

Psychometric Evaluation of Malay Version of Peritraumatic Distress Inventory (M-PDI) and Peritraumatic Dissociative Experiences Questionnaire (M-PDEQ) Using the Sample of Flood Victims in Kuching, Sarawak, Malaysia

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Abstract: The main purpose of the current research is to investigate the psychometric characteristics of Malay version of Peritraumatic Distress Inventory (M-PDI) and the Peritraumatic Dissociative Experiences Questionnaire (M-PDEQ). The original scales of PDI and PDEQ are used to measure the traumatic stress experienced by individuals during and immediately after and within or during a few minutes or hours of the traumatic event happened. Both instruments have been employed in past studies in assessing the traumatic experiences of individuals affected by disaster or terrorist attacks. Psychometric evaluation involved convergent and discriminant validity was conducted using SmartPLS 2.0. Whereas, internal consistency and correlation analysis were tested using the IBM Statistical Package for Social Sciences (SPSS) Version 23.0. A total of 116 flood victims from several areas in the district of Kuching and Kecil Siburan, Sarawak, Malaysia were involved in this study. These two areas were affected by the flood at the end of 2014 until early 2015. The findings showed that both M-PDI and M-PDEQ demonstrated a sufficient convergent and discriminant validity. The level of internal consistency for M-PDI ($\alpha = .768$) and M-PDEQ ($\alpha = .918$) was at an acceptable level. In addition there was a significant positive correlation between M-PDI and M-PDEQ. Both M-PDI and M-PDEQ have been proven as a valid instrument to be used in the contexts of flood victims in Malaysia, particularly in the Kuching District of Sarawak.

Key words: Psychometric evaluation, peritraumatic distress inventory, peritraumatic dissociative experiences questionnaire, flood victims, Malaysia

INTRODUCTION

Disaster is a “traumatic events” which could contribute to various mental and physical health impacts (Neria *et al.*, 2007). A traumatic event is an event or a series of events that cause a mild to high-stress reaction that leads to a feeling of threat or instability of an individual. For instance, several hours after a particular individual was exposed to a traumatic event such as a massive flood disaster he or she may experience distress, inconsistency and confusion regarding time, space and so forth. Many research have been conducted to investigate traumatic events particular related to a disaster. Most were interested in examining the reactions that occurred during the trauma or immediate reaction after the traumatic event. This period is identified as the “peritraumatic” period (Marmar *et al.*, 1997). A peritraumatic response is an experience suffered by the victim during the event or

a few minutes or hours after the event occurred. Although the response towards the disastrous event may not be “traumatic”, the emotional peritraumatic response is an important factor to be studied (Vaiva *et al.*, 2003).

Objectives: The specific aims of this study are as follows:

- To examine the convergent and discriminant validity of M-PDI and M-PDEQ
- To examine the internal consistency of M-PDI and M-PDEQ
- To examine the correlation of M-PDI and M-PDEQ

Literature review: To better understand the psychological responses as a result of the traumatic event one aspect that caught the attention of the researcher is the dissociation (Marmar *et al.*, 1997). Peritraumatic dissociation is associated with the risk of suffering from

Posttraumatic Stress Disorder (PTSD) or the increase of PTSD symptoms among the disaster victims (Craparo *et al.*, 2014; Koopman *et al.*, 1994).

However, the peritraumatic dissociation can also be understood in various forms such as the perception towards a changing passage of time, abstained or the individual feels that the environment is not real or unusual (Marshall *et al.*, 2002). Nevertheless, there is evidence to suggest that the acute dissociation responses occurred in a highly distressed context but not all who suffered from a higher level of distress during the trauma had a dissociation response. Therefore, peritraumatic distress may have more predictive factor value than peritraumatic dissociation (Koopman *et al.*, 1994; Brunet *et al.*, 2001).

There are several ways of identifying the peritraumatic dissociation responses and peritraumatic distress. One way is to use self-administrated questionnaires such as the Peritraumatic Dissociative Experiences Questionnaire (PDEQ) by Marmar *et al.* (1997) and Peritraumatic Distress Inventory (PDI) by Brunet *et al.* (2001). Both of these instruments have been widely used in measuring traumatic experience specifically related to the disaster (Simeon *et al.*, 2003; Briere *et al.*, 2005).

Although PDEQ and PDI are both capable of measuring peritraumatic dissociation and peritraumatic distress, some issues still needed to be accounted for. Firstly, the suitability of using the PDEQ and PDI applications in relations to flood victims in the local context, partly due to their limited applications and relevance to be empirically tested outside their country of origin. For instance, PDEQ and PDI were used for the victims of community violence in the East Los Angeles (Marshall *et al.*, 2002) flood and mudslide victims in Sicily, Italy (Craparo *et al.*, 2014); police officer in New York and California (McCaslin *et al.*, 2006); child victims of road accident in Toulouse, France (Bui *et al.*, 2011) and victims of motor-vehicle accident in Tachikawa, Japan (Nishi *et al.*, 2009). Therefore, the effectiveness of PDEQ and PDI must be validated so that the instruments can be generalized to the local community.

Secondly, the application of PDEQ and PDI in the local context did not touch the issue of its psychometric properties. Although many studies have reported that the items in PDI and PDEQ have demonstrated a consistent validity and internal consistency (Birmes *et al.*, 2005; Bui *et al.*, 2011; Marmar *et al.*, 1994; Simeon *et al.*, 2003; Tichenor *et al.*, 1996; Marx and Sloan, 2005; Brunet *et al.*, 2001; Nishi *et al.*, 2009; Jehel *et al.*, 2005) a particular question is raised regarding the application and suitability of the psychometric properties of PDI and PDEQ to the flood victims in the Malaysian context.

MATERIALS AND METHODS

This study employed a cross-sectional design research using the questionnaire method. The aims were to investigate the psychometric properties of Peritraumatic Distress Inventory (PDI) and Peritraumatic Dissociative Experiences Questionnaire (PDEQ) among flood victims in Kuching, Sarawak, Malaysia. A total of 116 flood victims aged between 10 and 78 years were chosen by using purposive sampling. The respondents were living around the area of Kuching, Sarawak which was affected by floods during the year end of 2014 until early 2015. Generally, the research areas are village and housing areas.

As mentioned earlier, two instruments were used in this study, namely Peritraumatic Dissociative Experiences Questionnaire (PDEQ) developed by Marmar *et al.* (1997) and Peritraumatic Distress Inventory (PDI) developed by Brunet *et al.* (2001). PDEQ consisted of 10 items which were employed to measure retrospective external of depersonalisation, derealisation, amnesia, external body experiences and the perception of time changes during and after a few minutes or hours after traumatic events has occurred. Meanwhile, PDI consisted of 13 items which were used to measure to what extent the feeling of the distressed experience of the individuals during or a few minutes or hours after the traumatic events.

With regards to the conditions of the area and the available facilities the researchers distributed the questionnaire by gathering the flood victims in a community hall, cultural houses the house of the tuairumah (community chief/leader) or the victims own houses. The data were computed into the IBM Statistical Package for the Social Science (SPSS) Version 23.0 and analysed using Smart PLS Version 2.0 (Ringle *et al.*, 2005).

RESULTS AND DISCUSSION

Hair *et al.* (2014) suggested that in order to consider an acceptable convergent validity, the factor loadings and the Average Variance Extracted (AVE) and Composite Reliability (CR) must be assessed. Specifically, the factor loadings and AVE must be above 0.50 whereas the CR must be above 0.70. Based on Table 1, the factor loadings are between 0.653-0.838 the AVE is above 0.520 and the CR is above 0.844 which indicate a sufficient convergent validity.

According to Sekaran and Bougie (2011) discriminant validity is defined as one condition in which two or more distinct concepts did not show a significant correlation. In order to differentiate items between constructs, discriminant validity can be evaluated by examining the cross loadings and criterion (Formell and Larcker, 1981).

Table 1: Convergent validity

Constructs	Items	Convergent validity		
		Factor loadings	AVE	Composite reliability
Peritraumatic distress inventory	PDI4	0.676	0.520	0.844
	PDI10	0.764		
	PDI11	0.791		
	PDI12	0.689		
Peritraumatic distress experiences questionnaires	PDI13	0.677	0.577	0.931
	PDEQ1	0.654		
	PDEQ2	0.653		
	PDEQ3	0.698		
	PDEQ4	0.772		
	PDEQ5	0.838		
	PDEQ6	0.790		
	PDEQ7	0.833		
	PDEQ8	0.818		
	PDEQ9	0.702		
	PDEQ10	0.810		

PDI1, PDI2, PDI3, PDI5, PDI6, PDI7, PDI8 and PDI9 were deleted due to low factor loadings

Table 2: Cross loadings analysis

Items	M-PDEQ	M-PDI
PDEQ1	0.655	0.453
PDEQ10	0.810	0.436
PDEQ2	0.653	0.428
PDEQ3	0.698	0.584
PDEQ4	0.772	0.564
PDEQ5	0.838	0.474
PDEQ6	0.790	0.657
PDEQ7	0.833	0.498
PDEQ8	0.818	0.620
PDEQ9	0.702	0.467
PDI10	0.555	0.764
PDI11	0.566	0.791
PDI12	0.474	0.689
PDI13	0.473	0.677
PDI4	0.428	0.676

Table 3: Discriminant validity

Scale	1	2
PDEQ	0.760	
PDI	0.697	0.721

Diagonals (bolded) represent the square root of the average variance extracted while the off-diagonals are correlations among constructs
PDI = Peritraumatic Distress Inventory; PDEQ = Peritraumatic Distress Experiences Questionnaires

Table 4: Cronbach's alpha coefficients

Scales	Cronbach's alpha coefficients
PDEQ	0.918
PDI	0.768

For cross loading values between the items, it must be more than the threshold value of 0.100. Meanwhile for criterion (Formell and Larcker, 1981) the square root of the AVE was compared with the correlation of other constructs. If the AVE extracted is larger than its correlations of the other constructs, it indicates that the discriminant validity is achieved. Cross loadings analysis is presented in Table 2. All cross loadings values are above 0.100.

In addition, Table 3 shows the latent variable correlations and the square root of the AVE represented by the bolded figures (diagonals) demonstrate higher values than the equivalent row and column values. Thus,

they prove that PDEQ and PDI are distinct from each other. Overall, the current research model has an acceptable convergent and discriminant validity.

The reliability of the Peritraumatic Distress Inventory (PDI) and Peritraumatic Distress Experiences Questionnaire (PDEQ) was assessed by using internal consistency analysis. Based on Table 4, Cronbach Alpha coefficient for PDI is 0.768 whereas PDEQ is 0.91. Thus, the coefficient values indicated an acceptable internal consistency.

A Pearson product-moment correlation coefficient was computed to assess the relationship between PDEQ and PDI. It was found PDEQ and PDI have a significant positive correlation ($r = 0.676$, $p = 0.000$). This can be concluded that PDEQ and PDI are two valid instruments for assessing traumatic experiences.

CONCLUSION

From the researcher's observations, this study is the first of its kind that specifically investigate the Malay version of the psychometric properties of Peritraumatic Distress Inventory (M-PDI) and Peritraumatic Dissociative Experiences Questionnaire (M-PDEQ) in the context of flood victims in Malaysia. The findings demonstrated an acceptable convergent validity of M-PDI and M-PDEQ. Thus, it can be concluded that both M-PDI and M-PDEQ measure the same concepts (dissociation experience and peritraumatic distress). Some of the items in the original PDI were omitted due to its low validity; the same situations were also reported in other studies such as Bui *et al.* (2011) and Nishi *et al.* (2009).

Nevertheless, the discriminant validity has been successfully achieved. Therefore, it can be concluded that the items in the PDI are focused on measuring the individual's distress experience during or after a few minutes or hours after traumatic events whereas PDEQ is focused on measuring the depersonalisation, derealisation, amnesia, external body experiences and perception of time changes during and a few minutes or hours after a traumatic event. Thus, this study corroborated various past studies (Brunet *et al.*, 2001; Simeon *et al.*, 2003; Jehel *et al.*, 2005; Tichenor *et al.*, 1996; Marmar *et al.*, 1997).

In terms of reliability, the current findings reported a good internal consistency for M-PDI and M-PDEQ. Thus, the findings are in support of previous studies (Birmes *et al.*, 2005; Brunet *et al.*, 2001; Bui *et al.*, 2011; Jehel *et al.*, 2005; Marmar *et al.*, 1997; Marx and Sloan, 2005; Nishi *et al.*, 2009; Simeon *et al.*, 2003; Tichenor *et al.*, 1996). The new M-PDI only consisted of 5 items from the original 13 items whereas the M-PDEQ retained all the 10 items.

LIMITATIONS

The limitation of the study is it relatively includes the cross-sectional design with a retrospective report of peritraumatic distress and dissociative, due to the fact that the act of recalling may become weak or decreases over time. Distress and dissociation might also be influenced by existing trauma experienced by the respondents which can strengthen after the flood disaster struck. Another limitation is the small sample size. Nevertheless, the sample size is more or less similar to previous studies (Bui *et al.*, 2011; Nishi *et al.*, 2009; Birmes *et al.*, 2005). Other than that the respondents included a wide variety of age groups, the ability to comprehend and giving accurate scores for traumatic experience might be different for children and adults. However, this study provides a good comparison of items in M-PDI and M-PDEQ using flood victims whereby the traumatic exposure is similar to previous studies (Bui *et al.*, 2011; Nishi *et al.*, 2009).

The current study shows that M-PDI and M-PDQ have a sufficient validity and reliability. Nevertheless, further research is warranted due to some limitation derived from this study. For example, this study employed a small sample of respondents. However, the findings of this study were consistent with previous studies by Velden *et al.* (2006) and Jehel *et al.* (2005), thus it showed that the research population is similar in terms of the traumatic exposure (Bui *et al.*, 2011). Thus, M-PDI and M-PDEQ are valid and reliable to be used in the context of the flood victims in Malaysia.

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