A Cross-Cultural Validation of the Territorial Functioning Construct in Residential Neighbourhoods: A Multigroup Invariance Analysis

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Abstract

One popular use of design strategies for crime prevention is territorial functioning (TF). While the TF scale has been widely utilised in crime studies, there is a lack of empirical evidence to support the equivalence of the scale across diverse contexts. A sample of 416 inhabitants from Britain and Malaysia took part in the study. We examined the factor structure validity and invariance of the TF scale instrument within the two nations based on a multigroup analysis of invariance. The results indicated that confirmatory factor analytic models of the constructs exhibited an adequate fit according to multiple criteria within each sample and across samples. The results further indicated full support of configural invariance and partial support of metric and scalar invariance. Multigroup latent mean analysis revealed significant group mean differences in territorial attitude, indicating that Malaysian residents perceived a significantly higher territorial attitude than British residents.

Keywords: territorial attitude, marking behaviour, multigroup, invariance, cross-cultural

1. Introduction

There is substantial empirical evidence that links territorial functioning (TF) with low crime rates. Based on Newman's (1972) defensible space theory, TF is a crime prevention strategy focusing on the manipulation of the physical design to reduce crime by giving residents control over their surrounding environment. It is defined as a set of attitudes and behaviours of how people manage, occupy and use the space they own. Based on defensible space features and territorial signs, it is assumed that physical elements in the environment act as cues in a person's understanding of who belongs in a space and who does not (Brower, Dockett, & Taylor, 1983). Territoriality is the central concept of defensible space that gives residents control of their environment. The term defensible space was used by Oscar Newman (1972) to refer to the impact of physical elements on people's behaviour and to define private and semi-private spaces that make it possible for residents to protect owned areas against unwanted intrusion.

Taylor (1988) argues that TF comprises the interwoven expression of attitudes, behaviours and markers that support and stimulate one another. Research has indicated that the sociocultural context variables affect the level of TF (Taylor, Gottfredson, & Brower, 1984). However, Pollack and Patterson (1980) found evidence indicating that these elements do not necessarily correlated with one another. Examining the literature provides a foundation for the present study. This conflict between territorial functioning elements indicates a need to investigate whether these elements correlated with one another. Taylor (1988) further suggested that TF is highly place-specific and should be regarded as a system that adapts to the social and physical contingencies of a particular locale. This perspective also recognises the varying shape of TF across cultures due to cultural evolution and adaptation to specific ecologies. Support for this assumption comes from work by Brower (1980) and Scheflen (1971), which has indicated that different cultural or ethnic groups utilised distinct territorial attitudes and behaviours to maintain control. Among this line of investigations, Taylor (1988, p. 356) also suggests that territorial functioning exists along a centrality continuum and defines it as "…an interlocked system of sentiments, cognitions, and behaviours that are highly place specific, socially and culturally determined and maintaining...".

Two popular scales for measuring TF are attitudes and marking behaviours (Brower et al., 1983). To study TF in a neighbourhood involves statements such as "I know my neighbour's name" or "I feel comfortable living in my neighbourhood". Such fundamental statements are measured because the responses reflect residents' sense of

control over their residential area as well as their willingness to get involved in community events. While the concept has been widely employed as a crime prevention measure in residential neighbourhoods, there is a lack of empirical evidence that validates the territorial functioning scale across cultures. Although there is a growing body of evidence to suggest that territorial functioning negatively affects the perceived fear of crime, many studies relied on a single sample and did not consider cultural differences in engaging TF features (e.g., Abdullah et al., 2013b; Hedayati Marzbali et al., 2012b, c). By taking this issue into consideration, the validity of TF measurements between two different cultures can be examined using multigroup invariance analysis to assess the measurement invariance.

1.1 Purpose of the Study

Territorial functioning has been reported to vary amongst cultures. However, the defensible space concept has seldom been tested in a non-Western culture such as Malaysia. In an American context, research found that crime opportunities may increase when capable guardians such as security systems are absent (Franklin, 2011). A recent study in the UK suggested that future research might examine the effects of environmental cues, such as territorial markings as indicators of environmental mastery, on crime and fear of crime (Abdullah et al., 2013a). However, examining the defensible space concept in a multi-ethnic society could provide a deeper understanding of territorial functioning in reducing crime and fear in different contexts. Therefore, the primary purpose of the present study was to test invariance of each TF item proposed to measure its respective factor between the British and Malaysian population samples. It is useful to validate whether residents in one country perceive attitudes and territoriality features differently from those of another. Therefore, our research contributes to the literature by incorporating the integral roles of attitude and marking behaviour into the territorial functioning measurement.

The multigroup analysis attempted to confirm whether samples from different nations affected the level of TF. Furthermore, we tested for differences in the latent means of territorial attitude and marking behaviour between the two samples. It should be noted that, despite the introduction of the mean and covariance structures in testing for latent mean differences over three decades ago, very few studies have examined latent mean differences across groups using real data (Byrne, 2010). The patterns relating to TF scale mean differences across variables such as age, tenure and culture have not been analysed using measurement invariance. A classic issue arising from the use of the territorial functioning construct involves determining whether this factorial structure is invariant with respect to residents' background characteristics. However, comparison of observed scores is a very common assessment method of TF levels across two or more samples. It is worth noting that such approaches assume that the observed scores include no measurement error and that this assumption is certainly untenable. Comparison between groups is methodologically valid when the instrument is equivalent across potentially different groups. Therefore, the present work examines the measurement invariance and latent mean differences of TF in relation to culture in a systematic and novel manner.

2. Methodology

The data collected in this study were analysed based on structural equation modelling (SEM) using the AMOS program. Multigroup analyses were performed to compare the TF measurement using two samples from different cultures, Britain and Malaysia. We relied heavily on Byrne's (2004) multistep for testing multigroup invariance using the AMOS program to test the invariance of the patterns of factor loadings in the scale between the two groups. The analysis of the data was threefold: stage one consisted of the identification of the baseline model that best fit the data of each group individually (configural invariance); stage two included further tests of invariance of the factor loadings between the two groups (metric invariance); and stage three tested the factorial validity of the scale using mean and covariance structure analysis (MACS) to analyse the difference in the latent mean values between groups (scalar invariance).

As a prerequisite step for invariance testing, it is necessary to determine a baseline model driven by the perspectives of both parsimony and substantive meaningfulness in stage one (Byrne, 2004; Hair et al., 2006). The two-factor measurement model (territorial attitude and marking behaviour) was hypothesised based on prior knowledge (Brower et al., 1983). The measurement model was tested in each of the two samples using two independent confirmatory factor analyses (CFAs) to validate the baseline model. Prior to testing the invariance of all loadings, the study again tested the overall model fit of the determined baseline model between the two groups simultaneously rather than separately for further comparison in stage two. The reason for this testing was that "… the fit of this simultaneously estimated model can provide the baseline value against which all subsequently specified models are compared" (Byrne, 2004, p. 279). Finally, latent mean group differences were tested, with equality constraints only on those invariance items obtained from full/partial metric invariance, as suggested by Byrne et al. (1989).

2.1 Participants

A sample of 416 residents from two high-crime neighbourhoods in Britain (n = 198) and Malaysia (n = 218) took part in the study. Of these respondents, 199 were male (48%) and 217 (52%) were female. The mean age was between 35 to 44 years in both the British (SD = 1.68) and Malaysian (SD = .99) samples. The majority of the British respondents surveyed were White (95%), whereas the Malaysian respondents were comprised of three major ethnic groups: Malay (33%), Chinese (56%) and Indian (11%). The unit of analysis is the neighbourhood resident and samples were selected using a systematic sampling method. The study focused on residents of terraced houses, as these were the predominant type of dwelling in both neighbourhoods. In terms of network system, the streets were mainly set out in a regular gridiron pattern in both samples. As Malaysia was previously a part of the British Empire, the modern town planning system was highly influenced by the British civil administration system, despite a certain degree of localisation over the years. City structure in Malaysia is based on a land use zoning approach, which is an adaptation of the British style of zoning. Malaysia is a suitable choice as there are many similarities between the two countries as it is a commonwealth country.

2.2 Measures

The study was quantitative in nature and involved two parts. The first part involved an on-site observation of residents' front gardens to identify and evaluate residents' *marking behaviour*. These actions were classified into four categories based on measures adapted from the work of previous studies (Brown & Altman, 1983; Greenbaum & Greenbaum, 1981; Hedayati Marzbali et al., 2012a; Pollack & Patterson, 1980). The first three categories, comprising gardening work (MB1), exterior house maintenance (MB2), and physical barriers (MB3), were measured on a five-point Likert scale. Markers (MB4), as the last category, were based on the total number of items present. During the analysis, three items – signs, personalisation items and security systems – were combined to create a single summative marker item.

The second part of the study involved asking residents to answer a self-administered questionnaire. Participants provided their demographic information and responded to seven statements regarding territorial attitudes that had been adapted and modified from previous studies (Edney, 1972; Patterson, 1978; Taylor et al., 1981; Taylor et al., 1984). *Territorial attitudes* included the following items: (1) Attitude 1: I spend time talking with neighbours in my garden; (2) Attitude 2: I keep an eye on what occurs in front of my house daily; (3) Attitude 3: I can tell if a person standing in front of my house lives in the neighbourhood; (4) Attitude 4: I know the names of most of my neighbours; (5) Attitude 5: I feel responsible for watching over my neighbours' house when they are on vacation; (6) Attitude 6: I feel comfortable living among my neighbours; and (7) Attitude 7: I feel that I belong in this neighbourhood. The scores were based on a four-point Likert scale (1=strongly disagree, 4=strongly agree).

To establish content validity, three renowned scholars with relevant expertise were asked to review the survey instruments, examine the effectiveness of the selected items in measuring the underlying variables and evaluate the overall content of the survey instruments. Prior to completing the questionnaire, all participants were briefed on the purpose of the study. An English version of the questionnaire was translated into Malay. All participants in Britain answered the questionnaire in English, whereas both English and Malay versions of the questionnaire were available for participants in Malaysia. It should be noted that, similar to other studies (Greenbaum & Greenbaum, 1981; Harris & Brown, 1996), the current study only observed marking behaviour in the front garden. The back garden was excluded because of the clear identification of this space for private use. The back garden is often fenced off and, therefore, not directly accessible to the public, either visually or physically. However, the front garden is the public access point to the property, despite its status as a private space. Therefore, the territorial functioning of the front garden is more purposeful.

2.3 The Hypothesised Model

The aim of this study is to test for latent mean differences in multidimensional TF between two nations. The CFA model encompasses two first-order factors, territorial attitude and marking behaviour. Territorial attitude is measured using seven items (Taylor et al., 1981, 1984), whereas four items are used to measure marking behaviour (Brown & Altman, 1983; Greenbaum & Greenbaum 1981; Hedayati Marzbali et al., 2012b). Consistent with theory and empirical research, the intercorrelation of the two TF factors is demonstrated.

3. Data Analysis

This section presents the results of the configural invariance test followed by an examination of the metric and scalar invariance analyses. CFA was performed to examine whether the hypothesis model adequately fit the data. A test of normality was performed prior to the analysis, as the SEM estimation is conditioned to multivariate

data normality. The bootstrap method was used in subsequent analyses for which the multivariate distribution was found to be non-normal, which was the case in this study based on the large Mardia's coefficients of multivariate kurtosis of 36.94 and 44.39 for the British and Malaysian samples, respectively (Mardia, 1974). SEM parameters with maximum likelihood (ML) estimation are robust in the instance of non-normality, resulting in biased fit indices and standard errors (Bollen, 1989). Researchers have advocated bootstrapping for testing both the direct and indirect effects of non-normal data (Preacher & Hayes, 2008; Williams & MacKinnon, 2008). The bootstrapping estimation method (*n*=1000 samples) was employed using AMOS 20.0 to evaluate potential bias, providing repeated resampling of the original sample to create a sampling distribution not dependent on the normality assumption (Lockwood & MacKinnon, 1998).

Several indices, such as the chi-square, chi-square/degree of freedom ratio and goodness-of-fit indices, were employed to determine whether the model fit the data. The recommendation for relative/normed chi-square (χ^2/df) is 5 or less (Schumacker & Lomax, 2004). An acceptable fit of the data to the model is indicated by the following values: comparative fit index (CFI) >0.9, Goodness of Fit Index (GFI) >0.9, Tucker-Lewis index (TLI) >0.9, and root-mean square error of approximation (RMSEA) <0.08 (Hu & Bentler, 1999).

3.1 Testing the TF Model Validity of Each Group

Establishment of the configural (baseline) model begins with separately testing the validity of each sample's hypothesised measurement model (Byrne, 2008, 2010). Whether the proposed two-factor model fits the empirical data for each group is tested first. Initial testing of the Malaysian sample's hypothesised model yielded a marginally good fit to the data (CFI=.905, GFI=.891, RMSEA=.112). In contrast to those of the Malaysian residents, the results of the British sample revealed a well-fitting model (CFI=.955, GFI=.935, RMSEA=.067). Indeed, a review of the modification indices for both groups revealed substantial evidence of misspecification as a consequence of an error variance between Attitude 2 and Attitude 3. This finding of overlapping variance among the attitude subscales is not surprising and can be explained by the fact that the two items emphasise residents' perception of control over their surrounding environment. Given a substantially reasonable rationale for estimating this additional parameter, the originally hypothesised model was estimated again for each group. Testing for these models resulted in a substantially better fitting model for both the British (CFI=.970, GFI=.944, RMSEA=.056) and Malaysian (CFI=.927, GFI=.904, RMSEA=.079) residents. Therefore, this model was deemed the most appropriate specified model for both groups. This final baseline model serves as the model to be tested for its equivalence between both samples, as portrayed schematically in Figure 1.
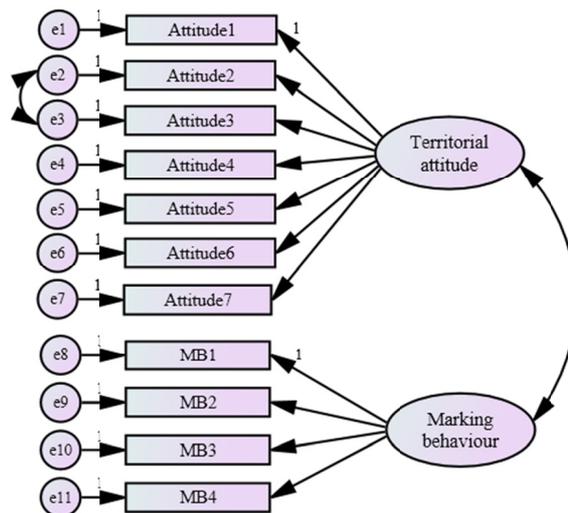

Figure 1. Baseline model of territorial functioning for British and Malaysian residents

In the study, a CFA technique was performed to examine the convergent validity and reliability of the factors. Three methods were used in assessing convergent validity: factor loading, composite reliabilities and average variance extracted (AVE). The results of the study indicated that the factor loadings were in the range of 0.48 to 0.98 and 0.45 to 0.96 for the British and Malaysian samples, respectively, which were close to the recommended value of 0.5 (Hair et al., 2010). Composite reliability estimates the degree to which the respective indicators

signal the latent construct (Lin, 2007); these estimates ranged from 0.79 to 0.89. A cut-off value of 0.7 and above is suggested for composite reliability, representing good reliability (Hair et al., 2010). The AVE is suggested have a value of 0.5 and above, indicating adequate convergence (Bagozzi & Yi, 1988). In this study, the AVE values ranged from 0.44 to 0.84, which were close to the recommended value of 0.5 (Hair et al., 2010). For both samples, the Cronbach's alpha scores in each factor were higher than the recommended cut-off value of 0.7 (Nunnally & Bernstein, 1994) and indicated good scale reliability. Overall, the CFA model demonstrated adequate reliability and convergent validity between the two samples. The results from the measurement models suggest that these models fit the data well.

3.2 Testing for Multigroup Invariance

3.2.1 The Global Fit of the Baseline Model between the Two Groups

Having determined baseline models for both sample populations, we repeated a test of goodness-of-fit of the model between the two groups simultaneously. Testing for configural invariance focuses on the extent to which the same number of factors best represents the data of both groups (Byrne, 2010). The test indicated that the determined baseline model still represented a fairly good fit ($\chi^2_{(84)}$= 220.498; CFI=.934, GFI=.916, RMSEA=.061). The χ^2 value and the goodness-of-fit indices for the unconstrained multigroup model served as an initial baseline model for subsequent constrained models.

3.2.2 Testing for Metric Invariance between the Two Groups

The purpose of testing for metric invariance is to ensure the equality of the factor patterns in the proposed model. Subsequent to the configural model, all factor loadings were constrained to be equal between the two groups in the metric invariance test (Hair et al., 2006). This model (model 2) was compared with the baseline model (model 1). The test for the invariance of factor loadings still represented a fairly good fit ($\chi^2_{(93)}$= 301.140; CFI=.903, GFI=.900, RMSEA=.072). These constraints increased the χ^2 value from 220.498 to 301.140, a gain of 9 degrees of freedom (see Table 1). Because the metric invariance model is nested within the baseline model, a χ^2 difference test was performed. A non-significance χ^2 test rejects the null of equality of all loadings. Given that the χ^2 difference of 100.703 with 10 degrees of freedom was statistically significant, metric invariance was not supported. Therefore, the hypothesis of an invariant pattern of factor loadings was untenable. Because the difference between the CFI values met the recommended cut off value of .01 (ΔCFI=.031) as suggested by Cheung and Rensvold (2002), the CFI difference test was used to further support our conclusion of non-invariance.

Table 1. Simultaneous tests of invariance for territorial functioning measurements

Competing models	χ^2	df	$\Delta\chi^2$	Δdf	p-Value	Decision
1. Configural invariance (baseline model) (Model 1)	220.498	84	—	—		
2. Full metric invariance (Model 2) (comparison between Models 1 and 2)	301.140	93	80.642	9	0.000	Reject
3. Partial metric invariance (Model 3a) ($\lambda_{Attitude6}$, $\lambda_{Attitude7}$ free) (comparison between Models 1 and 3a)	286.330	91	65.832	7	0.000	Reject
4. Partial metric invariance (Model 3b) ($\lambda_{Attitude6}$, $\lambda_{Attitude7}$ and λ_{MB4} free) (comparison between Models 1 and 3b)	241.735	90	21.237	6	0.002	Reject
5. Partial metric invariance (Model 3c) ($\lambda_{Attitude6}$, $\lambda_{Attitude7}$, λ_{MB2} and λ_{MB4} free) (comparison between Models 1 and 3c)	229.607	89	9.109	5	0.105	Accept
6. Partial metric and full scalar invariance (Model 4) (comparison between Models 3c and 4)	988.582	100	758.975	11	0.000	Reject
7. Partial metric and partial scalar invariance (Model 5) (i1, i6, i7, i9, i11 free) (comparison between Models 4 and 5)	242.105	95	10.918	6	0.052	Accept

3.2.3 Testing for Partial Metric Invariance

Some but not all measurement parameters are equally constrained across groups in the partial metric invariance test. It should be noted that the concept of partial metric invariance introduced by Byrne et al. (1989) has sparked

a modest debate in the technical literature (Byrne, 2010) over the intervening years. Indeed, researchers rarely considered the possibility of applying partial metric invariance to further testing for differences in latent mean scores. Research has suggested the sufficiency of have two equal factor loadings per construct across groups in partial metric invariance (Byrne et al., 1989; Muthén & Christofffersson, 1981). Byrne (2010) has argued that the application of partial metric invariance remains a popular approach in cross-cultural research. To implement partial metric invariance in our study, we manually examined individual loadings to identify the non-invariant indicators.

The invariance of each set of factor-loading parameters related to each particular factor was tested independently to pinpoint differences in the measurement parameters between the British and Malaysian samples. We subsequently tested the equality of the attitude measurements by holding major loadings on each factor invariant (see Table 1). Finally, the test illustrated that the following four factors were non-invariant between the two samples: Attitude 6, Attitude 7, MB 2 and MB 4. Therefore, these constraints were dropped, and the model was respecified. This respecified model (Model 5) yielded a good fit to the data (CFI=.932, GFI=.912, TLI=.916, RMSEA=.060) and a non-significant χ^2 difference test.

Such differences could be attributable to the levels of attitudes and perception of territorial features held by both samples. Attitude 6 refers to the extent to which residents feel comfortable living in the neighbourhood. The results indicated that the mean score of Attitude 6 in Malaysia (M=3.39) is slightly higher than in Britain (M=3.11). The same trend was observed in relation to Attitude 7, for which the Malaysian (M=3.17) residents perceived a greater sense of belonging to their neighbourhood than the British (M=2.99) residents. Meanwhile, the Malaysian (M=6.74) residents had higher levels of territorial markers than the British (M=2.02) residents. The results also demonstrated that the mean score of house maintenance is higher in the Malaysian (M=3.11) sample than the British (M=2.86) sample. It was concluded that the difference in the display of territorial cues around the home between the two cultures was responsible for the discrepancy.

3.3 Testing for Latent Mean Differences

With the support of the partial metric invariance model, scalar invariance was tested by constraining the intercepts of the 11 items to be the same between the two groups. Byrne et al. (1989) argued that it is possible to test for differences in latent factor means using partial measurement invariance. They further suggested that the intercept parameters of those freely estimated factor loadings should vary freely for each group. However, the latent mean difference test was performed based on both full and partial scalar invariances. The results from partial metric invariance and full scalar invariance yielded a poor fit to the data (CFI=.838, TLI=.817, RMSEA=.102). Given that the χ^2 difference of 758.975 with 11 degrees of freedom was statistically significant, scalar invariance was not supported. To implement partial scalar invariance, a strategy recommended by Byrne (2010) was used. All items were examined at the scale level. When the evidence of non-invariance was found, the items were examined at the subscale level. This is followed by examining the intercepts non-invariance at the item level. This process demonstrated that the intercept of Item 1, Item 6, Item 7, Item 9 and Item 11 had contributed to the significant increase in χ^2 value. Relaxing this constrain yielded a substantial improvement in model fit as compared to full scalar invariance. Furthermore, the results of partial metric invariance and partial scalar invariance (Model 5) represents a modestly well-fitting model (CFI=.923, TLI=.909, RMSEA=.064). Based on the suggestion of Byrne et al. (1989) and Hair et al. (2006) that full metric or scalar invariance is not necessary for further tests of invariance (such as latent mean differences) provided that at least two items per each construct are invariant, the analysis of latent mean differences was conducted on the basis of partial metric and scalar invariance.

In testing for latent mean difference, the British sample was used as the reference group, and as such, its latent mean parameters were fixed to zero, whereas the latent means for the Malaysian sample were freely estimated. Only the factor loading parameters known to be consistent in their respective measurements between the two samples were held invariant in testing for latent mean differences. Given that the latent mean parameters were estimated for the Malaysian residents and that they represented positive values, this finding indicates that residents in Malaysia have significantly higher territorial functioning than the British residents with respect to attitude (C.R.=5.036>1.96). This is consistent with previous research, in which shifts in spatial location resulted in changes in territorial attitudes or behaviour (Taylor, 1988). One possible explanation is that in some cultures, perception of control and responsibility extends further than in others. However, little difference was observed between the two samples of residents regarding marking behaviour (C.R.=1.093).

4. Discussion

In recent years, testing for measurement invariance has become an important approach, especially in cross-cultural research (Milfont & Fischer, 2010). This study attempts to examine whether the territorial functioning measurement is invariant between an Asian and a Western population. It is possible to state that

residents from different cultures perceive the contents of the items differently, given that perceived attitude and engaging in territorial markers could vary from nation to nation. The purpose of this cross-validation study was to examine the ability to generalise the TF instrument in different contexts. The procedure followed in this work led to the conclusion that the partial metric/scalar invariance was acceptable.

The applicability of the TF scale to the assessment of territorial features between the two samples was also demonstrated. The results of convergent validity and internal consistency demonstrate the reliability and validity of TF measurement. However, we found that people's perception of attitude and engagement in territorial marking behaviour were different between the nations. The findings indicate that several items operated differently between the two samples. It is believed that people infer territorial attitude and marking behaviour differently across diverse cultures regarding the use of physical elements, such as particular territorial signs on private territory. Of particular interest here were the latent mean differences between the two samples. Overall, the mean territorial attitude score differed between residents from Britain and Malaysia. The evidence suggested that the Malaysian residents made stronger attitude statements compared to the British residents. One possible conclusion refers to the different cultural and demographic backgrounds of the respondents by stating that the difference lay in the two cultures' perception of attitudes in their residential area. Consistent with the results of previous studies, the positive correlation between territorial attitude and marking behaviour in both samples further supported the notion that the presence of territorial signs is always associated with stronger territorial attitudes (Brower et al., 1983; Taylor et al., 1981). This contradicts the evidence found by Pollack and Patterson (1980), indicating that the TF elements do not necessarily correlated with one another. However, this association was higher among the Malaysian residents ($r=.50$, $p<0.001$) than the British residents ($r=.37$, $p<0.001$).

4.1 Strengths, Limitations and Future Directions

Testing measurement invariance is important in social science research because a factorial structure of a measurement instrument may show a consistent pattern when tested on a number of groups. As suggested by You et al. (2008), without evidence for the invariance of the scales, the interpretation of group differences can be problematic. Therefore, it is necessary to establish consistency in regard to the association between the construct undertaken in the study and its respective indicators amongst different populations. Milfont and Fischer (2010) claimed that, because measurement invariance testing is a robust procedure that tests invariance in multigroup analysis, it is able to address measurement biases and non-equivalence within the framework of SEM. We believe that the results of the current research provide cross-cultural evidence of the TF measurement's reliability and validity. By comparing samples from two different cultures, the findings of this study have the potential to deepen our understanding of the TF construct, which has often been applied to single-sample studies.

Some limitations and suggestions for future research are worth noting. First, as a cross-cultural validation study, this study considered ethnic diversity between the two samples of Britain and Malaysia. Because of the unique characteristics of the study samples, further studies should also focus on examining the measurement invariance both between and within groups. This is especially true for the Malaysian sample because three main ethnic groups exist within the country. Second, the findings of the study need to be considered in the contexts of its neighbourhoods. This study focused on middle-income residents residing in terraced houses in both samples. Future studies should focus on other types of housing occupied by either low or higher income residents.

This article is an interesting study of territorial functioning as a crime prevention technique in British and Malaysian residential neighbourhoods. Multigroup analysis was performed to compare the measurement using two samples from different cultures, Britain and Malaysia. It is believed that testing measurement invariance is important in social science research and would bring new insights to this area of study. This research indicated that certain items were not exactly the same for the residents of the two nations, demonstrating different perceptions toward attitude and marking behaviour. However, unlike a large body of studies that posited low levels of territorial functioning in a socially heterogeneous neighbourhood (e.g., Taylor & Stough, 1978), the Malaysian residents with diverse ethnic groups perceived higher levels of territorial attitudes than the British residents, who constituted an almost homogenous population. This study calls for further examination of TF when used in high and low crime contexts as well as homogenous and heterogeneous communities. Furthermore, this work concerned the invariance of the factor loading parameters and factor mean structures. Several studies have found that certain defensible space and territoriality features were associated with less crime and less fear of crime. It would be useful for future work to include testing for the invariance of causal structure for a better understanding of the impact of territoriality features in crime and fear reduction across populations.

Acknowledgements

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