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What is This?

Assessing Cross-National Invariance of the Three-component Model of Organizational Commitment: A Six-Country Study of European University Faculty

Rob Eisinga[1], Christine Teelken[2], and Hans Doorewaard[1]

Abstract

This study examined cross-national invariance of Meyer and Allen's three-component model of organizational commitment using samples of university faculty from six European countries. The analysis revealed strict factorial measurement invariance of affective, continuance, and normative organizational commitment constructs (AC, CC, and NC, respectively). While the samples failed to differ in AC and CC, substantial cross-national differences were found for NC. Results showed an invariant zero correlation between AC and CC, and NC associated positively with affective and continuance components. Procedural justice predicted AC and less strongly NC, but it had no effect on CC. A positive link with job performance was

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found for AC, a negative one for CC, and no association for NC. Results by and large support the generalizability of the tripartite organizational commitment model to the European context.

Keywords

The research reported here was sparked by the meta-analysis of organizational commitment studies by Meyer, Stanley, Herscovitch, and Topolnytsky (2002) and their conclusion that an important next step in establishing the generalizability of the three-component commitment model is evaluating its validity in other countries. They strongly recommended that the affective, continuance, and normative organizational commitment (AC, CC, and NC, respectively) scales frequently administered in the United States and Canada be examined outside North America as well.

A key concern when extending the model to other countries is whether the instruments designed to measure the three forms of commitment are cross-nationally equivalent. For comparisons across countries to be justified, the underlying constructs have to exhibit adequate cross-national invariance (Drasgow & Kanfer, 1985; Vandenberg & Lance, 2000). Although studies of a comparative nature have been reported (e.g., Andolšek & Štebe, 2004; Gelade, Dobson, & Gilbert, 2006; Lincoln & Kalleberg, 1985; Luthans, McCaul, & Dodd, 1985; Randall, 1993), a limitation of much research in the area has been the failure to establish measurement invariance of the instruments prior to assessing country differences and cross-national variations in relationships with other variables. Consequently, as Hattrup, Mueller, and Aguirre (2008) have recently argued, still little is actually known about the generalizability of commitment theory and empirical findings across borders.

The purpose of this article is twofold. First, to test measurement invariance of the AC, CC, and NC scales using multigroup confirmatory factor analysis of cross-national data of university faculty members from six European countries: Belgium, Germany, Netherlands, United Kingdom, Finland, and Sweden. Available tests form a hierarchy that provides increasing evidence of cross-national measurement invariance. The article additionally examines structural invariance of the relationships of AC, CC, and NC and constructs identified as their determinants and consequences. Our concern is not to offer an account of all potential predictors, correlates, and outcomes, as these already

have been carefully considered by Meyer et al. (2002). Rather, our interest is to examine invariance of structural effects (or lack thereof) of two frequently studied variables in the organizational commitment literature. The structural equation model reported here takes procedural justice (PJ) as antecedent of organizational commitment and job performance (JP) as relevant outcome. PJ, covering employee input in decision making and adequate employer notice before implementing decisions, is found to be an important determinant of organizational commitment (e.g., Meyer et al., 2002; Rhoades, Eisenberger, & Armeli, 2001). Furthermore, although narrative reviews and meta-analytic work have yielded weak positive effects on JP (Lee, Carswell, & Allen, 2000; Mathieu & Zajac, 1990; Meyer et al., 2002; Mowday, Porter, & Steers, 1982), AC to the organization is often credited with increasing individual effort at work (e.g., Meyer & Allen, 1991; Meyer, Paunonen, Gellatly, Goffin, & Jackson, 1989).

The second aim of the article is to theoretically explain potential cross-country differences in commitment levels. Our samples of European university employees are all taken from Western industrialized societies, and there is extensive similarity between their cultures due to the countries being geographically close, their shared histories, and culture contact. However, there are potential differences in cultural traditions and value orientations. Hofstede's (2001) cross-cultural framework provided measures of national cultures to specify groups of cultures rated as low versus high on individualism, power distance, masculinity, and uncertainty avoidance. The position on his Value Survey Module is taken to be associated with organizational commitment, and this enables us to anticipate country differences in commitment of European university employees to their faculty.

The article is organized as follows: Section 2 discusses the three facets of organizational commitment, reviews previous national and cross-national commitment research, and presents our empirical expectations. The data and invariance tests are discussed in Section 3. Section 4 shows the results of factorial invariance testing and structural equation modeling and Section 5 concludes.

Three-Component Model of Organizational Commitment

Employee commitment has long been a topic of interest to organizational researchers (Mathieu & Zajac, 1990; Meyer & Allen, 1984, 1991; Morrow, 1993; Mowday et al., 1982). What makes it important to investigate is that commitment is shown to be associated with various work-related outcomes,

such as job satisfaction, turnover, and performance (e.g., Allen & Meyer, 1990; Hackett, Bycio, & Hausdorf, 1994; Ko, Price, & Mueller, 1997; Mathieu & Zajac, 1990; Meyer et al., 1989, 2002; Randall, Fedor, & Longenecker, 1990). Although various definitions have emerged in the literature, the most common approach has defined organizational commitment as "the strength of an individual's identification with and involvement in a particular organization" (Porter, Steers, Mowday, & Boulian, 1974, p. 604). In 1991, Meyer and Allen proposed a three-dimensional conceptualization of organizational commitment and suggested that a distinction be made between an affective, continuance, and normative component. AC represents an individual's positive emotional attachment to the employing organization. CC refers to an attachment based on calculations of the social and economic costs involved in quitting. NC indicates an attachment based on feelings of duty to remain working for the organization after joining.

The three-component model of organizational commitment has frequently been investigated in the past two decades, albeit mainly from a domestic, single-country perspective by North American researchers. In 2002, Meyer et al. reported a meta-analysis of 155 independent samples to reevaluate their model. The analysis confirmed that the three components are related yet distinct constructs, clearly separated from frequently studied correlates such as job satisfaction. AC showed strong relationships with organization- and employee-relevant outcomes. These relationships were moderate for NC, and CC proved to be either negatively related or unrelated to outcomes. Meyer et al. (2002) also concluded that there were too few studies available to systematically compare cultures to test the generalizability of the model outside North America, and they argued that more primary research in other cultural settings is warranted.

Unicultural and Cross-Cultural Studies

Indeed, although cultural differences in commitment and its correlates have received scholarly interest, cross-national studies are still rather limited in both number and range. Previous comparative work has largely been restricted to single-nation studies conducted in countries outside North America.[1] Although these studies are methodologically important and informative from a cross-cultural viewpoint, a major limitation is that they do not provide a comparison of results across samples from different national cultures. Studies that did provide these findings typically compared two countries, commonly using a North American sample and an African or Eastern Asian one (e.g., Lee & Yang, 2005; Lincoln & Kalleberg, 1985; Meyer,

Srinivas, Lal, & Topolnytsky, 2007; Near, 1989, Snape, Lo, & Redman, 2008; Walumbwa, Orwa, Wang, & Lawler, 2005). Profound studies of more than two countries, cultures, or nationalities—such as those reported by Vandenberghe, Stinglhamber, Bentein, and Delhaise (2001), Gelade et al. (2006), and Hattrup et al. (2008)—are still rather rare.

Also, in spite of the multidimensionality of organizational commitment, only few comparative works have investigated all three components in the same study. Past cross-national research has typically focused on AC only or on AC and CC (Andolšek & Štebe, 2004; Gelade et al., 2006; Glazer, Daniel, & Short, 2004; Hattrup et al., 2008). Moreover, most of the cross-national studies are not concerned with measurement invariance. It is well known that substantive conclusions drawn from the analysis of noninvariant measures may deviate from those resulting from measures that are psychometrically invariant across groups (Zhou, Schriesheim, & Beck, 2001). Surprisingly, few studies have sought to examine measurement invariance of the three-component model across countries, however. Instead, as Hattrup et al. (2008) noted, most studies just assumed measurement invariance and compared countries without empirical evidence that such comparisons are justified.

Factor Structure and Measurement Invariance

Several North American studies using confirmatory factor analysis (e.g., Culpepper, 2000; Dunham, Grube, & Casteňada, 1994; Hackett et al., 1994; Irving, Coleman, & Cooper, 1997; Meyer, Allen, & Gellatly, 1990) have reported evidence in support of the three-dimensional oblique structure proposed by Allen and Meyer (1990). However, less consistency appears to characterize the findings of studies conducted in other cultural settings. White et al. (1995) examined the structure of the Organizational Commitment Questionnaire, a measure of AC developed by Porter et al. (1974), in Japan. Using a confirmatory factor analytic approach, they concluded that a three-factor solution yielded a good fit. Similar results were obtained by Snape and Redman (2003) for data collected in the United Kingdom and by Vandenberghe (1996) and Stinglhamber et al. (2002) for Belgian samples. Andolšek and Štebe (2004) showed that in each of the seven countries involved in their study of AC and CC, each measured by only two items, a two-factor solution obtained a superior fit compared to a one-factor solution. In contrast, a number of single-sample studies conducted outside North America have failed to provide strong support for the three-factor oblique structure, when administered to Chinese, South Korean, or Turkish samples (Chen & Francesco, 2003; Cheng & Stockdale, 2003; Ko et al., 1997; Snape

et al., 2008; Wasti, 2003a, 2003b). Although the three-factor model provided a better fit to the data than one- and two-factor models, it obtained less-than-optimal fit values. In some studies, a four-factor model—with CC broken down into two factors, namely, high perceived costs associated with leaving and perceived lack of alternatives—provided a superior fit (Wasti, 2003a, 2003b). In discussing the above-noted Eastern Asian studies, Vandenberghe (2003) noted that part of the nonequivalence may be due to difficulties in translating items into different languages, in addition to cultural differences. Indeed, Lee, Allen, Meyer, and Rhee (2001) reported that after replacing certain items by linguistically simpler ones, acceptable fit was obtained for commitment measures administered to their South Korean sample.

Only a handful of studies have assessed cross-national measurement invariance of the commitment model underlying item responses. Gelade et al. (2006) found evidence for metric invariance, obtained by constraining the factor loadings to be equivalent across countries, for an AC scale using data collected in 16 countries, and Hattrup et al. (2008) observed partial metric invariance for an AC scale in 25 nations. Vandenberghe et al. (2001) reported support for the three commitment components and support for measurement invariance across 12 nationalities represented by respondents from the European Commission headquarters in Brussels, using a measure of commitment designed specifically for their research. Lincoln and Kalleberg (1985) observed invariance of the Organizational Commitment Questionnaire for samples from Japan and the United States, and Walumbwa et al. (2005) found support for invariant factor loadings of these items across a U.S. sample and a Kenyan one. Recently, Snape et al. (2008) observed that the commitment measurement model was not significantly different for their British and Chinese samples, in terms of factor structure, loadings, and variances. Luthans et al. (1985), in contrast, reported differences in the number of factors extracted from an exploratory factor analysis across samples from the United States, Japan, and South Korea, which is bolstered by Lee and Yang's (2005) findings. Two factors, AC and NC, emerged from their U.S. sample but only a single factor from the Korean. Poor model fit was also observed in a study that compared French and English speaking Canadians using the Organizational Commitment Questionnaire (Mathieu, Bruvold, & Ritchey, 2000). Configural invariance was achieved, supporting the notion that the groups conceptualized commitment in the same way, but more rigorous multigroup invariance tests revealed that the responses could not be pooled for further analysis.

Some authors have argued that lack of invariance is more commonly observed in studies that use samples from more disparate cultures, for example the United States and Japan, than in comparisons involving culturally more

similar settings, such as North America and Western Europe (Hattrup et al., 2008, Vandenberghe, 2003). The "inequivalence" may be caused by response style differentials, language translation problems, and/or cultural differences. Near (1989) wrote that commitment means different things to members of collectivist cultures compared with members of individualist cultures. Whereas individualists are driven by individual goals and outcomes, collectivists are more strongly directed toward group and collective goals. Because the commitment measures emphasize organizational attachment and involvement, commitment levels may differ across countries differing in individualism versus collectivism. It seems likely that people from collectivist societies will express a stronger degree of identification with their organizations than those from individualist societies (Cheng & Stockdale, 2003; Randall, 1993). Indeed, the recent meta-analysis conducted by Fischer and Mansell (2009) showed greater collectivism to be associated with higher NC. However, it may also be that organizational commitment is conceptually different for disparate cultures. Some cultures may separate feelings of emotional attachment and feelings of obligation, whereas others do not. Moreover, it may even be that commitment cannot be measured with a single common set of items in studies comparing societies with highly diverse cultural values. Lack of measurement invariance may thus be due to systematic biases in the way people from different cultures respond to the items.

Factor Correlations and Mean Differences

Another issue concerns the relationships among the commitment components across cultures. The meta-analytic estimates provided by Meyer et al. (2002) revealed that the substantial correlation between AC and NC is even stronger outside ($\rho = .69$) compared to inside ($\rho = .59$) of North America. The intercorrelations among other components also differed markedly, with CC and NC being weakly related ($\rho = .15$ inside vs. $\rho = .22$ outside) and CC and AC almost unrelated ($\rho = .02$ inside vs. $\rho = .13$ outside). Several recently published studies conducted in China, reporting zero-order correlations between AC and NC (well) in excess of .60, support this finding (Chen & Francesco, 2003; Cheng & Stockdale, 2003; Yao & Wang, 2006). Thus, people in Asia seem to differentiate less strongly among the components AC and NC than North Americans do. Some authors even suggested that they may be conceptually indistinguishable among Koreans (e.g., Ko et al., 1997; Lee & Yang, 2005). Recent European studies, in contrast, reported rather moderate relationships, with AC and NC correlating in the .30 to .40 range (Vandenberghe et al., 2001). This seems to imply that higher AC–NC correlations tend to be

observed only in samples culturally dissimilar to the United States and Canada and, too, that equivalent correlations are more likely to be found among culturally similar samples.

Some research attention has been given to cross-national differences in mean levels of commitment across national boundaries. As noted above, it has been hypothesized that employees in non-Western collectivist cultures express higher levels of commitment to the organization than their Western counterparts in individualist cultures (Besser, 1993). In general, however, the evidence fails to support this conjecture (Randall, 1993). A study by Cole (1979), for example, found lower mean scores on a measure of AC among Japanese workers as compared with U.S. employees. Similar results were reported by Luthans et al. (1985) and Andolšek and Štebe (2004). The findings should be interpreted cautiously, however, because measurement invariance with regard to cultural differences in understanding of scaling units is not established in these studies. Kirkman and Shapiro (2001) found some evidence of measurement invariance for an AC scale and observed several mean differences across samples of employees from the United States, Finland, Belgium, and the Philippines. Gelade et al. (2006) reported national differences in AC and showed that country-level variation in AC was unrelated to country-level variation in individualism and collectivism. In contrast, Glazer et al. (2004) examined AC and CC using data collected in four countries and observed higher AC scores among communal cultures (Hungary, Italy) and higher CC scores among contractual cultures (United Kingdom, United States). Similarly, Snape et al. (2008) recently found that AC and NC were higher in their Chinese sample and CC higher in the British counterparts.

PJ as Antecedent

PJ involves policies and rules concerning decisions that affect employees and covers adequate management notice before decisions are implemented, receipt of accurate information by employees, and employee input in the decision process (Cropanzano & Greenberg 1997; Greenberg, 1990). Communication and participation in decision making are significant rewards that can be offered to obtain employee commitment. It has therefore been suggested that PJ creates the conditions for commitment and that it should thus be seen as one of its important antecedents (Meyer & Allen, 1997). In agreement with this view, several studies reported intraorganizational communication and organizational commitment to be strongly related (DeCotiis & Summers, 1987; De Ridder, 2004; Mathieu & Zajac, 1990; Postmes, Tanis, & De Wit, 2001; Trombetta & Rogers, 1988). Indeed, one of the most striking findings of

Mathieu and Zajac's (1990) meta-analysis was the strong effect of communication on commitment. Communication was even the strongest of all contextual antecedents reported. The Dutch survey conducted by Postmes et al. (2001) found AC to be strongly related to vertical work-related communications up and down the organizational hierarchy, ranging from employees receiving strategic information about the organization to the ability for giving bottom-up feedback and advice to top management. Other studies have also shown that employees who participate in decisions involving them have higher levels of AC, such as Rodwell, Kienzle, and Shadur (1998) in their Australian survey. But the link is not restricted to AC. The meta-analysis of Meyer et al. (2002) reported relatively strong positive correlations of PJ with AC ($\rho = .38$) and NC ($\rho = .31$), and a weak negative correlation with CC ($\rho = -.14$). Finally, some authors have reported global variations in the antecedents of organizational commitment (specifically various job characteristics) and found them to be related to Hofstede's (2001) cultural value individualism versus collectivism (e.g., Gelade, Dobson, & Auer, 2008). However, the job communication–commitment link is not expected to vary in the confined Western individualistic setting.

JP as Outcome

It has been rather disappointing that empirical research on organizational commitment has not validated the expectation that higher levels of commitment relate to higher work performance. Instead, exhaustive reviews of research indicate that commitment has relatively little direct influence (Mathieu & Zajac, 1990; Meyer et al., 2002; Morrow, 1993; Mowday et al., 1982). Moreover, the strength of the relationship varies for the different facets of commitment. Most important is AC which, if related, bears a positive relationship to performance. Also, while the relationship between organizational commitment and JP has received a fair deal of scholarly interest within North America, there has been little attempt to explore cross-national variation in the relationship. Some authors have argued that commitment matters more for outcomes in collectivist cultures than it does in individualist cultures. For example, Lee et al. (2001) reported higher correlations between NC and intention to leave for samples in collectivist cultures than for North American ones, and Felfe, Yan, and Six (2008) recently found stronger effects of AC and NC on turnover intention in China and Romania compared to Germany. This result is not supported by Glazer and Beehr (2005), who deemed the effects of AC and CC on turnover intention to be largely equivalent in Hungary, Italy, the United Kingdom, and the United States. However, only few studies

of the commitment–JP link have been conducted in countries outside of the United States and Canada, and these single-nation studies do not provide a direct comparison of the strength of the relationship across cultures (Chen & Francesco, 2003; Chen, Tsui, & Farh, 2002). The meta-analytic estimates of Meyer et al. (2002) showed that AC (ρ = .12) and NC (ρ = .07) correlated positively, and CC (ρ = –.05) correlated negatively with self-rated JP and that the correlation between NC and performance was larger in studies conducted outside (ρ = .10) than within (ρ = .01) North America. The study conducted by Chen and Francesco (2003) in China yielded similar results, showing that the correlation between AC, NC, and CC and in-role performance was .18, .08, and –.01, respectively. Overall, however, the relationships appear to be very moderate, so there is little reason to anticipate substantial cross-national differences in the link between commitment and JP, especially in comparisons of culturally similar countries.

Culture and Commitment

An important theoretical framework for understanding cross-cultural differences in organizational commitment and to guide cross-cultural comparisons is Hofstede's (2001) Value Survey Module. His model identifies four cultural dimensions that Hofstede determined were the most important in explaining differences among cultures—individualism (vs. collectivism), power distance, masculinity (vs. femininity), and uncertainty avoidance. Individualism has been referred to above and is the extent to which identity derives from the self versus the collective. Power distance indicates the extent to which less powerful individuals accept unequal distributions of power in institutions and organizations. Masculinity refers to the degree to which a culture is dominated by traditionally masculine (vs. feminine) ways of acting and thinking, and uncertainty avoidance refers to the extent to which uncertain or unstructured decisions are perceived as a threat by employees.

The index scores of the countries involved in this study are reproduced in the appendix to this article. The figures were obtained by Hofstede in the 1970s and should therefore be taken with some caution. Although Hofstede (2001) firmly suggested it is not the case, the numerical scores are arguably rather outdated. Notwithstanding this criticism, it would be premature to dismiss the indices as inaccurately reflecting cultural differences. Cultures change but such change is believed to be slow and is unlikely to have significantly skewed the overall picture. The figures therefore remain quite useful for hypothesis development.

If one compares the countries in terms of their relative scores on the Value Survey Module, one notes the absence of major differences in individualism and, except for Belgium, in power distance too. It may be, as Fischer and Mansell (2009) recently reported in their meta-analysis of employment commitment studies around the globe, that AC is higher in more individualistic settings and that NC increases with collectivism and power distance. The figures indicate, however, that the European countries examined here have an invariant high position on individualism and, apart from the higher score for Belgium, a relatively low position on power distance. This implies that, although a macro assessment of cultural values at the national level is not necessarily identical to an individual's orientation to these values, there is little reason to anticipate cross-national difference in commitment among the countries involved in this study as a result of the individualism dimension. People in high power distance countries more readily accept hierarchy and feel a strong sense of duty-bound loyalty in their relationships. Hence, a high-power distance country is likely to foster NC. Thus, NC levels could be expected to be higher in Belgium compared to the other European countries.

There are substantial differences among the countries in masculinity—with the Scandinavian countries and the Netherlands scoring low and the other countries scoring high on this dimension—and in uncertainty avoidance. The literature is scant on how the masculinity dimension might affect commitment. Whereas masculine societies emphasize career achievement and the acquisition of money, and thus reflect an exchange of behaviors for external rewards, feminine cultures emphasize quality of relationships. Randall (1993) supported this view by stating that masculine values promote calculative commitment, whereas feminine cultural values lead to AC. We therefore expect AC levels to be higher in Scandinavia and the Netherlands, and CC levels to be higher in Belgium, the United Kingdom, and Germany. On the uncertainty avoidance dimension, the country differences seem to be most pronounced. As can be seen in the appendix, Sweden scores low on this factor, reflecting a low uncertainty avoidant culture, and the United Kingdom has a low position too. The Netherlands, Finland, and Germany obtain an intermediate position, whereas Belgium scores very high on it, reflecting its opposite position on the scale. Hofstede (2001) noted that people living in high uncertainty avoidant cultures are more inclined to express feelings of obligation to stay with their current employer and to view loyalty to the employer as a virtue. And this is precisely what NC is about. We therefore predict NC levels to vary among the countries, with the Belgian sample scoring high on NC and the Swedish sample scoring low.

Current Study

This study examines whether the instruments designed to measure commitment are cross-nationally invariant using data from a survey conducted among university faculty employees in six European countries. The selected countries are, in relevant ways, similar to the United States and Canada, and we therefore anticipate that the North American three-component model generalizes to the European context. Thus, based on the review reported above, our first hypothesis reads as follows.

> *Hypothesis 1:* Organizational commitment has an invariant three-factor oblique structure with equivalent factor loadings, factor variances, and covariances across the Northern and Western European countries. The positive factor intercorrelations between AC, CC, and NC are equivalent across the countries involved, with relatively strong correlations for AC–NC, weak for CC–NC, and near zero for AC–CC.

The mean levels of organizational commitment are most likely culturally conditioned. We anticipate cross-cultural differences in AC and CC, but the country's differences are expected to be most pronounced when it comes to NC.

> *Hypothesis 2:* AC and CC vary by country with higher AC scores in Scandinavia and the Netherlands and higher CC scores in Belgium, the United Kingdom, and Germany. NC scores are higher in Belgium and lower in Sweden.

With respect to the attitudinal antecedent of organizational commitment and its outcome, we will test the following hypotheses.

> *Hypothesis 3:* PJ has an invariant positive effect on AC and NC and an invariant near-zero effect on CC.
> *Hypothesis 4:* AC bears a moderate positive effect on JP, CC a weak or near zero negative, and NC a weak or near zero positive effect. These weak to moderate relationships are invariant across country.

Method

Participants

The data were collected as part of an online survey conducted in the winter of 2004-2005 among university employees of 18 universities in Belgium

(Flemmish region), Germany, Netherlands, United Kingdom, Finland, and Sweden. For the current study, we considered the faculty members of the business and economics departments in the participating countries. The survey selected 3,253 eligible participants from the target population, 940 of whom participated giving on overall response rate of 29%. This is a relatively successful figure, not easily exceeded by similar surveys. The response rate varied by country, however, ranging from 18% for the United Kingdom to 40% for Belgium. Readers who require further information on the survey design and the research samples are encouraged to consult the documentation by Smeenk, Eisinga, Doorewaard, and Teelken (2006). Listwise deletion of participants with missing data reduced the total sample size to $N = 723$ faculty members who had complete records on all study variables: Belgium ($n = 216$), Germany ($n = 68$), Netherlands ($n = 208$), United Kingdom ($n = 47$), Finland ($n = 47$), and Sweden ($n = 137$). We are unable to examine if responders to the survey differed from nonresponders in relevant ways, as we lack nonresponder information. However, comparisons of sex, age, and employment distributions in the responding sample with corresponding population figures revealed no significant differences (see Smeenk et al., 2006). Approximately, two third (65.0%) of the sample were male and the mean age of participants was 38.2 years ($SD = 11.8$). The modal organizational tenure category was 2 to 5 years (38.8%; $M = 7.7$ years, $SD = 8.9$). The proportion male was very nearly the same in the six samples ($\chi^2 = 5.627$, $df = 5$, $p = .344$) but there were differences in age ($\chi^2 = 76.108$, $df = 5$, $p < .001$) and tenure ($\chi^2 = 23.489$, $df = 5$, $p < .001$). The United Kingdom and Swedish samples were somewhat older and the latter were employed longer by their universities. The Belgian and German samples, in contrast, were somewhat younger and the Germans had a shorter term of office.

Measures

The survey was administered in the English language in all countries to further comparability. The organizational commitment measures are responses to four AC, three CC, and three NC items taken from Allen and Meyer (1990). The AC and CC items were modified such that the word *faculty* replaced *organization*. The items, listed in Table 1, all employed a 5-point scale in Likert format, ranging from 1 (*totally disagree*) to 5 (*totally agree*). High scores thus indicated stronger commitment. The scales possessed acceptable psychometric properties given the number of items. The reliability coefficient (Cronbach's alpha) for the AC scale across the countries ranged from .806 to .872. The reliability for the CC scale ranged from .592 to .721 and for the NC scale from .678 to .800. The antecedent variable PJ was measured

Table 1. Single-Group Factor Analysis of Measures of Organizational Commitment (*N* = 723)

Scales, Items, and Cronbach's alpha		Promax rotated loadings			
		I	II	III	R^2
AC (α = .835)					
AC1	The faculty has a great deal of personal meaning for me	.819	−.072	−.032	.651
AC2	I feel like "part of the family" at the faculty	.806	.018	−.049	.625
AC3	I really feel as if the faculty's problems are my own	.700	−.028	.013	.497
AC4	I enjoy discussing the faculty in a positive sense with people outside it	.687	.074	.013	.488
CC (α = .679)					
CC1	I am afraid of what might happen if I quit my job without having another one lined up	−.017	.986	.024	.963
CC2	I continue to work for the faculty as leaving would require considerable personal sacrifice	.036	.350	−.062	.133
CC3	I feel that I have too few options to consider leaving the faculty	−.014	.712	−.008	.509
NC (α = .774)					
NC1	I believe in the value of remaining loyal to one organization	.089	.047	.655	.474
NC2	I think that wanting to be a "company man/woman" is still sensible	.056	−.027	.613	.409
NC3	Employees generally move from organization to organization too often	−.084	.008	.994	.931
Eigen values		3.206	2.029	1.503	
Explained variance (%)		17.007	18.386	21.415	
Goodness of fit					
χ^2				28.557	
df				18	
p				.054	
RMSEA				.028	

Note: AC = affective commitment; CC = continuance commitment; NC = normative commitment; RMSEA = root mean square error of approximation.

by the following two items, rated on a 5-point Likert-type disagree–agree response scale: (PJ1) "I am adequately informed about changes that affect my job" ($M = 3.3$, $SD = .98$) and (PJ2) "I am given the possibility to participate in decisions that affect my work" ($M = 3.2$, $SD = .99$). The items cover Cropanzano and Greenberg's (1997) conceptualization of structural aspects of organizational justice as involving voice and giving advance notice about decisions. The overall inter-item correlation was .405, and it ranged across the countries between .334 and .585. The analysis used self-rated JP as a consequence of organizational commitment. To measure JP, the university employees were asked how their colleagues would rate the quality of their research (JP1) and the quality of their teaching (JP2), using a 5-point scale measuring bottom 10% (0%-10%), lower 15% (10%-25%), middle 50% (25%-75%), upper 15% (75%-90%), and top 10% (90%-100%). The observed responses to JP1 ($M = 3.6$, $SD = .77$) and JP2 ($M = 3.8$, $SD = .67$) ranged from 1 (*bottom 10%*) to 5 (*top 10%*), with the most populated categories being middle 50% and upper 15%. Hence, on average, individual faculty believe their performance is of somewhat better quality than the performance of most of their colleagues. The relationship between self-rated quality of research and teaching was weak overall, as evidenced by the low inter-item correlation of .128. The correlations ranged across the countries from –.096 to .341, the former value being not significantly different from zero ($p = .520$).

Invariance Tests

Single- and multigroup confirmatory factor analyses were applied to the data using maximum likelihood estimation with Mplus Version 4.2 (Muthén & Muthén, 2007). To identify the multigroup models, the value of one loading per factor was constrained to equal unity and the corresponding item intercept was fixed to zero. The multigroup models fit to the data included strong factorial invariance and strict factorial invariance models as well as equal factor variances, equal factor covariances, and equal factor means models (Steenkamp & Baumgartner, 1998, Vandenberg & Lance, 2000). To identify mean structures, the means of all factors in the reference sample, which was taken to be Belgium, were fixed to zero.

The strong factorial (or scalar) invariance model imposed equality constraints on corresponding factor loadings and item intercepts (specific factor means) and fitted the three common factor model to the sample data from each country simultaneously. Invariant factor loadings across countries (also called metric, pattern, or weak invariance) provide evidence that corresponding common factors have the same meaning across population groups. If the

invariant intercepts hypothesis also holds country differences in common factor means will be unbiased and directly related to country differences in observed means. Strong factorial invariance supports meaningful substantive comparisons of observed and latent country means.

The strict factorial invariance model additionally required that residual variances (i.e., specific factor plus measurement error) of corresponding items are invariant across countries. Evidence of strict factorial invariance was obtained for comparisons of variance estimates across population groups. It implies that country differences in observed means and variances are accounted for by country differences in common factor means and variances. If the strict invariance model holds and the model parameters are scaled so that the loadings associated with each common factor sum to unity within each country, then expected country differences in observed composite means and variances (obtained by summing observed scores associated with the common factor) will equal country differences in factor means and variances.

Testing country differences in factor variances, covariances, and means are substantive in nature and do not test measurement invariance hypotheses. If the strict factorial invariance model holds and the factor variances are cross-nationally invariant, the items are equally reliable across countries (Steenkamp & Baumgartner, 1998). To test whether the correlations between the commitment constructs are cross-nationally invariant, factor variances and covariances were constrained to be equal across countries.

Structural Equation Modeling and Model Fit

Next, a three-component structural equation model was fitted to the data. The structural equation model included the latent commitment variables AC, CC, and NC; the latent antecedent variable PJ; and the latent consequence variable JP, and required their factor loadings, item intercepts, and residual variances to be invariant. In addition to the strict factorial invariance tests, the model examined whether the structural effects of PJ on the commitment constructs and the structural effects of these latent variables on JP are invariant across countries.

Chi-square goodness-of-fit statistics and additional fit indices were used to test the overall fit of the models. The indices included the comparative fit index (CFI), the Tucker–Lewis nonnormed Index (TLI), and the root mean square error of approximation (RMSEA). CFI and TLI values above .95 and RMSEA values below .05 are commonly considered indicators of good model fit (Bentler & Bonett, 1980; Brown & Cudeck, 1993). In addition to testing the overall fit of each model, we compared the relative fit of nested

models. The difference in chi-square statistics ($\Delta\chi^2$) and differences in model degrees of freedom (Δdf) were obtained and compared with the chi-square distribution. The chi-square difference tested whether cross-country equality constraints resulted in a nonsignificant worsening of fit, implying that the invariance hypothesis is supported.

Results

Single-Group Factor Analysis

First, a single-group factor analysis was performed using maximum likelihood estimation and promax rotation method. The model imposed no equality constraints on the parameter estimates across samples.

The findings, shown in Table 1, are quite elegant. The factor pattern indicates that there is little overlap in the items that go into the factors. The items have a substantial loading on the factor they were assumed to measure and trivial loadings on the other factors, and, conversely, the three factors centre on the items incorporated into the study to indicate them. The data in Table 1 also reveal that the scales possessed acceptable psychometric properties. The factors accounted for a passable proportion of the items variances, except CC2, and Cronbach's alpha suggested a reasonably good reliability for the four- and three-item scales. The model yielded a chi-square of 28.557 ($df = 18$, $p = .054$, RMSEA < .05). The three-factor oblique solution thus provided a good fit to the data and this suggests that organizational commitment breaks down into an affective, continuance, and normative subdimension. There is, however, a methodological issue related to the wording of the items. Note that whereas the AC and CC items are about the participant's commitment to his or her faculty department, the NC statements tap opinions about relationship with an organization. These different kinds of loci of commitment may at least in part explain the identification of distinct factors. The correlation between AC and CC was very weak (.043), between NC and CC modest (.138), and between AC and NC moderately strong (.370). Obviously, the latter correlation is not of sufficient magnitude to suggest construct redundancy.

Multigroup Confirmatory Factor Analysis

Multigroup confirmatory factor analysis tested the strong and strict factorial invariance hypotheses. The results are presented in Table 2.

Model 1 constrained corresponding factor loadings to be equal across countries. From a statistical perspective, this model fitted the data well,

Table 2. Tests of Measurement and Structural Invariance of the Three-Component Model of Organizational Commitment ($N = 723$)

Model	χ^2	df	p	$\Delta\chi^2$	Δdf	p	CFI	TLI	RMSEA
Measurement invariance tests									
1. Factor loadings invariant	258.517	227	.074				.987	.985	.034
2. Item intercepts invariant	301.915	262	.045	43.398	35	.156	.984	.983	.036
3. Residual variances invariant	333.770	307	.141	31.855	45	.930	.989	.991	.027
Structural invariance tests									
4. Factor variances invariant, factor covariance AC–CC fixed to zero, factor covariances AC–NC, and CC–NC invariant	380.078	338	.057	46.308	31	.038	.983	.986	.032
5. Factor means AC and CC fixed to zero, factor means NC equal for BE and DE and for NL, UK, and FI	388.526	351	.082	8.448	13	.813	.985	.988	.030
Antecedent variable procedural justice									
6. Factor loadings, item intercepts, residual variances and factor variance procedural justice invariant, factor means procedural justice	601.000	493	.001	212.474	142	.000	.961	.969	.043

(continued)

Table 2. (continued)

Model	χ^2	df	p	$\Delta\chi^2$	Δdf	p	CFI	TLI	RMSEA
fixed to zero, effects of procedural justice on AC and NC invariant, effects of procedural justice on CC fixed to zero									
Consequence variable job performance									
7. Factor loadings, item intercepts, residual variances and factor variance job performance invariant, factor means job performance fixed to zero, effects of AC and CC on job performance invariant, effect of NC on job performance fixed to zero	817.015	659	.000	216.015	166	.005	.944	.954	.045

Note: CFI = Comparative Fit Index; TLI = Tucker–Lewis Index; RMSEA = root mean square error of approximation; AC = affective commitment; CC = continuance commitment; NC = normative commitment; BE = Belgium; DE = Germany; NL = Netherlands; UK = United Kingdom; FI = Finland.

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supporting the cross-country equality constraints on all like loadings. Model 2 examined strong factorial invariance by constraining both corresponding factor loadings and item intercepts to be cross-nationally equivalent. The decrease in fit, relative to Model 1, was not significant ($\Delta\chi^2 = 43.398$, $\Delta df = 35$, $p = .156$), and the goodness-of-fit statistics of Model 2 supported the strong invariance hypothesis. The chi-square was 301.915 with 262 degrees of freedom ($p = .045$), the values of CFI and TFI exceeded the recommended .95 threshold levels, and the RMSEA was below the suggested cutoff point of less than .05. Model 3 additionally constrained the corresponding residual variances to be equal across countries. The goodness-of-fit statistics provided evidence of strict factorial invariance ($\chi^2 = 333.770$, $df = 307$, $p = .141$). Comparing Models 3 and 2, the subtractive chi-square difference was not significant ($\chi^2 = 31.855$, $df = 45$, $p = .930$), implying that Model 3 represented no significant deterioration of fit relative to Model 2. Hence, the strict factor invariance model fitted the data well.

Invariant Factor Variances, Covariances, and Means

Cross-national measurement invariance may also be imposed on the factor variances, covariances, and means. The constraints summarized in Model 4 provided the best fit to the data. The model imposed cross-country equality constraints on the factor variances, set the factor covariance of AC–CC to zero for all countries, and constrained the factor covariances of AC–NC and CC–NC to be cross-nationally invariant. Hence, the model implied a zero correlation between AC and NC in all countries. As can be seen in Table 2, the goodness-of-fit statistics provided support for the imposed cross-country equality of factor variances, covariances, and correlations. The chi-square was 380.078 with 338 degrees of freedom ($p = .057$), albeit that the decrease in fit, relative to Model 3, was borderline significant ($\Delta\chi^2 = 46.308$, $\Delta df = 31$, $p = .038$). It may be noted in this context that dropping the constraints of a zero correlation between AC and CC ($\Delta\chi^2 = 4.877$, $\Delta df = 6$, $p = .560$) and invariant factor covariances of AC and NC ($\Delta\chi^2 = 7.061$, $\Delta df = 5$, $p = .216$) and CC and NC ($\Delta\chi^2 = 11.388$, $\Delta df = 5$, $p = .044$) did not improve model fit.

Model 5 additionally constrained the factor means of AC and CC to zero for all countries and the factor means of NC to be equal for Belgium and Germany as well as for the Netherlands, the United Kingdom, and Finland. The chi-square for Model 5 was 388.526 ($df = 351$, $p = .082$). The χ^2 goodness-of-fit test statistics, the chi-square difference test, and the fit indices CFI, TLI, and RMSEA all suggested that the model offered a good fit to the data. Table 3 presents the parameter estimates obtained for Model 5.

Table 3. Multigroup Confirmatory Factor Analysis of Measures of Organizational Commitment ($N = 723$)

	Factor loadings						Residual variances		R^2	Observed sample means	Estimated intercepts
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE			
AC1	1.000	0	0	0	0	0	0.344	.028	.652	2.866	2.866
AC2	0.967	.047	0	0	0	0	0.385	.029	.611	2.817	2.817
AC3	0.858	.046	0	0	0	0	0.474	.031	.500	2.592	2.592
AC4	0.791	.043	0	0	0	0	0.436	.050	.482	3.303	3.308
CC1	0	0	1.000	0	0	0	0.075	.019	.946	3.248	3.248
CC2	0	0	0.350	.046	0	0	0.889	.058	.131	2.822	2.822
CC3	0	0	0.512	.050	0	0	0.319	.035	.518	3.147	3.147
NC1	0	0	0	0	1.000	0	0.459	.032	.492	3.084	3.222
NC2	0	0	0	0	0.834	.051	0.404	.026	.434	3.119	3.234
NC3	0	0	0	0	0.879	.051	0.077	.016	.817	2.959	3.080
Factor means											
BE	0	0	0	0	0	0					
DE	0	0	0	0	0	0					
NL	0	0	0	0	−0.449	.155					
UK	0	0	0	0	−0.449	.155					
FI	0	0	0	0	−0.449	.155					
SE	0	0	0	0	−0.988	.198					

(continued)

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Table 3. Multigroup Confirmatory Factor Analysis of Measures of Organizational Commitment ($N = 723$)

Factor intercorrelations	
AC–CC	.000
AC–NC	.333
CC–NC	.127
Goodness of fit	
χ^2	388.526
df	351
p	.082
RMSEA	.030

Note: AC = affective commitment; CC = continuance commitment; NC = normative commitment; BE = Belgium; DE = Germany; NL = Netherlands; UK = United Kingdom; FI = Finland; RMSEA = root mean square error of approximation. Factor means were obtained after rescaling the model parameters so that the loadings associated with each factor sum to unity within each country. Zero entries refer to parameters fixed to zero.

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The loadings on the three commitment factors, residual variances, observed variables R^2, and the estimated item intercepts were all invariant across the samples involved in this study. Note that the estimated item intercepts closely matched the observed sample means. The factor correlation matrix revealed a substantial correlation of .333 between AC and NC in all countries. The correlation between NC and CC was modest (.127) and between AC and CC equal to zero. Altogether, the findings corroborate Hypothesis 1 that organizational commitment has a three-factor oblique structure, invariant across the Northern and Western European countries. The factor-correlations tie in well with the average correlations for North America obtained by Meyer et al. (2002) in their meta-analysis and correspond to Hypothesis 1.

Despite invariant intercorrelations, the countries compared quite differently on the commitment means. They failed to differ from each other in their mean levels of AC and CC. This implies that our expectations with respect to cross-country differences in AC and CC, formulated in Hypothesis 2, is not supported by the data. However, in line with Hypothesis 2, substantial differences were found for NC, with Belgian and German employees obtaining high; Dutch, British, and Finnish employees obtaining intermediate; and Swedish employees obtaining low mean scores. This finding corroborates our expectations of Belgian NC levels being high as a result of uncertainty avoidance and Swedish NC levels being low.

Structural Equation Model

We subsequently applied a three-component structural equation model to the data. As can be seen in Table 2, Model 6 added the two-indicator antecedent variable PJ to Model 5, with PJ itself having invariant factor loadings, item intercepts, residual variances, and factor variance. The model additionally imposed the effect of PJ on CC to be zero in all countries and the effects of PJ on AC and NC to be cross-nationally invariant. While the chi-square for Model 6 was 601 with 493 degrees of freedom ($p = .001$), the CFI, TFI, and RMSEA values indicated a good overall model fit. Also, dropping the constraints of invariant effects of PJ on AC ($\Delta\chi^2 = 7.588$, $\Delta df = 5$, $p = .181$) and NC ($\Delta\chi^2 = 6.526$, $\Delta df = 5$, $p = .258$) and zero effects on CC ($\Delta\chi^2 = 8.644$, $\Delta df = 6$, $p = .195$) failed to improve the fit of the model.

Finally, Model 7 added the two-indicator consequence variable JP to Model 6, with JP having invariant factor loadings, item intercepts, residual variances, and factor variance. As indicated in Table 2, Model 7 fixed the effect of NC on JP to zero for all countries and it required the effects of AC
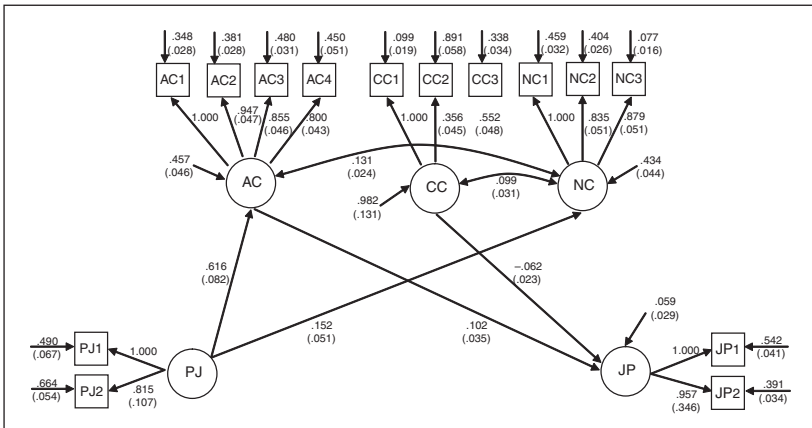
Figure 1. Three-component structural equation model of organizational commitment: factor loadings, residual (co)variances, unstandardized regression coefficients, and standard errors (in parenthesis)
Note: $N = 723$. AC = affective commitment, CC = continuance commitment,
NC = normative commitment, PJ = procedural justice, JP = job performance.

and CC on JP to be cross-nationally invariant. The goodness-of-fit indices (CFI = .944, TLI = .954, RMSEA = .045) indicated that the model matched the data rather well. Again, the model fit did not improve by dropping the restrictions of invariant effects of AC ($\Delta\chi^2 = 3.234$, $\Delta df = 5$, $p = .664$) and CC ($\Delta\chi^2 = 6.165$, $\Delta df = 5$, $p = .291$) and zero effects of NC ($\Delta\chi^2 = 11.929$, $\Delta df = 6$, $p = .064$) on JP.

Figure 1 offers a graphical presentation of the structural equation model and presents the invariant factor loadings, residual variances and covariances, and unstandardized regression coefficients of the latent variables.

The antecedent variable PJ had a strong, cross-nationally invariant positive effect on AC, a moderate and invariant positive effect on NC, and no significant effect on CC in all countries. This finding corroborates Hypothesis 3.

AC had a positive and CC had a universal negative effect on JP in all countries. The effect of NC on performance was not significant. These results are also consistent with our expectations based on earlier findings. Note that PJ had no direct effect on employees' JP. Its effect was found to be mediated by AC. Hence, the results by and large support Hypothesis 4 and corroborate the findings by Meyer et al. (2002), showing that AC has the strongest correlations with organization-relevant outcomes, that CC is negatively related with desirable outcomes, and that NC is less strongly related or unrelated.

Discussion

This study investigated cross-national comparability of the three-component model of organizational commitment using samples of university faculty employees from six geographically proximate Northern and Western European countries. The scales used to measure commitment were shown to exhibit strict factorial invariance and thus provided a valid basis for making country comparisons. Also, the correlations between the three commitment factors were cross-nationally invariant for the six European countries involved and their magnitude matched previously reported North American figures rather well. Most prominent was the strong correlation between AC and NC. There were no cross-national differences in AC and there were no differences in CC either. Substantial differences were found for NC, however, with Belgian and German university faculty obtaining relatively high and Swedish faculty obtaining low mean scores.

Although the analysis presented here does not allow firm conclusions to be drawn concerning the role of national cultures, the cross-national differences in NC observed in this study are likely to reflect cross-cultural variations in Hofstede's (2001) uncertainty avoidance. Individuals in high uncertainty avoidance cultures—such as Belgium—tend to form long-term commitments, whereas those in low uncertainty avoidance cultures—such as Sweden—tend to have multiple organizational affiliations and less employment stability, and this is what NC is about. The absence of difference in AC and CC to the faculty according to country is rather unexpected. Even though there are many common elements that might be underlined to portray the professions in the six countries analyzed here, one would hesitate to regard them as comparable. University staff structures of these European countries have a quite different kind of logic and employment and working conditions, job security and tenure, resources and work structures, research, teaching, and other obligations all vary to some extent. But these differences among academic staff internationally are apparently not directly linked to their degree of affective and commitment to the faculty.

The study revealed no effect of PJ on CC and an invariant positive effect on both NC and, most notably, AC in all countries. Also consistent with meta-analytic work (Meyer et al., 2002), AC was significant as a predictor of JP in all six European countries. Hence, in this cultural setting at least, AC seems to be an important attitude in remaining a high-performance academic workforce. CC had a negative effect on JP and the effect of NC was not significant, which is congruent with the North American literature. Altogether, the present findings can be interpreted as a demonstration of the generalizability of Allen and Meyer's (1990) commitment theory.

Among its strengths, this study offered a cross-national analysis of invariance of organizational commitment measures outside North America using a confirmatory approach. Unlike in many earlier studies, measurement invariance was not assumed but tested, a precondition for conducting meaningful cross-cultural comparisons. Also, one of the issues in cross-cultural research of this kind springs from concerns about sampling. Specifically, when different national cultures are compared using data from quite different types of organizations, one might wonder whether effects that are due to organizational type, rather than culture or nation, are at play. This study therefore took care to use similar types of organizations (universities) and similar settings (departments), thus defusing this particular concern.

However, this study also has limitations that need to be acknowledged. First of all, performance is difficult to measure in a valid manner in questionnaire surveys. The self reports assessed in this study suffer from the impossibility to separate true predictor-criterion covariance from the effects of same-source bias. Another limitation of this research is that it examined the three-component model of organizational commitment in the relatively homogeneous Western and Northern European context. Future comparative work is needed to explore the validity of the model in countries more dissimilar to the United States and Canada. Also, the study investigated a single population of professional employees. While the survey design is likely a good one, it leaves us with the questions whether the three-component model holds up well, simply because a particular type of organization employee set is used. To answer this question, additional replication is needed with culturally varied samples of countries and occupational groups to examine the boundary conditions of the tripartite model of commitment.

Appendix

Country Index Scores on the Value Survey Module

Country	Individualism	Power distance	Masculinity	Uncertainty avoidance
Belgium	75	65	54	94
Germany	67	35	66	65
Netherlands	80	38	14	53
United Kingdom	89	35	66	35
Finland	63	33	26	59
Sweden	71	31	5	29

Note: Source Hofstede (2001, p. 500).

Authors' Note

Declaration of Conflicting Interests

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Notes

1. Examples include single-nation studies conducted in Belgium (Stinglhamber, Bentein, & Vandenberghe, 2002; Vandenberghe, 1996), the Netherlands (Ellemers, De Gilder, & Van den Heuvel, 1998; Van Emmerik & Sanders, 2005), the United Kingdom (Snape & Redman, 2003), Russia (Buchko, Weinzimmer, & Sergeyev, 1998), Turkey (Wasti, 2002, 2003a, 2003b), Israel (Cohen, 2007; Dornstein & Matalon, 1989), United Arab Emirates (Yousef, 2000, 2002), Pakistan (Alvi & Ahmen, 1987), Australia (Abbott, White, & Charles, 2005; Iverson & Buttigieg, 1999), South Korea (Chang, 1999; Ko, Price, & Mueller, 1997; Lee, Allen, Meyer, & Rhee, 2001), Japan (White, Parks, Gallagher, Tetrault, & Wakabayashi, 1995), Taiwan (Chang, Chi, & Miao, 2007), and China (Chen & Francesco, 2000, 2003; Chen, Tsui, & Farh, 2002; Cheng & Stockdale, 2003; Wong, Ngo, & Wong, 2002; Yao & Wang, 2006).

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