THE MOTIVATION AT WORK SCALE: VALIDATION IN TWO LANGUAGES

The Motivation at Work Scale was developed according to self-determination theory. We examined the structure of the MAWS in English and French. Results suggested that the structure of motivation at work across languages is consistently organized in four different types: intrinsic motivation, identification, introjection and external regulation.

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The MAWS subscales were predictably associated with organizational behavior constructs.

Despite the fact that work motivation is one of the major topics in organizational behavior, not many work motivation surveys exist (exceptions count VandeWalle et al., and Amabile et al.). We developed and validated the Motivation at Work Scale based on the framework of self-determination theory (Deci & Ryan, 1985a, 2000). SDT offers a multidimensional conceptualization of motivation that allows the assessment of level of motivation and type of motivation. Combining all fields of psychology, SDT has yielded over 400 empirical publications since the early 1980’s. It is a dominant theory of motivation in social, education, and sport psychology. In these fields, validated measures of motivation already exist (Grolnick & Ryan, 1987; Guay, Vallerand, & Blanchard, 2000; Pelletier et al., 1995; Ryan & Connell, 1989; Vallerand, Blais, Brière, & Pelletier, 1989; Vallerand et al., 1992), but we do not have a reliable, valid, and practical measure of work motivation that follows the tradition of SDT in the field of organizational behavior. Blais, Brière, Lachance, Riddle, and Vallerand (1993) published the validation of a French measure of work motivation that was grounded in SDT but there have been reliability problems with some of the subscales as well as face validity problems with some of the items (Gagné, Bérubé, Donia, Houlfort, & Koestner, 2007; Gagné, Boies, Koestner, & Martens, 2004; Gagné, Boies, Koestner, & Martens, 2005). For example, an intrinsic motivation item in the Blais et al. scale is “Because of the pleasurable experience of learning new things at this job”. It is difficult to know if this should represent identified or intrinsic motivation. In addition, it is a long 31-item scale, and has not been validated in English. Following the SDT tradition (Grolnick & Ryan, 1987; Guay et al., 2000; Pelletier et al., 1995; Ryan & Connell, 1989; Vallerand et al., 1989; Vallerand et al., 1992), we created the Motivation at Work Scale in two different languages, assessed its structure using confirmatory factor analysis with invariance tests, and examined its links to antecedents and outcomes that are relevant to organizational behavior (Gagné & Deci, 2005).

The Continuum of Motivation

SDT proposes two overarching types of motivation, intrinsic and extrinsic. Intrinsic motivation is defined as doing something for its own sake, because it is interesting and enjoyable. Extrinsic motivation is defined as doing something for instrumental reasons. These instrumental reasons can differ, depending on how internalized the motivation is. Internalization refers to taking in a regulation that was initially regulated by external factors, such as rewards or punishments, so that it becomes internally regulated. Internalization can vary in terms of how well it is assimilated with a person’s existing self-regulations, such as values and interests that this person already holds. The degree to which a regulation is internalized gives rise to different types of regulations or motivations, so that extrinsic motivation can be completely externally regulated, or can be partially or fully internally regulated.
At the low end lies external regulation, which refers to doing an activity in order to obtain rewards or to avoid punishments. Behavior so regulated is therefore completely non-internalized. Next, introjected regulation refers to the regulation of behavior through self-worth contingencies like ego-involvement and guilt. It involves taking in a regulation so that it becomes internally pressuring, and thus involves only partial internalization that remains controlling, not volitional. Introjected people engage in a behavior or commit to an activity out of guilt or compulsion, or to maintain their self-worth (Koestner & Losier, 2002). Next, identified regulation refers to doing an activity because one identifies with its value or meaning, and accepts it as one’s own, which means that it is autonomously regulated. Identified people engage in a behavior or commit to an activity based on its perceived meaning or its relation to personal goals (Koestner & Losier, 2002). Finally, integrated regulation refers to identifying with the value of an activity to the point that it becomes part of a person’s habitual functioning and part of the person’s sense of self. This is the form of extrinsic motivation that is most autonomous and internalized. Thus, we would say that a nurse is identified if she fully endorses bathing a patient for the health of the patient even though it may not be an enjoyable task (thus not intrinsically motivated), but the motivation would be integrated if the nurse goes further to say that her job is a “vocation”. Integration and identification differ from intrinsic motivation in that the activity is done not so much for its own sake (because it is interesting and fun), but for the instrumental value it represents. Identification and integration are driven by values and goals, whereas intrinsic motivation is driven by emotions that emerge while engaging in the activity.

Research in different domains, such as education (Williams & Deci, 1996), sports (Vallerand & Fortier, 1998), work (Blais, Brière, Lachance, Riddle, & Vallerand, 1993), and health care (Williams, Grow, Freedman, Ryan, & Deci, 1996), has supported that the types of motivation form a simplex-like pattern (Guttman, 1954) that represents variation in the underlying degree of internalization, which means that each subscale correlates most positively with the subscales closest to it (e.g., intrinsic and identified regulation) and less positively or more negatively with subscales farther from it (e.g., intrinsic and external regulation). However, even if they are on one continuum, research has repeatedly shown that there is a clear break in the consequences of each type of motivation. If we break the continuum down the middle, we can recategorize the types of motivation such that external regulation and introjection represent controlled motivation, and identification, integration and intrinsic motivation represent autonomous motivation. Depending on the research question of interest, we can sometimes use these aggregates, and sometimes use the discrete types of motivation. Koestner and Losier (2003) has shown that we can find different behavioral and attitudinal differences between introjection, identification and intrinsic motivation in certain domains, like environmental behavior (Pelletier) and political behavior (Koestner et al.).
Measuring the Continuum of Motivation

Intrinsic motivation and each type of extrinsic motivation are reflected in different reasons for behaving, and these reasons provide a means for assessing the types of motivation (Ryan & Connell, 1989). Incumbents rate various reasons for doing a particular behavior or activity that reflect intrinsic motivation or one of the types of extrinsic motivation in terms of how true they are for them. Motivation can be assessed at different levels of analysis. Vallerand (1997) suggested that motivation can be measured at the life or global level, at the domain level (e.g., work, education, leisure), and at the state level (e.g., specific task, specific period of time). The MAWS assesses work motivation at the domain level, but other scales exist to measure, for example, teachers work motivation for specific job tasks (Fernet, Senécal, Guay, Marsh, & Dowson, in press).

Creation of the Motivation at Work Scale

We created items to measure different work-related behavioral regulations that represent the range of the continuum of motivation to do a particular job. We chose to focus on specific types of motivation that we thought were most useful to assess in the work domain. We did not include a motivation (i.e., lack of any type of motivation) items because we wanted the MAWS to focus on measuring the type of active motivation in organizational employees. We also did not include integration items as it is typically very difficult to psychometrically distinguish integration from identification (Vallerand et al., 1992). We therefore created 5 items for each of the following subscales: external regulation, introjection, identification, and intrinsic motivation. Six of the items were taken from the Blais et al. (1993) scale, but some of the wording was simplified, and they were translated into English. The rest were created simultaneously in French and English.

Testing the MAWS

We administered the MAWS along with other scales described below to various samples of French and English speaking Canadian workers. We conducted confirmatory factor analyses to trim down the MAWS to 12 items and test its invariance across the two languages.

To test the validity of the MAWS, we examined relations between the MAWS and known antecedents and consequences of motivation. SDT suggests that intrinsic motivation and the internalization of extrinsic motivation are determined by the degree to which people can satisfy three basic psychological needs for autonomy, competence and relatedness in the environment in which the
activity takes place. The satisfaction of these needs can be affected by environmental pressures, such as deadlines, surveillance and contingent rewards (Amabile, DeJong, & Lepper, 1976; Deci, Koestner, & Ryan, 1999; Fernet et al., in press; Lepper & Greene, 1975). It can also be affected by interpersonally controlling or supportive behavior of an authority figure, such as a teacher or a manager (Deci et al., 2001; Koestner, Ryan, Bernieri, & Holt, 1984; Lepper & Greene, 1975). Finally, it can be affected by the design of tasks and jobs (Gagné, Sénécal, & Koestner, 1997). To test some of these premises, we included a measure of need satisfaction in one of the samples, expecting that need satisfaction would be positively related to intrinsic motivation and identified regulation, and negatively related to introjected and external regulation. We also used a highly used measure of perceived organizational support (Eisenberger, Huntington, Hutchison, & Sowa, 1986), expecting that it would be positively related to autonomous motivation and unrelated to controlled motivation. SDT also proposes that certain individual differences or dispositions can influence the type of motivation adopted, such as causality orientations (Deci & Ryan, 1985b). We did not test causality orientations, because the scale has low psychometric properties, but instead examined links between work motivation and optimism, a stable disposition that we think can influence the degree of internalization of an activity; Deci and Ryan (1985b) found that an autonomous causality orientation, which is associated with more internalized motivation towards activities, was positively associated with self-esteem and negatively with self-derogation.

We also examined links between the different types of motivation and some of the outcomes that have been studied in other validations of similar SDT-based scales, as well as some organizationally relevant outcomes: job satisfaction, organizational commitment, turnover intentions, well-being, and psychological distress. Again, we expected that intrinsic and identified motivation would be positively correlated to positive outcomes (i.e., job satisfaction, affective commitment, and well-being), and negatively to negative outcomes (i.e., turnover intentions and psychological distress), and that the opposite pattern would be found with external and introjected regulation. The magnitude of these correlations should be aligned with their degree of internalization (e.g., positive correlation with intrinsic motivation should be slightly stronger than with identified motivation). Finally, we compared the motivation scores of employees in different types of jobs to see if we could find motivation differences based on the type of work they do. Workers in jobs that typically have low autonomy or low decision making power, poor relationships or low competence would be expected to score higher on controlled motivation and lower on autonomous motivation.

Method

Participants
Data were collected from convenience samples of Canadian workers in different industries, in two different languages.

**English version.** We contacted 2795 pilots from a commercial airline company by email through their union to complete a web-survey that included the MAWS, a short 8-item version of the perceived organizational support scale (Eisenberger et al., 1986), $\alpha = .86$, and the 5-item satisfaction with work scale (Gagné et al., 2007), $\alpha = .71$. Eight hundred eighty-one pilots completed the survey (32% response rate), out of which 98% were men with an average age of 52 years.

Fifty-five middle managers out of 66 that were contacted in four different ground transportation companies also completed the MAWS, 69% of which were men with an average age of 43.91 years and 3.5 years of tenure in the company. Finally, 130 undergraduate commerce students who worked part-time (86%) or full-time completed a web-survey that comprised the MAWS as well as a measure of work satisfaction (Gagné et al., 2007) in exchange for extra credit. Fifty-three percent were men with an average age of 22 years.

**French version.** Twenty-three advanced undergraduate students distributed paper surveys to 285 French Canadian workers who were categorized to work in one of five sectors: Education, management/professional, sales, health, and secretarial work. The survey included the MAWS, measures of the satisfaction of the needs for autonomy ($\alpha = .87$), competence ($\alpha = .70$), and relatedness ($\alpha = .79$), total $\alpha = .84$ ((Morin, 2003), as well as a measure of optimism ($\alpha = .72$; (Scheier, Carver, & Bridges, 1994; Trotter, 1999). Sixty-three percent were men with an average age of 39 years and 7.5 years of tenure at their work. Two-hundred forty-nine correctional officers and conditional liberation officers working at a maximum security Canadian prison (out of 398 workers) completed a paper survey comprising the MAWS, affective ($\alpha = .83$), normative($\alpha = .73$), and continuance ($\alpha = .89$) organizational commitment (Allen & Meyer, 1996), turnover intentions (created for this survey; “It is highly probable that I will leave this job”, “I will very likely look for a new job this year”, $r = .62$, $p < .001$), and workplace well-being (23 items, $\alpha = .97$), psychological distress (25 items, $\alpha = .98$), and self-reported physical health (5 items, $\alpha = .87$) from Massé et al. (1998). Sixty-three percent were men with an average age of 42.43 years and 11.5 years of tenure in the organization.

**Statistical Analysis Strategy**
We conducted confirmatory factor analysis on each of the samples to eliminate items that had a poor loading on their own factor and cross-loadings (based on Lagrange Multiplier tests). We eliminated 2 items per subscale to bring the MAWS down to 3 items per factor to make it parsimonious (from 20 to 12 items) while maintaining its reliability, stability and interpretability (Tabachnik & Fidell, 2006). Once 12 items were selected, we proceeded to test the factorial invariance of the MAWS across the two languages. To test the factorial invariance of a measuring instrument implies testing different models that becomes more stringent each time (Byrne, 2006; Cheung & Rensvold, 1999, 2002; Steenkamp & Baumgartner, 1998; Vandenbergh & Lance, 2000). We tested whether the item loadings, and then whether the factor structure (i.e., correlations between latent factors) were invariant across languages. We did not test whether the latent factor means were invariant across languages because we consider it normal for means to vary within and across groups, as variation would depend on job type, managerial styles, and other such factors.

To assess the fit of the models, goodness-of-fit indices were used in combination with the Satorra-Bentler $\chi^2$ statistic. We used the comparative fit index (CFI) (Bentler, 1990), the root mean square error of approximation (RMSEA) (Steiger, 1990), and the RMSEA 90% confidence interval (Cheung & Rensvold, 2002). Values between 0.90 and 0.94 for the CFI indicate adequate fit, whereas values of 0.95 and higher indicate excellent fit. Values smaller than 0.10 for the RMSEA indicate acceptable fit, values smaller than 0.08 indicates good fit, and values lower than 0.05 indicate excellent fit. RMSEA 90% confidence interval (CI) was also used to assess hypotheses of very close fit (RMSEA < 0.05) and no fit (RMSEA > 0.10; (McCallum, Browne, & Sugawara, 1996).

We then examined the validity of the MAWS by examining correlations between the motivation subscales with antecedents and outcomes. We also tested for differences in motivation orientation between groups of workers that would be expected to differ based on the type of work they do and their hierarchical level.

Results

Factorial Structure

The factorial structure of the MAWS was assessed through CFA. For each of the two languages, an initial model with four factors was postulated. These factors correspond to the four subscales and were made up of the three corresponding items for each subscale. No cross-loadings were hypothesized
and the covariance between the intrinsic motivation latent factor and the external regulation latent factor was not included in the analyses since SDT postulates through the simplex-like pattern that their correlation should be close to zero or non-significant. The fit of this initial model was within acceptable range, S-Bχ² (49) = 450.43, p < .001, CFI = .920, RMSEA = .086 and 90% CI .079, .093 in English and S-Bχ² (49) =166.56, p < .001, CFI = .963, RMSEA = .067 and 90% CI .056, .079 in French (see Table 1). We chose this model to be the baseline model for invariance analyses (Byrne, 2006).

### Table 1

Fit Statistics for the Motivation at Work Scale for each Language Separately, Languages combined, and for Invariance Tests

<table>
<thead>
<tr>
<th>Model</th>
<th>N</th>
<th>S-Bχ²</th>
<th>df</th>
<th>CFI</th>
<th>RMSEA</th>
<th>RMSEA 90% CI</th>
<th>Model comparison</th>
<th>Δ S-Bχ²</th>
<th>Δ df</th>
<th>Δ CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>English only</td>
<td>1115</td>
<td>450.43</td>
<td>49</td>
<td>.920</td>
<td>.086</td>
<td>.079, .093</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French only</td>
<td>529</td>
<td>166.56</td>
<td>49</td>
<td>.963</td>
<td>.067</td>
<td>.056, .079</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline model – Two languages combined</td>
<td>1644</td>
<td>803.92</td>
<td>98</td>
<td>.910</td>
<td>.094</td>
<td>.088, .100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement model invariant (factor loadings)</td>
<td>1644</td>
<td>840.74</td>
<td>106</td>
<td>.906</td>
<td>.092</td>
<td>.086, .098</td>
<td>Baseline vs. Measurement</td>
<td>36.82</td>
<td>8</td>
<td>-.004</td>
</tr>
<tr>
<td>Structural model invariant (factor covariances and factor loadings)</td>
<td>1644</td>
<td>1032.35</td>
<td>111</td>
<td>.882</td>
<td>.101</td>
<td>.095, .106</td>
<td>Measurement vs. Structural</td>
<td>191.61</td>
<td>5</td>
<td>-.024</td>
</tr>
<tr>
<td>Structural model invariant (all except covariance between intrinsic and identified regulation)</td>
<td>1644</td>
<td>916.35</td>
<td>110</td>
<td>.897</td>
<td>.094</td>
<td>.089, .100</td>
<td>Structural vs. Structural - 1</td>
<td>-115.99</td>
<td>1</td>
<td>.015</td>
</tr>
</tbody>
</table>

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Invariance Analyses

When using data from both languages to test the baseline model, the model fit the data acceptably well, S-Bχ² (98) = 803.92, p < .001, CFI = .910; RMSEA = .094; 90% CI = .088, .100. We tested the factorial invariance of the MAWS using the procedure outlined in Byrne (2006). After testing a baseline model, the second step is to verify if the measurement model (factor loadings) is group-invariant (i.e., language-invariant) while the third step entails examining if the structural model (correlations between latent factors) is also language-invariant (Byrne, 2006). By constraining the factor loadings to be equal across the English- and French-speaking samples, the model still fit the data well, S-Bχ² (106) = 840.74, p < .001, CFI = .906; RMSEA = .092; 90% CI = .086, .098, albeit with a negligible deterioration in model fit, ΔS-Bχ² (8) = 36.82, p < .001, ΔCFI = .004.

The final step entails the verification of the structural model invariance where all factor loadings as well as correlations between the latent factors are constrained to be equal across languages (apart from the correlation between intrinsic motivation and external regulation, which was already constrained at 0). This final invariant structural model had slightly lower fit indices than the previous model, S-Bχ² (111) = 1032.35, p < .001, CFI = .882; RMSEA = .101; 90% CI = .095, .106, with a significant deterioration in fit, = 191.61, p < .001; ΔCFI = .024.

It is not often the case that models succeed in going through all invariance tests and that is why Byrne (2006) suggests testing partial-measurement invariance where only specific parts of the model are verified. In this logic, she suggests identifying correlations between latent factors that are not invariant across groups. In the two samples, investigation of model misspecification with the maximum likelihood Lagrange Multiplier (LM) test for releasing constraints revealed that one constraint did not behave the same way in the two samples (i.e., intrinsic motivation with identified regulation). By releasing this constraint, the overall fit was better and closer to the generally recognized boundary with S-Bχ² (110) = 916.35, p < .001, CFI = .897, RMSEA = .094, and 90% CI .089, .100. But the improvement in fit over the previous fully constrained model was greater than the recommended cut-off, ΔS-Bχ² (1) = 115.99, p < .001, ΔCFI = .015. For this reason we decided to keep this model as our final one.

As can be seen in Figure 1 (which presents non-standardized results, for simplicity), the Motivation at Work Scale is best represented through four latent factors representing intrinsic motivation, identified regulation, introjected regulation and external regulation. Standardized factor loadings ranged from .61 to .95 across the two languages. This structure was invariant across English and French versions. However, one correlation differed across the two samples. While the correlation (standardized) between identified regulation and intrinsic motivation was .83 in English, it was .55 in

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6 A significant deterioration in fit would imply a ΔCFI larger that .01 (Cheung & Rensvold, 2002).
French. Both of these correlations are still considered moderate to high, and concur with the simplex-like pattern postulated in the theory.

Reliabilities and Simplex Pattern

Using SPSS, overall Cronbach alphas were calculated for each subscale using the entire sample (English and French) and values were .75 (External), .77 (Introjected), .84 (Identified) and .91 (Intrinsic) respectively. Standardized correlations between the latent factors in English were .14 between external and introjected regulation, .62 between introjected and identified regulation, .55 between identification and intrinsic motivation, .21 between external and identified regulation, and .37 between introjection and intrinsic motivation. Correlations in French were .12 between external and introjected regulation, .37 between introjected and identified regulation, .83 between identification and intrinsic motivation, .15 between external and identified regulation, and .21 between introjection and intrinsic motivation.

Convergent and Discriminant Validity

Correlations with hypothesized antecedents and outcomes are presented in Table 2. Autonomous types of motivation were related more strongly with reports of the satisfaction of the needs for autonomy, competence and relatedness than controlled types of motivation. Autonomous motivation was also more strongly related to perceived organizational support and optimism than controlled motivation. Autonomous motivation was also more strongly and positively related to job satisfaction, well-being, and self-reported health than controlled motivation. It was also more strongly and negatively related to turnover intentions and psychological distress. In line with Meyer, Becker and Vandenberghe (2004) affective commitment was positively related to autonomous motivation, and continuance commitment was positively related to controlled motivation. Normative commitment was positively related to both autonomous motivation and introjected regulation.
Mean Differences on the MAWS

We compared the 285 French workers from the 5 different sectors of employment on mean subscale scores on the MAWS, similar to what Blais et al. (1993) did in their validation study. Based on the assumption that some types of work may have lower propensity to satisfy basic psychological needs (i.e., some jobs typically involve lower levels of autonomy or decision making power, are likely to involve comparatively poorer relationships with managers and peers (e.g., competitive atmosphere in sales) and require lower levels of education), we hypothesized that some types of jobs will breed lower levels of autonomous motivation, and higher levels of controlled motivation. We dummy coded different
job types in the following ascending order of their hypothesized potential to foster autonomous motivation: (1) sales, (2) secretarial work, (3) education, (4) health, and (5) management and professional work. ANOVA tests were conducted on each subscale of the MAWS (see Table 3 for means). The ANOVA was not significant for external regulation. It was marginally significant for introjection, \( F(4, 201) = 2.26, p < .10 \). Contrary to our hypothesis, Tukey tests revealed that health employees scored lower on introjection than managers and professionals. The ANOVA was significant for identification, \( F(4, 205) = 13.67, p < .001 \). Supporting our hypothesis, Tukey tests revealed that sales workers scored lower on identification than all other workers, and that secretarial workers scored lower than managers and professionals. The ANOVA on intrinsic motivation was also significant, \( F(4, 208) = 5.09, p < .001 \). Supporting our hypothesis, Tukey tests revealed that sales and secretarial workers scored lower on intrinsic motivation than education workers, managers and professionals.

Table 2

<table>
<thead>
<tr>
<th>Relations with Hypothesized Antecedents and Consequences of Forms of Motivation (Correlations)</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td>External regulation</td>
</tr>
<tr>
<td>Need for autonomy</td>
</tr>
<tr>
<td>Need for competence</td>
</tr>
<tr>
<td>Need for relatedness</td>
</tr>
<tr>
<td>Need satisfaction total (285 varied workers)</td>
</tr>
<tr>
<td>Perceived organizational support (881 pilots)</td>
</tr>
<tr>
<td>Optimism (285 workers)</td>
</tr>
<tr>
<td>Job satisfaction (881 pilots)</td>
</tr>
<tr>
<td>(130 students)</td>
</tr>
<tr>
<td>Turnover intentions (249 CO’s)</td>
</tr>
<tr>
<td>Affective OC (249 CO’s)</td>
</tr>
<tr>
<td>Normative OC (249 CO’s)</td>
</tr>
<tr>
<td>Continuance OC 249 CO’s</td>
</tr>
<tr>
<td>Well-being (249 CO’s)</td>
</tr>
<tr>
<td>Psychological distress (249 CO’s)</td>
</tr>
<tr>
<td>Self-reported physical health (249 CO’s)</td>
</tr>
</tbody>
</table>

Note: CO = correctional officer, OC = organizational commitment.

* \( p < .05 \), ** \( p < .01 \), *** \( p < .001 \)
To test whether need satisfaction could explain motivation differences across these job sectors, we coded the employment sectors (sales = 1, secretarial = 2, education = 3, health = 4, management = 5) and entered this new variable in the first step of a regression on each type of motivation. We entered an aggregate of the three needs in a second step. This new job variable, although it did not account for much variance in need satisfaction, was still a significant predictor, $\beta = .17, \ p < .01, R^2 = .03$. The job variable significantly predicted intrinsic motivation, $\beta = .19, \ p < .01, R^2 = .03$, and this relation went down slightly when adding need satisfaction as a mediator, $\beta = .10, \ p < .10$, and need satisfaction was also significant, $\beta = .48, \ p < .001, R^2 = .22$, Sobel = 2.85, $p < .01$. The job variable also significantly predicted identified regulation, $\beta = .39, \ p < .001, R^2 = .15$, and this relation went down slightly when adding need satisfaction as a mediator, $\beta = .31, \ p < .001$, and need satisfaction was significant $\beta = .44, \ p < .001, R^2 = .19$, Sobel = 2.84, $p < .01$. The job variable did not predict either introjected or external regulation. Thus we found evidence of mediation of need satisfaction to account for relations between job sectors and autonomous motivation.

### Table 3

**Mean Differences between Work Sectors**

<table>
<thead>
<tr>
<th></th>
<th>External regulation</th>
<th>Introjected regulation</th>
<th>Identified regulation</th>
<th>Intrinsic motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales (n = 74)</td>
<td>2.53$^a$</td>
<td>1.92$^a$</td>
<td>2.17$^a$</td>
<td>2.83$^a$</td>
</tr>
<tr>
<td>Secretarial (n = 66)</td>
<td>2.61$^a$</td>
<td>2.10$^{ab}$</td>
<td>2.68$^b$</td>
<td>2.75$^a$</td>
</tr>
<tr>
<td>Education (n = 36)</td>
<td>2.26$^a$</td>
<td>2.09$^{ab}$</td>
<td>2.95$^{bc}$</td>
<td>3.31$^b$</td>
</tr>
<tr>
<td>Health (n = 23)</td>
<td>2.72$^a$</td>
<td>1.79$^{ab}$</td>
<td>3.04$^{bc}$</td>
<td>2.94$^{ab}$</td>
</tr>
<tr>
<td>Management/professional (n = 14)</td>
<td>2.69$^a$</td>
<td>2.48$^b$</td>
<td>3.29$^c$</td>
<td>3.45$^b$</td>
</tr>
</tbody>
</table>

*Note: Different superscripts within a column denote a significant difference in means.*

### Discussion

We developed the Motivation at Work Scale and tested its factorial structure and validity in two languages, French and English. Confirmatory factor analysis showed a sound factorial structure of the
MAWS, similar to the one found with other scales using the self-determination theory continuum. Further invariance tests showed that the MAWS items are interpreted in very similar ways in French and English.

The MAWS was related in expected directions with other constructs that are relevant to the domain of organizational behavior. Autonomous motivation was related to hypothesized antecedents, such as the satisfaction of the psychological needs for competence, relatedness and autonomy as well as with perceived organizational support and optimism. Controlled motivation was unrelated to these antecedents. Autonomous motivation was also positively related to hypothesized outcomes, such as job satisfaction, well being, and affective commitment, and negatively related to turnover intentions and psychological distress. Although we had expected controlled motivation to be negatively related to the outcomes, we found instead that it was unrelated to them. The only outcome that controlled motivation was related to, as expected in Meyer, Becker, and Vandenberghe (2004), was continuance commitment. This supports SDT’s assertion that autonomous motivation yields more positive outcomes than controlled motivation and concurs with a number of studies that have shown the advantage of using a more differentiated assessment of motivation, as different forms of motivation yield different consequences (Deci & Ryan, 2000; Koestner & Losier, 2002).

Mean differences between scores of workers employed in different sectors demonstrated how we can expect work motivation to vary as a function of how much work makes employees feel autonomous, competent and related to others. Regression analyses concurred with the premises of the theory, and also with the premises of the Job Characteristics Model ((Hackman & Oldham, 1975), whereby jobs with different characteristics afford the satisfaction of basic psychological needs differently, thereby influencing the type of motivation people will adopt at work. Overall, what the present research shows is that we get much better outcomes with autonomous than with controlled motivation. Controlled motivation is not necessarily bad, it just does not have much of an effect on outcomes that are valued by organizations. We still need research to extend our finding that promoting autonomous motivation is the path to successful organizational outcomes. For example, Kacmar, Andrews, Van Rooy, Steilberg, and Cerrone (2006) recently showed that turnover rates can influence sales and profits. If autonomous motivation influences turnover intentions, it would provide a useful mechanism to influence actual turnover and organizational success.

There are some limitations to the present research. First, all data were collected cross-sectionally using self-reports, which could lead to common method variance issues. However, by looking at Table 2, we can see that not all correlations are significant, which indicates that the relationships we found are less likely to be spurious (Spector, 2006). Further validation work should test the MAWS in longitudinal designs and with multiple reports (e.g., managers and colleagues) or more behavioral and objective measures (e.g., performance appraisals). We also used convenience samples of Canadian
workers, so further work will need to validate the MAWS in other cultures and languages as well as with other types of jobs and organizations. We did not test the social desirability of the MAWS, but other similar scales, such as the Blais et al. (1993) scale on which the present scale is partly based, found very low relationships between the motivation subscales and the Marlowe-Crowne scale.

As proposed in Gagné and Deci (2005), work motivation is under the influence of both dispositional and situational factors. Dispositional factors can include personality traits such as optimism, as well as deeply ingrained causality orientations (Deci & Ryan, 1985b) that may influence people’s reactions to work-relevant events and circumstances. Situational factors may include the way the work is divided, organized, and designed, as well as the quality of relationships with superiors, peers, subordinates and clients. Reward and recognition systems could also influence work motivation. The MAWS can serve as a useful tool to conduct research that examines how different types of work motivation may be influenced by these factors. The MAWS can also be used to study different outcomes associated with different types of motivation. The different subscales of the MAWS can be used separately to examine their discrete effects (Koestner et al), or they can be aggregated into autonomous and controlled types to simplify analyzes. These aggregates can also serve to test possible interaction effects. We advise this technique over using the self-determination index (Ryan & Connell, 1989), which consists of subtracting controlled motivation from autonomous motivation. The use of difference scores has been heavily criticized (Zuckerman, Gagné, Nafshi, Knee, & Kieffer, 2002) for masking the effects of their respective variables. We hope the MAWS will help the proliferation of organizational research that uses the self-determination theory framework, which has yielded very useful results in other fields.

Appendix

The Motivation at Work Scale (MAWS).

<table>
<thead>
<tr>
<th>Intrins1</th>
<th>Because I enjoy this work very much.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrins2</td>
<td>Because I have fun doing my job.</td>
</tr>
<tr>
<td>Intrins3</td>
<td>For the moments of pleasure that this job brings me</td>
</tr>
<tr>
<td>Ident1</td>
<td>I chose this job because it allows me to reach my life goals.</td>
</tr>
<tr>
<td>Ident2</td>
<td>Because this job fulfills my career plans.</td>
</tr>
<tr>
<td>Ident3</td>
<td>Because this job fits my personal values.</td>
</tr>
</tbody>
</table>
Intro1  Because I have to be the best in my job, I have to be a ‘winner’.
Intro2  Because my work is my life and I don’t want to fail.
Intro3  Because my reputation depends on it.
Ext1   Because this job affords me a certain standard of living.
Ext2   Because it allows me to make a lot of money.
Ext3   I do this job for the pay-check.

Note. The stem is “Using the scale below, please indicate for each of the following statements to what degree they presently correspond to one of the reasons for which you are doing this specific job” and is accompanied by the scale: 1= not at all; 2= very little; 3 = a little; 4 = moderately; 5 = strongly; 6 = very strongly; 7= exactly. The French version of the scale is available upon request from the first author.

References


