

# THE WORKPLACE AFFECTIVE COMMITMENT MULTIDIMENSIONAL QUESTIONNAIRE: FACTOR STRUCTURE AND MEASUREMENT INVARIANCE

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## ABSTRACT

Employees could be affectively committed towards at least eight work-related targets: organization, career, co-workers, supervisor, tasks, profession, customers, and work. The WACMQ (Workplace Affective Commitment Multidimensional Questionnaire) was recently developed to assess these targets. This study used confirmatory factor analyses (CFAs) to test alternative factor structures, relying on a sample of 404 Canadian workers. The measurement invariance of the model across gender and linguistic groups was also examined. CFAs generally supported a 7-factor structure over the original 8-factor model, showing that two targets (profession and tasks) rather formed a single factor (occupation). Finally, CFAs supported the measurement invariance of the WACMQ across gender and language versions. In addition to this substantive purpose, this study was also designed as a methodological illustration of Millsap and Tein's (2004) procedure for the evaluation of the measurement invariance of CFA models

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for ordered-categorical items, as supplemented by Cheung and Rensvold's (1999) recommendations for the post-hoc probing of non-invariant factor models.

**Keywords:** affective commitment, targets, invariance, confirmatory factor analysis, categorical.

## INTRODUCTION

Since Porter, Steers, Mowday, and Boulian (1974) proposed the first definition of organizational commitment, many refinements have been incorporated to this concept, such as the need to distinguish among the different forms (or bases) of commitment and among the various targets (or foci) of commitment. For instance, Allen and Meyer (1990) proposed to distinguish three forms of organizational commitment: affective, normative and continuance. The results generally supported the factorial validity of this conception (e.g. Allen, and Meyer, 1996; Meyer, Allen, and Smith, 1993). Similarly, the study of the nature, antecedents and consequences of workplace commitment was initially limited to employees' commitment to their organization as an undifferentiated entity. Drawing from the literature on organizational, reference group and role theories, Reichers (1985) was among the first to suggest that, given the coalitional nature of organizations, employees may be differentially committed towards different work-related entities (or targets). More precisely, she proposed that employees' workplace commitment might reflect a "process of identification with the goals of an organization's multiple constituencies" (Reichers, 1985, p. 465), such as supervisors or colleagues. According to Reichers (1985), the advantages of this conception over the preceding one is that it provides a more realistic representation of employees' differential binding to organization's multiple constituencies, while taking into account the possibility of these multiple attachments conflicting with one another.

In a related way, Morrow (1983, 1993) pointed out that some of the proposed targets of workplace commitment were redundant, while others were not relevant to the majority of employees. She thus proposed to focus on what she called "universal" (or generic) targets of workplace commitment. Morrow (1993) initially proposed four universal targets of workplace commitment (organizational

commitment, career commitment, job involvement, and work ethic endorsement)<sup>1</sup>. In a similar effort, Randall and Cote (1991) proposed five generic targets (organizational commitment, career salience, job involvement, work group attachment, and Protestant work ethic). More recently, Stinglhamber, Bentein and Vandenberghe (2002) also proposed a distinct five-target model of commitment (organization, occupation, supervisor, work group, and customers). Interestingly, the combination of those three propositions allows for the identification of eight generic targets of workplace commitment (Madore, 2004): organization, supervisor, co-workers, customers, work, tasks, career, and profession. As Madore (2004) showed, these targets also provide an interesting synthesis of the relevant scientific literature. In a more detailed synthesis of the relevant literature Cohen (2003) reached similar conclusions but added union (see also Gordon, Philpot, Burt, Thompson, and Spiller, 1980) to this list and proposed to combine into a single target employees' commitment to their careers and professions. However, since many employees are still not unionized, unions cannot be considered as a generic target of commitment. This form of commitment will thus be excluded from the present study. Additional targets were also defined but will not be considered in the present study for similar reasons, for instance: organizational change and programs (Herscovitch and Meyer, 2002; Neubert and Cady, 2001), and external organizations (McElroy, Morrow, and Laczniak, 2001). These targets could not be considered "generic" because many organizations do not undergo constant change and most employees are not in boundary-spanner positions.

Following Morrow's (1993) suggestion, this study will verify whether these eight targets of workplace commitment could be distinguished from one another. To our knowledge, the distinct character of those eight targets of workplace commitment has never been directly verified within a single study. Only the affective form of workplace commitment will be considered in the present study. This form of commitment can be defined as employees' emotional attachment to a specific work-related target and as the importance they attribute to this target in their daily lives. This definition is similar to previous definitions and reflects the fact that commitment could be directed towards multiple targets (Allen and Meyer, 1990; O'Reilly and Chatman, 1986). Although many instruments were developed to separately assess employees' affective commitment to different targets (e.g. Blau, 1985; Cook and Wall, 1980; Lodahl and Kejner, 1965; Meyer and Allen, 1991; Stinglhamber et al., 2002), to our knowledge, only one questionnaire was designed to measure all eight of these targets while relying on a

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<sup>1</sup> In fact, Morrow (1993) proposed five universal targets because she initially distinguished between affective and continuance commitment to the organization (see also Cohen, 2003).

common definition: The Workplace Affective Commitment Multidimensional Questionnaire (WACMQ; Madore, 2004). This instrument was built as a synthesis of those preexisting instruments and will be described in the methodological section. Unfortunately, the factor structure of the WACMQ remains unclear (Madore, 2004). Before discussing these issues further, the substantive nature of these targets will be briefly discussed.

## **EIGHT DISTINCT TARGETS OF WORKPLACE AFFECTIVE COMMITMENT**

*Organization.* Organizations are the most often cited target of employees' affective commitment (e.g. Meyer and Allen, 1997; Morrow, 1993; Porter et al., 1974). In conformity with the previously proposed generic definition and with previous definitions, affective commitment to the organization is defined as employees' emotional attachment to their specific organization and as the importance they attribute to this target in their daily lives.

*Supervisor.* This target was previously defined as "identification with the supervisor and internalization of the supervisor values" (Becker and Billings, 1993, p.179), "psychological identification with the supervisor, that can be characterized by a willingness to exert considerable effort on behalf of the supervisor" (Boshoff and Mels, 2000, p. 259), or as "the feeling of pride in working with, and appreciation of, the supervisor" (Stinglhamber et al., 2002, p.12). In this study, affective commitment to the supervisor is defined as employees' emotional attachment to their immediate supervisors and as the importance they attribute to this target in their daily lives.

*Co-Workers.* Randall and Cote (1991, p.195) defined employees' affective commitment to their workgroup as their "identification and sense of cohesiveness with other members of the organization," and Stinglhamber et al. (2002, p. 127) defined it as "the feeling to belong and emotional attachment to the work group." In this study, affective commitment to co-workers is defined as employees' emotional attachment to their co-workers and as the importance they attribute to this target in their daily lives. While previous authors specifically referred to employees' commitment to their workgroups rather than co-workers (Stinglhamber et al., 2002), this definition was chosen to account for the fact that although many employees do not work within well-defined workgroups, most do have co-workers.

*Customers.* Although it may be evident that customers (internal or external) represent potential targets of employees' affective commitment, few scholars integrated this target in their studies (Gregersen, 1993). To our knowledge, Stinglhamber et al. (2002, p. 12) provided the only systematic definition of this concept: "the feeling of being close to, and having a liking for, one's customers." In this study, affective commitment to customers is defined as the importance attributed by an employee to the satisfaction of the organization's customers in their daily lives. This definition reflects the fact that although many employees may not have direct contact with customers, every organization has customers to whom employees could be committed. Furthermore, while it may be unrealistic to expect employees to be emotionally attached to customers with whom they do not interact, their affective commitment may be more clearly reflected through the importance they attribute to customers' satisfaction in their daily lives.

*Work.* Weber referred to employees' affective commitment to work as early as 1905 in *The Protestant Ethic and Spirit of Capitalism* (Weber, 1905). Later, Mirels and Garrett (1971) referred to this concept by the term *protestant work ethic*, which they did not directly define. Buchholz (1976) later defined the term *work ethic* as a series of beliefs concerning the inherent goodness and value of work. On her side, Kanungo (1982, p. 342) defined *work involvement* as "an individual's psychological identification with work in general." Morrow (1993) was the first to establish a clear relation between this concept and workplace affective commitment when she defined *work ethic endorsement* as "the extent to which one intrinsically values work as an end in itself" (Morrow, 1993, p.1). Similarly, Paullay, Alliger and Stone-Romero (1994, p. 224) defined *work centrality* as "the extent to which individuals' view work as a main component in their life." Some of these definitions adopt an extreme viewpoint on employees' affective commitment to work and tend to blur the demarcation between commitment to work and work dependency (workaholism: Spence and Robins, 1992). Items previously used to measure this concept reinforce this observation (e.g. "life is worth living only when people get absorbed in work": Kanungo, 1982). In the present study, we follow Morrow's (1993) suggestion and propose to integrate these various concepts under the generic concept of workplace affective commitment to work, which we define as the importance attributed to work in an employee's daily life. The decision to focus on the second part of the generic definition (importance), rather than to integrate the concept of emotional attachment as well, emerges from a desire to maintain a clear demarcation between work commitment and work dependency. Indeed, it would be unrealistic for an employee to develop a truly "emotional" attachment to such an

undifferentiated entity as work without reaching extreme levels of work commitment/dependency.

*Tasks.* Previously referred to as *job involvement* or *job commitment*, employees' affective commitment to their tasks was defined in many different ways, such as: (a) "the degree to which the individual identifies with a job" (Dubin, 1956, in Blau, 1985, p. 281); (b) "cognitive beliefs of psychological identification with one's job" (Kanungo, 1982, p. 342); (c) "the degree to which a person's work performance affects his self-esteem" (Lodahl and Kejner, 1965, p. 25); (d) "the degree of daily absorption an individual experiences in a work activity" (Morrow, 1993, p. 51); (e) "the degree to which one is cognitively preoccupied with, engaged in, and concerned with one's present job" (Paullay et al., 1994, p.224). Although the demarcation between employees' affective commitment to work in general and to their tasks may appear hazy in some of these definitions, previous studies confirmed the distinctiveness of these two concepts (Diefendorff, Brown, Kamin, and Lord, 2002; Paullay et al., 1994). In the present study, affective commitment to tasks is defined as employees' emotional attachment to the tasks inherent in their daily job and as the importance they attribute to this target in their daily lives.

*Career and Profession.* Gouldner (1958) was the first to make a distinction between employees' commitment to their own careers and to the development of their professions. Since then, many definitions of employees' affective commitment to their professions were proposed: (a) "the relative strength of identification and involvement in one's profession" (Aranya, Pollock, and Amernic, 1981, p. 271); (b) "employees' identification with his/her professional group or people doing the same job" (Angle and Perry, 1981, in Boshoff and Mels, 2000, p. 259); (c) "one's attitude towards one's profession or vocation" (Blau, 1985, p. 278); (d) "employee commitment to a specific profession" (Parasuraman and Nachman, 1987, p. 288); (e) "the extent to which an employee uses people in the same profession as a reference group" (Boshoff and Mels, 2000, p. 259). Conversely, few authors attempted to define employees' commitment to their careers. Greenhaus (1971) proposed the term "career salience" to illustrate this concept, but the proposed definition included elements pertaining to employees' commitment to their tasks, to work in general and to their careers. This confusion is also apparent in other definitions (e.g. Blau, 1985) and Cohen (2003) review even proposes to combine these two targets into a single one. In fact, Morrow (1993) and Ellemers, de Gilder and van den Heuvel (1998) were the first to propose a clear distinction between these forms of commitment. Ellemers et al. (1998, p. 718) specifically defined *career-oriented commitment* as "the extent to which people felt committed to the individual goal of advancing

their personal careers.” In this study, employees’ affective commitment to their careers refers to their emotional attachment to the planning and progression of their careers and to the importance they attribute to this target in their daily lives, whereas affective commitment to their professions refers to their emotional attachment to their specific profession or vocation and to the importance they attribute to this target in their daily lives.

Most studies in which multiple targets of workplace affective commitment were considered found an improvement, both quantitative and qualitative, in the prediction of a variety of workplace behaviors such as turnover, turnover intent, work performance, organizational citizenship behaviors, etc. (e.g. Boshoff and Mels, 2000; Cohen, 1999, 2000, 2003; Stinglhamber et al., 2002). Similarly, previous studies separately confirmed the distinct nature of the workplace commitment targets proposed in Morrow (1993), Randall and Cote (1991), and Stinglhamber et al. (2002) models (e.g. Cohen, 1999, 2000, 2003; Randall and Cote, 1991; Stinglhamber et al., 2002). With the exception of certain studies conducted by Vandenberghe and colleagues (Bentein, Stinglhamber and Vandenberghe, 2002; Stinglhamber et al., 2002; Vandenberghe, Bentein, and Stinglhamber, 2004), most of the preceding studies verified the distinctiveness of the proposed targets while relying on different questionnaires, presented to participants in succession. Therefore, it remains unknown whether the aforementioned results represent an artifact of the differences between questionnaires (answer scales, conceptual frameworks, type of items, etc.) or if they really reflect the distinct nature of the underlying constructs. To provide a preliminary answer to these questions, Madore (2004) conducted exploratory factor analyses on the WACMQ. Her results suggest that most of the proposed targets could be distinguished from one another, with the exception of the task- and profession-related foci, which were highly correlated and seem to rather form a single factor: employees’ affective commitment to their occupation. Thus, despite the promising usefulness of the questionnaire, the fit of different alternative factor models should be tested empirically.

In addition, the measurement invariance of the WACMQ scales across various substantively important subgroups was never tested. Indeed, a clear demonstration of invariance is necessary if one wants to study different groups reliably (Bollen, 1989). For instance, although previous studies demonstrated the cultural and linguistic invariance of multidimensional conceptions of commitment (e.g. Vandenberghe, 1996; Vandenberghe, Stinglhamber, Bentein, and Delhaise, 2001), no study testing the gender invariance of those models could be located. Given the gender-based differences in the importance attributed to personal versus social goals, this lack of empirical verification is surprising (e.g. Cross and

Madson, 1997; Taylor et al., 2000). Given these known differences, we can expect to observe gender-based differences at the average level of workplace affective commitment towards personal advancement (e.g. career) versus social (e.g. colleagues, customers, and supervisors) targets. To conclude that such differences are real, were they to be observed, one must first demonstrate that the measurement instrument is invariant for the subgroups to be compared (e.g. Vandenberg and Lance, 2000). Additionally, in Canada (and especially in Quebec), verification of the linguistic equivalence of measurement instruments across French and English versions is a very important issue due to the fact that most organizations include French- and English-speaking employees. The only direct way to verify this equivalence is to conduct measurement invariance tests across language versions (e.g. Cheung and Rensvold, 1999), and such tests are lacking on most measurement instruments that are available in French and English versions for organizational research.

## THE PRESENT STUDY

The present study aimed at comparing the fit of four alternative factor representations of the WACMQ: a single factor model, the original 8-factor model, an alternative 7-factor model based on Cohen (2003; combining profession and career), and the alternative 7-factor model proposed Madore (2004; combining tasks and profession). The measurement invariance of the best-fitting model across gender and linguistic groups will also be verified using confirmatory factor analyses. In addition to this substantive purpose, this study was also designed as an illustration of Millsap and Tein's (2004) procedure for the evaluation of the measurement invariance of CFA models for ordered-categorical items, as supplemented by Cheung and Rensvold's (1999) recommendations for the post-hoc probing of non-invariant factor structures and latent means comparisons. Although the evidence is mounting regarding the need to rely on methods specifically designed for ordered-categorical variables when CFA models are fitted to Likert-type items (e.g. Lubke and Muthén, 2004), most studies still rely on methods designed for continuous variables and many are still unaware of the differences between CFA models for continuous versus ordered-categorical items (e.g. thresholds versus intercepts, etc.). We believe that this phenomenon can be at least partly explained by the rarity of empirical illustrations using non-technical explanations. This study thus aims to provide such an illustration.



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## METHOD

### Participants and Procedure

Employees (analysts, research specialists, insurance agents, account managers, technicians, call center, customer services, etc.) from three Canadian organizations ( $n=270$ , 170, and 120) were solicited to participate in this study between August and December 2003. The data collection procedure relied on web-based questionnaires: the employees from the first organization completed the questionnaires in computer rooms whereas the other employees completed it on their personal computers. The response rates are quite high (90%, 82%, and 76%) and reflect the organizations' high degree of involvement in the project. Since the companies wanted to obtain an overall portrait of their employees' commitment, higher-level managers also had the opportunity to complete the questionnaire. However, since managers often experience their work environment differently and since they were too few of them ( $n = 55$ , 11.7%) to conduct invariance analyses across hierarchical levels, they were taken out of the sample to ensure a minimal level of homogeneity. Additionally, 14 participants had to be excluded from the analysis due to a high level of missing data, leaving a final sample of 404 employees. Of those, 28.4% ( $n = 115$ ) completed the French version of the questionnaires and 71.6% ( $n = 289$ ) completed the English version. The majority of the participants are women (66.0%,  $n = 250$ ) between the ages of 26 and 45 years (71.8%, with 6.6% under 26 and 21.6% over 45) who are highly educated (48.9% have a university degree), have less than five years of tenure in the organizations (57.1%) and hold a full-time position (92.89%).

### The Workplace Affective Commitment Multidimensional Questionnaire (WACMQ)

To develop the Workplace Affective Commitment Multidimensional Questionnaire (WACMQ), Madore (2004) first identified the instruments already used to measure employees' affective commitment to work-related targets. She located the seventeen instruments most commonly used to assess these various constructs (Becker, 1992; Blau, 1985, 1988; Blood, 1969; Boshoff and Mels, 2000; Clugston, Howell, and Dorfman, 2000; Cook and Wall, 1980; Ellemers et al., 1998; Gregersen, 1993; Kanungo, 1982; Lee, 2001; Lodahl and Kejner, 1965; Meyer and Allen, 1991; Mowday, Steers, and Porter, 1979; O'Reilly and Chatman, 1986; Randall and Cote, 1991; Stinglhamber et al., 2002) from which

she selected the 57 items best fitting the aforementioned conceptual definitions. Additional items were developed to represent neglected aspects of the various constructs and to ensure a minimal degree of conceptual convergence between the eight subscales. Overall, 12 items were associated with each of the eight proposed dimensions. A professional translator translated the selected items from English into French. Original items were directly developed in French. The 96 items were then submitted to a sample of 12 independent judges (university professors, graduate students and organizational psychologists) who selected the six to eight items most representatives of the dimensions. From these selections, six or seven items were retained per dimension. For the commitment to work subscale, only five items could be retained from the ratings. A translation/back-translation procedure involving two independent professional translators was then used to create the English version.

The WACMQ version used in this study comprises 49 items: six items for commitment to the organization; seven items for commitment to the supervisor; six items for commitment to the co-workers; six items for commitment to the customers; six items for commitment to the profession; seven items for commitment to tasks; six items for commitment to the career; five items for commitment to work. These items were rated on a seven-point Likert scale ranging from “1- Totally disagree” to “7- Totally agree.” Because this study aimed to conduct invariance analyses, the items were treated as ordered-categorical items, since Lubke and Muthén (2004) showed that meaningful group comparisons are complicated if Likert scale items are treated as continuous when invariance hypotheses are being verified. However, because some response categories were too rarely endorsed (especially in the various subgroups), the adjacent response categories of all items were collapsed, resulting in three-category items. This helped avoid obtaining a large number of empty cells that precludes stable modeling with categorical data<sup>2</sup>. The items were presented by

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<sup>2</sup> For categorical data modeling using a weighted least square estimator (see the analytical strategy section), observations are needed in all response categories. In the present sample, very high or low response categories were rarely endorsed (e.g. less than 1% in some cases) for several items. This situation was problematic for the overall confirmatory factor analyses and especially for the invariance tests that were conducted in the various sub samples (men/women, or French/English). Participants' answers from adjacent response categories were thus combined, resulting in three-category items. The observed “near-empty” cells suggest that participants' answers do indeed follow a three-category rating (low commitment: 1-4; moderate commitment: 5-6; and very high commitment: 7) rather than a seven-point scale. However, the underlying psychological response process remains the same, with increasing response categories representing higher levels on the given scale. Of course, even though Lubke and Muthén's (2004) results seem to disagree with this, it can be argued that an estimator for continuous variables could have been used directly on the seven-point answer scale. However, this strategy

alternating construct content in order to avoid artifactual correlations due to content repetition. Moreover, to control for acquiescence, two items with inverted content were included for each construct (Nunnally and Bernstein, 1994). The final questionnaires are reproduced in Appendix A (English version) and B (French version).

## ANALYTICAL STRATEGY

### Testing Factor Structure and Measurement Invariance<sup>3</sup>

In order to empirically test the adequacy of the hypothesized factor structures of the WACMQ, confirmatory factor analyses (CFA) were used. For all analyses, we used Mplus version 5.0 (Muthén and Muthén, 2007). Results from the initial analyses were then used to develop an optimal scale of five items per factor. This strategy of including more items with the objective of retaining an optimal set of items follows Marsh, Hau, Balla and Grayson's (1998) recommendations, particularly given the later verification of invariance hypotheses. In all models, given the ordered-categorical items (polychoric correlation matrices), the models were estimated with the robust weighted least square estimator (WLSMV), which used a diagonal weight matrix with standard errors and a mean- and variance-adjusted chi-square test statistic that use a full-weight matrix. Previous simulation studies showed this method to be superior to the more traditional WLS estimator for categorical data, especially for more complex models and lower sample sizes (Flora and Curran, 2004; Muthén, du Toit, and Spisic, 1997). All models were specified under the Theta parameterization, which allows for the estimation of factor loadings, thresholds, uniquenesses, variances, covariances and means<sup>4</sup>.

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would be reasonable only if the distribution of response categories for each item were symmetrical, which was clearly not the case in the present sample. This strategy of collapsing adjacent response categories of polychotomous items is routinely used for modeling questionnaire data where individuals do not use the entire range of responses (e.g. Lubke & Muthén, 2004; Reise, Morizot, & Hays, 2007).

<sup>3</sup> Given the methodological purposes of this chapter, examples of key analytical inputs are available upon request from the first author.

<sup>4</sup> For CFA models with ordered-categorical items, one can estimate either uniquenesses (Theta parameterization) or scale factors (Delta parameterization) since both are directly interrelated (Millsap & Tein, 2004; Muthén & Muthén, 2007). The uniqueness represent the proportion of variance of the latent response variate underlying the observed categorical item that remains unexplained by the factor and is often considered to represent measurement error. Scale factors represent differences across groups in the variance of the latent response variate underlying the observed categorical item. To ensure a greater level of comparability with more classical CFA

Unless otherwise noted, other Mplus defaults were used. All models were congeneric (each item was related to a single factor) and, for identification purposes, the loading of the first item from each factor was fixed at 1.

After having identified a stable factor model, the measurement invariance of the model across language versions and genders was tested. First, we estimated the fit of the model separately in both gender and linguistic groups to see if it provided an adequate representation of the data in the various subgroups. Then, the invariance of this model was directly tested through a sequential series of gradually more stringent tests. Six different models were thus sequentially tested following Vandenberg and Lance's (2000) recommendations. The first four of those steps followed Millsap and Tein's (2004) recommendations for the assessment of factorial invariance with ordered-categorical items. It should be noted that to make valid and interpretable group comparisons at the mean level, complete invariance of the factor model (configural invariance) and at least partial invariance of a majority of loadings (weak invariance), thresholds (strong invariance) and uniquenesses (strict invariance) per factor are necessary (Byrne et al., 1989; Millsap and Tein, 2004; Steenkamp and Baumgartner, 1998). Although it has previously been suggested that the last step (strict invariance) may not be necessary for mean-level group comparisons (e.g. Little, Card, Slegers, and Ledford, 2007), Lubke and Dolan (2003) showed that unequal residual variances may confound the analyses of latent mean differences. The last two steps, namely demonstrating the invariance of the factor variance/covariance matrices and then of the latent means, are not required for assuming the invariance of a factor model, but provide important substantive information on between-group differences (Little et al, 2007).

*Step 1: Configural Invariance.* The first step is to identify the baseline model, to see whether a model with the same pattern of fixed and free parameters is supported across groups. This is important because the model has to fit the data in the first place, before adding constraints. This model provides the basis for comparison with more restrictive models. For this model to be identified (Millsap

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models for continuous items, we decided to rely on the Theta parameterization. Similarly, in CFA models with ordered-categorical items, both the threshold and the intercept of an item cannot be identified at the same time. Thresholds represent the points on the latent response variate underlying the observed categorical item over which the observed scores change from one category to another. Intercept represent the intercept of the regression equation linking the latent factor to the latent response variate underlying the observed categorical item. Mplus defaults involve working with thresholds rather than intercepts (Muthén, 2004; Muthén & Muthén, 2007). Because thresholds allow a greater level of flexibility in the types of models that could be tested (R. Millsap, personal communication April 3, 2008) and given the complexity of intercept estimation in Mplus, we decided to rely on thresholds.

and Tein, 2004), (a) uniquenesses of the items were fixed at 1 in the first group (referent) and free in the other group (comparison); (b) factor means were fixed to zero in the referent group and free in the other group; (c) the loading of the first item (referent variable) from each factor was fixed at 1; (d) both thresholds for the referent variables and the first threshold from the other variables were fixed to equality across groups.

*Step 2: Weak Invariance ( $A$ ).* To assume that the factors have the same meaning across groups, factor loadings should be equivalent in all groups (metric invariance). This assumption is tested by adding equality constraints on the factor loadings across groups. Millsap and Tein (2004) indicate that it is not necessary at this step to maintain the referent variable loading fixed to 1 for identification purposes if the factor variance is constrained to 1 in the referent group.

*Step 3: Strong Invariance ( $\nu$ ).* The assumption of strong invariance is also necessary for comparing groups on a latent trait. Essentially, scalar invariance means that all individuals with the same score on a latent trait tend to answer the items in a similar way. This assumption is tested by adding equality constraints on all thresholds across groups to the preceding model.

*Step 4: Strict Invariance ( $\Theta$ ).* The more stringent assumption of strict invariance involves testing whether the measurement errors associated with the items are equivalent across groups by adding equality constraints on the uniquenesses of the items across groups.

*Step 5: Invariance of the Factor Variance/Covariance Matrices ( $\Phi$ ).* Although the previous steps are sufficient to assume that the measurement properties of an instrument are the same across groups, it is interesting and highly informative to test for even more restrictive models across all groups, particularly when the ultimate goal is to test for latent mean differences. To test for the invariance of complete variance/covariance matrices, loadings, thresholds, uniquenesses, factor variances and factor covariance were all constrained to equality across groups, while factor means were freely estimated in the comparison group.

*Step 6: Factor Means Invariance ( $\kappa$ ).* Finally, factor means were also constrained to equality.

## Model Fit

The fit of all models was estimated using various indices (see Bollen, 1989; Hu and Bentler, 1999). First, the  $\chi^2$  likelihood ratio was estimated for all models. However, because this test is recognized to be overly sensitive to sample size and

minor departures from multivariate normality, three additional fit indices were calculated: the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA)<sup>5</sup>. Values above .95 for the CFI and TLI and below .06 for the RMSEA indicate an adequate fit (Hu and Bentler, 1999). Yu (2002) recently replicated these cut-off points for WLSMV models involving categorical items. However, Vandenberg and Lance (2000) note that RMSEA values under or close to .08 may still indicate acceptable fit, especially with small sample sizes, because they tend to be inflated in such situations (Curran, Bollen, Chen, Paxton, and Kirby, 2003).

For the cross-group invariance tests, the chi-squared difference test ( $\Delta\chi^2$ ) was also calculated in order to determine if the constrained models displayed a worse fit than the baseline models. Note that since the likelihood ratio chi-square test is not distributed as a chi-square with WLSMV estimation, we used the adjusted chi-square difference test available in Mplus for all the invariance tests, hereafter referred to the Mplus DIFFTEST chi square difference test ( $MD\Delta\chi^2$ ) (Muthén and Muthén, 2007)<sup>6</sup>. For testing differences between models (invariance tests),  $MD\Delta\chi^2$  was used. Because this test is sensitive to sample size or minor departures from multivariate normality, it is generally recommended to use additional indices. For this reason and to take into account the overall number of  $MD\Delta\chi^2$  tests used in this study, the significance level to identify non-invariance was also fixed at 0.01 (Bollen, 1989; Rensvold and Cheung, 1998). Regarding additional indices, Cheung and Rensvold (2002) suggested to use change in CFI: values under .01 indicate that the invariance hypothesis should not be rejected, values between .01 and .02 suggest the possibility of non-invariance, and values over .02 support the rejection of the invariance hypothesis (Cheung and Rensvold, 2002; Vandenberg and Lance, 2000). Chen (2007) recently confirmed these results and added that examining changes in RMSEA of the same magnitude (.01) may complement this information. However, the performance of both of these indices

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<sup>5</sup> Yu (2002) recently showed that another commonly used fit index, the Standardized Root Mean Square Residual (SRMR), did not perform well with categorical variables.

<sup>6</sup> Note that although the models testing the invariance across gender and linguistic groups are similar in terms of number of estimated parameters, the degrees of freedom associated with the chi square test of model fitting are different and may appear counter-intuitive because they do not closely reflect the number of measured variables and estimated parameters. This is not unexpected because with the WLSMV estimator, both the chi-square values and degrees of freedom are not exact, but rather adjusted or "estimated" as the closest integer necessary to obtain a correct *p*-value (Muthén, 2004; Muthén & Muthén, 2007). Thus, in practice, only the *p*-value should be interpreted. We report the other values for the sake of thoroughness. Similar comments apply to the chi square difference tests, which were obtained with the DIFFTEST function for the WLSMV estimator ( $MD\Delta\chi^2$ : Asparouhov & Muthén, 2006; Muthén & Muthén, 2007).

in invariance tests involving WLSMV and categorical items remains unknown and potentially problematic given the particular method used to compute the chi square and degrees of freedom, which are themselves used in the computation of the CFI and RMSEA (see footnote 5). Consequently, changes in CFI and RMSEA will only be reported as complement to the  $MD\Delta\chi^2$  with the hope that someday more information will be available on the efficacy of these indicators in tests of invariance. When the fit of a constrained model is not significantly worse (non significant  $MD\Delta\chi^2$ ) than the preceding (or least restrictive model) then the parameters may be assumed to measure the factors in a comparable way (i.e. measurement invariance). However, when the constrained model fit is worse (significant  $MD\Delta\chi^2$ ) than the baseline model, the assumption of invariance across all groups is not tenable.

## RESULTS

### Factor Structure of the WACMQ

The results of the CFA testing the alternative hypothesized measurement of the WACMQ are reported in Table 1.

**Table 1. Summary of Goodness-of-Fit Statistics for CFA Testing Alternative Models of the WACMQ**

Model	$\chi^2 (df)$	CFI	TLI	RMSEA
<i>Model 1</i> 1-Factor – 49 Items	2941.08 (114)*	.580	.786	.248
<i>Model 2 (Cohen, 2003)</i> 7-Factor – 49 Items	1064.33 (136)*	.862	.941	.130
<i>Model 3</i> 8-Factor – 49 Items	644.29 (151)*	.927	.972	.090
<i>Model 4 (Madore, 2004)</i> 7-Factor – 49 Items	721.37 (149)*	.915	.967	.098
<i>Model 5 (Madore, 2004)</i> 7-Factor – 35 Items	429.24 (112)*	.956	.982	.084

Note. \*  $p < .01$ ; CFI = Comparative Fit Index, TLI = Tucker-Lewis Index, RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual.

First, the result show that both the single-factor model and the seven-factor model based on Cohen (2003) propositions performed poorly and did not fit the data. Second, the 8-factor structure also did not fit the data particularly well (CFI = .927; TLI = .972; RMSEA = .090), but still performed better than both of the preceding models. A closer look at factor intercorrelations revealed that this could be due to the fact that the correlation between the proposed affective commitment to tasks and to profession factors was much too high to sustain their hypothesized independence ( $r = .752$ ). The resulting 7-factor model, which corresponds to Madore's (2004) results, was then estimated, but did not provide a better fit to the data than the 8-factor model (CFI = .915; TLI = .967; RMSEA = .098). After careful examination, this less-than-optimal fit appeared to be caused by items with low loadings on all seven factors ( $\leq .4$ ). Because shorter scales are better suited to the time constraints inherent in organizational research and practice, and following Marsh et al. (1998) recommendations, the five items with the highest loadings for each of the seven factors were selected for the final version of the questionnaire. Note also that items resulting in lower correlations among the factors were favored. The resulting 35-item 7-factor model provides a better fit to the data than the two previous models (CFI = .956; TLI = .982) although the RMSEA remains somewhat elevated (.084)<sup>7</sup>. Standardized factor loadings and Cronbach's  $\alpha$  coefficients for this final model are reported in Table 2. Modifications indices revealed no significant cross-factor loadings or correlated errors. Factor correlations are reported in Table 3. These results lend a strong support to the model: (a) latent factor standardized correlations vary between .13 and .57; (b) standardized factor loadings vary between .57 and .97; (c)  $\alpha$  vary between .77 and .91.

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<sup>7</sup> An additional attempt to create a shorter 8-factor version (40 items, with five items per factor) did not provide a better fit to the data than the initial solution.



**Table 2. Items and Standardized Factor Loadings for the 35-item 7-factor Model**

	1 - CO <sub>r</sub>	2 - CS	3 - CC <sub>w</sub>	4 - CC <sub>u</sub>	5 - CW	6 - CO <sub>c</sub>	7 - Ca
1- I am proud to say that I work for this organization ( <i>COMPANY</i> ).	.954						
2- This organization ( <i>COMPANY</i> ) means a lot to me.	.941						
7- I don't like working for this organization ( <i>COMPANY</i> ).*	.864						
11- I don't feel emotionally attached to this organization ( <i>COMPANY</i> ).*	.762						
14- When I talk about this organization ( <i>COMPANY</i> ) to my friends, I describe it as a great place to work.	.830						
3- I like the values my immediate supervisor conveys.		.956					
4- I feel privileged to work with someone like my immediate supervisor.		.971					
9- I don't like my immediate supervisor.*		.915					
10- If it were possible, I would like to work with another immediate supervisor.*		.876					
13- When I talk about my immediate supervisor to my friends, I describe him/her as a great person to work with.		.892					
5- I'm happy to work with my co-workers (in my unit).			.942				
6- My co-workers (in my unit) make me feel like going to work.			.926				
15- When I talk about my co-workers (in my unit) to my friends, I describe them as great people to work with.			.887				
24- I don't share the values conveyed by my co-workers (in my unit).*			.568				
25- If it were possible, I would move to another unit so I wouldn't have to work with my current co-workers any more.*			.739				



	1 - CO <sub>r</sub>	2 - CS	3 - CC <sub>w</sub>	4 - CC <sub>u</sub>	5 - CW	6 - CO <sub>c</sub>	7 - Ca
32- It is important for me to move up the ranks or obtain promotions.							.864
37*- I don't consider myself particularly ambitious in terms of my career.							.656
48- I feel it is important to plan one's career.							.903
49- In my opinion, planning one's career and achieving success is important.							.960

*Note.* All coefficients significant at  $p < .01$ ; \* = Marked items were inverted beforehand; COMPANY = this term should be replaced by the name of the company in organizational surveys; CO<sub>r</sub>: Affective commitment to the organization; CS: Affective commitment to the supervisor; CC<sub>w</sub>: Affective commitment to the co-workers; CC<sub>u</sub>: Affective commitment to the customers; CW: Affective commitment to work; CO<sub>c</sub>: Affective commitment to the occupation; Ca: Affective commitment to the career.

**Table 3. Factor Correlations and Internal Consistency for the 35-item 7-factor Model**

	Organization	Supervisor	Co-workers	Customers	Work	Occupation	Career
Organization	(.874)	.418	.458	.455	.416	.502	.262
Supervisor	.495	(.914)	.441	.222	.216	.347	.174
Co-workers	.534	.522	(.832)	.320	.236	.316	.119
Customers	.548	.289	.397	(.880)	.353	.374	.249
Work	.526	.279	.303	.473	(.775)	.403	.443
Occupation	.579	.445	.391	.453	.487	(.860)	.186
Career	.290	.210	.139	.301	.528	.225	(.855)

*Note.* Latent factors standardized correlations are below the diagonal; raw score correlations are over the diagonal; and standardized Cronbach's alphas ( $\alpha$ ) are in the diagonal. All coefficients significant at  $p < .01$ .

### **Invariance Across Language Groups**

The results of the measurement invariance tests across language versions are reported in Table 4. The model appears to fit the data relatively well in both the French and English language groups, with the exception of the RMSEA which appears somewhat high for the French group. This could be due to small sample size since, as previously noted, RMSEA tends to be inflated for small sample sizes (Curran et al., 2003).

The results from the first step of the multiple-group analyses support the configural invariance of the model, which means that the items are associated with the same factors in both language versions. Model 2 tests the weak invariance hypothesis across language versions by holding the factor loadings equal. The  $MD\Delta\chi^2$  as well as the  $\Delta CFI$  and  $\Delta RMSEA$  reveal no significant decrease in model fit and thus support the metric invariance of the WACMQ across language versions. Model 3 tests the strong factorial invariance hypothesis by constraining the thresholds of the items. Again,  $MD\Delta\chi^2$  as well as the  $\Delta CFI$  and  $\Delta RMSEA$  reveal no significant decrease in model fit. Model 4 tests the strict invariance hypothesis by adding equality constraints to the uniquenesses of the items. Once again, the results ( $MD\Delta\chi^2$ ,  $\Delta CFI$  and  $\Delta RMSEA$ ) reveal no significant decrease in model fit. The results from these four models support the measurement invariance of the WACMQ across the language groups and thus support the linguistic equivalence of both versions of the questionnaire. Additional steps also support this conclusion and show that adding equality constraints on the factor variance-covariance matrices and factor means also produces no significant decrease in the fit of the model. Although the  $\Delta CFI$  criteria exceed .01 (but not .02) for model 5, this result shows a tendency towards improvement in model fit. While this result could be attributed to the fact that the more restricted model provides a more parsimonious representation of the data, it is more plausible to attribute it to the way in which  $\chi^2$  and df are computed with the WLSMV estimator.

### **Invariance Across Gender Groups**

The results of the measurement invariance tests across gender groups are reported in Table 5. The model appears to fit the data relatively well in both gender groups.

**Table 4. Summary of Goodness-of-Fit Statistics for Confirmatory Factor Analysis Testing Invariance Across Language Versions**

Model	$\chi^2$ (df)	CFI	TLI	RMSEA	Reference model	DIFFTEST $\Delta\chi^2$ (df)	$\Delta$ CFI	$\Delta$ RMSEA
<i>Model 1.</i> Configural Invariance (Multiple-Group)	360.53 (140)*	.963	.981	.088	---	---	---	---
French only	128.23 (55)*	.957	.976	.107	---	---	---	---
English only	276.26 (98)*	.963	.984	.080	---	---	---	---
<i>Model 2.</i> Invariance of the factor loadings ( $\Lambda$ )	364.86 (143)*	.963	.981	.088	1	35.98 (21)	.000	.000
<i>Model 3.</i> Invariance of the thresholds ( $\nu$ )	362.62 (144)*	.964	.982	.087	2	23.16 (17)	.001	.001
<i>Model 4.</i> Invariance of the uniquenesses ( $\Theta$ )	333.53 (138)*	.968	.983	.084	3	25.28 (20)	.004	.003
<i>Model 5.</i> Invariance of the factor Variance/Covariance matrices ( $\Phi$ )	171.12 (75)*	.984	.984	.080	4	17.38 (9)	.016	.004
<i>Model 6.</i> Invariance of the factor means ( $\kappa$ )	171.54 (77)*	.984	.985	.078	5	2.52 (4)	.000	.002

Note. \*  $p < .01$ ; CFI = Comparative Fit Index, TLI = Tucker-Lewis Index, RMSEA = Root Mean Square Error of Approximation.

**Table 5. Summary of Goodness-of-Fit Statistics for Confirmatory Factor Analyses Testing Invariance Across Gender**

Model	$\chi^2$ (df)	CFI	TLI	RMSEA	Reference model	DIFFTEST $\Delta\chi^2$ (df)	$\Delta$ CFI	$\Delta$ RMSEA
<i>Model 1.</i> Configural Invariance (Multiple-Group)	328.62 (148)*	.966	.982	.080	---	---	---	---
Men only	121.88 (65)*	.966	.978	.082	---	---	---	---
Women only	228.44 (89)*	.961	.983	.079	---	---	---	---
<i>Model 2.</i> Invariance of the factor loadings ( $\Lambda$ )	329.15 (151)*	.967	.982	.079	1	17.12 (21)	.001	.001
<i>Model 3.</i> Invariance of the thresholds ( $\nu$ )	332.37 (154)*	.967	.983	.078	2	26.78 (19)	.000	.001
<i>Model 4A.</i> Invariance of the uniquenesses ( $\Theta$ )	321.23 (147)*	.967	.982	.079	3	52.11 (21)*	.000	-.001
<i>Model 4B.</i> Partial uniquenesses invariance ( $\Theta$ )	312.38 (148)*	.969	.983	.077	3	30.02 (19)	.002	.001
<i>Model 5.</i> Invariance of the factor Variance/Covariance matrices ( $\Phi$ )	163.22 (90)*	.986	.988	.066	4B	10.36 (11)	.017	.011
<i>Model 6A.</i> Invariance of the factor means ( $\kappa$ )	172.83 (92)*	.985	.987	.068	5	15.31 (4)*	-.001	-.002
<i>Model 6B.</i> Partial invariance of the factor means ( $\kappa$ )	163.26 (91)*	.987	.988	.065	5	2.92 (3)	.001	.001

*Note.* \*  $p < .01$ ; CFI = Comparative Fit Index, TLI = Tucker-Lewis Index, RMSEA = Root Mean Square Error of Approximation.

The results from the first step of the multiple-groups analyses support the configural invariance of the model, which means that the items are associated with the same factors for men and women. Model 2 tests the weak invariance hypothesis by holding the factor loadings equal across genders. The  $MD\Delta\chi^2$  as well as the  $\Delta CFI$  and  $\Delta RMSEA$  reveal no significant decrease in model fit and thus support the metric invariance of the WACMQ across genders. Model 3 tests the strong factorial invariance hypothesis by constraining the thresholds of the items. Again,  $MD\Delta\chi^2$  as well as the  $\Delta CFI$  and  $\Delta RMSEA$  reveal no significant decrease in model fit. Model 4A tests the strict invariance hypothesis by adding equality constraints to the uniquenesses of the items. In this case, the significant  $MD\Delta\chi^2$  shows that uniquenesses are not fully invariant across genders, although the  $\Delta CFI$  and  $\Delta RMSEA$  failed to detect this difference.

To detect the specific items responsible for this non-invariance, Cheung and Rensvold's (1999; see also Byrne et al., 1989; French and Finch, 2008) recommendations were followed. First, seven different models were estimated by constraining the uniquenesses of the items to invariance one factor at a time. The uniquenesses of all items associated with the target factor were constrained to invariance, while the uniquenesses of the items associated with the other factors were not. When compared to Model 3, the results from these models show non-significant  $MD\Delta\chi^2$  when the uniquenesses of the items from factors 1, 2, 3 and 5 were constrained to invariance. Conversely, these results suggest that the uniquenesses associated with factors 6 (occupation;  $MD\Delta\chi^2 = 13.23$ ;  $df = 4$ ;  $p = 0.010$ ) and 7 (career;  $MD\Delta\chi^2 = 15.99$ ;  $df = 3$ ;  $p = 0.001$ ) were non-invariant across genders. The  $MD\Delta\chi^2$  was also marginally significant for factor 4 (customers;  $MD\Delta\chi^2 = 12.42$ ;  $df = 4$ ;  $p = 0.015$ ). Further probing of these results was thus conducted at the level of the items for the non-invariant items. First, for each separate non-invariant factor, the uniquenesses of the items were constrained to equality across groups one item at a time, while the uniquenesses for all other items of the model were not. These analyses were complemented with Cheung and Rensvold's (1999) factor-ratio test, which involves imposing invariance constraints on all possible pairs of items within each non-invariant factor, one pair at a time, while all other items of the model are freely estimated. In the present study, each factor is represented by five items, which mean that 10 different models had to be tested for each non-invariant factor (constraining items 1-2, 1-3, 1-4, 1-5, 2-3, 2-4, 2-5, 3-4, 3-5, 4-5). The results from these analyses are available upon request from the first author and show that the uniquenesses of four items were in fact non-invariant (items 17, 31, 32, and 40), leaving at least three strictly invariant items per factor. The results from model 4B, in which the uniquenesses of all other items were constrained to invariance confirm this conclusion.

Model 4B was used as the baseline model for Model 5 and 6. Model 5 adds the invariance of the factor variances and covariances. This model shows no significant decrease in model fit from model 4B, confirming the invariance of this measurement model across genders. Once again, the  $\Delta CFI$  and  $\Delta RMSEA$  criteria exceed .01 (but not .02) for model 5, but this result shows a tendency towards improvement in model fit (see the previous section). Finally, the results from model 6 show that the latent factor means were non-invariant across genders. Alternate models in which the latent means were restricted to invariance one factor at a time were thus tested (Byrne et al., 1989; Cheung and Rensvold, 1999; Little et al., 2007). The results show that the latent means from most factors are perfectly invariant across gender groups, except those from factors 4 (customers;  $MD\Delta\chi^2 = 6.463$ ;  $df = 1$ ;  $p = 0.011$ ) and 7 (career;  $MD\Delta\chi^2 = 16.00$ ;  $df = 1$ ;  $p = 0.0001$ ). These results suggest that compared to men, women are less committed to their career and more committed to the customers (standardized means are .30 on factor 4 and -.45 on factor 7 for women when they are fixed at 0 for men). Results from model 6B, in which the latent means of factors 1, 2, 3, 5, and 6 were constrained to invariance, confirm this conclusion.

## CONCLUSION

The main objective of this study was to verify the distinct nature of eight proposed generic targets of workplace affective commitment. The results sustain the distinctiveness of employees' affective commitment to their organizations, supervisors, co-workers, customers, careers, and work in general. However, the results failed to support that the profession and tasks targets of WAC could be distinguished. Rather, they showed that these targets were best represented as a single construct: employees' affective commitment to their occupation. This target may be defined as employees' emotional attachment to their specific profession and to the tasks inherent in their daily work. Interestingly, this replicates Madore's (2004) results and concurs with previous definitions of the *job involvement* (Kanungo, 1982; Paullay et al, 1994) and *occupational commitment* (Meyer et al., 1993) concepts.

Various hypotheses may explain this result. First, it remains possible that the chosen items failed to adequately capture the essence of these two constructs. However, the fact that the majority of the items included in both subscales were taken from previous instruments in which they did correctly measure the relevant concepts, as well as the fact that they were chosen by independent judges to be included in this study as adequate illustrations of the concepts, limit the



plausibility of this hypothesis. Second, both proposed dimensions may indeed represent a single underlying construct. In fact, Cohen (1993, 1999) is the only author who previously did systematically attempt to demonstrate the distinct nature of these two targets of WAC. In one study (Cohen, 1999) he did manage to demonstrate their distinctiveness, using a sample of 238 nurses. However, in a previous study relying on a sample of 129 white collar workers (Cohen, 1993), he observed that these two targets were strongly correlated and hard to distinguish (many items did load on both factors). The nature of Cohen (1993, 1999) samples allows for the formulation of a third hypothesis: the possibility to distinguish these two targets may depend on the specific sample used in the study. In the present sample, the analysis relied on a sample of technical and operational employees (insurance agents, statisticians, secretaries, etc.) for whom the distinction between their tasks and their profession may be blurred, their tasks being usually intimately determined by their profession. Conversely, some types of professional workers (nurses, teachers, physicians, etc.) may often be exposed to conflicting tasks unrelated to their profession. For instance, Aiken, Clarke, Sloane and Sochalski (2001) conducted a study on a sample of 43 329 nurses from five different countries and found that a very high percentage of them reported spending a significant portion of their working time executing tasks that were unrelated to their profession (e.g. housekeeping). In this context, this study should clearly be replicated in professional samples to see whether the tasks and profession targets of WAC could be distinguished. However, the present results cast definite doubts on the purported “universality” of the commitment to profession dimension and suggest that the factor structure may vary across occupational groups. This hypothesis could not be verified in the present study due to the small sample size and reduced variability of the occupational groups.

A second objective was to verify the measurement invariance of the proposed conception across gender and linguistic groups. Given the fact that the model was submitted to some quite severe invariance tests, the full invariance of the final model across language versions is impressive. These results thus provide additional support to the previously demonstrated intercultural/linguistic invariance of the WAC concept (e.g. Vandenberghe, 1996; Vandenberghe et al., 2001) and show that both versions of the WACMQ can be used interchangeably in organizational settings. The level of invariance of the WACMQ across gender groups is also encouraging. Indeed, the only part of the WACMQ measurement model that seems non-invariant across gender groups refers to the uniquenesses associated with four of the 35 items retained in the final model. It should be noted that a number of scholars do not consider uniqueness invariance necessary for comparing latent means and that the requirement of complete uniqueness

invariance for group comparisons is an issue that still needs further systematic empirical testing (e.g. Little et al., 2007; Lubke and Muthén, 2004). In any case, partial invariance of 31 of the 35 items (added to the full invariance of the model configuration, loadings, thresholds, variances and covariances) clearly justify the adequacy of between-group mean-level comparisons using the WACMQ. In this regard, mean-level comparisons provide partial support to our hypothesis by showing that women did indeed appear to be more strongly committed to their co-workers than men, while the reverse was true for career-related commitment. The high level of convergence between these results and the known gender differences regarding the relative importance ascribed to social and personal accomplishment targets (Cross and Madson, 1997; Taylor et al., 2000) provide preliminary support to the construct validity of the WACMQ. Conversely, no differences were found between men's and women's levels of supervisor- and customer-related affective commitment, although the same theoretical bases suggest that women should present higher levels of commitment towards both targets (Cross and Madson, 1997; Taylor et al., 2000). Four hypotheses may explain this result.

First, the absence of gender-based differences in commitment to those targets may represent an artifact of the reduced size of the men's sample. Second, it is also possible that gender really does not influence employees' affective commitment to those work-related targets. This hypothesis is supported by previous studies which also failed to demonstrate relations between gender and commitment (e.g. Clugston, Howell, and Dorfman, 2000; Meyer, Stanley, Herscovitch, and Topolnytsky, 2002). However, a third hypothesis invokes the specific characteristics of the sample used in the present study. Indeed, in this study, very few employees could be considered as members of clearly defined work teams. Consequently, although they may develop strong affective ties with other employees or with supervisors, there is no reason that those ties should be stronger or more prevalent within their work units than across work units. Consequently, women's tendency to ascribe a greater level of importance to their friendships may not appear on the WACMQ, which refers specifically to the co-workers from their unit and to their immediate supervisors. Fourth, the influence of cultural stereotypes and values on gender roles represents another known fact in social psychology (Cross and Madson, 1997; Hofstede, 1991). Thus, the preponderance of women in the participating companies may have an impact on what is considered important in these companies. If that hypothesis were true, "feminine" forms of commitment should be more prevalent in this study, even in the men's subsample. This hypothesis suggests that organizational culture may represent a more important determinant of commitment than individual values, or

that individuals select organizations sharing their values. Preliminary evidence indirectly supports this hypothesis (e.g. Clugston et al., 2000; Judge and Cable, 1997), which should be examined in future studies.

This study also resulted in the development of a new multidimensional measure of workplace affective commitment, the WACMQ. The final version (35-item, 7-factor) represent a promising instrument to measure generic targets of workplace affective commitment in French and English, male and female populations. This conclusion remains conditional on the verification of additional psychometric properties and on the replication of the present results. The results provide preliminary support to the internal consistency and to the factorial, content, and construct validity of the WACMQ's scores. Still, because the main objective of the present study was to verify the dimensionality and invariance of the construct of workplace affective commitment rather than to validate the WACMQ per se, other psychometric properties such as test-retest reliability or convergent / discriminant validity were not evaluated. This is particularly important and represents a serious psychometric limitation of the WACMQ. Indeed, a complete demonstration of the distinct character and usefulness of those seven (or eight) targets of WAC need to demonstrate their differential associations with relevant external variables and to show that they really improve the prediction of workplace outcomes (e.g. Cohen, 2003).

## LIMITATIONS AND FUTURE RESEARCH

Before the psychometric properties of the WACMQ can be clearly established, these results should be replicated to address the many limitations of the present study. Indeed, this study relied on a convenience sample which was used to validate and refine Madore's (2004) WACMQ. From an initial pool of 49 items, the final scale was reduced to 35, through a process that canceled some of the advantages of CFAs over exploratory factor analyses. The results are very encouraging, but it remains unknown whether they suggest adequate factorial validity of the WACMQ or simply the overfitting of the factorial model to a single sample (capitalization on chance). Although the overfitting hypothesis is somewhat offset by the fact that the model proved invariant across four distinct sub samples, the reduced size of these sub samples constitutes another serious limitation, especially in the men and in the French sub samples.

Theoretical limitations also affect the generalizability of the results. Indeed, for the sake of parsimony and because the main objective of this study was to verify the distinctiveness of the eight proposed targets of workplace affective

commitment, some important concepts from the workplace commitment literature were voluntarily excluded. First, the choice to focus only on the affective base of commitment implies that the resulting conceptualization could not be generalized to the normative and continuance commitment which have also been found to predict employees' efficient behaviors at work and even to moderate the effects of affective commitment (e.g. Herscovitch and Meyer, 2002; Meyer et al., 1993). Second, the retained definition of workplace affective commitment did not attempt to distinguish between O'Reilly and Chatman's (1986) concepts of internalization and identification, which both represent facets of workplace affective commitment. Indeed, recent studies suggest that commitment and identification could and should be differentiated (Gautam, Van Dick, and Wagner, 2004; Van dick, Wagner, Stellmacher, and Christ, 2004). Still, since both constructs are highly correlated (Gautam et al., 2004) and since it remains unclear whether this distinction is equally relevant to the eight targets of commitment, this distinction was not taken into account.

Third, Brown (1996) pointed out that workplace commitment should be defined not only according to its bases and targets, but also according to its terms. He defines the terms of commitment as "an understanding of what must be done by a committed party to uphold the commitment" (p.233). This conceptualization indicates that, while different employees may be committed to the same target, their commitment may reflect a desire to take different courses of actions regarding the target. Finally, this study voluntarily excludes references to the literature on "goal commitment" (Klein, Wesson, Hollenbeck, and Alge, 1999; Klein, Wesson, Hollenbeck, Wright, and DeShon, 2001). This choice relied on the fact that employees' goals are either inherent aspects of their daily tasks or shared with their superiors or co-workers. Consequently, it appears that goal commitment is more likely to represent a term of an employee's commitment to a specific target than a target of workplace commitment per se (Brown, 1996). The consequences of these choices should be evaluated in future studies in which additional layers of complexity could progressively be added to the proposed multidimensional conception.

To conclude, the present results are interesting and suggest that at least seven generic targets of workplace affective commitment could be distinguished in different samples (males and females, French and English). However, the real usefulness of the present conceptualization and its applicability to white collar and professional samples remain to be demonstrated. Additionally, the interrelations among these forms of commitment remain to be evaluated. For instance, it would be interesting to identify distinct profiles of commitment (e.g. cluster analyses, mixture modeling) and to test whether they are replicable in various populations.

**APPENDIX A**  
**The Workplace Affective Commitment Multidimensional**  
**Questionnaire (final version)**

**INSTRUCTIONS**

Please indicate to what extent you disagree or agree with each statement

1	2	3	4	5	6	7
Totally disagree			Neutral			Totally agree

1.	Statement	1	2	3	4	5	6	7
1.	I am proud to say that I work for this organization ( <i>COMPANY</i> )	1	2	3	4	5	6	7
2.	This organization ( <i>COMPANY</i> ) means a lot to me	1	2	3	4	5	6	7
3.	I like the values my immediate supervisor conveys	1	2	3	4	5	6	7
4.	I feel privileged to work with someone like my immediate supervisor	1	2	3	4	5	6	7
5.	I'm happy to work with my coworkers (in my unit)	1	2	3	4	5	6	7
6.	My coworkers (in my unit) make me feel like going to work	1	2	3	4	5	6	7
7.	I don't like working for this organization ( <i>COMPANY</i> )	1	2	3	4	5	6	7
9.	I don't like my immediate supervisor	1	2	3	4	5	6	7
10.	If it were possible, I would like to work with another immediate supervisor	1	2	3	4	5	6	7
11.	I don't feel emotionally attached to this organization ( <i>COMPANY</i> )	1	2	3	4	5	6	7
12.	When I talk about my immediate supervisor to my friends, I describe him/her as a great person to work with	1	2	3	4	5	6	7
13.	When I talk about this organization ( <i>COMPANY</i> ) to my friends, I describe it as a great place to work	1	2	3	4	5	6	7
14.	When I talk about my coworkers (in my unit) to my friends, I describe them as great people to work with	1	2	3	4	5	6	7
15.	I really care about the satisfaction of [ <i>COMPANY</i> ] customers	1	2	3	4	5	6	7
16.	Delivering quality products and/or services to [ <i>COMPANY</i> ] customers is a major source of satisfaction for me	1	2	3	4	5	6	7
17.	I consider satisfying [ <i>COMPANY</i> ] customers the most important part of my job	1	2	3	4	5	6	7
18.	In my opinion, the satisfaction of [ <i>COMPANY</i> ] customers is a priority	1	2	3	4	5	6	7
19.	[ <i>COMPANY</i> ]'s customers inspire me to give my best	1	2	3	4	5	6	7
20.	I don't share the values conveyed by my coworkers (in my unit)	1	2	3	4	5	6	7
21.	If it were possible, I would move to another unit so I wouldn't have to work with my current coworkers any more	1	2	3	4	5	6	7

**Appendix A. (Continued)**

22	I would be happy to practice this profession all my life	1	2	3	4	5	6	7
23	Work is a priority in my life	1	2	3	4	5	6	7
24	I find the tasks I perform in my current position stimulating	1	2	3	4	5	6	7
25	I find most of the tasks I perform in my current position extremely interesting	1	2	3	4	5	6	7
26	I would like to hold increasingly important positions throughout my career	1	2	3	4	5	6	7
27	It is important for me to move up through the ranks or obtain promotions	1	2	3	4	5	6	7
28	I would keep working even if I had enough money	1	2	3	4	5	6	7
29	I could very easily not work and be perfectly happy	1	2	3	4	5	6	7
30	I don't consider myself particularly ambitious in terms of my career	1	2	3	4	5	6	7
31	I like the tasks I perform in my current position too much to think about changing jobs	1	2	3	4	5	6	7
32	I like my profession too much to think about changing	1	2	3	4	5	6	7
33	One of the most satisfying things in my life is the fact that I work	1	2	3	4	5	6	7
34	Most of my personal objectives are focused on work	1	2	3	4	5	6	7
35	I feel it is important to plan one's career	1	2	3	4	5	6	7
36	In my opinion, planning one's career and achieving success is important	1	2	3	4	5	6	7

**APPENDIX B****Le Questionnaire Multidimensionnel d'Engagement Affectif en Milieu de Travail (version finale)****CONSIGNE**

**Veillez indiquer votre degré de désaccord ou d'accord avec chacun des énoncés**

1	2	3	4	5	6	7
Totalement en désaccord			Neutre			Totalement en accord

1.	Je suis fier (fière) de dire que je travaille pour cette organisation ( <i>COMPAGNIE</i> )	1	2	3	4	5	6	7
2.	Cette organisation ( <i>COMPAGNIE</i> ) a beaucoup d'importance pour moi	1	2	3	4	5	6	7
3.	J'aime les valeurs véhiculées par mon (ma)	1	2	3	4	5	6	7

	superviseur (e) immédiat (e)							
4.	Je me considère privilégié (e) de travailler avec quelqu'un comme mon (ma) superviseur (e) immédiat (e)	1	2	3	4	5	6	7
5.	Je suis heureux (heureuse) de pouvoir travailler avec mes collègues de travail (dans mon unité)	1	2	3	4	5	6	7
6.	Mes collègues de travail (dans mon unité) me donnent le goût d'aller travailler	1	2	3	4	5	6	7
7.	Je n'aime pas travailler pour cette organisation ( <i>COMPAGNIE</i> )	1	2	3	4	5	6	7
9.	Je n'aime pas mon (ma) superviseur (e) immédiat (e)	1	2	3	4	5	6	7
10.	Si c'était possible, j'aimerais travailler avec un (une) autre superviseur (e) immédiat (e)	1	2	3	4	5	6	7
11.	Je ne me sens pas attaché (e) émotionnellement à cette organisation ( <i>COMPAGNIE</i> )	1	2	3	4	5	6	7
13.	Lorsque je parle de mon (ma) superviseur (e) immédiat (e) à mes amis je le (la) décris comme une personne avec qui il est très agréable de travailler	1	2	3	4	5	6	7
14.	Lorsque je parle de cette organisation ( <i>COMPAGNIE</i> ) à mes amis je la décris comme un endroit où il est très agréable de travailler	1	2	3	4	5	6	7
15.	Lorsque je parle de mes collègues de travail (dans mon unité) je les décris comme des personnes avec qui il est très agréable de travailler	1	2	3	4	5	6	7
16.	Je me préoccupe vraiment de la satisfaction des clients de [ <i>COMPAGNIE</i> ]	1	2	3	4	5	6	7
17.	Livrer aux clients de [ <i>COMPAGNIE</i> ] des produits et/ou des services de qualité est pour moi une source de satisfaction importante	1	2	3	4	5	6	7
19.	Je considère que satisfaire les clients de [ <i>COMPAGNIE</i> ] est la partie la plus importante de mon travail	1	2	3	4	5	6	7
22.	La satisfaction des clients de [ <i>COMPAGNIE</i> ] est prioritaire à mes yeux	1	2	3	4	5	6	7
23.	Les clients de [ <i>COMPAGNIE</i> ] me poussent à donner le meilleur de moi-même	1	2	3	4	5	6	7
24.	Je ne partage pas les valeurs véhiculées par mes collègues de travail (dans mon unité)	1	2	3	4	5	6	7
25.	Si c'était possible, je changerais d'unité afin de ne plus avoir à travailler avec mes collègues de travail actuels	1	2	3	4	5	6	7

**Appendix B. (Continued)**

26.	Je serais heureux (heureuse) d'exercer cette profession toute ma vie	1	2	3	4	5	6	7
27	Le travail occupe une place prioritaire dans ma vie	1	2	3	4	5	6	7
28	Je trouve stimulantes les tâches que j'effectue dans mon poste actuel	1	2	3	4	5	6	7
29	La majorité des tâches que j'effectue dans mon poste actuel me passionnent	1	2	3	4	5	6	7
30	J'aimerais, tout au long de ma carrière, occuper des postes de plus en plus importants	1	2	3	4	5	6	7
31	Il est important pour moi de gravir les échelons ou encore d'obtenir des promotions	1	2	3	4	5	6	7
32	Je continuerais à travailler, même si j'avais assez d'argent	1	2	3	4	5	6	7
33	Je pourrais très bien ne pas travailler et être parfaitement heureux (heureuse)	1	2	3	4	5	6	7
34	Je ne me considère pas comme une personne particulièrement ambitieuse en ce qui concerne ma carrière	1	2	3	4	5	6	7
35	J'aime trop les tâches que j'effectue dans mon poste actuel pour penser à changer d'emploi	1	2	3	4	5	6	7
36	J'aime trop cette profession pour penser à changer d'occupation	1	2	3	4	5	6	7
37	L'une des plus grandes satisfactions dans ma vie vient du fait que je travaille	1	2	3	4	5	6	7
38	La majorité de mes objectifs personnels sont orientés vers le travail	1	2	3	4	5	6	7
39	Je considère qu'il est important de planifier sa carrière	1	2	3	4	5	6	7
40	Planifier sa carrière et avoir du succès est important à mes yeux	1	2	3	4	5	6	7

**ACKNOWLEDGEMENT**

The first two authors contributed equally to this article and their order was determined at random. The authors wish to thank *Analys Organizational Psychology Inc.*, as well as the participating organizations for their invaluable material, financial and logistic support; the judges and translators for their input; Roger E. Millsap, and the Mplus discussion board (Bengt Muthén and Linda Muthén) for invaluable input at the initial stage of the analyses.



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