

Impact of teachers' implicit theories and perceived pressures on the establishment of an autonomy supportive climate

Nadia Leroy

Pascal Bressoux

Laboratoire des Sciences de l'Éducation (EA 602), Université Pierre Mendès France et Institut Universitaire de Formation des Maîtres, Grenoble, France

Philippe Sarrazin

David Trouilloud

Laboratoire Sport et Environnement Social (EA 3742), Université Joseph Fourier, UFRAPS, Grenoble, France

According to self-determination theory, when teachers establish an autonomy supportive climate in the classroom, students demonstrate high levels of self-determination and are intrinsically motivated. The aim of this study was to identify factors leading teachers (N=336) to report that they create such a climate. We conducted a path analysis in order to examine the respective roles of teachers' implicit theories, their seniority, and their perceptions of pressures at work. We also attempted to find out whether these personal and contextual variables have a direct influence or are mediated by teachers' self-efficacy. Our first finding was that a theory of academic ability as a fixed trait caused a drop in the teachers' reported support for autonomy. On the other hand, the belief that academic abilities can be improved through students' own efforts indirectly favored an autonomy supportive climate by acting positively on the teachers' self-efficacy. Also, seniority had a significant positive effect on autonomy support that was direct, but was also mediated by self-efficacy. Finally, perceived pressures had a negative impact on reported autonomy support, but their influence was also mediated by self-efficacy.

The theory of self-determination is one of the most useful theories for enlightening researchers on motivational processes. One of the main contributions of this theoretical trend

concerns the academic benefits associated with self-determined motivational regulation (Deci & Ryan, 1985; Ryan & Deci, 2000, 2002). Numerous studies have highlighted the positive relationship between intrinsic motivation and academic achievement (Deci, Ryan, & Williams, 1996; Fortier, Vallerand, & Guay, 1995; Ryan, Connell, & Deci, 1985; Vallerand & Bissonnette, 1992; Vallerand, Fortier, & Guay, 1997). According to Deci and his colleagues (Deci & Ryan, 1985; Ryan & Deci, 2000), this type of motivational regulation, which can be described as the voluntary practice of an activity for its own sake, is the most desirable type and the best suited to scholastic learning because it pushes students to seek out challenging situations, stretch their abilities, and persevere in the face of difficulty. If intrinsic motivation is associated with positive academic results, it is because it is autonomy-based. Indeed, intrinsic motivation is characterized by a person's feeling that his/her actions originate from within (Deci & Ryan, 1987). Moreover, this ability of motivation to emerge from an inner will is likely to be much greater when an individual's motivational needs for autonomy, competence, and empathy are met (Deci, 1971; Deci & Ryan, 1985; Deci, Vallerand, Pelletier, & Ryan, 1991; Ryan & Deci, 2002). As numerous studies have underlined, however, this internalization process is dependent upon the individual's environment (for a review, see Connell & Wellborn, 1991).

Clearly, while motivation is characterized by its intrapersonal nature, it also reflects interpersonal processes (Turner & Patrick, 2004), as confirmed by many later studies. These studies showed that the quality of students' motivation depends in part on their relationships with their teacher and the climate the teacher establishes in the classroom (de Charms, 1976; Black & Deci, 2000; Deci, Schwartz, Sheinman, & Ryan, 1981; Reeve, Bolt, & Cai, 1999; Reeve & Jang, 2006).

Two motivational climates: Autonomy supportive versus controlling

To understand the role of teacher-student relationships in student motivation, researchers have examined the styles adopted by teachers to relate to students. They have shown that motivational styles could be conceptualized along a continuum, with one extreme being a climate that supports autonomy and the other, a more controlling kind of climate.

According to Reeve and Jang (2006), autonomy support is an interpersonal behavior that one person adopts toward another, in view of promoting the latter's wilful intentions and psychological needs. In an educational setting, "autonomy support revolves around finding ways to nurture, support and increase students' inner endorsement of their classroom activity" (p. 210). Thus, an autonomy supportive teacher will seek to identify students' inner motivational resources by creating classroom conditions favorable to meeting students' needs in a way that promotes internalization processes and enhances intrinsic motivation. This motivational climate shows up in teaching practices when the teacher pays more attention to what students say and allots ample time for students to solve problems by themselves. Teachers promoting such a climate are also thought to provide more informative feedback to students concerning their personal progress and task mastery. Finally, these teachers show more empathy by trying to put themselves in their students' shoes and by recognizing potential difficulties their students may be facing. In short, by supporting students' motivational needs, these teachers contribute to the internalization process and ultimately promote the most autonomous kind of motivation (i.e., intrinsic motivation).

By contrast, a controlling motivational climate is defined as a set of practices that puts pressure on people and tries to get them to act in a specific way (Deci & Ryan, 1987). Teachers who set up a controlling climate pay little attention to their students' inner motivational resources and encourage students to adopt expected behaviors by using incentives, more directive language, and controlling modes of communication (Reeve, 2002; Reeve & Jang, 2006). In an academic setting, this climate is manifested when the teacher does most of the talking and allows students little time for doing exercises. Controlling teachers also tend to use numerous contingent rewards or even feedback about students' intelligence. Finally, these teachers appear to be more critical and show more disapproval. It is easy to understand why these teaching behaviors can detract from the satisfaction of students' motivational needs and ultimately favor a less autonomous kind of motivation (i.e., extrinsic motivation).

Thus, compared to students with controlling teachers, students with autonomy supportive teachers exhibit not only more intrinsic motivation (Deci, Nezlek, & Sheinman, 1981), higher achievement (Boggiano, Flink, Shields, Seelback, & Barrett, 1993), greater academic success (Flink, Boggiano, Main, Barrett, & Katz, 1992), and a feeling of being more competent (Deci, Schwartz, et al., 1981), but also more perceived autonomy, greater involvement in school, more persistence, greater psychological well-being, and a better understanding of concepts (for a review, see Reeve & Jang, 2006).

Studies on the personal determinants of motivational climates established by teachers

While numerous studies have shown that support for student autonomy is more likely to stimulate self-determined motivation, the reasons that lead teachers to establish such a climate have not been studied much and still remain to be discovered. Some studies (e.g., Moore & Esselman, 1992; Rich, Lev, & Fischer, 1996) have demonstrated links between the teacher's feeling of efficacy and the prevailing classroom climate, showing in particular that the quality of a teacher's interventions is related to his/her self-efficacy. Other authors (e.g., Woolfolk & Hoy, 1990) have suggested similarly that the more effective teachers feel, the more they tend to create an environment that promotes self-development and cooperation. In other words, the stronger their feeling of self-efficacy, the more teachers take a humanistic approach (Enochs, Scharmann, & Riggs, 1995). Such teachers are also more inclined to experiment with different teaching methods that help meet students' needs and are geared to learning that leads to task mastery (Guskey, 1988; Stein & Wang, 1988).

Other studies have pointed out the importance of considering people's beliefs when trying to explain their behaviors. In particular, Dweck et al. (e.g., Dweck, 1991, 1999; Dweck & Leggett, 1988) advanced the thesis that the implicit theories to which people subscribe affect their perceptions by creating interpretation frameworks that favor reactions and behaviors that fit into those frameworks. According to these authors, there are two major implicit theories of intelligence: the "incremental" theory and the "entity" theory. The first holds that intelligence is a capacity that can be modified and improved with effort and perseverance (i.e., the incremental view); it leads to a focus on developing this capacity by placing priority on personal effort. In the second theory, by contrast, individuals are convinced that intelligence is an immutable trait (i.e., the entity theory); they focus more on performance and abilities, which creates more competitive learning situations. According to Trouilloud, Sarrazin, Bressoux, and Bois (2006), teachers who adhere to the entity theory may tend to praise students considered "gifted", to the detriment of other "normal" students, thus meting out differential treatment and creating a competitive climate that reduces support for autonomy. Conversely, teachers subscribing to the incremental theory would be more inclined to establish motivational climates that promote autonomy and internalization. Related to this, some studies (e.g., Kasimatis, Miller, & Marcussen, 1996; Taberero & Wood, 1999) have asserted that there is a positive relationship between adherence to the incremental theory and a high level of self-efficacy.

In an attempt to understand what mechanisms cause teachers to choose different strategies, Carter, Cushing, Sabers, Stein, and Berliner (1988) showed that the way experienced teachers interpret what happens in class depends upon their previous teaching experiences, whereas beginning teachers have a greater tendency to look for solutions in their repertoire of personal experiences. Depending on the depth of their knowledge about school situations, teachers are thought to interpret signals coming from the class in different ways. These varied interpretations in turn cause them to generate different motivational climates in the classroom. According to Newby (1991) and Martin and Baldwin (1993), beginning teachers are more likely to use controlling and directive strategies.

Not only is teaching experience an important factor in explaining the motivational climate a teacher creates, it also has a significant impact on the teacher's self-efficacy. In this vein, Glickman and Tamashiro (1982) reported that teachers with the most experience also exhibit the highest levels of self-efficacy.

Studies on the contextual determinants of motivational climates established by teachers

A number of studies (e.g., Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982; Flink, Boggiano, & Barrett, 1990) have stressed the importance of considering contextual variables in explaining the motivational climates created by teachers. In particular, it was shown that certain constraints in the work environment – to the extent that they accentuate pressures on teachers – can lead to modifications in teaching practices that cause teachers to be more controlling. Pelletier, Seguin-Lévesque, and Legault (2002) demonstrated that when teachers feel pressured at work, their motivation is diminished, and this has the effect of increasing their use of controlling strategies. The feeling of being pressured affects not only teachers’ motivational styles but also their self-efficacy. Bandura’s studies (e.g., 1977, 1997) emphasized the positive side of this equation, i.e., how perceived social support, whether coming from colleagues or other members of the community to which an individual belongs, provides social-persuasion cues that influence one’s self-efficacy. Likewise, Tschannen-Moran, Woolfolk-Hoy, and Hoy (1988) provided evidence that teachers make judgments about their own efficacy in terms of the constraints of their teaching environment. The more support they perceive as coming from colleagues, the stronger their self-efficacy. Parkay, Greenwood, Olejnik, and Proller (1988) came to a similar conclusion in their study, which demonstrated a negative correlation between teachers’ self-efficacy and stress associated with parents, students, or even administrators.

Study: Objectives and hypotheses

Given the academic benefits associated with intrinsic motivation, and the impact of autonomy-supportive climates on this kind of motivation, it seemed essential to learn more about the process that leads teachers to establish such climates in their classrooms. Thus, although several studies have attempted to identify the individual and environmental characteristics affecting the motivational climates created by teachers, very little research has been conducted in real-world situations. Furthermore, the results remain too fragmented, in the sense that no one has tried to integrate these diverse results into a single model.

Based on the contributions of the above research and the relationships between the variables identified therein, the aim of the present study was to propose and test an exploratory model of the autonomy-supportive motivational climate in a natural classroom setting. In accordance with the foundational principles of the sociocognitive approach (Bandura, 1986), we believe that in order to identify the factors responsible for the social climate in the classroom, one should look not only at teachers’ belief systems but also at signs in the environment that indicate the atmosphere in which teachers work. We hypothesized that the tendency to establish a given classroom climate depends on the teacher’s self-efficacy, the implicit theories to which he/she subscribes, his/her seniority, and the pressures he/she perceives coming from administration, colleagues, and students’ parents (Figure 1).

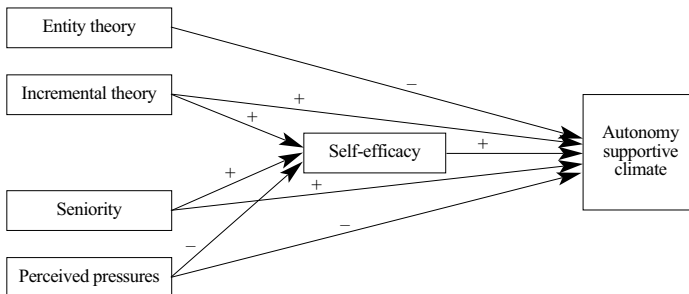


Figure 1. Theoretical model of the antecedents of an autonomy supportive climate

When teachers have a high self-efficacy level, this should influence the motivational climate in the direction of supporting autonomy in students. Adherence to an entity theory ought to reduce autonomy support, whereas adherence to an incremental theory should enhance this motivational climate. We hypothesized in addition that the relationship between the incremental theory and the motivational climate in the classroom is a direct one, but is also mediated by the teacher's self-efficacy. Furthermore, we expected a direct positive correlation between teacher seniority and support for autonomy, but also one mediated by self-efficacy. Finally, pressures perceived by teachers should have a negative and direct impact on autonomy support, but this influence, once again, should be mediated by the teacher's self-efficacy.

Method

Study overview

The data collected for this study was taken from a larger research project called *Evaluation Bilan Ecole* or EBE (Overall School Evaluation) commissioned by the French Ministry of Education and aimed at assessing students' knowledge at the end of the fifth grade of elementary school. Various factors likely to influence teaching practices, as well as students' behaviors and academic performance, were examined in an attempt to shed light on the mechanisms governing the motivational processes of both teachers and students.

Participants

The initial EBE sample of 336 fifth-grade teachers (125 men and 211 women), randomly chosen from 269 schools across France, was a representative sample of the national population. On average, the teachers had 18.68 years of seniority ($SD=11.88$). Twenty-five percent of the teachers had between 1 and 7 years of seniority and 25% had 30 years or more.

Measures

A booklet containing all the questionnaires needed for the study was distributed to each teacher during the last quarter of the school year. The teachers were to complete the questionnaires and return the booklet to the researcher two weeks later. Participating teachers were informed that the responses provided on the questionnaire would remain strictly anonymous and that the data would be used solely for the purposes of this study. In a preliminary phase of the study, all questionnaires were processed via a principal component analysis. In this initial phase, we did not place any restrictions on the number of factors to extract from the analyses. For each instrument, we extracted as many factors as there were variables included in the analyses so as to account for 100% of the total variance in each case.

Teacher's self-efficacy. Dussault, Villeneuve, and Deaudelin's (2001) French version of the *Teacher Efficacy Scale* (Gibson & Dembo, 1984) was used to measure teacher self-efficacy. This scale consists of four items related to teachers' opinions concerning their behavior towards students (e.g., "If I work really hard, I think I can make myself understood, even by the most difficult students" and four items concerning how much control teachers think they have over their students' education in spite of their social and family environment (e.g., "Some factors that are beyond my control have a bigger influence on student achievement than I can have in conducting the class.")). The teachers had to fill out this questionnaire by giving their ratings a 5-point Likert scale ranging from 1 (*not at all true*) to 5 (*completely true*).

Two factors had an eigenvalue equal to 1 or more. These factors were retained; together, they accounted for 53.64% of the total variance. Given that Gibson and Dembo (1984) reported

independence between the two factors constituting this scale, we opted for a varimax rotation. The first factor retained was made up of items related to self-efficacy, and explained 29.64% of the total variance. The second factor consisted of items related to perceived control; it explained 24% of the total variance. Since we were interested solely in teacher self-efficacy here, we used only the first factor and derived a self-efficacy score by taking the mean of all items with loadings of at least .40 on this factor. This score yielded a moderate Cronbach's alpha equal to 0.68.

Teachers' implicit theories. The scale used to measure teachers' beliefs about their students' abilities was an abridged version of the Nature of Ability Beliefs Questionnaire (Sarrazin et al., 1996) consisting of sixteen items divided into four subscales. The first subscale reflects an entity theory (e.g., "Students come to school possessing a certain ability level and it is difficult to change that"), while the second reflects an incremental ability theory (e.g., "A student's achievement in school depends on the efforts he/she makes to improve"). The third subscale evaluates the innatist view of intelligence (e.g., "To do well at school, one has to be naturally gifted"). Finally, the last subscale is based on a generalist conception of intelligence (e.g., "A good student can succeed at school regardless of the subject matter"). The teachers filled out the questionnaire by giving "their opinion on students in general" on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*strongly agree*).

A four-factor structure was retained with an eigenvalue cutoff set at greater than 1. Once combined, these factors explained 66.46% of the total variance. We opted for a promax rotation because, as stated by the developers of this instrument, the subscales constituting the questionnaire are not independent. After rotation, the first factor obtained consisted of the four items pertaining to the incremental theory of intelligence; the second factor consisted of the four entity-theory items; the third factor included the four items related to an innatist conception of intelligence; the last factor was composed of three of the items referring to a generalist view of intelligence.

However, given that we were interested mainly in the role of incremental and entity theories of intelligence, we used the first two factors only, which accounted for 28.13% and 16.61% of the total variance, respectively. To derive the score related to the incremental theory of intelligence, we averaged the scores on the items whose loadings on the first factor were at least .40 (Cronbach's $\alpha=0.84$). Similarly, the entity-theory score was derived by averaging the scores on the items whose loadings on the second factor were at least .40 (Cronbach's $\alpha=0.83$).

Perceived work pressures. The scale used to measure the pressures and constraints perceived by the teachers in their work environment was the Pelletier et al.'s (2002) *Constraints at Work Scale* consisting of fifteen items. The items were grouped into six subscales, one for each source of pressure. The first subscale was designed to measure pressures associated with parents (e.g., "The parents of your students do not support your teaching methods"); the second, pressures associated with student performance (e.g., "You have to limit the number of failures in your class"); the third, pressures associated with colleagues (e.g., "You have to conform to your colleagues' teaching methods"). The fourth subscale contained items related to student satisfaction (e.g., "It is important that your students find pleasure in learning"); the fifth concerned constraints associated with school curricula (e.g., "It is important to cover all the material in the curriculum"). The sixth and last subscale assessed pressures associated with administration (e.g., "You feel that the school principal supports you"). The first sentence of the questionnaire asked the teachers to give their "impressions regarding the atmosphere at their workplace" on a five-point Likert scale ranging from 1 (*not at all true*) to 5 (*completely true*). The terms "impression" and "atmosphere" were used to emphasize pressures as experienced and perceived by teachers, rather than actual or proven ones.

Six factors explaining 65.74% of the total variance were retained because they had an eigenvalue of at least 1. According to Pelletier et al. (2002), these various factors are independent, so a varimax rotation was performed. After rotation, our results did not support

the theoretical structure of the questionnaire. Given that the teachers did not seem to make an unequivocal distinction between the different sources of pressure, a composite score was computed by averaging the items with loadings of at least .40 on these factors. After eliminating items that were slightly correlated with each other, the final score obtained had a satisfactory internal consistency level (Cronbach's $\alpha=0.71$)

Autonomy supportive climate

The questionnaire used here was an adaptation of the Learning Climate Questionnaire used by Williams and Deci (1996) and Black and Deci (2000). This questionnaire is frequently administered to assess the degree to which a classroom climate is perceived by students as promoting student motivation. As we have seen, the satisfaction of the three needs mentioned above (autonomy, competence, and empathy) is necessary for the process of internalization that underlies intrinsic motivation.

In this study, the items were revised slightly in order to measure the degree of support for student autonomy reported by teachers. The revised scale was composed of fourteen items divided into three subscales. The first subscale, designed to measure support for autonomy, consisted of four items that referred to whether the teacher lets his/her students feel they are the source of their own behaviors (e.g., "In class, I encourage students to ask questions"), in line with current definitions of autonomy (de Charms, 1968; Deci & Ryan, 1985; Ryan & Connell, 1989). The second and third, designed to assess support for competence and empathy, respectively, each consisted of five items. The competence subscale presented items related to the extent to which teachers allow their students to feel they can make good use of their abilities (White, 1959) (e.g., "In class, I check to make sure my students understand what they have to do"). The empathy subscale included items about opportunities to establish relationships with others and the need to feel affectively connected (Baumeister & Leary, 1995; Bowlby, 1979; Ryan, 1995) (e.g., "In class, I try to put myself in the place of my students, particularly those who are having problems"). The teachers had to answer the questionnaire by expressing their "teaching preferences" on a five-point Likert scale ranging from 1 (*never*) to 5 (*all the time*).

We retained three factors based on the eigenvalue cutoff of 1. These factors explained 46.83% of the total variance. However, after varimax rotation, the three factors did not show the expected theoretical structure. This partially explains why most researchers who study autonomy-supportive behaviors do not consider these three subscales separately, but average the three subscores. As such, the concept of "autonomy support" refers to cases when the teacher promotes satisfaction of students' needs for autonomy, competence, and empathy (Deci et al., 1981). A new score was thus calculated by averaging the items whose loadings were at least .40 on these three factors. After discarding items that were weakly correlated with each other, this score exhibited good internal consistency, with a Cronbach α of 0.82.

Data analysis

A path analysis was chosen for examining the antecedents of the motivational climate because it represents the best procedure for detecting potential causal relations among the variables identified as affecting teacher self-efficacy and support for autonomy. This type of modelling is particularly well suited to our study in that it was developed for the purpose of examining and testing causal relationships in non-experimental settings (Hatcher, 1994).

To test the mediating function of teacher self-efficacy, we used the procedure proposed by Baron and Kenny (1986). According to these authors, in order to say that a variable has a mediating effect, the path model must satisfy three conditions: (1) the independent variable must have an effect on the mediating variable, (2) the independent variable must have an effect on the dependent variable, and (3) the mediating variables must have an effect on the dependent variable after controlling for the independent variable. Our model tested the impact of teachers' self-efficacy, the implicit theories to which teachers subscribe, their seniority, and

their perceptions of work pressures, on autonomy support in the classroom. For the modelling process, we considered self-efficacy as a mediating variable of the effect of these personal and contextual characteristics on the autonomy supportive climate.

Results

Preliminary analyses

Descriptive statistics and correlations between variables are reported in Table 1. The original sample was reduced ($N=298$) because a path analysis can only include participants who respond to every item that corresponds to the variables proposed and retained in the model. To make sure that the attrition did not generate a selection bias, Student's t -tests on the means of the model variables were run for the original and reduced samples. No significant differences were found.

Table 1

Means, standard deviations, and bivariate correlations between variables, from the path analysis

Variable	Mean	Standard deviation	1	2	3	4	5	6
1. Self-efficacy	3.24	0.70	–					
2. Incremental theory	3.50	0.89	0.22***	–				
3. Entity theory	2.02	0.83	-0.08	0.05	–			
4. Seniority	18.68	11.89	0.13*	-0.02	0.11*	–		
5. Perceived pressures	2.13	0.54	-0.24***	-0.02	0.15**	-0.025	–	
6. Autonomy supportive climate	4.30	0.40	0.30***	0.01	-0.20***	0.22***	-0.27***	–

Note. $N=298$; * $p<.05$; ** $p<.01$; *** $p<.001$.

Path analysis

Table 2 presents the fit indexes of the theoretical model output by the path analysis using the CALIS procedure (Covariance Analysis and Linear Structural Equation) from version 8 of SAS software (SAS Institute, Inc., 2000).

Table 2

Fit indexes for the theoretical and modified models of the antecedents of an autonomy supportive climate

Model	Chi-square	df	$p>$	GFI	AGFI	CFI	NNI	NFI
Theoretical model	1.962	1	0.16	0.997	0.954	0.991	0.983	0.861
Modified model	2.158	2	0.340	0.998	0.975	0.998	0.989	0.982

The chi-square statistic, taken as an absolute fit index, is a test of the null hypothesis that the model fits the data well; if it is significant, then the hypothesis that the model fits the empirical data should be rejected. However, because this test is highly sensitive to the sample size (Bentler & Bonett, 1980; Marsh, Balla, & McDonald, 1988), we also calculated some alternative indexes, including Jöreskog and Sörbom's (1981) adjusted goodness of fit index (AGFI), the goodness of fit index (GFI), Bentler's (1989) comparative fit index (CFI), and Bentler and Bonett's (1980) normed fit index (NFI) and non-normed index (NNI). A value of .90 or more for these various indexes indicates a good fit of the model.

We tested our theoretical model first (Figure 1) and then proceeded to make a number of simplifications in order to obtain a model that fit the data well and also met the criterion of parsimony. The necessary changes were then made based on the modification indexes

supplied by the Lagrange Multiplier Test (LMT) and the Wald Test (WT). The indexes of the theoretical model are given in the top row of Table 2.

Regarding the fit indexes, NFI was not very good, which meant that the fit of our theoretical model to the empirical data could be improved. Moreover, looking at the regression equations output by the system, we can see that the path linking the incremental theory to autonomy support was nonsignificant, which indicates the need to delete this path to make the model more parsimonious. This was confirmed by the WT and also by the nonsignificant correlation between these two variables (Table 1). These results told us that the incremental theory did not have a direct impact on autonomy support, so this path was removed. The analysis results reported in the bottom row of Table 2 show that our model now fits the empirical data. All the fit indexes are good and all the paths are significant (Figure 2).

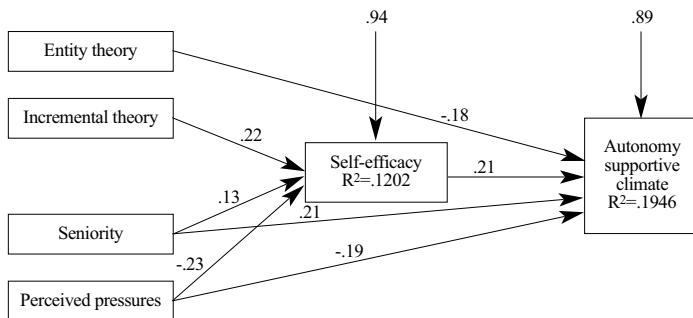


Figure 2. Modified model of the relationships between teachers' self-efficacy, implicit theories, seniority, perceived pressures, and establishment of an autonomy supportive climate

We can see from this analysis that the teachers' self-efficacy level had a significant, positive impact on the support for autonomy, as hypothesized. The more efficacy the teachers felt they had, the more they said they created a climate in the classroom that supported the autonomy of their students ($\beta=.21$).

Concerning the teachers' implicit theories, the results partially validated our hypotheses but only for the positive impact of the incremental theory on self-efficacy ($\beta=.22$). The mediating effect of the incremental theory on autonomy support *via* teacher self-efficacy was not significant (Table 3). Indeed, condition 2 of Baron and Kenny's (1986) procedure was not satisfied because the incremental theory did not have a significant impact on autonomy support. However, there was an indirect effect such that the more the teachers subscribed to an incremental theory, the greater their self-efficacy. In turn, the higher their self-efficacy, the more they reported supporting autonomy in their students. This indirect effect was equal to .05 (from the product .22 x .21). Regarding the negative impact of the entity theory on the support for autonomy, our hypothesis was validated. The analysis yielded a significant and direct negative impact of this theory on autonomy support ($\beta=-.18$).

Table 3

Test of the mediating effect of teachers' self-efficacy, following Baron and Kenny's (1986) procedure

	Step 1	Step 2	Step 3
Independent variable (IV)	Mediating variable (MV) is regressed over IV	Dependent variable (DV) is regressed over IV	DV is regressed over IV after controlling for MV
Incremental theory	0.22***	0.04	-0.03
Seniority	0.13*	0.24***	0.21***
Perceived pressures	-0.23***	-0.24***	-0.19***

Note. MV: Teacher's self-efficacy; DV: Autonomy Supportive Climate; * $p<.05$; ** $p<.01$; *** $p<.001$.

As for the direct positive impact of the teachers' seniority on autonomy support, and the mediation of this relation by their self-efficacy, the analyses confirmed our hypotheses (Table 3). All three conditions of the mediation test were met, and the coefficient decreased when autonomy support was regressed over seniority, after controlling for self-efficacy. However, the decrease was small, which means that the teachers' self-efficacy only partially mediated the relation between seniority and autonomy support. The longer the teachers had been in the profession, the more they said they created climates supporting student autonomy ($\beta=.21$). And the more seniority they had, the higher their self-efficacy ratings ($\beta=.13$), which ended up generating a more autonomy-supportive motivational climate.

Finally, as predicted, the pressures experienced by the teachers had a significant and direct impact on the motivational climate in the classroom, but the impact of pressures was also mediated by their feeling of self-efficacy (Table 3). When the teachers' self-efficacy was regressed over perceived pressures, a significant negative relation was obtained. Similarly, a significant negative relation was observed when support for autonomy was regressed over perceived pressures; this relation persisted even after controlling for self-efficacy. However, as above, the mediation was partial. The more the teachers perceived pressures, the less they said they created autonomy-promoting climates ($\beta=-.19$). And the more they felt pressured by their working conditions, the less efficacy they felt they had ($\beta=-.23$), which, in turn, lowered their reported level of student-autonomy support.

Discussion

Numerous studies have demonstrated the benefits of autonomy supportive (versus controlling) school environments on students' intrinsic motivation (e.g., Deci, Schwartz, et al., 1981; Reeve et al., 1999; Reeve, 2002; Reeve & Jang, 2006). Given the importance of such environments for student motivation, some researchers began to focus on determining the responsible factors in order to gain insight into the underlying processes. The goal of this study was to add new knowledge to this issue and integrate the existing knowledge on this subject into a single model. Our analysis centered on two types of determinants: personal variables related to the teacher (i.e., self-efficacy, implicit theories, and seniority) and environmental variables (i.e., perceived work pressures). Although the amount of explained variance in the teachers' self-efficacy (12.02%) and their support for autonomy (19.46%) was limited, the results of this study have some particularly important implications concerning the roles of certain teacher characteristics and environmental pressures in the type of motivational climate created in class.

Our discussion of the results is presented in two sections. The first describes the relationships between personal variables and support for autonomy; the second confirms the negative effects of environmental pressures on this motivation-based teaching style.

Relationships between personal variables and autonomy supportive climate

Relationships between teachers' self-efficacy and autonomy supportive climate. Our model showed that the more the teachers felt they could help their students overcome difficulties in school, the more they reported that they reinforced students' needs for autonomy. Thus, it seems that environmental conditions that make teachers feel high self-efficacy are also conducive to a climate that promotes self-determined motivation among students. Identifying these conditions is a promising avenue of research, for if we can set up situations favorable to creating high self-efficacy in teachers, this should ultimately lead them to support student autonomy and to be less controlling.

Relationships between implicit theories, self-efficacy, and autonomy supportive climate. It appeared undeniably here that conceiving of academic ability as a dispositional characteristic that can be developed and improved prompts teachers to believe in the efficacy of their actions with students. This feeling of self-efficacy in turn engenders stronger support for autonomy.

Thus, teachers who see student achievement in school as something that can be cultivated, *through effort*, also believe in their own ability to help their students make progress, and thus to play a determining role in their students' academic success. Therefore, believing in a potential for change seems to be a condition favoring a teacher's perception that his/her own actions can lead to improvements in student achievement. Accordingly, the more capable of helping their students our teachers felt, the more they reported supporting students' motivational needs.

On the other hand, regarding the role of the entity theory on teacher-generated climates, it seems that this belief directly and negatively influences support for autonomy. Indeed, the teachers who subscribed to an entity theory reported establishing a climate that was less conducive to enhancing intrinsic motivation in students, and said they were more directive and set up activities that were less autonomy-supportive. A possible explanation of this is the fact that teachers convinced that students' ability levels are stable over time may concentrate on detecting these levels in order to identify which students will probably succeed. To do so, they are likely to conduct activities that emphasize ability, and thus rely on more controlling methods.

These results suggest that in interactions between teachers and students, teachers' beliefs and expectations about competence partially guide their behaviors. An important implication of this finding is that teachers' beliefs regarding their students' academic ability trigger certain teaching behaviors. This raises the important question of why teachers might subscribe to one theory over another. Perhaps the answer to this question lies in the characteristics of the learners themselves (e.g., academic achievement, level of motivation or involvement).

Relationships between seniority, self-efficacy and autonomy supportive climate. In line with our hypothesis, the more experienced the teachers were, the more they reported establishing intrinsically motivating classroom climates and supporting their students' motivational needs. This result, which runs counter to the conclusions drawn by Barfield and Burlingame (1974) and Hoy and Woolfolk (1989), suggests that teachers with experience believe they are able to manage their classrooms in a less authoritarian manner, are more empathetic with their students, enhance students' feelings of competence by raising their self-confidence, and provide students more opportunities to make choices. Previous teaching experiences would lead these teachers to offer more support for individuality and student autonomy, in contrast to inexperienced colleagues who would tend to show greater rigidity, dogmatism, and authoritarianism. It is likely that classroom experience provides a foundation which, once in place, allows teachers to widen their repertoire and, over time, to make more humanistic pedagogical choices. In sum, it would seem that motivational climates, and notably the capacity to promote intrinsic motivation in students, is rooted in the professional development of each individual teacher.

Relationships between environmental pressures, self-efficacy, and autonomy supportive climate

Consistent with existing studies (Deci et al., 1982; Flink et al., 1990; Pelletier et al., 2002), we found that external pressures caused teachers to minimize support for students' psychological needs. The more pressure the teachers felt, the more they reported establishing constraining learning conditions for their students. Another important finding of this study is that these pressures were associated with different parties in the educational milieu, all of whom contributed, in the teachers' eyes, to producing constraints that restricted their practices and teaching methods. Perceiving such pressures tended to cause teachers to be more controlling with their students, either by limiting their options or by being less attentive to their need for autonomy despite its key role as a source of intrinsic motivation. Teachers who felt that their work or teaching methods were being criticized said they reacted by being more directive and authoritarian with their students. This finding suggests that teachers are more likely to generate classroom climates conducive to student learning when they find themselves in a supportive working environment. Moreover, the present results indicate that factors influencing teacher practices are not limited to the classroom; external parties can play an important, though indirect, role. By communicating their disagreement or disapproval, outside parties constitute sources of annoyance and tension for

teachers. Working conditions characterized by opposition in turn cause teachers to establish classroom climates that are not open to the development of intrinsic student motivation.

Furthermore, such pressures appear to lower teachers' self-efficacy, ultimately causing them to reduce autonomy-promoting practices. Indeed, our teachers with low self-efficacy reported conducting pedagogical activities that were more controlling and not as humanistic, in the sense that they provided less support for student individuality (on this topic, see Barfield & Burlingame, 1974; Willower, Eidell, & Hoy, 1967; Woolfolk & Hoy, 1990). As Bandura (1997) noted, perceived pressures from co-workers, parents, and students are social-persuasion cues that can threaten a teacher's self-efficacy. When teacher self-efficacy is lowered, this in turn causes a reduction in the use of practices favorable to satisfying students' autonomy needs. Teachers with low self-efficacy thus tend to exhibit authoritarian and directive behaviors and seem to pay less attention to the well-being and satisfaction of their students. Setting up classroom activities that reinforce autonomy needs presupposes a certain availability on the part of the teacher, but these teachers may not be available because they are focusing instead on trying to preserve their already-weakened self-efficacy. In short, practicing this profession in a social setting characterized by disapproval may cause teachers to question their effectiveness or doubt their own ability to help students learn new things. This kind of social persuasion appears to be even stronger when it comes from a source that is credible (Bandura, 1986) in the teacher's eyes, as is the case with colleagues, parents, and students.

What stands out from this study is that not all factors influencing teachers' motivational styles are behavioral ones: teachers' beliefs about themselves and others also play an important role. Moreover, the factors that account for teaching behaviors are not strictly limited to the classroom, but seem to extend to the general social context in which teachers practice their profession.

This study has numerous implications for the teaching world. First of all, by providing a unified analysis framework, it facilitates a more integrated view of the patterns of personal and contextual variables that act upon motivational classroom climates established by teachers. A setting that enhances teacher self-efficacy, favors adherence to an incremental theory, and reduces pressures on teachers, would do much to promote an autonomy-supportive motivational climate, and ultimately the most autonomous types of student motivation. In contrast, an environment that weakens teacher self-efficacy, increases adherence to an entity theory, and is characterized by strong pressures, will very likely cause teachers to be more controlling with their students.

Note, however, that while it is important to take specific steps toward the development of educational environments based on cooperation among the various parties involved, and toward reinforcing teachers' self-efficacy, the key to this undertaking seems to be knowledge of the processes at play. Educating teachers about these processes would no doubt contribute to a necessary awakening which could, in turn, help them to modify their classroom practices.

In conclusion, while teaching is clearly a complex job, one can say in addition that to teach in a way that promotes intrinsic motivation in students is all the more difficult when the mechanisms involved are poorly understood. It is therefore essential to conduct additional studies on the antecedents of teaching practices. Further insight into these factors could ultimately be the basis for designing educational devices that increase student motivation in school. Moving back up the chain of causal relations should help us identify the factors responsible for these motivational climates, and could lead to better-targeted interventions by the various parties in the educational field.

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Selon la théorie de l'autodétermination, lorsque les enseignants instaurent en classe un climat motivationnel soutenant l'autonomie, les élèves démontrent de hauts niveaux d'autodétermination et sont motivés intrinsèquement. La visée de ce travail était d'identifier les facteurs menant les enseignants (N=336) à déclarer générer un tel climat. Nous avons procédé à une analyse en pistes causales dans laquelle nous avons mis en perspective le rôle des théories implicites des enseignants, de leur ancienneté ainsi que celui des contraintes qu'ils perçoivent. Nous avons cherché à savoir si l'influence de ces variables personnelles et contextuelles était directe ou médiatisée par leur auto-efficacité. Il ressort tout d'abord que concevoir l'habileté scolaire comme un trait fixe occasionne une chute dans le soutien de l'autonomie déclaré par les enseignants. En revanche, croire que ces mêmes habiletés sont améliorables grâce aux efforts investis par les élèves favorise indirectement un tel climat motivationnel en agissant

positivement sur leur sentiment d'auto-efficacité. Par ailleurs, l'influence de l'ancienneté sur le soutien de l'autonomie est significativement positive et s'exerce de manière directe mais est également médiatisée par l'auto-efficacité. Enfin, les contraintes perçues agissent négativement sur le soutien de l'autonomie déclaré mais leur influence est également médiatisée par le sentiment d'auto-efficacité.

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Nadia Leroy. Université Pierre Mendès France, Département Sciences de l'Éducation, 1251 avenue centrale, BP47, 38040 Grenoble Cedex 9, France; E-mail: Nadia.Leroy@upmf-grenoble.fr; Web site: web.upmf-grenoble.fr/sciedu/leroy/

Current theme of research:

Her research interests include the evolution of achievement motivation and intrinsic motivation during middle high school, and the impact of motivational climate on pupils' self-determined motivation.

Most relevant publications in the field of Psychology of Education:

Leroy, N., Bressoux, P., Sarrazin, P., & Trouilloud, D. (2007). Vers un modèle de l'impact du climat motivationnel de la classe sur la motivation des élèves: Intégration des théories de l'autodétermination et des buts d'accomplissement. In *Cédérom Actes du congrès international de l'AECSE. Actualité de la recherche en éducation et formation*. Strasbourg, 28 August-1st September.

Pascal Bressoux. Université Pierre Mendès France, Département Sciences de l'Éducation, 1251 avenue centrale, BP47, 38040 Grenoble Cedex 9, France; E-mail: pascal.bressoux@upmf-grenoble.fr; Web site: web.upmf-grenoble.fr/sciedu/pbressou/

Current theme of research:

His research interests include teacher and school-related effects on pupils' academic achievement and classroom management. His current research focuses on teachers' judgments and their effects on pupils' self-concept and achievement.

Most relevant publications in the field of Psychology of Education:

Bressoux, P., & Pansu, P. (2003). *Quand les enseignants jugent leurs élèves*. Paris: Presses Universitaires de France.

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Philippe Sarrazin. Université Joseph Fournier Grenoble 1 France, UFRAPS, BP53, 38041 Grenoble Cedex 9, France; philippe.sarrazin@ujf-grenoble.fr; Web site: www-sens.ujf-grenoble.fr/annuaire/sarrazin.html

Current theme of research:

His research interests concern individuals' motivation in educational and sport contexts, with frameworks resulting from contemporary socio-cognitive models (e.g., achievement goal theory, self-determination theory, self theory).

Most relevant publications in the field of Psychology of Education:

Chanal, J., Marsh, H., Sarrazin, P., & Bois, J. (2005). The big-fish-little-pond effect on gymnastics self-concept: Generalizability of social comparison effects to a physical setting. *Journal of Sport and Exercise Psychology*, 27(1), 53-70.

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David Trouilloud. Université Joseph Fournier Grenoble 1 France, UFRAPS, BP53, 38041 Grenoble Cedex 9, France; E-mail: david.trouilloud@ujf-grenoble.fr; Web site: www-sens.ujf-grenoble.fr/annuaire/trouilloud.html

Current theme of research:

His research interests concentrate on socio-psychological factors relating to motivation in educational and sport contexts. The role of significant other's expectations (e.g., teacher, coach), stereotypes and motivational climate are particularly investigated.

Most relevant publications in the field of Psychology of Education:

Sarrazin, P., Tessier, D., Pelletier, L., Trouilloud, D., & Chanal, J. (2006). The effects of teachers' expectations about students' motivation on teachers autonomy-supportive and controlling behaviors. *International Journal of Sport and Exercise Psychology*, 4, 283-301.

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