

The Work Tasks Motivation Scale for Teachers (WTMST)

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The authors developed and validated a measure of teachers' motivation toward specific work tasks: The Work Tasks Motivation Scale for Teachers (WTMST). The WTMST is designed to assess five motivational constructs toward six work tasks (e.g., class preparation, teaching). The authors conducted a preliminary ($n = 42$) and a main study among elementary and high school teachers ($n = 609$) to develop and validate the scale. Overall, results from the main study reveal that the WTMST is composed of 30 reliable and valid factors reflecting five types of motivation among six work tasks carried out by teachers. Results based on an extension of the multitrait-multimethod approach provide very good support for assessing teachers' motivation toward various work tasks. Support for the invariance of the WTMST over gender and teaching levels was also obtained. Results are discussed in light of self-determination theory and the multitask perspective.

Keywords: teachers, motivation, self-determination, domain specificity, scale development

Recent studies have shown that more than any other professionals, elementary and high school teachers suffer from a lack of work motivation (Jesus & Lens, 2005). Teachers' motivation appears crucial for optimal human functioning in the workplace because teachers who are highly motivated are more engaged in their work

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and more satisfied (Levesque, Blais, & Hess, 2004). More important, teachers' motivation is associated with students' motivation (Pelletier, Séguin-Lévesque, & Legault, 2002). Therefore, researchers and practitioners alike have devoted a considerable amount of energy to understanding teachers' motivation. However, considering the multiple tasks that teachers have to perform, it may be difficult to identify with precision the motivational processes underlying each given task and their relative impact on teachers' psychological functioning. Indeed, motivational processes are not necessarily uniform and may vary across the different work tasks carried out by teachers. Furthermore, despite the different theoretical approaches used to understand teachers' motivation (e.g., self-efficacy, locus of control), few have yet focused on the "quality" of the motivational processes.

A potentially useful theoretical framework for understanding teachers' motivation is self-determination theory (SDT; Deci & Ryan, 1985). More precisely, this theory makes an important distinction between self-determined and controlled types of motivation. Thus, SDT focuses not only on the quantity of motivation but also on the quality. Based on SDT and the literature on the domain specificity of self-representations, our goal is to develop and validate a self-report measure of teachers' motivation: the Work Tasks Motivation Scale for Teachers (WTMST). In the sections that follow, we present an overview of the teachers' motivation research, introduce SDT, and discuss the issue of domain specificity.

Teacher Motivation

Teachers' motivation is usually studied through the conceptual lenses of two social cognitive theories of motivation: social learning theory of internal-external locus of control (Rotter, 1966) and self-efficacy theory (Bandura, 1977, 1997). Research based on both theories underscores the relevance of competence beliefs. Although these beliefs are important for predicting intentional behaviors, we believe that an exclusive focus on teachers' competence does not allow us to verify to what extent motivated behavior is integrated within the self (Ryan, 1995). According to SDT, teachers may perceive themselves as competent, but some may perform their work tasks because they personally grasp the value of their work, whereas others engage in these work tasks because of external pressures or benefits associated with the work. Both examples involve instrumentalities that may lead to different outcomes. The former example entails personal endorsement and a feeling of choice, which may lead to well-being, whereas the latter involves compliance with an external source of control, which may generate ill-being. Thus, unlike most other theories of motivation, SDT emphasizes the experience of choice in the regulation of behaviors.

SDT

SDT posits the existence of three broad types of motivation that are characterized by different levels of self-determination. From high to low self-determination, these are intrinsic motivation, extrinsic motivation, and amotivation.

Intrinsically motivated behaviors are engaged in for the pleasure or the satisfaction derived from performing them. On the other hand, extrinsically motivated behaviors are instrumental in nature. In other words, behaviors are not performed for the activity itself but rather as a means to an end. The different types of extrinsic motivation proposed by SDT can be ordered along the self-determination continuum from lower to higher levels of self-determination, referred to as external, introjected, and identified regulations. *External regulation* occurs when behaviors are regulated to obtain a reward or to avoid a constraint. *Introjected regulation* corresponds to the process whereby an external demand becomes an internal representation. Individuals put pressure on themselves through internal coercion (e.g., anxiety, shame, or guilt) to make sure that a particular behavior is performed. Finally, *identified regulation* is defined as behavior that individuals choose to perform because it is congruent with their own values and goals. Instead of succumbing to external or internal pressures, individuals experience choice while doing the activity, although the activity is not intrinsically interesting. SDT also proposed a last concept, namely *amotivation*, which refers to being neither intrinsically nor extrinsically motivated. Amotivation corresponds to the lower level of self-determination. Individuals are amotivated when they have no intention of engaging in a particular behavior and do not really know why they are doing it.

Because the types of motivation are posited to vary along a self-determination continuum, SDT makes specific predictions concerning motivational consequences. Because self-determination is associated with enhanced psychological functioning (Deci, 1980), it is hypothesized that self-determined types of motivation (intrinsic motivation and identified regulation) lead to positive outcomes, whereas less self-determined types (introjected regulation, external regulation, and amotivation) lead to negative ones. Research in the workplace has supported this hypothesis (Gagné & Deci, 2005). For instance, self-determined types of motivation in the context of work are associated with more job satisfaction (Blais, Brière, Lachance, Riddle, & Vallerand, 1993) and less job burnout (Fernet, Guay, & Senécal, 2004) and turnover intentions (Richer, Blanchard, & Vallerand, 2002).

Content Domain Specificity in Assessing Teachers' Motivation

Most studies examining teachers' self-determined motivation have assessed motivation through a global motivational orientation at work (e.g., Pelletier et al., 2002). However, this kind of assessment may be too broad to get a clear picture of motivation at work, specifically because respondents are asked to report their beliefs about their job without any specific tasks in mind (Bandura, 1997). Marsh (1990) suggested that while answering a global measure, respondents may base their responses on immediate experience, mood, or content of short-term memory instead of pursuing the more cognitively demanding effort to search for accurate information. Accordingly, assessment of teachers' motivational orientation could be determined by a particular task (i.e., teaching) or even by some personality characteristics. Thus, global measures do not take into account the complexity and the variation of self-perceptions that may impair the ability to understand and

predict behavior (Marsh & Yeung, 1998). In line with this, we believe that self-report measures need to consider teachers' motivation across the range of tasks that teachers are asked to perform. We therefore conducted a pilot and a main study to develop and validate the WTMST.

PILOT STUDY

The pilot study comprised two steps. First, based on the task descriptions of elementary and high school teachers provided by the Quebec Ministry of Education, we depicted a list of 25 tasks that make up teachers' work. In turn, those 25 work tasks were classified into 10 broad categories by 6 classroom teachers (i.e., 3 elementary and 3 high school teachers). To verify the relevance of these broad categories, a short questionnaire was distributed to a total of 42 school teachers. This second step was conducted to ensure an objective classification of the teachers' tasks. Specifically, participants were instructed to rate the importance of each task and the percentage of time spent doing each task. Also, participants had to respond to an open-ended question about the adequacy of tasks' grouping. In line with the results, four work tasks were regrouped into the label complementary tasks, thereby leading to six main tasks: (a) class preparation (e.g., deciding on instruction topics and material, determining the presentation forms and sequences, and establishing the work procedure), (b) teaching (e.g., presenting instruction, answering questions, and listening to the students' needs), (c) evaluation of students (e.g., constructing assessments and exams, correcting, entering marks, giving remarks to the parents), (d) classroom management (e.g., handling discipline, applying the rules, and managing students' interruptions and conflicts), (e) administrative tasks (e.g., recording and transmitting absences, building disciplinary files, and participating in meetings with the parents and principals to study disciplinary cases, meetings with teachers, meetings with the administration, meetings with the union, and school assemblies), and (f) complementary tasks (e.g., tutorial guidance, involvement in committees, extracurricular activities, continuous improvement training, and extraclass monitoring).

MAIN STUDY

The main study comprised two goals. The first goal was to develop items assessing intrinsic motivation, identified, introjected, and external regulations, and amotivation toward six work tasks carried out by teachers. The second goal was to verify the construct validity of the WTMST and encompassed five tests.

We tested the factorial structure of the WTMST. The factorial structure of the WTMST would be supported if the confirmatory factor analysis (CFA) were to reveal adequate fit indices for the 30-factor solution (5 types of motivation for

each of the 6 teachers' work tasks). In addition, we conducted a test of invariance of the 30-factor structure over gender and teaching levels (elementary and high school).

We also assessed, using the 30-factor solution, the convergent–divergent validity of the WTMST. In line with Campbell and Fiske (1959), one could use a multitrait–multimethod (MTMM) approach to evaluate convergent–divergent validity. A MTMM is designed to evaluate multiple traits using different methods. However, with the absence of multiple methods in the present study, we decided to apply a different MTMM approach to assess the convergent–divergent validity of the scale. Although the multiple traits are assessed by the motivational constructs, we replaced multiple methods by the different content domains (i.e., work tasks). Clearly, the different content domains rely on the same source of information. Nevertheless, some studies have demonstrated the utility of this alternative MTMM approach in assessing convergent–divergent validity (Marsh, Martin, & Hau, 2006). First, convergent validity occurs if the correlations among different tasks assessing the same type of motivation are positive and significant. For example, intrinsic motivation toward class preparation would positively correlate with intrinsic motivation from one task to another. In addition, in line with the differentiation hypothesis put forward by Guay, Marsh, Dowson, Larose, and Boivin (2005), we postulate that the specificity of teachers' motivation varies as a function of the position of the motivational components on the self-determination continuum. Specifically, this hypothesis proposes that self-determined types of motivations are easier to differentiate from one domain to another. Accordingly, intrinsic motivation would be more differentiated (thus less correlated) across teachers' work tasks than identified regulation, but identified regulation should be more differentiated than introjected regulation and so on. Thus, amotivation would represent the type of motivation that is less differentiated (thus most correlated) across the tasks. Second, divergent validity occurs when convergent correlations are higher than the divergent correlations among different types of motivation assessed by different tasks. For example, intrinsic motivation toward teaching would rely to a greater extent on intrinsic motivation toward class preparation than on other types of motivation underlying this particular or another task.

We verified, using the 30-factor solution, the simplex pattern of correlations among the six subscales. This pattern is based on the self-determination continuum previously described. Precisely, within each task, the pattern of interrelations among the subscales is expected to form an ordered pattern in which adjacent subscales along the continuum correlate more positively than those more distant from each other. For example, for each task, intrinsic motivation is predicted to be most positively correlated with identified regulation, whereas correlations become progressively less positive or more negative for introjected and external regulations and for amotivation.

We explored possible effects of gender and teaching levels on the 30 factors. Indeed, several studies have shown that, typically, women present higher levels of intrinsic and identified regulation toward work than men (Vallerand, 1997).

With regard to teaching levels, there is some evidence suggesting that job burnout is less prevalent among elementary teachers than among high school teachers (Byrne, 1999). Besides, some studies have shown that elementary teachers presented higher levels of self-efficacy than high school teachers (e.g., Soodak & Podell, 1996). Because teachers' motivation is related to burnout and self-efficacy, elementary teachers should present higher levels of intrinsic and identified regulation but lower levels of introjected and external regulations and amotivation toward their work, when compared to high school teachers.

We performed a 33-factor CFA structure that included the 30 motivational factors and teachers' perceptions of efficacy, job burnout, and leadership style of the school administration. Recently, Marsh et al. (2006) argued that the extension of the MTMM that includes external validity criteria provided an effective approach to construct validation. Because self-determination is associated with optimal psychological adjustment to work, it is expected that intrinsic motivation and identified regulation would be positively correlated with teachers' perception of efficacy and negatively correlated with job burnout and the controlling style of the school principal. In contrast, it is posited that introjected and external regulations, and particularly amotivation, would be negatively associated with teachers' perceptions of efficacy and positively correlated with job burnout and the controlling style of the school principal. In addition, we conducted a test of invariance of the 33-factor structure over gender and teaching levels.

The present pilot and main studies expand previous studies on teachers' motivation because (a) we assessed motivation not only quantitatively but also qualitatively and (b) in contrast to much research, we assessed not a global motivational orientation but rather motivation toward specific work tasks. Such assessment may enable practitioners to identify tasks that are more central to explain work adjustment and then to build interventions aimed at fostering self-determined types of motivation toward those tasks. Likewise, the WTMST could be of a great help to practitioners interested in assessing the motivational changes produced by implantation of various education programs or reforms.

METHOD

Scale Development

A committee of experts (i.e., four graduate students and two professors) was asked to develop items reflecting the conceptual definition of the five motivational constructs. Items had to be worded so as to indicate the underlying reasons for engaging a teacher's task. In addition, items had to be relevant for each task considering that the same items are presented for each task. This was done to ensure that the WTMST assesses the same motivational properties across the six tasks. With respect to the WTMST, respondents were asked the following question: "Why are you engaged in the following task?" Items represented potential

answers to this question. A total of 30 items were generated for the five types of motivation of the WTMST. These items were then presented to a second panel of experts. Fifteen items were selected by the committee, which represented three items per motivational construct for each task. Consequently, the final version of the WTMST included a total of 90 items (15 items \times 6 tasks). Each item was rated on a 7-point scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). Means for the 90 items ranged from 1.32 to 6.60, and standard deviations ranged from 0.81 to 2.33. The 15 items are presented in the appendix.

Procedure and Participants

Data used in this study come from three school boards located in Quebec City, Canada. Teachers were asked to fill out the questionnaire and consent form and return them in a prepaid envelope. A total of 609 teachers (172 men, 433 women, and 4 without gender identification) participated in the study. Participants' mean age was 41.2 years ($SD = 10.86$) and mean years of experience was 15.8 years ($SD = 10.69$); 77% of the participants had a life partner, and 53% had at least one dependent child. There were 291 elementary teachers and 318 high school teachers, of whom 79% held a permanent position and 88% were full-time.

Measures

Job burnout. Two subscales of the French Canadian version (Dion & Tessier, 1994) of the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1986) were used to measure teachers' perception of job burnout: Emotional Exhaustion and Depersonalization. These dimensions are generally considered as the "core elements of burnout" (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) and were used as observed multiple indicators. Emotional Exhaustion is composed of nine items (e.g., "I feel emotionally drained from my work."), whereas Depersonalization is assessed by five items (e.g., "I've become more callous toward people since I took this job."). Responses to all items are scored on a 7-point scale ranging from 0 (*never*) to 6 (*daily*). In the present study, the Cronbach's alpha values for these subscales were .90 and .73, respectively. The psychometric properties of the French Canadian version of the MBI are similar to those of the original version (Maslach, Schaufeli, & Leiter, 2001). Specifically, Dion and Tessier (1994) provided support for the factorial structure, construct validity, internal consistency, and temporal stability.

Teachers' perceived self-efficacy. Teachers' perception of self-efficacy was assessed using the French Canadian version (Fernet, Senécal, & Guay, 2005) of the Classroom and School Context Teacher Self-Efficacy Scale (Friedman, 2003). This measure consists of 30 items that are scored on two subscales assessing Classroom Efficacy (17 items; e.g., "I see myself as an interesting and motivating teacher.") and Organizational Efficacy (13 items; e.g., "I believe I am quite persuasive when communicating with my principal."). All items were rated on a

6-point scale ranging from 1 (*never*) to 6 (*always*). In the present study, both subscales were used as observed multiple indicators, and their Cronbach's alpha values were .88 and .85, respectively. Fernet et al. (2005) showed that (a) the factorial structure of the French Canadian version of the scale was adequate, (b) the internal consistency values of the subscales were greater than .75, and (c) the construct validity of the scale was supported by correlations between the subscales and various indicators of teachers' functioning at work (e.g., perceptions of burnout and work satisfaction).

Leadership style of school principals. Perception of school principal leadership was assessed with the Supervisory Style Inventory (Blais, Lachance, Brière, Dulude, & Richer, 1991), which has been developed in French. In the present study, we focused on the controlling style of the school direction that consists of two subscales: Perception of Control (4 items; e.g., "I am very closely monitored by my school principal.") and Perception of "Laissez-Faire" (i.e., passive style; 3 items; e.g., "My school principal is indifferent to what I do."). All items are scored on a 7-point scale ranging from 1 (*do not agree at all*) to 7 (*agree very strongly*). In the present study, the controlling style and laissez-faire style were used as observed multiple indicators, and their Cronbach's alpha values were .66 and .83, respectively.

Statistical Analyses

CFAs. Structural equation modeling (EQS Version 6.1) was used to assess the adequacy of the models. All models were tested with standardized coefficients obtained from the maximum likelihood method of estimation. Model adequacy was evaluated via the comparative fit index (CFI), the non-normed fit index (NNFI), the root mean square error of approximation (RMSEA), and the chi-square test statistic. Because the chi-square test is sensitive to sample size, the use of relative fit indices such as the CFI, the NNFI, and the RMSEA is strongly recommended (Bentler, 1990). Values smaller than .05 for RMSEA are indicative of a close fit, whereas values up to .08 represent acceptable errors of approximation (Browne & Cudeck, 1993). For NNFI and CFI, values greater than .90 are indicative of a good fit (Hoyle, 1995). However, Hu and Bentler (1995) called for more stringent cutoff values for goodness of fit indices, such as .95 for the CFI and the NNFI and .06 for the RMSEA, but Marsh, Hau, and Wen (2004) noted problems in overgeneralizing these new recommendations. Indeed, although goodness of fit indices are useful in evaluating a model, there is ultimately a degree of subjectivity and professional judgment in model evaluation.

Correlated errors or uniquenesses of parallel items. Following Marsh and Hau (1996), we predicted a priori that there would be correlated uniquenesses between

items in which the wording is the same. Marsh and Hau argued that when parallel wording is used to assess different traits, the idiosyncratic wording of the parallel items reflects a method effect, so that correlations among the factors are artificially inflated if correlated uniquenesses is not included. Based on these recommendations, we included correlated uniquenesses in the model tested.

Multiple group tests of invariance. Separate tests were conducted to evaluate whether the factor loadings, factor variances, and factor correlations were invariant (i.e., have the same values) across gender and teaching levels (Byrne, 1995). Support for the invariance of the factor structure for gender and teaching levels is provided if the addition of invariance constraints results in little or no change in goodness of fit.

Although differences between nested models can be tested, under appropriate conditions, for statistical significance (Bentler, 1990), some researchers (see Marsh, Hau, & Grayson, 2005) have argued that it is typically more appropriate to compare them in terms of fit indices. Indeed, the statistical significance of the chi-square statistic is rarely used as the basis for evaluating goodness of fit of a single model, and Marsh et al. (2005) suggest that it is even less appropriate for testing the difference between two different models. Thus, Cheung and Rensvold (2002) suggested that for incremental fit indices, decreases in fit greater than .01 might be important. For the present purposes, we focus on goodness of fit indices that control for parsimony (e.g., NNFI and RMSEA).

Missing data. In the present study, we observed that 10% of the 609 participants had at least one missing response. Despite the low number of missing values in the larger initial sample, it would be inappropriate to “disregard” missing values by using a listwise deletion of cases. Indeed, the American Psychological Association Task Force on Statistical Inferences discourages the use of listwise deletion (see Peugh & Enders, 2004). In the present study, the full information maximum likelihood approach was used to estimate missing values. Briefly, this methodology rebuilds the covariance matrix and the sample means estimates. In this way, the maximum function use is made of all nonmissing data, resulting in more accurate results than other traditional approaches for missing data. Jamshidian and Bentler (1999) concluded that the normal theory maximum likelihood estimates are preferred over other methods proposed to handle missing data (mean imputation, listwise, pairwise, regression imputation).

Multiple indicator multiple indicator cause (MIMIC) models. We decided to perform MIMIC models to provide a more stringent test of the construct validity of the WTMST instrument. The MIMIC model has the advantage of being a latent variable approach in which the dependent variables are used as multiple indicators. In the present investigation, we explore possible gender and teaching-level effects on the 30-factorial structure of the scale. We initially constructed three single degree of freedom contrast variables to represent the linear effects of

gender (0 = women, 1 = men), teaching levels (0 = elementary, 1 = high school), and Gender \times Teaching Levels interaction. Then, we tested a model in which latent variables were “caused” by grouping variables that were represented by single indicators. Consequently, path coefficients indicated whether main and/or interaction effects were significant among each of the 30 motivational factors. The MIMIC is a stronger approach than a traditional MANOVA because measurement error is considered in this approach.

RESULTS

Preliminary Analyses

Internal consistency values were evaluated for the five types of motivation among the six work tasks. Cronbach's values ranged from .83 to .96 (mean $r = .92$) for intrinsic motivation, .72 to .89 (mean $r = .82$) for identified regulation, .79 to .89 (mean $r = .85$) for introjected regulation, .64 to .87 (mean $r = .76$) for external regulation, and .75 to .81 (mean $r = .77$) for amotivation. Overall, internal consistency values met the criterion of .70 proposed by Nunnally (1978).

Factor Structure

A first set of CFAs was performed to evaluate the factorial structure of the WTMST. In this 30-factor model, we used responses to 90 items (3 items \times 30 motivational constructs) to infer 30 latent factors (5 motivational constructs \times 6 work tasks). This 30-factor model provided a good fit to the data (see Table 1; Model 1a), and all factors had salient loadings (higher than .50; see Table 2).

We decided to conduct a test of invariance of the 30-factor structure over gender and teaching levels. Four models were tested for both gender and teaching levels to evaluate the invariance of the factor loadings, factor variances, and factor correlations. Results of these analyses are presented in Table 1 (see results under Model 2 and Model 3). Results provided good support for the invariance of the 30-factor structure over gender and teaching levels because the fit indices did not substantially decrease as stringent equality constraints were imposed within successive models. Indeed, fit indices of the various models were nearly identical to the no invariance model. For example, for gender invariance, the RMSEA of the more restrictive Model 2d is equivalent to the no invariance Model 2a.

Convergent–Divergent Validity and the Simplex Pattern

In line with our construct validity strategy, we used the MTMM matrix of the 30-factor model to assess convergent and divergent validity and the simplex pattern of relations. The MTMM matrix is presented in Table 3. This matrix is divided into three components: (a) correlations in italics represent relations

Table 1
Fit Indices for the Models Tested

	χ^2	<i>df</i>	CFI	NNFI	RMSEA
Model 1—Total group CFA models					
1a. 30-factor model	5658.936	3255	.94	.93	.04
1b. 33-factor model	6395.519	3712	.94	.93	.04
Model 2—CFA gender group; invariance of the 30-factor model					
2a. No invariance	12019.924	6510	.90	.87	.04
2b. FL	12135.932	6570	.90	.87	.04
2c. FL + FV	12205.773	6600	.90	.87	.04
2d. FL + FV + FC	12820.389	7035	.89	.88	.04
Model 3—CFA teaching levels; group invariance of the 30-factor model					
3a. No invariance	12125.077	6510	.90	.88	.04
3b. FL	12202.929	6570	.90	.88	.04
3c. FL + FV	12252.868	6600	.90	.88	.04
3d. FL + FV + FC	12934.034	7035	.89	.88	.04
Model 4—CFA gender group; invariance of the 33-factor model					
2a. No invariance	14760.465	7422	.90	.88	.04
2b. FL	14879.097	7485	.90	.88	.04
2c. FL + FV	14949.811	7518	.90	.88	.04
2d. FL + FV + FC	15724.320	8046	.89	.88	.04
Model 5—CFA teaching levels; group invariance of the 33-factor model					
3a. No invariance	13854.068	7422	.90	.88	.04
3b. FL	13991.209	7485	.90	.88	.04
3c. FL + FV	14053.002	7518	.90	.88	.04
3d. FL + FV + FC	14869.703	8046	.89	.88	.04
Model 6-SEM model MIMIC					
All paths estimated	5942.324	3430	.94	.92	.04

Note. CFA = confirmatory factor analysis; CFI = comparative fit index; NNFI = non-normed fit index; RMSEA = root mean square error of approximation; FL = factor loadings; FV = factor variances; FC = factor covariances; SEM = structural equation modeling; MIMIC = multiple indicator multiple indicator cause.

among different types of motivation assessing different work tasks (divergent validity), (b) correlations in block represent relations among the same type of motivation assessing different work tasks (convergent validity), and (c) correlations in bold represent relations among different types of motivation assessing the same work tasks (simplex pattern).

Convergent and divergent validity. Based on an alternative approach of MTMM, two guidelines were proposed to evaluate both the convergent and the divergent validity of the WTMST: (a) Convergent validity is supported if correlations between

Table 2
Factor Loadings From the 30-Factor Confirmatory Factor Analysis Solution

Items	Class			Evaluation of Students Factors	Class		Complementary Tasks Factors
	Preparation Factors	Teaching Factors	Students Factors		Management Factors	Administrative Tasks Factors	
Intrinsic motivation							
Item 1	.88	.83	.92	.87	.90		.97
Item 2	.90	.85	.93	.92	.88		.94
Item 3	.85	.77	.86	.94	.90		.94
Identified regulation							
Item 1	.70	.73	.76	.74	.80		.82
Item 2	.77	.64	.81	.73	.78		.83
Item 3	.75	.77	.86	.84	.84		.86
Introjected regulation							
Item 1	.85	.81	.81	.69	.86		.88
Item 2	.83	.74	.85	.76	.83		.81
Item 3	.78	.70	.86	.79	.83		.87
External regulation							
Item 1	.59	.76	.77	.66	.71		.86
Item 2	.69	.64	.84	.72	.88		.92
Item 3	.51	.58	.62	.51	.60		.67
Amotivation							
Item 1	.69	.85	.82	.71	.73		.81
Item 2	.67	.77	.70	.67	.59		.71
Item 3	.74	.63	.72	.74	.77		.80

Table 3
Correlations Among Work Tasks Motivation Scale for Teachers Subscales From the 30-Factor
Confirmatory Factor Analysis Solution

Work Tasks	Class Preparation			Teaching			Evaluation of Students			Class Management			Administrative Tasks			Complementary Tasks					
	IM	ID	IJ	EX	AM	IM	ID	IJ	EX	AM	IM	ID	IJ	EX	AM	IM	ID	IJ	EX	AM	
Class preparation																					
IM																					
ID	.43																				
IJ	.01	.21																			
EX	-.14	.03	.52																		
AM	-.23	-.50	.15	.35																	
Teaching																					
IM	.31	.28	-.03	-.06	-.17																
ID	.10	.54	.11	-.00	-.26	.64															
IJ	.05	.12	.70	.45	.17	.00	.18														
EX	-.13	.10	.44	.71	.16	-.15	.06	.67													
AM	-.07	-.18	.13	.23	.52	-.36	-.36	.15	.24												
Evaluation of students																					
IM	.36	.21	.02	.04	-.13	.23	.19	.08	-.03	-.10											
ID	.13	.43	.08	.10	-.23	.17	.40	.13	.09	-.14	.64										
IJ	-.02	.07	.59	.35	.19	.00	.18	.69	.44	.16	-.14	-.03									
EX	-.14	-.02	.40	.62	.28	-.05	.08	.47	.71	.18	-.40	-.25	.67								
AM	.03	-.21	.07	.11	.42	-.10	-.21	.10	.09	.51	-.41	-.65	.28	.46							
Class management																					
IM	.28	.10	-.08	-.04	-.02	.18	.04	-.09	-.12	-.12	.40	.20	-.13	-.25	-.11						
ID	.16	.43	.02	-.09	-.26	.35	.52	.07	.01	-.27	.22	.40	.01	-.06	-.23	.40					
IJ	-.00	.01	.54	.33	.19	.00	.08	.63	.39	.18	.02	.02	.69	.46	.15	-.12	.08				
EX	-.11	-.01	.37	.55	.22	-.09	.01	.46	.66	.30	-.09	.03	.50	.69	.21	-.29	-.14	.55			
AM	-.06	-.22	.18	.24	.43	-.20	-.29	.16	.20	.44	-.07	-.21	.26	.30	.46	-.25	-.43	.32	.44		

(continued)

the same motivation variables in relation to different tasks (e.g., intrinsic motivation in relation to class preparation and teaching tasks) are positive and statistically significant, and (b) discriminant validity is supported if convergent correlations are higher than the correlations between different motivation variables involving different tasks (e.g., intrinsic motivation in relation to class preparation and amotivation in relation to teaching tasks). These tests of convergent and discriminant validity provide an evaluation of the extent to which motivation variables generalize over different teaching tasks. It is important to note that convergent coefficients are supposed to vary according to the position of the motivational components on the self-determination continuum. For example, convergent coefficients are supposed to be lower for intrinsic motivation than for identified regulation.

In accordance with those guidelines, correlational analyses provided support for the convergent and divergent validity of the scale. With regard to convergent validity, all 15 correlations were positive and significant for each type of motivation. More precisely, correlations among the tasks showed low positive interrelations for intrinsic motivation (.15 to .47; mean $r = .29$) and identified regulations (.21 to .54; mean $r = .37$) but moderate and positive interrelations for introjected regulation (.51 to .75; mean $r = .63$), external regulation (.27 to .71; mean $r = .55$), and amotivation (.33 to .64; mean $r = .44$). The present results supported the convergent validity of the WTMST. In line with Guay et al.'s (2005) hypothesis, these findings show that intrinsic and identified regulations are more differentiated across work tasks than are other types of motivation. These findings are more thoroughly discussed in the discussion section. With regard to divergent validity, results indicated that overall convergent correlations (mean $r = .46$) were higher than divergent correlations (mean $r = .14$).

Simplex pattern. Most correlations among the five subscales for each work task represent a simplex pattern of relations. That is, in line with the self-determination continuum, the overall pattern of interrelations among the subscales is made up of an ordered pattern where adjacent subscales are more positively correlated than those more distant from each other. For example, for the task involving "evaluation of students," intrinsic motivation positively correlated with identified regulation ($r = .64$), whereas it negatively correlated with introjected regulation ($r = -.14$), external regulation ($r = -.40$), and amotivation ($r = -.41$). However, we observed a minor deviation of the simplex pattern of amotivation, which is consistent across the six work tasks. Specifically, results indicated that amotivation is more highly correlated with identified regulation than with intrinsic motivation. To more stringently evaluate this simplex-like pattern, we used a procedure proposed by Ryan and Connell (1989). First, we assigned a value to the correlations according to how close the motivational components are to each other on the self-determination continuum. The following values were used for each type of correlation:

- r (intrinsic motivation, identified regulation) = 4
- r (intrinsic motivation, external regulation) = 3
- r (intrinsic motivation, introjected regulation) = 2
- r (intrinsic motivation, amotivation) = 1

r (identified regulation, introjected regulation) = 4

r (identified regulation, external regulation) = 3

r (identified regulation, amotivation) = 2

r (introjected, external regulation) = 4

r (introjected, amotivation) = 3

r (external regulation, amotivation) = 4

These values were assigned to the 60 within-tasks correlations presented in Table 3 (correlations in bold). We then computed the amount of variance accounted for by these values in the 60 correlations. This analysis revealed a congruency coefficient of .81, demonstrating that 65% of the variance in correlations of the simplex-like pattern is accounted for by the values. This value of the congruency coefficient is quite similar to the one observed in Ryan and Connell's (1989) study (i.e., .79). These results thus attested to the relative robustness of the simplex pattern proposed by SDT.

MIMIC Model of the Effect of Gender and Teaching Levels

A MIMIC (structural equation path) model was constructed in which the main effects of gender and teaching levels and Gender \times Teaching Levels interactions were related to each of the 30 factors outlined above. Fit indices for the MIMIC model are presented in Table 1 (see Model 6). Results of the MIMIC model revealed seven main effects for gender and five for teaching levels and four interaction effects. These results are summarized in Table 4. It is important to note, however, that most of the effects observed are small in magnitude. Significant main effects on a given variable that are qualified by interaction effects are not interpreted.

Gender differences. Results indicated that women presented higher levels of identified regulation than men toward class preparation and administrative tasks. In addition, women had lower levels of amotivation than men toward class preparation and administrative tasks. No gender effects were observed for introjected and external regulations for the six work tasks.

Teaching-level differences. Results indicated that elementary teachers present higher levels of amotivation toward class preparation than did high school teachers. However, high school teachers had higher levels of intrinsic and identified regulation than did elementary teachers toward complementary tasks but higher levels of external regulation toward class management. No teaching-level effects were observed on introjected regulation.

Interaction effects. Three of the four interactions encompassed the teaching task. Specifically, the results indicated that male elementary teachers had lower levels of intrinsic motivation toward teaching than did male high school teachers. However, no difference was observed for intrinsic motivation toward teaching between female elementary and high school teachers. With regard to identified regulation toward teaching, results indicated that male elementary teachers had lower levels than did

Table 4
Correlations Among Work Tasks Motivation Scale for Teachers Subscales, External Criteria, Gender, Teaching Levels, and Interaction Effects

Motivational Factors	Teachers' Self-Efficacy	Job Burnout	Controlling		Teaching Levels	Gender × Teaching Levels
			Style of School Principal	Gender		
Class preparation						
IM	.32**	-.22**	.10	.10	.07	-.13
ID	.38**	-.06	-.04	-.18*	-.03	.07
IJ	-.29**	.31**	-.06	-.09	-.01	.10
EX	-.20**	.20**	.06	.05	-.01	.07
AM	-.20**	.23**	-.01	.23*	-.14*	-.06
Teaching						
IM	.49**	-.43**	.10	-.28**	-.06	.24*
ID	.50**	-.20**	-.07	-.38**	-.13*	.30**
IJ	-.15**	.25**	.00	-.08	-.02	.10
EX	-.24**	.23**	-.01	.03	.03	-.09
AM	-.31**	.47**	.06	.34**	.03	-.26**
Evaluation of students						
IM	.18**	-.20**	.09	.05	.06	.01
ID	.25**	-.09	-.09	-.02	.06	.04
IJ	-.12*	.33**	.03	-.11	-.09	.12
EX	-.19**	.28**	.09	-.05	-.07	-.00
AM	-.20**	.27**	.13*	.15	-.05	-.13
Class management						
IM	.33**	-.30**	.12	.04	-.08	.02
ID	.41**	-.23**	.02	-.02	-.07	.02
IJ	-.21**	.32**	-.01	.11	.03	-.10
EX	-.30**	.42**	-.11*	.05	.12*	-.11
AM	-.37**	.51**	.08	.14	.04	-.12
Administrative tasks						
IM	.29**	-.30**	.02	-.10	-.01	.05
ID	.33**	-.30**	-.09	-.22**	.05	.09
IJ	-.21**	.32**	.08	-.11	-.02	.05
EX	-.21**	.30**	.15**	.16	-.04	-.15
AM	-.27**	.49**	.26**	.22*	-.01	-.12
Complementary tasks						
IM	.18**	-.26**	-.11*	-.05	.22**	.08
ID	.29**	-.27**	-.07	-.01	.23**	-.00
IJ	-.18**	.34**	.11*	.02	-.04	-.06
EX	-.23**	.37**	.28**	.17*	-.03	-.20*
AM	-.18**	.48**	.33**	.17	-.06	-.14

Note. IM = intrinsic motivation; ID = identified regulation; IJ = introjected regulation; EX = external regulation; AM = amotivation.

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

male high school teachers. In contrast, female elementary teachers presented higher levels of identified regulation toward teaching than did female high school teachers. With regard to amotivation toward teaching, results indicated that female elementary teachers had lower levels than did female high school teachers. However, no difference was observed between male elementary and high school teachers. Finally, the fourth interaction effect implied external regulation toward complementary tasks. More precisely, results indicated that male elementary teachers had higher levels of external regulation than did male high school teachers. However, no difference was observed between female elementary and high school teachers.

Construct Validation Based on External Validity Criteria

Factorial structure. To find more evidence for the construct validity of the scale, we tested a second model in which the latent factors of teachers' perceptions of efficacy and job burnout and leadership style of the school principal were added to the 30-factor solution, leading to a 33-factor model. According to Marsh et al. (2006), the incorporation of external criteria validity provides an effective approach to construct validation. As with the 30-factor model, this model provided satisfactory fit indices (see Table 1; see Model 1b). The correlations are presented in Table 4. Results revealed that most of the WTMST subscales were associated with teachers' self-efficacy and job burnout, which supported the self-determination continuum. More precisely, for each task, most intrinsic motivation and identified regulation correlated positively with teachers' perceptions of efficacy but negatively with burnout. In contrast, introjected regulation, external regulation, and amotivation were negatively associated with teachers' perceptions of efficacy and positively associated with job burnout. However, regarding the perception of the controlling style of the school administration, with the exception of complementary tasks, the correlations were mostly nonsignificant for all the work tasks. This specific pattern of relations is not surprising and may be explained by the fact that complementary tasks are imposed by the school principal whereas the other tasks are determined by the teachers themselves. These results provide additional support for assessing motivation toward specific work tasks.

Invariance of the factorial structure. We decided to conduct a test of invariance of the 33-factor structure over gender and teaching levels. We tested four invariance models to evaluate the invariance of the factor loadings, factor variances, and factor correlations. Results are presented in Table 1 (see results under Model 4 and Model 5). Again, results provided good support for the invariance of the 33-factor structure across gender and teaching levels because the fit indices did not substantially decrease as stringent equality constraints were imposed. This test thus provides additional support for the robustness of construct validity over gender and teaching levels.

DISCUSSION

The WTMST was designed to assess the constructs of intrinsic motivation, identified, introjected, and external regulations, and amotivation toward six work tasks (i.e., class preparation, teaching, evaluation of students, class management, administrative tasks, and complementary tasks). Results provide good support for the psychometric properties of the WTMST. Indeed, (a) internal consistency values of WTMST subscales are satisfactory; (b) results from CFA analyses reveal that the WTMST has a 30-factor structure that is invariant over gender and teaching levels; (c) correlations among the motivation subscales form a simplex-like pattern of relations; (d) convergent correlations are mostly higher than divergent ones, thereby supporting the construct validity of the scale (this pattern of correlations is also invariant over gender and teaching levels); and (e) correlations among the motivational factors and teachers' perceptions of self-efficacy, job burnout, and controlling style of school principal yield a pattern of results in line with the self-determination continuum. The present findings suggest a number of methodological and theoretical implications and directions for future research. These are detailed below, along with the limitations of the present research.

Theoretical Implications

The present research makes a number of theoretical contributions. First, it underscores the multidimensional nature of teachers' motivation. Indeed, within each work task, it is possible to assess intrinsic motivation, extrinsic motivation (identified, introjected, and external regulations), and amotivation. More important, within each work task, we observe a pattern of correlations among motivational components that is consistent with the self-determination continuum. Specifically, our congruency index indicates that the self-determination continuum explains more than 60% of the variance in the observed correlations. These results are in line with other scale development studies (for a review, see Vallerand, 1997) and support SDT motivational typology (Deci & Ryan, 1985).

Second, the present research shows that some components of teachers' motivation toward multiple tasks could be assessed. Indeed, in line with Guay et al.'s (2005) differentiation hypothesis, results of the present study show that self-determined types of motivation (i.e., intrinsic and identified regulations) are more domain specific than external regulation, introjected regulation, and amotivation (though amotivation was less stable than external and introjected regulations). Taken together, these results suggest that it is paramount to evaluate intrinsic motivation and identified regulation toward specific work tasks. However, it appears that external and introjected regulations and amotivation are not very specific and could tend to collapse across work tasks. We therefore suggest that external and introjected regulations are probably less differentiated because they could be more influenced by the social context or by the person's characteristics. For example, teachers who put pressure on themselves to perform in a given task may have

difficulty engaging in another task without any self-induced pressure or external demands. Thus, the level of external or internal pressure could be the same across tasks. All these tasks may thus represent a unique opportunity for people to feel worthy (Ryan, 1982).

In sum, the assessment of motivation at the multitask level opens an important door to a deeper understanding of teachers' motivational processes. In fact, some teachers' motivational components do not seem to be limited to unifacted and stable representations such as a global contextualized motivational orientation but rather represent important dynamic entities that may be operative and responsive to particular tasks. Such an assessment should more adequately reflect the organismic process posited by SDT and provides insight into the way in which individuals integrate the different aspects of their work into their self. Further work is needed to better understand the interplay between motivation and work tasks and to determine how the fluctuations in motivation at the multitask level facilitate or impede teachers' psychological adjustment.

A third implication concerns the relations among the WTMST subscales and external validity criteria (e.g., teachers' self-efficacy). In line with the SDT continuum, results of the present study show that work task motivations differently relate to these criteria. For example, for the various tasks, intrinsic motivation negatively correlated with job burnout, whereas amotivation positively correlated with it. Moreover, it seems that types of motivation within each task are not correlated to the same extent with particular criteria. For example, the strength of the correlations between intrinsic motivation for each work task and teachers' self-efficacy varies from .18 to .49. These correlations suggest that the perception of teachers' efficacy depends more on intrinsic motivation toward teaching ($r = .49$) than on intrinsic motivation toward complementary tasks ($r = .18$). In addition, the only significant correlations between teachers' motivational components toward complementary tasks and perception of the leadership style of the school principal provide further evidence of the importance of assessing motivation toward specific tasks. Research on motivation usually suggests that managerial control has dramatic effects on work motivation (Deci, Connell, & Ryan, 1989). The present study suggests that these adverse effects could be limited to particular tasks over which the school principal exerts more influence. However, the present study is limited to a small number of criteria variables. Future research should seek to verify if teachers' task motivation predicts their other behaviors (e.g., behavioral, physical, and cognitive) that are specific to each work task.

A fourth implication concerns the main and interaction effects of gender and teaching levels on teachers' motivation toward work tasks. Results from the MIMIC model reveal some main and interaction effects. It seems well established that in different life contexts women report greater levels of self-determined motivation than do men (Vallerand, 1997). The present results suggest that those differences may be true only for specific work tasks. For example, results indicate that women presented higher levels of identified regulation than did men for class preparation and administrative tasks, but no significant differences were observed on other work

tasks. In addition, interaction effects between gender and teaching, especially for the teaching task, suggest that male elementary teachers present lower levels of identified regulation than do male high school teachers, whereas female elementary teachers have higher levels of identified regulation toward teaching than do female high school teachers. Future research on teachers' motivation should further our understanding of the reasons for such differences. However, it is important to note that most effects of gender and teaching levels (and their interaction) are small in magnitude.

Scale Utilization

The WTMST presents some challenges for researchers who want to study teachers' motivation from a multidimensional and multitask perspective. Indeed, the scale is made up of 90 items. In an ideal world, researchers would have sufficient time and resources to use the full version of the scale. Unfortunately, circumstances are often not ideal, and researchers interested in studying teachers' motivation may be tempted to use a global measure of motivation rather than our scale to reduce the time required for its administration. However, it is important to note that our scale is designed to be versatile. Depending on the research questions, researchers and practitioners can consider multiple dimensions of teachers' motivation that are particularly relevant to the concerns of their inquiries. Researchers may use, for example, two teachers' tasks instead of using the full version. This specific selection of tasks would imply the use of only 30 items in the survey, thereby considerably reducing the amount of items but respecting the content specificity of the scale.

Limitations

Although the present results provided strong support for the psychometric properties of the WTMST, certain limitations should be taken into account when interpreting these results. First, only a small number of variables were used to assess the construct validity of the WTMST. Considering that the WTMST is a specific measure of teacher motivation, to provide additional support of the construct validity, specific criteria with respect to each task should be investigated in future studies. Second, only self-reported measures were used to assess the psychometric properties of the WTMST, which could give rise to the common problem of shared method variance. Future research could test the construct validity with objective measures. Third, the design of the present research was cross-sectional. To conduct a more stringent test of the validity of the WTMST, future research should include multiwave data.

In sum, because the WTMST assesses motivation in a multidimensional manner while considering the content domain specificity of work tasks, it may prove to be quite useful in furthering our knowledge of teacher motivational processes and psychological functioning at work. Research along these lines appears promising to better understand why teachers, more than any other professionals, suffer from a lack of work motivation.

APPENDIX

The 15 Items Assessing the Motivational Constructs for Each Task

Intrinsic Motivation

- Because it is pleasant to carry out this task.
- Because I find this task interesting to do.
- Because I like doing this task.

Identified Regulation

- Because it is important for me to carry out this task.
- Because this task allows me to attain work objectives that I consider important.
- Because I find this task important for the academic success of my students.

Introjected Regulation

- Because if I don't carry out this task, I will feel bad.
- Because I would feel guilty not doing it.
- To not feel bad if I don't do it.

External Regulation

- Because my work demands it.
- Because the school obliges me to do it.
- Because I'm paid to do it.

Amotivation

- I don't know, I don't always see the relevance of carrying out this task.
- I used to know why I was doing this task, but I don't see the reason anymore.
- I don't know, sometimes I don't see its purpose.

Note. For the purpose of this article, we followed the back-translation procedure described by Vallerand and Halliwell (1983) to translate the original French Canadian items into English.

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