Cross Cultural Validity and Measurement Invariance of the Organizational Stressor

Indicator for Sport Performers (OSI-SP) Across Three Countries

Rachel Arnold

University of Bath

Vellapandian Ponnusamy

Institut Sukan Negara (National Sports Institute of Malaysia)

Chun-Qing Zhang

Hong Kong Baptist University

Daniel Gucciardi

Curtin University

Author Note

Rachel Arnold, Department for Health, University of Bath; Vellapandian Ponnusamy, Institut Sukan Negara (National Sports Institute of Malaysia); Chun-Qing Zhang, Department of Physical Education, Hong Kong Baptist University; Daniel Gucciardi, School of Physiotherapy and Exercise Science, Curtin University. Daniel Gucciardi is supported by a Curtin Research Fellowship.

Correspondence concerning this article should be addressed to Rachel Arnold, Department for Health, University of Bath, Bath, BA2 7AY, United Kingdom. Telephone: 4412-2538-5107. Fax: 4412-2538-3833. E-mail: R.S.Arnold@bath.ac.uk

Abstract

Organizational stressors are a universal phenomenon which can be particularly prevalent and problematic for sport performers. In view of their global existence, it is surprising that no studies have examined cross-cultural differences in organizational stressors. One explanation for this is that the Organizational Stressor Indicator for Sport Performers (OSI-SP; Arnold, Fletcher, & Daniels, 2013), which can comprehensively measure the organizational pressures that sport performers have encountered, has not yet been translated from English into any other languages nor scrutinized cross-culturally. The first purpose of this study, therefore, was to examine the cross-cultural validity of the OSI-SP. In addition, the study aimed to test the equivalence of the OSI-SP's factor structure across cultures. British (n = 379), Chinese (n = 335), and Malaysian (n = 444) sport performers completed the OSI-SP. Confirmatory factor analyses confirmed the cross-cultural validity of the factorial model for the British and Malaysian samples; however the overall model fit for the Chinese data did not meet all guideline values. Support was provided for the equality of factor loadings, variances, and covariances on the OSI-SP across the British and Malaysian cultures. These findings advance knowledge and understanding on the cross-cultural existence, conceptualization, and operationalization of organizational stressors.

Keywords: confirmatory factor analysis, demand, generalizability, occupational, psychometric, stress

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Organizational stressors, defined as the "environmental demands (i.e. stimuli) associated primarily and directly with the organization within which an individual is operating" (Fletcher, Hanton, & Mellalieu, 2006, p. 329), can be particularly problematic for sport performers. To elaborate, organizational stressors can lead to various negative consequences if they remain unaddressed (Fletcher & Arnold, 2016). These include: overtraining, burnout, unpleasant emotions and affect, dysfunctional health and well-being, and impaired preparation for and performance in major competitions (DiBartolo & Shaffer, 2002; Fletcher, Hanton, & Wagstaff, 2012; Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999; Noblet, Rodwell, & McWilliams, 2003; Tabei, Fletcher, & Goodger, 2012). These potential consequences are somewhat alarming given the prevalence and predominance of organizational demands in performers' competitive sport experiences. For example, Arnold and Fletcher (2012b) identified 640 distinct organizational stressors that were encountered by a total of 1809 sport performers. Furthermore, Hanton, Fletcher, and Coughlan (2005) noted that sport performers experienced and recalled more organizational-related demands than they did competitive-related demands.

Given the importance of understanding these prevalent and impactful stressors, various scholars have identified the organizational demands that a recruited sample have encountered (see, e.g., Fletcher & Hanton, 2003; Fletcher, Hanton, Mellalieu, & Neil, 2012; Kristiansen & Roberts, 2010; Thelwell, Weston, & Greenlees, 2005). To enhance the relevance of these studies to the broader population and generalize beyond each sample studied, a meta-interpretation was conducted to synthesize 34 studies that have examined this topic and identify appropriate stressor themes and categories (Arnold & Fletcher, 2012b). From this research synthesis, four main dimensions of organizational stressors emerged:

leadership and personnel issues (e.g., the coach's behaviors and interactions, external expectations), cultural and team issues (e.g., communication, team atmosphere), logistical and environmental issues (e.g., facilities, selection), and performance and personal issues (e.g., injuries, career transitions).

To make significant advances in psychologists' understanding of organizational stressors in competitive sport and further build a body of knowledge (Fletcher & Arnold, 2016; Fletcher et al., 2006), a comprehensive measure of organizational stressors in sport performers was required (cf. Arnold & Fletcher, 2012a). Whilst there have been some measures designed to assess the daily hassles that athletes experience (e.g., Albinson & Pearce, 1998), these do not exclusively focus on organizational stressors nor have they been exposed to rigorous psychometric testing (cf. Arnold & Fletcher, 2012a). There have also been measures designed to assess particular organizational stressors (e.g., perceived coach-athlete and media stressors; Kristiansen, Halvari, & Roberts, 2012); however, these do not assess the broad range of identified organizational demands. Recognizing this absence in the sport psychology literature, Arnold, Fletcher, and Daniels (2013) developed and validated the Organizational Stressor Indicator for Sport Performers (OSI-SP) via a series of four related studies. The OSI-SP comprises 23 items examining the multidimensional nature (e.g., frequency, intensity, duration) of organizational pressures that sport performers have encountered in the past month. The items on the indicator can be classified within five subscales: goals and development, logistics and operations, team and culture, coaching, and selection. Support has been provided for the indicator's internal consistency and content, concurrent, discriminant, and factorial validity (Arnold et al., 2013).

It is evident from the research synthesis of studies on this phenomenon (Arnold & Fletcher, 2012b) that organizational stressors are a universal phenomenon. Indeed, studies are available in the literature that identify the presence of organizational stressors across different

groups of performers (Arnold, Fletcher, & Daniels, 2015) and in American (see, e.g., Gould et al., 1999), Asian (see, e.g., Sohal, Gervis, & Rhind, 2013), Australasian (see, e.g., Noblet & Gifford, 2002), and European (see, e.g., Kristiansen & Roberts, 2010) cultures. In view of this global existence, it is surprising that no studies to date have examined cross-cultural differences in organizational stressors encountered. This observation can be applied to various areas of psychological research, however, and not just the topic of organizational stressors. Indeed, Sue (1999) contended that scholars have not taken sufficient advantage of cross-cultural comparisons that allow them to test the external validity and applicability of their interpretations, theories, and models in psychological research. Although the initial validation of the OSI-SP included over 1000 participants who, collectively, represented over 20 nationalities (with both individualist and collectivist societies represented), participants were restricted to those able to understand and complete the OSI-SP in the English language. The lack of indicator translation and cross-cultural scrutiny may explain why there is a lack of cross-cultural research on this phenomenon; however, both will need to be addressed going forwards before the generalizability of the OSI-SP can be supported and it can be used confidently with various populations and cultures (Fletcher & Arnold, 2016).

Based on these observations, the first purpose of this study is to examine the cross-cultural validity of the OSI-SP by comparing the psychometric properties and factor structure of an English OSI-SP with Chinese and Malay translated versions of the indicator. In terms of this sampling decision, it is worth noting at this stage that China represents a collectivistic culture, England a individualistic culture, and Malaysia a mixed individualistic and collectivistic culture; therefore, enabling a meaningful comparison of the indicator across the cultures. Such an examination will also enable an assessment of whether the OSI-SP, and the conceptualization and operationalization on which it is based, are capable of accommodating the idiosyncrasies of cultural diversity (cf. Sue, 1999; Yang & Jowett, 2012). The

conceptualization on which the OSI-SP is based is Fletcher et al.'s (2006) meta-model of stress, emotions, and performance which stipulates that stressors arise from the environment an individual is operating in (objective stressors) and are subsequently perceived by individuals (subjective stressors). The model further proposes that these stressors are mediated by appraisal and coping and, as a consequence, result in positive or negative responses, feeling states, and outcomes (Fletcher et al., 2006).

In addition to examining the psychometric properties of the indicator (and its foundations) in different cultural contexts, it is also important to conduct a direct cross-cultural comparison to examine any cultural differences. Indeed, Byrne et al. (2009) has emphasized the need to not only test psychometric instruments within various countries, but also their structural and measurement equivalence across cultural groups. Only once there is evidence that both the meaning and dimensional structure of organizational stressors and the items comprising the OSI-SP are group-equivalent, can cross-cultural comparisons of scores on the indicator be made (cf. Byrne et al., 2009; van de Vijver & Leung, 1997). The second purpose of this study, therefore, is to adopt a multi-sample approach to test the equivalence of the OSI-SP's factor structure across the three language versions. If the parameters exhibit invariance then this would provide evidence to support the generalizability of the model across the three cultural groups. Although no studies to date have examined cross-cultural variation in organizational stressors, differences are expected to arise across the cultures sampled in this study. For example, collectivist cultures are group-oriented which involves greater value being placed on the group (Triandis, 1995); therefore, variations might be expected in the degree to which certain group versus personal stressors are experienced and interpreted within these cultures.

Materials and Methods

Participants

The optimal number of countries involved in cross-cultural comparison research has been a point of discussion in the literature, with many scholars agreeing that the psychometric models from at least three countries should be tested simultaneously in order to imply "universality" (Bond & Smith, 1996; Marsh, Marco, & Abcy, 2002). In accordance with this recommendation and the purpose of the present study, British, Chinese, and Malaysian samples were recruited. The British sample ($n = 379$; 178 male, 201 female) ranged in age from $18 - 66$ years ($M_{age} = 26.04$, $SD = 10.06$), and had been competing in a range of individual (e.g., Golf) and team (e.g., Lacrosse) sports for two months to 53 years ($M = 11.67$ years, $SD = 7.96$) at standards ranging from club to international. The Chinese sample ($n = 335$; 178 male, 154 female, three unknown) ranged in age from $11 - 26$ years ($M_{age} = 17.06$, $SD = 2.68$), and had been competing in a range of individual (e.g., Taekwondo) and team (e.g., Soccer) sports for six months to 17 years ($M = 7.58$ years, $SD = 2.84$) at standards ranging from regional/provincial to international. The Malaysian sample ($n = 444$; 257 male, 170 female, 17 unknown) ranged in age from $15 - 44$ years ($M_{age} = 18.31$, $SD = 4.03$), and had been competing in a range of individual (e.g., Boxing) and team (e.g., Hockey) sports for six months to 20 years ($M = 3.77$ years, $SD = 3.23$) at standards ranging from regional/state to international.

Procedure

Institutional ethical approval was granted for this study. All samples were recruited by either contacting sport performers directly or via enquiries with coaches, clubs, sport organizations, universities, and event organizers. All participants were provided with instructions at the start of the study, which informed them of their ethical rights (e.g., confidentiality, right to withdraw). Following this, participants were asked to sign an informed consent sheet prior to completing the measure. The measure took approximately ten minutes to complete.

Measure

  The Organizational Stressor Indicator for Sport Performers (OSI-SP). The 23-item OSI-SP (Arnold et al., 2013) was used to measure the organizational stressors that participants had encountered as part of their participation in competitive sport over the past month. The five subscales on the OSI-SP are: Goals and Development (six items; example: "the development of my sporting career"), Logistics and Operations (nine items; example: "travelling to or from training or competitions"), Team and Culture (four items; example: "the atmosphere surrounding my team"), Coaching (two items; example: "my coach's personality"), and Selection (two items; example: "how my team is selected"). For all items on the OSI-SP, the stem "In the past month, I have experienced pressure associated with…" was provided, to which the participants responded on three rating scales with options ranging from zero to five. These scales are: frequency ("how often did this pressure place a demand on you?") (0 = *never*, 5 = *always*), intensity ("how demanding was this pressure?") (0 = *no demand*, 5 = *very high*), and duration ("how long did this pressure place a demand on you for?") (0 = *no time*, 5 = *a very long time*). There is evidence to support the validity and internal consistency of the English version of the OSI-SP (Arnold et al., 2013). To create the Chinese and Malay versions of the OSI-SP, standard forward and back translation methods were used to appropriately reflect the nuances and peculiarities of each country (cf. Byrne, Shavelson, & Muthen, 1989; Byrne et al., 2009). The result was the production of a 23-item Chinese OSI-SP and a 23-item Malay OSI-SP[1], to which Chinese and Malaysian participants respectively responded to each item using the same stem and three rating scales (translated into Chinese and Malay) as is used on the English version of the OSI-SP.

Data Analysis

  To address the first purpose of this study and compare the psychometric properties and factor structure of an English OSI-SP with Chinese and Malay versions, the 23-item indicators were analyzed with confirmatory factor analysis (CFA) using EQS 6.1 (Bentler &

Wu, 2002). For the purposes of identification and latent variable scaling, one item from each of the five factors was fixed to 1.0. In accordance with suggestions in the literature, the chi-square statistic and a variety of fit indices were used to judge the adequacy of the models produced (Byrne, 2006; Fayers & Aaronson, 2012; Hu & Bentler, 1999; McIntosh, 2012; Mulaik, 2007; Vernon & Eysenck, 2007; Williams, Vandenberg, & Edwards, 2009). These fit indices were: the comparative fit index (CFI; Bentler, 1990), the Bentler-Bonett non-normed fit index (NNFI; Bentler & Bonett, 1980), the standardized root mean residual (SRMR; Hu & Bentler, 1998), and the root mean square error of approximation (RMSEA; Steiger, 1990). It is generally accepted for fit indices that an adequate fit between the data and hypothesized model is indicated by SRMR values of around .08 (Hu & Bentler, 1999) and NNFI and CFI values of >.90 (Bentler, 1992; Marsh, Hau, & Grayson, 2005), or closer to .95 for an excellent fit (Hu & Bentler, 1999). For RMSEA, a value of between .08 and .10 indicates a mediocre fit, whereas below .08 shows a good fit (MacCallum, Browne, & Sugawara, 1996). That said, these values were used as guides rather than absolute values (cf. Heene, Hilbert, Draxler, Ziegler, & Bühner, 2011; Marsh, Hau, & Wen, 2004) and several statistics were considered in combination.

With regard to the second purpose of this study, a sequential model testing approach was employed via multi-sample CFA to test the equivalence of the OSI-SP's factor structure across the different language versions. A baseline model was firstly established and then additional models were tested with increased degrees of constraints. These models were specified to examine the equality of measurement (item loadings) and structural parameters (factor variances and covariances) of the OSI-SP across the different versions (Byrne, 2006). To assess equality across groups, the ΔS-B $\chi 2$ test statistic (Satorra & Bentler, 2001) and Cheung and Rensvold's (2002) guideline of a change in CFI of $\leq$. 01 were used. This combination was chosen since it is suggested that the $\chi 2$ difference test is oversensitive to

multivariate normality, minor misspecifications, and sample size; the usage of the goodness-of-fit indexes to test measurement invariance has been widely supported (see, e.g., Chen, 2007; Cheung & Rensvold, 2002).

Results

Preliminary Analysis

No variable had >5% missing data in this study and across all variables the total amount of missing data was <1%; therefore, any data not present were assumed to be missing at random (cf. Tabachnick & Fidell, 2001). The expectation maximization algorithm was used to impute missing values. The univariate skewness values of the items across all three versions of the OSI-SP ranged from −.29 to 2.37 and the univariate kurtosis values ranged from −1.22 to 5.65. For multivariate kurtosis, Mardia's normalized coefficients indicated that the data departed from multivariate normality (e.g., English OSI-SP frequency = 29.77, intensity = 18.38, duration = 28.11; Chinese OSI-SP frequency = 38.38, intensity = 36.83, duration = 37.04; Malay OSI-SP frequency = 40.90, intensity = 34.55, duration = 42.69). Therefore, all CFAs were conducted using the robust maximum likelihood (ML) estimation procedure with a Satorra–Bentler correction (S-B$\chi 2$; cf. West, Finch, & Curran, 1995; Bentler & Wu, 2002) and fit indices corrected for robust estimation.

Main Analyses

Testing the OSI-SP factor structure. The first purpose of this study was to examine the cross-cultural validity of the OSI-SP by comparing the psychometric properties and factor structure of an English OSI-SP with Chinese and Malay translated versions of the indicator. In terms of the psychometric properties, the internal consistency values for the three dimensions of the English and Malay versions of the OSI-SP were all deemed acceptable (α range = .72 to .90). Although 73% of the alpha values for the Chinese version of the OSI-SP were acceptable (α range = .70 to .87), the selection frequency (α = .62) and goals and

development frequency (α = .65), intensity (α = .65), and duration (α = .65) values were

slightly below the recommended .70 threshold (Tabachnick & Fidell, 2001).

The results of the confirmatory factor analyses demonstrated that the fit of the 23-

item, five-factor model to the British and Malaysian samples' data was acceptable if adopting

the SRMR, RMSEA and original CFI guidelines (cf. Bentler, 1992); however, did not meet

Hu and Bentler's (1999) revised CFI cutoff value of .95 for an excellent model fit.

Specifically, the results for the British data were as follows: Frequency S-Bχ2 (220) =

396.86, p < .001, CFI = .93, NNFI = .91, SRMR = .05, RMSEA = .05 (CI = .04 to .05),

Intensity S-Bχ2 (220) = 408.78, p < .001, CFI = .93, NNFI = .92, SRMR = .05, RMSEA =

.05 (CI = .04 to .06), and Duration S-Bχ2 (220) = 398.77, p < .001, CFI = .93, NNFI = .92,

SRMR = .05, RMSEA = .05 (CI = .04 to .05). Turning to the Malaysian data, the results for

model fit were as follows: Frequency S-Bχ2 (220) = 575.01, p < .001, CFI = .94, NNFI = .93,

SRMR = .05, RMSEA = .06 (CI = .05 to .07), Intensity S-Bχ2 (220) = 565.44, p < .001, CFI

= .94, NNFI = .93, SRMR = .04, RMSEA = .06 (CI = .05 to .07), and Duration S-Bχ2 (220) =

538.68, p < .001, CFI = .94, NNFI = .94, SRMR = .04, RMSEA = .06 (CI = .05 to .06).

Overall, these results confirm the cross-cultural validity of the first-order, five-factor model

of organizational stressors (as measured by the OSI-SP) for the British and Malaysian

samples.

For the Chinese data, the model fit was acceptable if adopting the SRMR and

RMSEA guidelines; however, CFI and NNFI guidelines were not met. Specifically, the

model fit results for the Chinese data were as follows: Frequency S-Bχ2 (220) = 524.11, p <

.001, CFI = .87, NNFI = .85, SRMR = .06, RMSEA = .06 (CI = .06 to .07), Intensity S-Bχ2

(220) = 521.45, p < .001, CFI = .87, NNFI = .85, SRMR = .07, RMSEA = .06 (CI = .06 to

.07), and Duration S-Bχ2 (220) = 565.14, p < .001, CFI = .86, NNFI = .84, SRMR = .07,

RMSEA = .07 (CI = .06 to .08). The fit of the 23-item, five factor model to the data from the

Chinese sample, therefore, required further examination. An inspection of the modification indices for model misspecification suggested that the Chinese model should be re-specified with various error variances correlated. These suggestions from the LM $\chi 2$ statistic and related probability values were not implemented, however, since they were not substantively or empirically justified and were deemed inappropriate for preserving psychometric integrity (cf. Byrne, 2006; Jöreskog, 1993).

In measurement models where overall fit is not fully supported, researchers have suggested exploring the structure and assessing the psychometric properties of each factor independently (Arnold & Fletcher, 2015; Brown, 2006; Harrington, 2008; Hurley et al., 1997; Mullan, Markland, & Ingledew, 1997; Woodman & Hardy, 2003). Measuring the factorial validity of subscales is also important practically, because practitioners will often calculate factor scores by averaging the items in a subscale (Lane, Harwood, Terry, & Karageorghis, 2004; see also Grice, 2001; Stone, Ye, Zhu, & Lane, 2009). A CFA was, therefore, conducted on each factor of the OSI-SP independently using the Chinese data. By observing the overall fit values, it appears that the logistics and operations, team and culture, coaching, and selection factors all generally display acceptable fit (CFI values = .90 to .99); however, the goals and development factor does not (CFI values = .76 to .77). Based on these findings and the lower alpha values reported for the goals and development factor, it is also worth reporting the fit values for the Chinese data when testing an overall four factor model (with the goals and development subscale removed). Specifically, these were as follows: Frequency S-B$\chi 2$ (113) = 259.81, $p < .001$, CFI = .92, NNFI = .90, SRMR = .06, RMSEA = .06 (CI = .05 to .07), Intensity S-B$\chi 2$ (113) = 236.12, $p < .001$, CFI = .93, NNFI = .92, SRMR = .05, RMSEA = .06 (CI = .05 to .07), and Duration S-B$\chi 2$ (113) = 284.32, $p < .001$, CFI = .91, NNFI = .89, SRMR = .06, RMSEA = .06 (CI = .06 to .08). These results demonstrate that the fit of the 17-item, four-factor model to the Chinese samples' data was acceptable if adopting

the SRMR, RMSEA and original CFI guidelines (cf. Bentler, 1992); however, similar to the British and Malaysian samples, did not meet Hu and Bentler's (1999) revised CFI cutoff value of .95 for an excellent model fit.

Invariance testing. In view of the aforementioned CFA results relating to the Chinese dataset, a sequential model testing approach was employed via multi-sample CFA to test the equivalence of the OSI-SP's factor structure across the British (n = 379) and Malaysian (n = 444) versions. There were nine significant changes in the S-Bχ2 difference test, which occurred when the factor loadings, factor variances, and factor covariances of the frequency, intensity, and duration dimensions were constrained across culture (see Table 1). However, in accordance with Cheung and Rensvold's (2002) guidelines, the change in CFI values was ≤ .01 in all the analyses (see Table 1) thereby providing support for the equality of factor loadings, variances and covariances on the OSI-SP across the British and Malaysian cultures.

Discussion

In view of the universal prevalence and problematic nature of organizational stressors in competitive sport, the purpose of this study was to examine the cross-cultural validity of a measure designed to assess such demands – the OSI-SP (Arnold et al., 2013). Specifically, the study aimed to compare the psychometric properties and factor structure of an English OSI-SP with Chinese and Malay translated versions of the indicator to examine if the indicator could accommodate the idiosyncrasies of cultural diversity (cf. Sue, 1999; Yang & Jowett, 2012). Furthermore, the study also tested the equivalence of the OSI-SP's factor structure across the language versions to see if the model was generalizable across cultural groups. To achieve these aims, a first-order, five-factor model based on the prior conceptualization, operationalization, and measurement of organizational stressors was examined (Arnold & Fletcher, 2012b; Arnold et al., 2013; Fletcher et al., 2006). Collectively,

the results showed congruence with the pattern of the factor structure for the first-order, five factor model across the British and Malaysian cultural groups. Nonetheless, some potential discrepancies in the support for the model structure were also revealed when observing the Chinese findings. The testing of the OSI-SP's equivalence in factor structure across the versions demonstrated support for the equality of factor loadings, variances, and covariances across the British and Malaysian data. This finding extends the factorial invariance found previously for the OSI-SP across various groups (e.g., gender, sport type, competitive level; Arnold et al., 2013). Together, these findings now make it possible for researchers to assess organizational stressors across different groups and cultures of sport performers and suggest more meaningful comparisons between them (cf. Vandenberg & Lance, 2000).

To elaborate on the Chinese discrepancies found in the CFA, it was evident that the fit of the 23-item, five-factor model was only acceptable if adopting SRMR and RMSEA guidelines, and not CFI and NNFI criteria. When exploring the structure and assessing the psychometric properties of each factor independently for the Chinese data, it was evident that the logistics and operations, team and culture, coaching, and selection factors all generally displayed acceptable fit; however, the goals and development factor did not. Based on these results and the lower alphas reported for this subscale with the Chinese participants, it is suggested that future research further examines the translation and appropriateness of the goals and development items to Chinese samples. For instance, there may be particular cultural idiosyncrasies and norms that need to be considered when examining the organizational pressures that Chinese, as opposed to British, sport performers experience relating to goals and development stressors such as the food that they have available to them, the development of a sporting career, and training schedules (cf. Lu, 2014; Si, Duan, Lo, & Jiang, 2011; Si, Duan, Li, Zhang, & Su, 2015; Tian, He, Zhao, Tao, Xu, & Midgley, 2015).

Future investigations should also look to consider how Chinese cultural values might differ from those in Britain and Malaysia (cf. Ho & Chiu, 1994; Hofstede, 1980; Oyserman, Coon, & Kemmelmeier, 2002; Triandis, 1995) and how this might impact on performers' organizational stressor experiences. For instance, Triandis (1995) identified that a defining attribute between individualistic and collectivistic cultures is whether personal or group goals have priority; thus, this could explain why some of the goals-related items on the OSI-SP developed in an individualist culture (e.g., England) are perhaps not as appropriate to a collectivist culture (e.g., China). Furthermore, it is also worth noting that the age of the participants in the Chinese sample (range 11-26) was lower than the British and Malaysian samples (ranging from 18-66 and 15-44 respectively). In view of Arnold et al.'s (2015) finding that organizational stressors can vary by demographic differences, it will be important for future research in this area to examine the validity of the OSI-SP with older Chinese sport performers, and consider the impact of early athletic specialization in cultures such as China (cf. Wei, Hong, & Zhouxiang, 2010) on the organizational stress experience. Going forwards, it is clear that the model fit for the 17-item, four factor model to the Chinese data (i.e. with the goals and development factor removed) was acceptable and, therefore, can be currently used for research and practice with Chinese samples. Notwithstanding this suggestion, given the vulnerability of this factor to cultural variability, scholars should consider the future development of a culturally specific goals and development subscale for Chinese populations (cf. Hagger et al., 2007) and explore if there are further pertinent stressors encountered by sport performers operating in this culture.

In addition to further developments for the goals and development subscale, it is also suggested that scholars look to extend the psychometric testing of the whole indicator to additional cultures by translating the measure into different languages (e.g., French, German, Portuguese etc). Indeed, although the results demonstrated substantial equivalence in the

measurement parameters of models and, thus, suggest that culture does not appear to greatly

affect the construct at a conceptual level, there was some cross-cultural variation in the

interpretation of some items in the Chinese sample. Testing the OSI-SP in an extended

diversity of cultures, therefore, would ensure that the organizational stressors construct can be

measured in a reliable and valid way with a multitude of groups across the globe (cf. Fletcher

& Arnold, 2016). To ensure such coverage, scholars could look to sample cultures which are

situated across Hofstede, Hofstede, and Minkov's (2010) six dimensions. These are power

distance (i.e. expectation of unequal power distribution), individualism versus collectivism

(i.e. preference for a loosely- or tightly-knit social framework), masculinity versus femininity

(i.e. societal preferences for competition or cooperation), uncertainty avoidance (i.e. the

degree to which society feel uncomfortable with ambiguity), long term versus short term

orientation (i.e. society maintains links with past versus dealing with present and future

challenges), and indulgence versus restraint (i.e. gratification or suppression of needs).

Further testing of the cross-cultural validity of the OSI-SP should also look to incorporate

qualitative research methods to explore if item translations are as accurate and unified as is

originally intended and expected by developers (cf. Sumathipala & Murray, 2000). Moreover,

scholars might look to conduct reflexive sport psychology research from a critical cultural

studies perspective to capture the complexity of individual's contextual experiences of

organizational stressors (cf. Agger, 2014; McGannon & Johnson, 2009).

The findings of the present study are important from a theoretical and empirical

standpoint since they can offer support for the external validity and cross-cultural

applicability of the prior conceptualization (cf. Arnold & Fletcher, 2012b; Fletcher et al.,

2006) and operationalization (cf. Arnold et al., 2013) of organizational stressors in

competitive sport. Practically, based on the findings it is proposed that consultants working

with teams that comprise a cultural mix of individuals can now confidently use the indicator

to accurately assess the organizational demands (and their frequency, intensity, and duration) at both an individual and group level. Specifically, it is recommended from the results that the five-factor OSI-SP structure is adopted when working with sport performers who speak English and/or Malay, whereas the four-factor structure appears most appropriate to guide practice with Chinese speaking athletes. When managing organizational stressors cross-culturally, practitioners can draw valuable lessons from those individuals who have already provided psychological support to athletes encountering such demands (e.g., crowd distractions, physical safety concerns, coaching style inappropriateness) in a diversity of countries (see, e.g., Araki & Balasekaran, 2009; Lidor & Blumenstein, 2009). Furthermore, practitioners operating cross-culturally should anticipate recognized practitioner- and client-centered issues such as incompatible communication styles and stereotyping (Terry, 2009; see also, Schinke, McGannon, Parham, & Lane, 2012).

To conclude, organizational stressors can be accurately measured by the OSI-SP in a first-order, five-factor model regardless of if they are encountered in a British or Malaysian cultural context. Future research is required to further examine the appropriateness of the goals and development subscale with Chinese sport performers and also extend the usage of the indicator to additional cultures.

Perspectives

To provide perspective, organizational stressors are a universal phenomenon which can be particularly prevalent and problematic for sport performers. It is surprising that no studies to date have examined cross-cultural differences in organizational stressors, given their global existence. To address this, the present study has provided evidence for the cross-cultural validity of the OSI-SP, which is an indicator designed to assess these organizational demands (and their dimensions). The findings are theoretically, empirically, and practically important since they offer support for the external validity and cross-cultural applicability of

the prior conceptualization and operationalization of organizational stressors, and provide

scholars and practitioners with sound knowledge and understanding on the cross-cultural

existence and optimal measurement of these demands.

Footnote

[1]The three language versions of the Organizational Stressor Indicator for Sport Performers

(OSI-SP) are available from www.osisport.info.

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Table 1: *OSI-SP Fit Indices for Invariance Analyses*

Model	S-Bχ^2	df	RCFI	SRMR	RRMSEA	ΔS-Bχ^2	Δdf	ΔRCFI
Culture: Frequency Data								
Unconstrained	979.62*	440	.932	.049	.039	-	-	-
Constrained factor loadings	1055.68*	458	.924	.061	.040	56.97*	18	.008
Constrained factor variances	1136.52*	463	.915	.154	.042	253.20*	5	.009
Constrained factor covariances	1255.52*	473	.901	.195	.045	119.60*	10	.014
Culture: Intensity Data								
Unconstrained	984.95*	440	.934	.048	.039	-	-	-
Constrained factor loadings	1042.41*	458	.929	.057	.039	63.43*	18	.005
Constrained factor variances	1117.58*	463	.921	.135	.041	220.59*	5	.008
Constrained factor covariances	1225.46*	473	.909	.170	.044	111.15*	10	.012
Culture: Duration Data								
Unconstrained	945.50*	440	.936	.047	.037	-	-	-
Constrained factor loadings	1019.87*	458	.929	.060	.039	81.36*	18	.007
Constrained factor variances	1096.95*	463	.919	.140	.041	411.89*	5	.010
Constrained factor covariances	1211.34*	473	.906	.179	.044	109.17*	10	.013

Note. S-Bχ^2 = Satorra-Bentler scaled chi-square statistic, df = degrees of freedom, RCFI = robust comparative fit index, SRMR = standardized root mean residual, RRMSEA = robust root mean square error of approximation, ΔS-Bχ^2 = Satorra-Bentler scaled chi-square difference, Δdf = difference in degrees of freedom, ΔRCFI = change in RCFI, when the fit of the more constrained model is compared with that of the previous less constrained model (Cheung & Rensvold, 2002). *$P < .01$.