishments.

Intrinsic motivation to experience stimulation (IM-to experience stimulation). Finally, IM-to experience stimulation is operative when someone engages in an activity in order to experience stimulating sensations (e.g., sensory pleasure, aesthetic experiences, as well as fun and excitement) derived from one's engagement in the activity. Research on the dynamic and holistic sensation of flow, on feelings of excitement in IM, on aesthetic stimulating experiences, and peak experiences is representative of this form of IM (e.g., Csikszentmihalyi, 1975). Students who go to class in order to experience the excitement of a stimulating class discussion, or who read a book for the intense feelings of cognitive pleasure derived from passionate and exciting passages represent examples of individuals who are intrinsically motivated to experience stimulation in education.

Extrinsic Motivation

Contrary to IM, extrinsic motivation (EM) pertains to a wide variety of behaviors which are engaged in as a means to an end and not for their own sake (Deci, 1975). Recently, Deci, Ryan and their colleagues (Deci and Ryan, 1985, 1991) have proposed that three types of EM can be ordered along a self-determination continuum. From lower to higher levels of self-determination, they are: external regulation, introjection, and identification¹.

External regulation corresponds to EM as it generally appears in the literature. That is, behavior is regulated through external means such as rewards and constraints. For instance, a student might say: "I study the night before exams because my parents force me to." With *introjected regulation*, the individual begins to internalize the reasons for his or her actions. However, this form of internalization, while internal to the person, is not truly self-determined since it is limited to the internalization of past external contingencies. Thus, the individual might say: "I study the night before exams because that's what good students are supposed to do." To the extent that

¹ Deci and Ryan (1985) also include integrated regulation as one type of extrinsic motivation. However, integrated regulation was not initially included in the Echelle de Motivation en Education (EME) and therefore is not assessed in the Academic Motivation Scale (AMS). Two major reasons supported this initial decision. First, pilot data revealed that integrated regulation did not come out as a perceived reason for participating in educational activities. Second, factor analyses on experimental forms of the EME revealed that integrated regulation did not distinguish itself from identified regulation. The above findings may have been due to a host of potential factors including the fact that young adults may be too young to have achieved a sense of integration with respect to school activities. Future research would appear necessary on this issue.

the behavior becomes valued and judged important for the individual, and especially that it is perceived as chosen by oneself, then the internalization of extrinsic motives becomes regulated through *identification*. The individual might say, for instance: "I've chosen to study tonight because it is something important for me."

Amotivation

In addition to intrinsic and extrinsic motivation, Deci and Ryan (1985) have recently posited that a third type of motivational construct is important to consider in order to fully understand human behavior. This concept is termed amotivation. Individuals are amotivated when they do not perceive contingencies between outcomes and their own actions. They are neither intrinsically nor extrinsically motivated. When amotivated individuals experience feelings of incompetence and expectancies of uncontrollability. They perceive their behaviors as caused by forces out of their own control. They feel undecieved, and start asking themselves why in the world they go to school. Eventually they may stop participating in academic activities.

Although scales assessing motivation toward education do exist, no scale currently allows to assess all constructs discussed above. Harter's (1981) Intrinsic vs Extrinsic Orientation Scale pits IM against EM on the same continuum and thus prevents an independent assessment of these two constructs. In addition, it does not measure the different types of EM and amotivation. Gottfried's (1985) Children Academic Intrinsic Motivation Inventory assesses only intrinsic interest toward learning in various subjects (e.g., reading, social sciences) as well as toward school in general. Thus, it does not measure the different types of IM, EM, or amotivation. Furthermore, while Ryan and Connell (1989) have recently developed a scale that does assess IM, identification, introjection, and external regulation, the psychometric properties of this scale have not been fully presented. In addition, this scale does not include the different types of IM or amotivation. Finally, it should be noted that all of the above scales are aimed at elementary and beginning high-school students. No existing scale seems to assess motivation toward post-secondary studies within the present theoretical framework.

In light of the importance of conducting research on academic motivation with an instrument based on a valid theoretical conceptualization, and the fact that no scale to date seems to assess IM, EM, and amotivation toward post-secondary studies, Vallerand et

al. (1989) developed and validated in French the Echelle de Motivation en Education (EME). This scale is made up of seven subscales of four items each assessing the three types of IM (IM to know, to accomplish things, and to experience stimulation), three types of EM (external, introjected, and identified regulation), and amotivation. In the EME, motivation is operationalized as the underlying "why" of behavior (Deci and Ryan, 1985) and focus on the perceived reasons for engaging in the activity. Thus, the scale asks the question "Why do you go to college?" and items represent possible answers to that question, thus reflecting the different types of motivation. Here are some sample items from the scale: Amotivation subscale, "Honestly I don't know; I really feel that I'm wasting my time in college"; External Regulation, "In order to get a more prestigious job later on"; Introjected Regulation, "To prove to myself that I can do better than just a high-school degree"; Identified Regulation, "Because eventually it will allow me to enter the job market in a field that I like"; IM-to know, "Because I experience pleasure and satisfaction while learning new things"; IM-Accomplishment, "For the pleasure I experience while surpassing myself in my studies"; IM-Stimulation, "For the high feeling that I experience while reading on various interesting subjects."

Preliminary (Daoust, Vallerand, and Blais, 1988; Vallerand and Bissonnette, in press) and validation studies (Vallerand et al., 1989), which involved more than 3,000 students, revealed that the EME has satisfactory internal consistency levels (a mean alpha score of .80), as well as high indices of temporal stability (a mean test-retest correlation of .75) over a one-month period. Results of a confirmatory factor analysis (with LISREL) also confirmed the seven-factor structure of the EME. Finally, the construct validity of the scale was supported by a series of correlational analyses among the seven subscales, as well as between these scales and other psychological constructs relevant to education, such as interest toward school, time spent in academic activities, being distracted in class, academic satisfaction, positive emotions in the classroom, and nihilism toward education. These findings replicated the results reported earlier on the role of the different IM, EM, and amotivation in various educational outcomes. In addition, earlier versions as well as the current version of the EME were able to predict dropout behavior in high school and junior college (see Vallerand et al., 1989). The French version of the EME therefore appears to represent a reliable and valid measure of IM, EM, and amotivation in education.

Because the EME was initially validated in French, it was thus not available to researchers conducting research with English-

speaking students. In light of the psychometric qualities of the EME, the findings it has yielded, and the importance of assessing motivation from a sound theoretical perspective, it was decided to cross-culturally validate the EME in English. To validate a scale into another language involves much more than translation (Brislin, 1986; Vallerand, 1989). In addition to appropriate translation, one must conduct research in order to show that this new version of the scale shares the same psychometric properties as the original scale. Thus, the overall purpose of the present study was to translate the scale in English and to conduct initial assessment of its psychometric properties.

The Current Investigation

Purpose

A four-fold purpose guided this investigation: (a) to translate the EME in English using appropriate cross-cultural procedures, (b) to replicate the seven-factor structure of the AMS through confirmatory factor analysis (with LISREL), (c) to assess the reliability (internal consistency and temporal stability) of the seven subscales, and (d) to assess whether the results from the Vallerand et al. (1989) study which revealed that females reported higher levels of IM to know, IM to experience stimulation, identification, and introjection, but lower levels of amotivation than males, would be replicated with a population of English-speaking students.

Method

Translation of the EME in English

In line with recent approaches to cross-cultural scale translation (Brislin, 1986; Vallerand, 1989), three steps were taken. First, the scale was translated from French to English. This was done with the parallel back-translation procedure (Brislin, 1986). Back translation first involves translating the scale from the original to the target language by a bilingual individual. This translation is then translated back to the original language by another bilingual individual without the use of the original scale. To the extent that the original scale is appropriately retranslated, this method provides an initial assessment of the adequacy of the translated version of the scale. The parallel back-translation procedure necessitates the use of two independent back translation sequences. This approach is preferred

to the single back-translation method because it prevents the occurrence of certain biases that could result from the two specific bilingual individuals used in the back translation. In this study, four bilingual individuals (two social psychologists and two graduate students in social psychology) well cognizant of Deci and Ryan's (1985) motivation theory conducted the parallel back-translation procedure. This led to two preliminary English versions of the AMS that were evaluated in the next phase.

In the second phase, the items produced by the two back-translations were thoroughly assessed by a committee. The committee was formed of the individuals who participated in the back translation procedures and the authors of the original version of the scale (the EME). The committee selected the items that had been retranslated appropriately, that is which had retained the original meaning, and that had been conveyed in acceptable English. Once the 28 English items were selected the committee prepared the scale format and instructions so that they be identical to the ones used with the original French-Canadian version. Thus, the experimental version of the English AMS lists 28 items that may represent reasons why students go to college. These reasons are scored on a 7-point scale anchored by the end point "Not at all" (1) to "Exactly" (7) with a midpoint at 4 ("Moderately").

Third and final, a pretest was conducted with 10 junior-college students in order to determine whether the AMS was clear and formulated in a language to which post-secondary studies students can relate (Vallerand, 1989). Students were asked to read the AMS and to verbalize any questions they may have with the items or instructions. This led to some minor modifications with the instructions.

Procedures

The AMS was completed by 745 university students from the province of Ontario. This sample was composed of 484 females and 261 males with a mean age of 21.0 years. In order to assess the temporal stability of the AMS, a second sample of 57 university students (27 males and 30 females) with a mean age of 19.3 years also completed the AMS twice over a one-month period. Students were informed that we were interested in better understanding the reasons why they go to the university. To this end, we asked students to complete the AMS. Students were told that they did not have to complete the questionnaire but that their collaboration

would be very much appreciated. Subjects completed the AMS in class at the beginning of the period.

Statistical Analyses

The various statistical analyses conducted dealt with the confirmatory factor analysis (with LISREL), the internal consistency (Cronbach alphas), test-retest correlations of the seven subscales, and the analysis of variance on the means of the subscales in order to test for sex differences.

Results and Discussion

Confirmatory Factor Analysis

The data were subjected to a confirmatory factor analysis with LISREL VI (Jöreskog and Sörbom, 1984). This analysis tests the extent to which the theoretical model, in this case the seven-factor model corresponding to the seven subscales, adequately represents the covariance matrix of the data. The fitting function estimated by the procedure was assessed through several indices, namely a chi-square statistic, the Goodness of Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI), and the Normed Fit Index (NFI) being the most widely used. These indices vary from 0 to 1 where 1 indicates a perfect fit for the model.

In the initial model, seven factors were postulated. These factors corresponded to the seven subscales and were made up of the four corresponding items. No cross-loadings were postulated. Although the confirmatory factor analysis of the initial measurement model yielded fit values of .89 for the NFI, .87 for the AGFI, and .89 for the GFI, the model did not reach statistical nonsignificance ($\chi^2 = 1228.27$, $df = 329$, $p < .001$). Correlations between pairs of measured-variable residuals were added to the model on the basis of the inspection of the modification indices. This resulted in 26 correlated residuals added to the model. With these additions the fit indices for the final measurement model showed that the model fits the data reasonably well, NFI = .93, AGFI = .91, GFI = .94, although the model did not reach statistical nonsignificance ($\chi^2 = 748.64$, $df = 303$, $p \leq .001$). This improvement in fit was highly significant, difference in $\chi^2 = 479.63$, $df = 26$, $p < .001$.

In order to assess whether the inclusion of these theta delta values in the model could bias the interpretation of the model, the initial parameter estimates from the initial model were correlated with

TABLE 2
Internal Consistency Values (Cronbach alpha) and Test-Retest Correlations of the
AMS 7 Subscales: Samples 1 and 2

	Alpha Sample 1 (n = 745)	Alpha Pretest Sample 2 (n = 57)	Alpha Posttest Sample 2 (n = 57)	Test-Retest Correlations Sample 2 (n = 57)
Amotivation	.85	.91	.88	.83
External Regulation	.83	.85	.89	.83
Introjected Regulation	.84	.76	.83	.73
Identified Regulation	.62	.72	.78	.71
IM-to Know	.84	.85	.90	.79
IM-Accomplishment	.85	.90	.87	.83
IM-Stimulation	.86	.88	.84	.80

repeated measures on the scale factor, revealed the presence of main effects for sex, $F(1, 743) = 21.10, p < .001$, and scale, $F(6, 738) = 1035.18, p < .001$. The latter main effect revealed that all subscales differed from each other except for the Introjection and IM to Accomplish subscales, and the identification and external regulation subscales, respectively. The most important forms of motivation for the students in this sample were, in decreasing order: identification, external regulation, IM to know, introjection, IM toward accomplishments, IM to experience stimulation, and amotivation. However, these main effects must be interpreted in light of the significant sex X scale interaction, $F(6, 738) = 3.87, p < .001$. Results from the simple main effects revealed that female students scored higher than males on the 3 IM subscales (knowledge, accomplishment, and stimulation), as well as on the Identification and Introjection subscales. However, no sex differences were found on the other subscales (all $F_s > 4.03, p_s > .05$).

TABLE 3
Means (and Standard Deviations) for Males and Females on the AMS: Sample 1

Subscales	Males (n = 261)	Females (n = 484)
Amotivation	6.74 (3.96)	6.51 (4.14)
External Regulation	21.78 (4.79)	21.80 (5.27)
Introjected Regulation*	16.0 (5.82)	17.80 (5.81)
Identified Regulation*	21.60 (3.57)	22.19 (3.98)
Intrinsic Motivation—Knowledge*	18.89 (4.22)	20.46 (4.74)
Intrinsic Motivation—Accomplishment*	15.93 (5.03)	17.52 (5.39)
Intrinsic Motivation—Stimulation*	12.21 (5.33)	13.83 (5.75)

* Females scored significantly higher ($p < .01$) than males.

General Discussion

The purpose of the present study was to cross-culturally validate the English version of the EME. Results revealed that the AMS has adequate levels of reliability and factorial validity, very much in line with those of the original French-Canadian version. With respect to the reliability of the scale, results from this study revealed that the internal consistency of all subscales was adequate, typically ranging in the .80s, with the exception of the Identification subscale which yielded values of .62 in the large sample, and .72 and .78 with the second sample used to assess the temporal stability of the scale. Finally, it should be reiterated that all AMS subscales displayed acceptable levels of temporal stability with a mean test-retest correlation value of .79 over a one-month period. These last results support the contention that the AMS measures students' rather stable motivational orientations toward education.

With respect to the validity of the AMS, the present results are also very encouraging on at least three accounts. First, results from the confirmatory factor analysis confirmed the seven-factor structure of the AMS and thus provided some support for the factorial validity of the scale. Second, results from the confirmatory factor analysis and the pattern of means of the IM subscales yielded preliminary support for the discriminant validity of the three IM subscales. Finally, gender differences on the various subscale means generally reproduced findings from the original study (Vallerand et al., 1989). The only difference between these two studies is that in the Vallerand et al. study (1989) females were also less amotivated than males and there was no sex differences on the IM Accomplishment subscale (although the means were in the predicted direction). These differences between the results from the Vallerand et al. and this study could be due to several factors including distinctions between the French and English-Canadian cultures, the motivation of university students (this study) and junior-college students (the Vallerand et al., 1989 study), as well as specificities (e.g., age, socio-economic background) of the samples used in the present and Vallerand et al. (1989) studies. Future research is needed in order to more fully understand these sex differences. However, one thing seems rather clear: In line with past research in education (e.g., Daoust et al., 1988; Vallerand and Bissonnette, in press; Vallerand et al., 1989) it appears that female students display a more self-determined motivational profile than male students.

Overall, the findings from the series of studies replicated the results obtained with the French-Canadian version (EME). It now

appears that preliminary support exists for the reliability and some elements of validity of the AMS. Although these findings are indeed very encouraging, they must nevertheless be perceived as being only preliminary in nature. A complete assessment of the psychometric properties of the scale will necessitate additional research. In that perspective, recent research of ours (Vallerand, Pelletier, Blais, Brière, Sénécal, and Vallières, in press) has shown that the AMS has elements of concurrent and construct validity. Specifically, it was found that the scale was correlated as hypothesized with other motivational scales such as that of Gottfried (1985). In addition, the AMS correlated as predicted from cognitive evaluation theory (Deci and Ryan, 1985) with motivational antecedents and consequences. Future research in that direction would therefore appear fruitful.

In addition, it seems appropriate to reiterate that the operational definition of the AMS directly reflects the conceptual definition of intrinsic/extrinsic motivation which refers to one's perceived reasons for engaging in a given activity (the "why" of behavior), be they for the activity itself or for reasons lying outside the activity. Such an equivalence between the conceptual and operational definition of motivation should lead to more meaningful research. Furthermore, it should also be noted that contrary to other unidimensional instruments (e.g., Gottfried, 1985), the AMS assesses several types of motivation in a multidimensional fashion. These types of motivation go beyond the usual IM/EM distinction and allow a finer analysis of the motivational forces in education, thereby opening the door to innovative research.

In sum, even though the AMS represents a recent scale whose evaluation should be pursued in future research, results from the present study provide support for the adequacy of its psychometric properties. Not only does the AMS represent an adequate cross-cultural adaptation of the original French-Canadian version (the EME), but it represents a reliable and valid scale in its own right. The psychometric properties of the AMS, as well as the flexibility allowed through its multidimensional structure, should make it a useful tool in motivation research in educational settings.

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