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**MEASUREMENT INVARIANCE IN MENTORING RESEARCH:
A CROSS-CULTURAL EXAMINATION ACROSS TAIWAN AND THE U.S.**

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Abstract

Workplace mentoring in the international context is an emerging research area with significant potential for global integration. However, although measurement equivalence is a prerequisite for examining cross-cultural differences, this assumption has yet to be examined in mentoring research. This study contributes to the mentoring literature by assessing the measurement equivalence of the Mentoring Functions Questionnaire (MFQ-9) across two diverse cultural settings, the U.S. and Taiwan. Results of a series of multi-group confirmatory factor analyses supported full configural invariance, full metric invariance, and partial scalar invariance across the two groups. These findings suggest MFQ-9 may provide acceptable comparisons and meaningful interpretations across cultures. Implications for future international mentoring research and managerial practice are discussed.

Keywords: Mentoring, measurement equivalence/invariance, cross-cultural

Organizations worldwide are increasingly recognizing the value of mentoring relationships and attempt to reap the advantages through formal mentoring programs (Allen & Eby, 2007; Scandura & Pellegrini, 2007). The benefits of mentoring to protégés and mentors as well as to organizations are well-documented by research and further supported by human resource practitioners (Noe, Greenberger, & Wang, 2002; Ragins & Kram, 2007; Wanberg, Welsh, & Hezlett, 2003). Three decades of mentoring research has linked receipt of mentoring to an array of positive career outcomes including promotion, higher salary, career satisfaction, career commitment, job satisfaction, and greater expectation for advancement (Allen, Eby, Poteet, Lentz, & Lima, 2004; Kammeyer-Mueller & Judge, 2008). However, the majority of these early studies have been conducted in the Western context, specifically in the U.S.

Workplace mentoring in the international context is an emerging research area with increasing number of studies conducted beyond the U.S. context (e.g., Bozionelos & Wang, 2006; Carraher, Sullivan, & Crocitto, 2008; Gentry, Weberb, & Sadric, 2007; Hu, 2008). **Societal** culture is important when examining close relationships such as mentoring, since relationship expectations and acceptable patterns of interaction may vary considerably across cultures (Allen, Eby, O'Brien, & Lentz, 2008). However, the most established mentoring scales such as the Mentoring Functions Questionnaire (Scandura & Ragins, 1993) were developed using North American samples. Therefore, research on cross-cultural mentoring should examine whether these measures demonstrate similar psychometric properties outside the U.S. context as well (Scandura & Pellegrini, 2007; Vandenberg & Lance, 2000). Cultural differences may dramatically influence norms and expectations regarding mentorships in the workplace (Allen, et al., 2008). Accordingly, ensuring measurement equivalence/invariance (ME/I) of the measures reflecting mentoring functions should be established prior to studying mentoring across diverse

cultural contexts. The current study addresses this gap and studies the measurement equivalence of the Mentoring Functions Questionnaire (MFQ-9) across two diverse business settings, Taiwan and the U.S.

Measurement equivalence/invariance (ME/I) refers to the extent to which respondents from different populations exhibit similar cognitive frameworks when interpreting and responding to a given measure (Drasgow & Kanfer, 1985; Vandenberg & Lance, 2000). Conceptually, ME/I at the measurement level examines the extent to which items of a measurement instrument demonstrate similar psychometric relationships to their corresponding latent variables across different samples (Little, 1997). Therefore, researchers agree ME/I should be a prerequisite for the generalization of an instrument, in fact a requirement for cross-group comparisons to be interpretable and meaningful (Raju, Laffitte, & Byrne, 2002; Steenkamp & Baumgartner, 1998; Vandenberg & Lance, 2000).

Previous mentoring research largely focused on the protégé and examined how mentoring influences protégé career outcomes (Scandura & Pellegrini, 2007). In a recent review of the state of mentoring research, Allen et al. (2008) suggested that in 80.2% of the published mentoring studies the protégé was the focus of inquiry. Although the focus of mentoring research has largely been on mentoring functions received by protégés, empirical research on cross-cultural measurement of mentoring functions has lagged behind (Scandura & Pellegrini, 2007; Wanberg, et al., 2003).

The Mentoring Functions Questionnaire (MFQ-9)

There are a number of commonly used mentoring functions scales which were all developed based on Kram's (1983) pioneering work on mentoring (i.e., Dreher & Ash, 1990; Noe, 1988; Ragins & McFarlin, 1990; Scandura & Ragins, 1993). Kram (1983, 1985)

distinguished two distinct mentoring functions provided by mentors: career support includes sponsorship, coaching, exposure and visibility, protection, and challenging work assignments whereas psychosocial support refers to the mentor's acceptance and confirmation, counseling, role modeling and friendship. Subsequent research suggested role modeling as a third dimension of mentoring, rather than an aspect of the psychosocial function (Castro & Scandura, 2004; Hu, 2008; Pellegrini & Scandura, 2005; Scandura, 1992; Scandura & Ragins, 1993).

We specifically chose to examine the measurement equivalence of the MFQ since this instrument is the only mentoring scale which assesses a three-dimensional structure of mentoring relationships (see the Appendix). We used the most recent version of the Mentoring Functions Questionnaire (MFQ-9; Castro & Scandura, 2004) which is a shortened version of the 15-item MFQ (Scandura & Ragins, 1993).

MFQ-9 captures three mentoring functions: vocational support, psychosocial support, and role modeling. Each mentoring function is measured with three items. Our choice of MFQ-9 for this analysis is further based on the following reasons. First, MFQ has accumulated substantial information regarding its factor structure based on exploratory as well as confirmatory factor analyses (Castro & Scandura, 2004; Hu, 2008; Pellegrini & Scandura, 2005; Scandura & Ragins, 1993; Wanberg, et al., 2003). Second, configural invariance and partial metric invariance of MFQ-9 have been established across satisfied and dissatisfied protégés (Pellegrini & Scandura, 2005). Further, full configural, metric, and scalar invariance have been established across genders (Hu, 2008). Finally, MFQ-9 has the least number of items among mentoring scales which may minimize translation errors and reduce hasty responding owing to too many items (Gosling, Rentfrow, & Swann, 2003).

The current study of U.S. and Taiwanese protégés present a preliminary attempt to

examine the generalizability of mentoring functions across different cultural settings. Taiwan not only provides an informative cultural contrast to the U.S. but it also presents a particularly interesting context with its increasing globalization as a rising Asian economy. Taiwan is the world's number one provider of chip foundry services, notebook PCs, and LCD monitors holding 70% of the world's market share (Einhorn, Kovac, Engardio, Roberts, Balfour, & Edwards, 2005). However, despite rapid economic changes Taiwan still strongly adheres to traditional values as portrayed by its high rank on institutional collectivism and power distance (Chang, Chi, Miao, 2007; House, Hanges, Javidan, Dorfman, & Gupta, 2004) making the Taiwanese organization an interesting contrast to the U.S. context.

Further, in Confucian societies such as Taiwan, relationships are influenced by Confucianism which guides proper ordering and responsibilities of positions in society (Fu, Wu, Yang, & Ye, 2007). For example, in the family the eldest male possesses absolute authority and all others are expected to obey and be loyal. These obligations of deference and loyalty are then extended to other institutions in the society, such as the workplace. Taiwanese workers also place a high value on paternalism which combines strong discipline and authority with fatherly benevolence (Cheng, Chou, Wu, Huang, & Farh, 2004). Farh and Cheng (2000) stated that paternalism stems from Confucian ideology, which is founded on social relations, such as "benevolent leader with loyal minister" and "kind father with filial son." These principles may form distinct cultural expectations in Taiwanese organizations such that a mentor should be authoritative but also benevolent to his or her protégés.

Due to cultural differences, it is essential to establish measurement equivalence prior to inferring substantive conclusions from cross-cultural mentoring studies. If the MFQ does not demonstrate sufficient invariance, the findings from cross-cultural studies employing the MFQ

may be uninterpretable. However, the three-factor structure of MFQ-9 has previously been supported in Taiwanese samples (Hu, 2008) and therefore we expect that potential sources of non-invariance, if any, may be in item factor loadings or intercepts. For example, in terms of metric invariance, Taiwanese protégés may place more importance on role modeling than U.S. protégés due to a cultural norm which emphasizes respect and loyalty in hierarchical work relationships. As a result, the factor loadings of role modeling items may not be invariant across the two samples. In addition, item intercepts may be different. For example, psychosocial support and role modeling items reflect self-ratings of the protégé's behaviors and it is likely that respondents in Asian work cultures (e.g., Taiwan) may show an upward bias (higher item intercepts) due to social desirability (Campbell, Campbell, & Goh, 1999). On the other hand, since career support items describe specific mentor behaviors, an upward bias may be less likely to have an influence in this context. However, due a cultural expectation of paternalistic treatment, it is also possible that Taiwanese protégés may have higher expectations of both career and psychosocial mentoring from their mentors as compared with U.S. protégés. Consequently, Taiwanese protégés may show a downward bias (lower item intercepts) while responding to career mentoring items as well.

Method

Samples

The U.S. sample included 195 employees who were involved in an ongoing mentoring relationship at the time they responded to the survey. Data were collected from employed executive MBA students enrolled in a Southeastern University. The average age of the respondents was 28.8 years ($SD = 8.3$), 59% of the respondents were full-time employed, 51% were male, 66% were Caucasian, followed by 17% Latin-American and 6% African American.

The Taiwanese sample consisted of 309 full-time workers involved in an ongoing mentoring relationship at the time they responded to the survey. Participants were recruited from students who attended graduate level refresher courses at a university located in Northern Taiwan. The average age of protégés was 30.9 years ($SD = 7.1$) and 59% were female.

Measures

Traditional Chinese is the native language for Taiwanese respondents and therefore all items used in Taiwan were translated from English into traditional Chinese with the back-translation approach suggested by Brislin (1980). One of the authors translated the survey items from English to traditional Chinese. We then asked two bilingual Taiwanese professors to translate the traditional Chinese items back to English. When there was any discrepancy between the translations, these three individuals discussed and revised the translation until an agreement was reached.

Mentoring functions. We used MFQ-9 (Castro & Scandura, 2004) to measure the mentoring functions protégés received. All scale items had a five-point response format with higher scores representing receipt of more mentoring. Career mentoring was measured with three items. A sample item from this scale is “My mentor has devoted special time and consideration to my career. Psychosocial support was assessed with three items. A sample item from this scale is “I share personal problems with my mentor.” Finally, role modeling was assessed with three items. A sample item from this scale is “I try to model my behavior after my mentor.” The Cronbach alpha coefficients for the overall scale, career support, psychosocial support, and role modeling were .89, .83, .83, and .81, respectively in the U.S. and .91, .87, .87, and .84, respectively in Taiwan.

Analysis

Two of the most popular procedures for testing ME/I are multi-group confirmatory factor analysis (MGCFA) and item response theory (Raju, et al., 2002). We chose to employ MGCFA due to its high recognition, applicability, and appropriateness for sample sizes smaller than 500 (Stark, Chernyshenko, & Drasgow, 2006).

We conducted a series of nested MGCFA to investigate ME/I across the two samples with LISREL 8.71 (Jöreskog & Sorbom, 1997). To evaluate model fit, we used the combinational rule that TLI and CFI be larger than .95 and SRMR be smaller than .09 since this combination provides the smallest Type I and Type II error rates as suggested by Hu and Bentler (1999). For tests of invariance, in addition to the chi-square differences (Anderson & Gerbing, 1988) among pairs of nested MGCFA models, we examined the differences in alternative fit indices. Numerous alternative fit indices (e.g., CFI and gamma-hat) provide redundant information (Hu & Bentler, 1999; Meade, Johnson, & Braddy, 2008) and RMSEA is increasingly not recommended in invariance testing (Meade, et al., 2008). Therefore we examined differences in CFI and McDonald's (1989) Non-Centrality Index (NCI) among pairs of nested MGCFA models (Cheung & Rensvold, 2002; Meade, et al., 2008). Instead of using the critical values of .01 for Δ CFI and .02 for Δ NCI as suggested by Cheung and Rensvold (2002), we used the criteria suggested by Meade et al. (2008) since their simulation extends the study by Cheung and Rensvold (2002) by taking into consideration multiple data conditions and statistical power. Specifically, to reject a null hypothesis of invariance, we used a critical value of .002 for Δ CFI and .0072 for Δ NCI when examining the fit indices of nested models (Meade, et al., 2008). We examined configural invariance, metric invariance, and scalar invariance since full configural invariance, partial metric invariance, and partial scalar invariance are required to

compare latent means, factor variances, variance covariances, and path coefficients (Cheung, 2008; Steenkamp & Baumgartner, 1998). When the results suggested non-invariance based on chi-square difference tests (CDTs), we identified the sources of non-invariance following the sequential model-fitting procedure proposed by Byrne, Shavelson, and Muthen (1989) which suggests examining the modification indices and estimates of parameters in a less constrained model.

Results

Descriptive Statistics

Table 1 shows the intercorrelations among the factors separately for both samples. All item means exceeded 3 (range: 3.15 to 4.17), indicating that protégés generally perceived receiving more than average mentoring support. The skewness of the items ranged from -1.26 to -0.27 and the kurtosis ranged from -1.12 to 2.10 in support for a normal distribution (Table 2).

Insert Table 1 about here

Insert Table 2 about here

Single Group Confirmatory Factor Analyses

Single-group CFAs were conducted to examine construct validity of the MFQ-9 within each sample. In the U.S. sample, the three-factor model demonstrated acceptable fit ($\chi^2_{(24)} = 102.22, p < .01, TLI = .93, CFI = .95, SRMR = .06$). All factor loadings were significant at the $p < .01$ level providing evidence for convergent validity (Anderson & Gerbing, 1988).

Discriminant validity was examined by three CDTs ($df=1$). Each nested model fixed one pair of latent construct correlation to 1. The results support discriminant validity of the 3-factor model as all CDTs were significant at the $p<.01$ level ($\Delta\chi^2_{(1)}$ ranged from 11.05 to 18.67) and none of the confidence intervals of the latent variable correlations included the value of 1 (Anderson & Gerbing, 1988; Bagozzi, Yi, & Phillips, 1991).

For the Taiwanese workers, the three-factor model demonstrated acceptable fit ($\chi^2_{(24)} = 74.21, p <.01, TLI = .97, CFI = .98, SRMR = .06$). Convergent and discriminant validities were supported since all factor loadings were significant at the $p<.01$ level, all CDTs were significant at $p<.01$ ($\Delta\chi^2_{(1)}$ ranged from 158.94 to 305.70), and none of the confidence intervals of the latent variable correlations included 1. These baseline CFA models support the three-factor structure in both samples.

Multi-Group Confirmatory Factor Analyses

First, covariance matrix invariance was examined following the procedure suggested by Vandenberg and Lance (2000). The significant chi-square value suggested that the two covariance matrices were significantly different although some practical fit indices suggested the model was acceptable ($\chi^2_{(45)} = 271.22, p <.01, TLI = .92, CFI = .95, SRMR = .13, NCI = 0.79$). Since the chi-square test was significant, we continued with subsequent ME/I tests as suggested by Vandenberg and Lance (2000). A summary of the ME/I tests are listed in Table 3.

Insert Table 3 about here

We tested configural invariance by investigating a baseline model with no constrained

parameters across two groups (M0). This model showed acceptable model fit ($\chi^2_{(48)} = 176.43$, $p < .01$, TLI = .96, CFI = .97, SRMR = .06, NCI = .88). Since configural invariance was established, we continued with subsequent ME/I tests (Vandenberg & Lance, 2000).

We tested metric invariance by constraining corresponding factor loadings to be equal across groups (M1). The constrained model showed acceptable fit ($\chi^2_{(54)} = 178.91$, $p < .01$, TLI = .96, CFI = .97, SRMR = .06, NCI = .88). Both the CDT results (M0 vs. M1) and the comparisons of CFI and NCI suggested all factor loadings were invariant across samples ($\chi^2_{(6)} = 2.482$, $p > .01$; $\Delta\text{CFI} = .001$, $\Delta\text{NCI} = .003$). Accordingly, full-metric invariance was supported.

Scalar invariance was tested by further constraining like items' intercepts on the latent construct to be invariant across samples (M2). The constrained model showed acceptable model fit ($\chi^2_{(60)} = 299.04$, $p < .01$, TLI = .94, CFI = .95, SRMR = .06, NCI = .78). The CDT results (M1 vs. M2) and the comparisons of CFI and NCI suggested not all like items' intercepts on the latent constructs were invariant across samples ($\chi^2_{(6)} = 120.13$, $p < .01$, $\Delta\text{CFI} = -.023$, $\Delta\text{NCI} = -.094$). After releasing the constraint on three items (items 7, 3, and 4, in the order of releasing), the modified model (M3) showed acceptable fit ($\chi^2_{(57)} = 189.61$, $p < .01$, TLI = .96, CFI = .97, SRMR = .06, NCI = .87). Comparisons of the nested models (M1 vs. M3) also suggested partial scalar invariance across samples ($\chi^2_{(3)} = 10.69$, $p > .01$, $\Delta\text{CFI} = -.002$, $\Delta\text{NCI} = -.006$). Following Vandenberg and Lance (2000), we conducted the test of factor means after establishing partial scalar invariance. We tested the factor means invariance by comparing the constrained model with the partial scalar invariance model (M3).

Factor mean invariance was tested by further constraining latent concepts' means to be equal across samples (M4). The constrained model showed acceptable model fit ($\chi^2_{(60)} = 198.61$,

$p < .01$, TLI = .96, CFI = .97, SRMR = .06, NCI = .87). Comparisons of the nested models (M3 vs. M4) suggested all latent means were invariant across samples ($\chi^2_{(3)} = 9.00$, $p > .01$, $\Delta\text{CFI} = -.001$, $\Delta\text{NCI} = -.005$). Therefore, full factor means invariance was supported.

Previous research suggests that two scalar and metric invariant indicators suffice to obtain estimates of latent mean differences that permit meaningful mean comparisons (Baumgartner & Steenkamp, 1998; Byrne, Shavelson, & Muthen, 1989). Steenkamp and Baumgartner (1998) suggested partial scalar invariance, at least, must be established before latent means can be compared. Current results support full configural, full metric and partial scalar invariance.

Discussion

To advance organizational theory, it is imperative that scholars study Western concepts in distinct work cultures (Tsui, Nifadkar, & Ou, 2007). Technological advances and globalization produce increasingly diverse organizations, increasing use of expatriates and the need to foster multiple mentoring relationships across cultures (Higgins & Kram, 2001; Meziar & Scandura, 2005). However, prior to studying cross-cultural mentoring relationships researchers need to establish ME/I which is a prerequisite for meaningful substantive conclusions from cross-cultural studies. The purpose of this study was to examine the measurement equivalence of MFQ-9 across Taiwanese and American workers. We were unable to locate previous studies examining the measurement equivalence of this instrument, nor any other mentoring scale, across Western and Eastern cultures. Consistent with previous mentoring theory, current results demonstrated factor structure invariance which suggests the three-factor structure of the MFQ-9 holds in both cultural contexts. Specifically, protégés from the U.S. as well as Taiwan perceive MFQ-9 reflects three distinct mentoring functions: career support, psychosocial support, and role

modeling. Although we expected role modeling to be slightly variant across the two samples, full metric invariance suggested that the strength of the relationship between each item and its corresponding mentoring function was invariant.

This study contributes to our understanding of the cross-cultural generalizability of mentoring functions. The results were congruent with the Western context which may promote future research in conducting cross-cultural comparisons of mentoring relationships among individualistic (e.g., U.S.) and collectivistic work cultures (e.g., Taiwan). Consistent with our expectation; the non-invariant item in psychosocial support (Item # 4: I share personal problems with this person) and role modeling (Item # 7: I try to model my behavior after this person), had lower estimates of item intercepts in the U.S. In contrast, the non-invariant item in career support scale (Item # 3: This person has devoted special time and consideration to my career), had a higher estimate of item intercept in the U.S. These results suggest when mentors provide the same amount of mentoring, U.S. protégés report higher ratings on a career support item whereas Taiwanese protégés report higher ratings on one psychosocial support and one role modeling item.

Previous research suggests that in a mentoring relationship, the mentor is expected to invest both positional and personal resources, such as counseling, providing visibility, building self-confidence, and exposure to challenging assignments. In return, the protégé is expected to attain skill advancement (Kram, 1983). However, in paternalistic work contexts, protégés may expect a closer connection from a mentoring relationship which may be manifested in higher expectations for psychosocial support and role modeling. Accordingly, compared with U.S. protégés, Taiwanese protégés may be less likely to have an upward bias in responding to Item # 3 since Taiwanese protégés may perceive the mentor's extra time and consideration as an

implicit obligation. U.S. work culture is individualistic and achievement oriented whereas Taiwan is more collectivistic and relationship oriented (Chiu & Peng, 2008; House, et al., 2004; Hsu, 1981). In the Taiwanese context, protégés may expect their mentors to be more involved and devote considerable time to their career advancement whereas in the U.S., protégés may perceive career management primarily as their own responsibility and may therefore have fewer expectations from their mentors. Therefore, when mentors devote extra time and consideration in support of protégés' career advancement, such efforts may be particularly appreciated in the U.S. context. In contrast, employees in Taiwanese organizations are encouraged to be mutually dependent rather than self-sufficient (Hsu, 1981).

Taiwan is also high on paternalistic values (Cheng et al., 2004) which place importance on discipline and benevolence in work relationships. Paternalism may explain the slight variance among the samples regarding the importance of sharing personal problems (Item #4) with mentors. In paternalistic societies, such as Taiwan, mentors take a personal interest in the workers' off-the-job lives and attempt to promote protégé's personal welfare (Gelfand, Erez, & Aycan, 2007). Protégés expect their mentors to show individualized concern for their personal well-being which may explain the higher item intercept in Taiwan when protégés responded to "I share personal problems with this person" (Item # 4). Further, in Confucianism the ability to remain obedient to one's superiors under all circumstances is a significant virtue (Fu et al., 2007). Therefore, the current finding of higher item intercept in Taiwan when protégés responded to "I try to model my behavior after this person" (Item # 7) supports previous research on Confucianism and paternalism specifically when coupled with the importance of loyalty in Taiwanese relationships. In Taiwan as compared with the U.S. context, it is likely that protégés

not only expect a closer personal relationship with their mentors but also are culturally more driven to perceive their mentors as role models.

Current findings suggest many unanswered questions about international mentoring relationships may be explored using MFQ-9. Our results demonstrate full metric and partial scalar invariance which support that mentoring functions may be compared across cultures (Cheung & Rensvold, 2002). Although there are slight differences in the way U.S. and Taiwanese protégés respond to MFQ-9 items, both groups of protégés reported receiving similar levels of mentoring and similar conceptual frameworks when responding to the items.

Limitations

This study may be limited in its degree of generalizability. The U.S. sample predominantly consisted of Caucasian protégés (66% of the sample) and therefore current results may not generalize to other populations. As Hofstede and Hofstede (2005) suggest there are layers of culture within a national culture and future studies should replicate current findings with different ethnic samples. Also, the U.S. sample consisted of part-time and full-time employees whereas Taiwanese protégés were full-time employed. However, participants in both contexts responded to MFQ-9 based on their ongoing mentoring relationships, and the *t*-tests which compared item means between the part-time and full-time protégés in the U.S. suggested non-significance. Accordingly, the employment status of the participants should not be a major threat to the validity of the results (Highhouse & Gillespie, 2008).

Our findings suggest some items were not fully equivalent across U.S. and Taiwanese workers. Although we presented a discussion on cultural values (i.e., individualism-collectivism and paternalism) which may explain the non-invariance, such interpretations were offered under the assumption that country may sufficiently act as a surrogate for national cultures. Although

this is not an uncommon practice in cross-cultural studies (Riordan & Vandenberg, 1994), future studies that incorporate direct measures of cultural values into their research design may provide more direct evidence for the validity of our interpretations.

Conclusions

This study investigated measurement invariance across two countries that are culturally different from each other (United States and Taiwan). Results suggested that the measurement structure of MFQ-9 was invariant across the two contexts. Scales that are developed through deductive approaches rather than inductive approaches may be more likely to demonstrate ME/I across cultures because the items tend to be more general and less culture specific (Riordan & Vandenberg, 1994). MFQ-9 was developed through a deductive approach (Scandura & Ragins, 1993) and our findings provide preliminary support that individuals from different cultural backgrounds may share similar conceptualizations of mentoring functions. Therefore, current results suggest that MFQ-9 may be psychometrically sound across different cultural contexts.

Further, partial metric and scalar invariance suggest MFQ-9 may be used in cross-cultural comparisons. However, future research should also integrate emic manifestations of mentoring relationships. For example, in paternalistic societies there may be additional facets in mentoring relationships that have not yet been conceptualized in the Western context. In order to fully capture protégé experiences in international mentoring relationships, we need to not only ensure measurement invariance of etic dimensions but also integrate emic interpretations to advance mentoring theory.

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Table 1: Factor correlations based on single group CFAs

Variable Name	1	2	3
1. Vocational support	-	.69*	.64**
2. Psychosocial support	.60**	-	.66**
3. Role modeling	.76**	.59**	-

Note. Correlations for the U.S. workers ($N = 195$) are listed above the diagonal, and correlations for the Taiwanese workers ($N = 309$) are listed below the diagonal.

** $p < .01$.

Table 2: Descriptive statistics for MFQ-9 items by sample

Samples	U.S. (<i>N</i> =195)				Taiwan (<i>N</i> =309)			
	Mean	SD	Skewness	Kurtosis	Mean	SD	Skewness	Kurtosis
Item1	4.05	0.96	-1.08	0.98	3.75	0.80	-0.78	1.08
Item2	3.88	0.92	-0.93	1.10	3.76	0.79	-0.97	1.23
Item3	3.93	0.98	-0.95	0.78	3.30	0.95	-0.34	-0.23
Item4	3.15	1.32	-0.22	-1.12	3.44	0.91	-0.41	-0.46
Item5	3.51	1.26	-0.62	-0.63	3.28	0.97	-0.27	-0.49
Item6	3.99	1.01	-0.98	0.68	3.83	0.83	-0.89	0.79
Item7	3.35	1.21	-0.43	-0.68	3.66	0.89	-0.85	0.84
Item8	3.97	1.02	-0.97	0.71	3.86	0.84	-1.00	1.49
Item9	4.17	0.91	-1.26	1.83	3.93	0.78	-1.06	2.10

Table 3: Results of nested measurement invariance tests

Model	$df/\Delta df$	χ^2	$\Delta\chi^2$	SRMR	TLI	CFI	ΔCFI	NCI	ΔNCI
<i>Configural invariance</i> Model 0 (M0)	48	176.43**		.06	.96	.97		.88	
Model 1 (M1)	54	178.91**		.06	.96	.97		.88	
<i>Metric invariance</i> (M0 vs M1)	6		2.48				.00		.003
Model 2 (M2)	60	299.04**		.06	.94	.95		.78	
<i>Full scalar invariance</i> (M1 vs M2)	6		120.13**				-.02		-.094
Model 3 (M3)	57	189.61**		.06	.96	.97		.87	
<i>Partial scalar invariance</i> (M1 vs M3)	3		10.69				-.00		-.006
Model 4 (M4)	60	198.61**		.06	.96	.97		.87	
<i>Factor means invariance</i> (M3 vs M4)	3		9.00				-.00		-.006

Note: SRMR = standardized root mean square residual; TLI = Tucker Lewis Index; CFI = comparative fit index; NCI = McDonald's noncentrality index;.

** p < .01

Appendix: Mentoring Functions Questionnaire (MFQ-9) (Castro & Scandura, 2004)

Vocational Support

1. My mentor takes a personal interest in my career.
2. My mentor helps me coordinate professional goals.
3. My mentor has devoted special time and consideration to my career.

Psychosocial Support

4. I share personal problems with my mentor.
5. I exchange confidences with my mentor.
6. I consider my mentor to be a friend.

Role Modeling

7. I try to model my behavior after my mentor.
8. I admire my mentor's ability to motivate others.
9. I respect my mentor's ability to teach others.