

**VALIDATION OF MALAY VERSION OF EMOTION
THERMOMETER AMONG ADULT VICTIMS OF
FLOOD DISASTER IN KELANTAN.**

By

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PREFACE

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ABSTRAK (BAHASA MELAYU)

PENGESAHAN TERMOMETER EMOSI VERSI BAHASA MELAYU DI KALANGAN MANGSA BANJIR DEWASA DI KELANTAN

Latar belakang: Termometer Emosi (TE) adalah sejenis skala visual analog yang cepat dalam menilai tekanan emosi dikalangan pesakit kanser. Setakat ini, masih belum terdapat skala visual analog yang ringkas dan mudah untuk digunakan bagi mengesan tekanan emosi pasca bencana.

Objektif: Kajian ini bertujuan untuk mengesahkan Termometer Emosi versi Bahasa Melayu terhadap mangsa bencana banjir di Kelantan.

Metodologi: Kajian ini merupakan kajian keratan rentas yang dijalankan antara April 2015 hingga Jun 2015 melibatkan seramai 150 mangsa bencana banjir di daerah Kuala Krai. Pemilihan sampel dilakukan melalui kaedah pensampelan berperingkat. Proses penterjemahan, kesahan muka dan kandungan telah dijalankan oleh sekumpulan pakar, diikuti dengan kajian awalan. Versi terakhir soalan kemudiannya digunakan untuk kajian kesahan. Analisa data melibatkan penilaian korelasi dengan membandingkan domain tekanan, kemurungan dan kebimbangan dalam Termometer Emosi Melayu (MET) dengan domain yang sama dalam Skala Stres 21 (DASS-M 21) dilakukan dengan menggunakan perisian R.

Keputusan: Domain tekanan, kemurungan dan kebimbangan pada MET mempunyai korelasi yang boleh diterima dengan domain DASS-M 21. Korelasi Pearson untuk ketiga-tiga domain adalah di antara $r = 0.25$ hingga $r = 0.34$. Semua domain menunjukkan sensitiviti yang baik dan kawasan bawah lengkung (AUC) yang boleh diterima. Pada markah penentu optimum > 2 untuk tekanan, > 3 untuk keresahan dan > 1 untuk kemurungan, sensitiviti masing-masing adalah 0.66, 0.78, dan 0.79.

Kesimpulan: Kajian ini menunjukkan bahawa Termometer Emosi versi Bahasa Melayu mempunyai asas psikometri yang baik. Ia boleh digunakan sebagai alat saringan dalam mengenal pasti masalah emosi semasa trauma. Walaubagaimanapun, kajian seterusnya adalah disarankan untuk menyokong lagi penggunaannya semasa pasca trauma. supaya alat saringan yang mudah, ringkas dan sah dapat dicapai.

Kata kunci: *pengesanan, nilai psikometrik, termometer emosi, mangsa banjir*

ABSTRACT (ENGLISH)

VALIDATION OF MALAY VERSION OF EMOTION THERMOMETER AMONG ADULT VICTIMS INVOLVED IN FLOOD DISASTER IN KELANTAN

Background: Emotion Thermometer is a quick visual analogue scale in assessing emotional distress originally designed for cancer patients. To date, there is no visual analogue scale available for quick assessment of emotional distress post disaster.

Aim: This study aimed to validate the Malay version of Emotion Thermometers in flood disaster survivors in Kelantan.

Methods: A cross-sectional study, involving 150 participants who were involved in flood disaster in the Kuala Krai district, was conducted from April 2015 to June 2015. The sample selection was done by multistage sampling method. Back to back translation, content validity and face validity processes were conducted by a group of expert, followed by pilot study. The final version of the questionnaire then was used for the validation study. The data analyses involve assessment of correlation by comparing Malay Emotion Thermometer (MET) with Malay version of Depression, Anxiety and Stress Scale 21 (DASS-M 21) by using R software.

Results: Domains of depression, anxiety and distress of MET correlated well with respective domains of DASS-M 21. Pearson's correlations, r ranged from 0.25 to 0.34. All domains showed good sensitivities and acceptable area under the curve values. At the

optimal cut-off scores of >2 for distress, >3 for anxiety and >1 for depression, the sensitivity were 0.66, 0.78, and 0.79 respectively.

Conclusion: This study demonstrates that The Malay version of Emotion Thermometer can be used in identifying emotional distress during traumatic event. To improve the validity of this screening tool, further consideration to overcome the limitation should be done so that a valid, reliable, fast and easy screening tool can be achieved.

Key words: Validation, psychometric property, emotion thermometer, flood victims.

1.0 INTRODUCTION

Annually, Malaysia is affected by flood disaster. Kelantan is one of the east coast states of Peninsular Malaysia which affected by flood due to change of wind from northeast monsoon. According to the Malaysian National Security Council (NSC) (Rahman, 2012) the most recent flood that struck Kelantan between 17th December 2014 and 2nd January 2015 was unpredictably the worst disaster in the history. The massive flood or “bah kuning” involved 202,000 victims were displaced and thousands of properties damaged (Baharuddin et al., 2015).

Exposure to a natural disaster is a risk factor for mental health problems (Fergusson, Horwood, Boden, & Mulder, 2014). Flood victims are more prone to have psychological disturbances such as depressive symptoms, anxiety and stress than non-victimized people after flood disasters in various countries (McMillen, North, Mosley, & Smith, 2002). This is because disasters may lead to consequential negative life events including death of family or friends; loss of employment/earnings; loss of housing; and related events (Perkonigg, Kessler, Storz, & Wittchen, 2000). There is a substantial literature linking such life events to mental health problems (Avison & Gotlib, 1994).

Accurate early assessment of psychological distress can help clinicians serve the immediate needs and guide secondary prevention to reduce the severity of persistent distress after trauma exposure (Kassam-Adams et al., 2013). Thus, a fast and easy screening tool in the disaster is needed to aid in early detection and further prevent the serious consequences of mental disturbances.

This study hypothesized that the Emotion Thermometers is a valid and reliable tool and it could be used among flood victims post disaster in a local context. Findings from this study would support the importance of fast, valid and reliable screening tool for the use in disaster. With the added value of needing help in the Emotion Thermometer itself, would highlighted the importance of further intervention could be done to prevent serious mental complications.

This dissertation was arranged in a form of manuscript-ready format which has been proposed by the USM. This dissertation focused on the validation of the Emotion Thermometer among flood victims in flood disaster in Kelantan.

2.0 LITERATURE REVIEW

2.1 Psychological Distress post Disaster

Psychological distress can be defined as a state of emotional suffering characterized by symptoms of depression and anxiety (Mirowsky & Ross, 2002) with the impact on the social functioning and daily living of individuals (Wheaton, 2007). On the other hand, distress is a diagnostic criterion for some psychiatric disorders, for example obsessive-compulsive disorders and post-traumatic stress disorder. The severity of the symptoms in psychiatric disorders such as major depression and generalized anxiety disorder can be diagnosed when there is distress with the impairment in daily living function (Satin, Linden, & Phillips, Watson et al., 2009).

No matter the disaster is natural or human-made, most of the victims felt distress because they felt that their lives had been threatened. At the same time they were worried and sad because of their basic needs such as food and drinks were loss. However, earlier research had shown that for most victims, these psychological anxieties and symptoms such as fear, sleeplessness, helplessness and hopelessness will not be prolonged and will go away within a few days to several weeks. During this life threatening event, the victims even would feel guilty when they failed to save their family members who were killed in the disaster. At the same time, they would feel angry and fearful (Ahern, Kovats, Wilkinson, Few, & Matthies, 2005). The more serious psychological distress tends to be more experienced by the victims who have mental illness.

Numerous epidemiological studies have examined the psychological consequences of disasters. In the epidemiological research, the disasters can induce short- and long-term psychological disorders (Bromet & Dew, 1995). These includes posttraumatic stress symptoms, anxiety, depression, and alcohol dependence and abuse. The most often studied and most frequent and debilitating psychological disturbance that occurs after disasters is Post-traumatic Stress Disorder (PTSD) (Galea, Nandi, & Vlahov, 2005). Yet, more acute emotional distress tend to be ignored although studies found that, following natural disaster, there are significant increase in emotional distress immediately after the flood (Powell & Penick, 1983). Not only confined to disaster, emotional distress often missed to be detected during routine medical encounters among primary care patients (Roter et al., 1995).

2.2 Factors associated with psychological distress

An individual would have been affected by any traumatic events depending on many factors. These include characteristics of the individual, the type and characteristics of the event(s), developmental processes, the meaning of the trauma, and sociocultural factors (Abuse, 2014). From these factors, they can also be divided into three categories. They are socio-demographic factors, stress-related factors and personal resources factors. In a meta-analysis studied by McKee-Ryan et al. (McKee-Ryan, Song, Wanberg, & Kinicki, 2005), they found that those who are unemployed are at risk of psychological distress. This is because they do not have access to the benefits such as skill utilization and socialization although some work-related advantages may be obtained outside the work environment. Poverty is one of the factors that cause stressful life condition, whereas income is viewed as personal resource.

In general, the strong evidence of factors associated with psychological distress vary across social groups. The impact of the exposure to specific stressors on mental health is more or less severe depending on the resources available to cope with this stress. Overall, elderly, chronic stress, recent life events and childhood trauma emerge as major risk factors for psychological distress (Cairney & Krause, 2005).

Living with a spouse is also associated with a lower level of psychological distress (Caron and Liu 2011, Jorm et al. 2005) except perhaps in elderly (Cairney and Krause 2005, Paul, Ayis, and Ebrahim 2006, Prévile et al. 2002). However, although individuals, who are divorced, separated or widowed tend to report a higher mean level of distress than those who are married, the mean level of distress is similar in never married and married (Walters, McDonough, and Strohschein 2002). People living alone tend to report a higher

mean level of psychological distress than those living with others (Paul, Ayis, and Ebrahim 2006, Phongsavan et al. 2006); but singles may live with friends and family. Finally, the influence of the role of parent on psychological distress is more controversial partly because the assessment of the parental role is complicated.

Some studies focus on specific stresses consistent with the role-identify theory such as life transition, family and work-related conflict whereas others cover a wide range of stressors. In addition, most studies have targeted a specific age group such as adolescent, young adults, working age adults and seniors since, exposure to different types of stress is likely to vary across the lifespan.

2.3 Assessment and screening tools for psychological distress

Psychological distress is assessed with standardized scales that are either self-administered or administered by interviewer. Theoretically, the development of a scale must be based on a comprehensive description of the construct to be measured. The varieties of meaning in the scientific literature caused a major problem with the construct of psychological distress. Indeed, several scales covering a wide range of psychological, somatic and behavioral symptoms were developed without clear conceptual basis and are used to assess “psychological distress”.

Ideally, the assessment of psychological distress must be stressed on two important issues. The first issue is the duration of the time window used for the detection of distress symptoms. This time window ranges from the past 7 days to the past 30 days depending on the scale. The second issue is the cut-off point used to discriminate individuals with a

lower vs. higher level of distress. In most studies, psychological distress is analyzed as a continuous variable. However, the individual scores must be dichotomized to estimate the prevalence of distress and dichotomous scores are sometimes used as a solution to the notably asymmetrical distribution of the scores of psychological distress. Clearly, the length of the time window and the selection of the cut-off point impact on the estimation of the prevalence of psychological distress and may also affect the identification of the less influential risk and protective factors. In principle, the length of the time window and the cut-point are set in the course of the development of the scale. Now and then, different time windows and cut-points are applied for a specific scale. In particular, the modification of a cut-point may be appropriate when it is demonstrated that the initial cut-point lacks validity for the population under study (Drapeau, Marchand, & Beaulieu-Prévost, 2011).

Several scales fulfill the definition of psychological distress. They are not only popular, but the most validated instruments. They comprised of three families of scales that share several items in common. They are the General Health Questionnaire (GHQ), the Kessler scales and the scales derived from the Hopkins Symptom Checklist. Most of them are used in the clinical settings (Edwards & Burnard, 2003). Another scale such as Kessler scale, (K10) ((Kessler et al., 2002) Kessler, 2002) evaluates how often respondents experienced anxio-depressive symptoms (e.g., nervousness, sadness, restlessness, hopelessness, worthlessness) over the last 30 days.

In disaster, health professionals often fails to detect distress in their patient due to time constraints, and a lack of confidence in assessing distress and using psychometric instruments (Heaven & Maguire, 1998). Many methods have been developed to aid the

detection of severe distress or depression, but most of them are too long for routine use (Alex J Mitchell, Kaar, Coggan, & Herdman, 2008).

Some of the scales that are commonly used are Depression Anxiety Stress Scale (DASS) (R. Musa & Fadzil MA, 2007), Hospital Anxiety Depression Scale (HADS) (Zigmond & Snaith, 1983) and Montgomery-Asberg Depression Scale (MADRS) (Iannuzzo, Jaeger, Goldberg, Kafantaris, & Sublette, 2006) but these scales have their disadvantages. One of the disadvantages includes the long list of wording of the descriptive categories most probably affect the responses and artificial categories might not be sufficient to describe a complex continuous, subjective phenomenon (Vickers, 1999). Finally, a total score from a multi-item Likert index may be the result of many different combinations of ratings, which leads to a loss of information about the scale items (Bowling & Stafford, 2007). Moreover, it has been indicated that the use of sum scores may lead to incorrect conclusions (Svensson, 2001)

Major advantages of Visual Analogue Scale (VAS), it has been argued that are that it is relatively easy to use, and to understand (Laerhoven, Zaag-Loonen, & Derkx, 2004). Furthermore, researchers claim that VAS is easier to use and has a better responsiveness than the Likert scale made it preferred by the raters (Du Toit, Pritchard, Heffernan, Simpson, & Fonn, 2002). Others indicate that VAS and Likert scales are comparable with regard to reliability and validity and yield similar results (Bolton & Wilkinson, 1998).

Disadvantages with the VAS are that it is difficult to understand for some users, require a significant time and commitment for instruction and administration, and involves more work than a Likert scale (Hasson & Arnetz, 2005)). It might also not be a valid

measure for young children since they do not understand and answer the VAS correctly (Shields, Palermo, Powers, Grewe, & Smith, 2003). Additionally, it has been suggested that a mark on the VAS have no interpretable meaning (Svensson, 2000) and VAS might be less specific and have worse precision than the Likert scale (Vickers, 1999).

Since there are many limitations in available screening tools, the National Comprehensive Cancer Network (NCCN) recommends the Distress Thermometer (DT), a single-item self-report measure of distress (Network, 2008). It has been used to both oncology patients, health professionals, simple to score and easy to interpret (Bultz & Carlson, 2005). A year later, a more accurate, adapted version of DT together with the Depression Thermometer (DepT), Anxiety Thermometer (AnxT) and Anger Thermometer (AngT) was created and validated, namely Emotion Thermometer (ET) (Alex J Mitchell et al., 2008). This was due to DT alone was good in detecting distress but modesty regarding anxiety and depression (Alex J Mitchell & Coyne, 2007).

The accuracy of ET to screen for depression, anxiety or distress besides its ability to screen the undetected emotional distress with the application of conventional tools, created an idea in this study to proceed with the use of ET in disaster population. With the urgent need for a short and effective screening tool to detect distress among disaster survivors, it is hope that it can create less burdened to the participants and the healthcare team.

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3.0 STUDY OBJECTIVES

3.1 General Objective

To validate the Emotion Thermometers as a screening tool during flood disaster.

3.2 Specific Objective

3.2.1 To validate the Malay version of Emotion Thermometers among adults victims.

3.2.1 To determine the prevalence of emotional distress among adult victims of flood disaster among adult victims affected by flood disaster in Kelantan.

3.2.2 To determine the association between socio-demographic factors and flood related questionnaires with emotional distress among adult victims affected by flood disaster in Kelantan.

Note: Objectives 3.2.2 and 3.2.3 were not reported in the manuscript presented in this dissertation as it focused on the objective 3.2.1. The results for the both remaining objectives were included in the additional results subchapter in Appendices.

4.0 MANUSCRIPT

4.1 Title:

Validation of Malay Version of Emotion Thermometer Among Adult Victims Involved In
Flood Disaster In Kelantan

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Abstract

Emotion Thermometer is a quick visual analogue scale in assessing emotional distress originally designed for cancer patients. To date, there is no visual analogue scale available for quick assessment of emotional distress post disaster. This study aimed to validate the Emotion Thermometers in flood disaster survivors in Kelantan. The scale was translated into Malay language and validated among 150 flood survivors. The scale was checked for face and content validity by a group of psychiatrist, linguist and epidemiologist. The Malay Emotion Thermometer (MET) contains four domains which are depression, anxiety, distress and anger. MET was compared with Malay version of Depression, Anxiety and Stress Scale 21 (DASS- 21-M). Domains of depression, anxiety and distress of MET correlated well with respective domains of DASS- 21-M. Pearson's correlations ranged from $r = .25$ to $r = .34$. All domains showed good sensitivities and acceptable area under the curve values. At the optimal cut-off scores of >2 for distress, >3 for anxiety and >1 for depression, the sensitivity were .66, .78, and .79 respectively. These findings conclude that MET can be used as a screening tool in detecting emotional distress in post disaster survivors, however further studies in other traumatic experiences are recommended to further support its use.

Key words: *validation, psychometric property, emotion thermometer, flood victims*

Introduction

Disaster is a traumatic event that can lead to emotional impact to the survivor. The emotional distress such as depression, anxiety and traumatic stress related disorders are common psychiatric sequelae after disaster (Norris & Elrod, 2006); (Neria, Nandi, & Galea, 2008). These conditions warrant early detection. Therefore, a quick and reliable screening tool is needed. The current practice in disaster management for psychological screening uses lengthy and wordy screening tools such as Depression Anxiety Stress Scale (DASS), Hospital Anxiety Depression Scale (HADS) and Montgomery-Asberg Depression Scale (MADRS) (Hasson & Arnetz, 2005).

In 2014, Malaysia was affected by a massive flood disaster throughout the country especially in the coastal states. One of the states that involved was Kelantan. Kelantan is the highest poverty rate within Peninsular Malaysia (Telfer & Sharpley, 2015). Majority of its population live in the rural area. This study was conducted in one of the rural area in Kelantan which was worst hit by the flood.

This study used a multi-domain, visual analogue screening tool called Emotion Thermometer (ET). ET consists of four emotion thermometer domains namely Distress, Anxiety, Depression and Anger and one non-emotion domain (need for help). It is sensitive in detecting emotional distress among various population including cancer survivors (Alex J. Mitchell et al., 2012), epilepsy (Rampling et al., 2012), and cardiovascular disease (Alex J. Mitchell et al., 2012). The usage of ET in detecting the psychological distress among disaster survivors yet been used. Thus, the aim of this study

is to validate the Emotion Thermometer into Malay version for the usage for local disaster survivors.

Methods

Participants

A total of 150 Malay language users flood survivors who aged 18 and above included in this study. Those who have been involved in the pilot study and who have major mental illness were excluded from the study.

Study Design and Procedure

A cross-sectional study was conducted in Kuala Krai district, Kelantan from April 2015 to June 2015. Multistage sampling method was used to randomly select the participants. At first, 3 out of 6 flood affected districts in Kelantan were randomly selected. Next, among the 3 districts, 3 most affected sub-district areas were chosen by randomization. Ethical clearance was approved by the Human Research Ethics Committee Universiti Sains Malaysia [USM/JEPeM/15040110].

Measures

Socio-demographic questionnaire

Socio-demographic characteristics such as age, gender, ethnicity, marital status, education level, occupations, household income, past medical and psychiatric history were recorded.

Emotion Thermometers

The Emotion Thermometers (ET) is a self-rated, simple visual-analogue tool used for detection and monitoring of emotional disorders. It is originally used for evaluation of distress in cancer patients (Network, 2003). It was adapted from Distress Thermometer (DT) and was piloted in 2007, among 130 patients attending the chemotherapy in Leicester Cancer Centre (UK) (Alex J Mitchell, Baker-Glenn, Granger, & Symonds, 2010). It takes about 45 seconds to complete. An optimal balance between sensitivity and specificity was achieved by a cut-off point of 3v4 on the ET (distress, anxiety and depression). It has high psychometric properties with Cronbach's alpha .91 (Alex J Mitchell, 2010). ET had been widely translated into a number of different languages including Italian, Spanish and Portuguese (Gil, Grassi, Travado, Tomamichel, & Gonzalez, 2005), Czechoslovakian (Cohen et al., 2012), and Romanian (Kállay & Csaba, 2014). ET also has been validated among epilepsy patients (Rampling et al., 2012) and cardiovascular disease patients (Alex J. Mitchell et al., 2012). For the purpose of using ET in this study, the permission was obtained from the original author (Alex J Mitchell et al., 2010).

It has four emotion thermometer domains (distress, anxiety, depression, anger) and one non-emotion domain (need for help) (Figure 1). The participants need to rate from 0 to 10 of the Likert scale in each visual thermometer domain to indicate which level of distress they experienced for the past one week.

The forward and backward translation from original language to Malay language was carried out by a group of experts consisted of linguist, psychiatrists and epidemiologist. During the process, the content validity was checked to ensure the preservation of meanings and the test's suitability for the local population.

A total of 17 Malay-speaking trauma victims were involved in a pilot study using the final translated version of MET. The pilot study was conducted to assess the understandability and the content of the tool. It was done to ensure the preservations of the meanings and followed by the content and face validity.

DASS-21M

DASS-21 is a self- report instrument designed to measure depression, anxiety, and stress. DASS-21 was translated and validated to Malay language among 263 patients attending three government clinics in Klang Valley (R. Musa & Fadzil MA, 2007). From the study, DASS-21-M showed high psychometric properties with Cronbach's alpha values of .84, .74 and .79, respectively, for depression, anxiety and stress. It also has good factor loading ranged from .39 to .73 and good correlations among scales (.54 and .68) (R. Musa & Fadzil MA, 2007) The participants need to recall the respective symptoms within past one week and put the score ranged from 0 (mild) to 3 (very severe). Participants who score nine or more for depression, seven and more for anxiety, fourteen and more for stress are considered having symptoms of respective domains (Lovibond & Lovibond, 1995).

Data Analysis:

All data entry and analysis for descriptive statistics were done using Statistical Package for the Social Sciences (SPSS) version 20.0 software. There were no data missing. The R package version 3.2.1 was used for validity analysis. The Cronbach's alpha is measured for the internal consistency of MET. The correlations between MET and DASS-21-M domains were assessed by Pearson's correlation coefficient. The sensitivity, specificity, and area under the curve were also evaluated.

Results

Characteristics of the participants

The characteristics of the participants ($n = 150$) are presented in Table 1. The sample was predominantly Malay ($n = 148, 98.7\%$). Most of them were married ($n = 125, 83.3\%$), and received formal education ($n = 133, 88.7\%$). Majority of them were working ($n = 89, 59.3\%$) with monthly incomes of less than RM500 ($n = 59, 39.9\%$). Most of them had no chronic medical illness ($n = 108, 72\%$). The means and standard deviation (SD) for MET (distress, anxiety and depression) are presented in Table 2.

Validity

The respective domains in the MET were fairly correlated with DASS-21-M (distress $r = .25, p = 0.02$; anxiety $r = .26, p = 0.015$; and depression $r = .34, p = 0.001$) (Table 3). Correlation coefficient value of .25 to .50 has fair correlation (Colton, 1974).

The three domains of emotions in MET showed good sensitivities and acceptable area under the curve values (Table 4). At the optimal cut-off scores of >2 for distress, >3 for anxiety and >1 for depression the sensitivity are .66, .78, and .79 respectively. Despite of high sensitivities, this scale shows low specificity. The specificity of distress is .38, anxiety and depression are .43.

Reliability

The internal consistency of the MET were computed using Cronbach's alpha. The overall coefficient alpha for MET was .65 suggesting the MET has an acceptable reliability.

Discussion

Many studies found that, following natural disaster, there was significant increase in emotional distress and it tends to be ignored (Powell & Penick, 1983). The failure of early detection of emotional distress would lead to serious psychological consequences to the victims. Screening for emotional distress so far, mostly limited to cancer, epilepsy and cardiovascular disease patients. To date, there is lack of evidence on proper validation of Emotion Thermometer in for the use in disaster setting.

In this validation study, we found that, the MET is sensitive in detecting emotional distress. MET showed acceptable sensitivities with .66, .78 and .79 for distress, anxiety and depression respectively. The high sensitivity is important criteria in a screening tool. Despite of high sensitivities, this scale showed low specificity. The specificity with distress is .38. Both anxiety and depression specificities are .43. Unlike diagnostic measures, screening instruments only need to measure the predictions of the criterion diagnosis. They do not include items corresponding to specific diagnostic criteria (Brewin, 2005).

This is resembled with previous study that compared to Hospital Anxiety and Depression Scale (HADS), the specificity of ET was quite lower than sensitivity (Alex J Mitchell et al., 2010). Since MET is used as a screening tool rather than diagnostic instrument, the sensitivity is more important than specificity to meet its purposes. Thus, it is recommended to proceed with further psychological testing for diagnostic use. As we know, ET is a form

of visual analogue scale (VAS). As compare to Likert scale, VAS might be less specific and less precised (Vickers, 1999).

With regards to cut-off point, the optimal cut-off scores for each domain was >2 for distress, >3 for anxiety and >1 for depression. These findings were not much different from the cut-off point obtained from previous studies which ranged from 2 to 4, 2 to 4 and 3 to 4 for distress, anxiety and depression respectively (Beck, Tan, Lum, Lim, & Krishna, 2016). However, they were compared with variable tools such as Hospital Anxiety and Depression Scale (HADS) against stress (Alex J. Mitchell et al., 2012) (Rampling et al., 2012), Generalized Anxiety Disorder 7-item (GAD-7) scale against anxiety (Kroenke, Spitzer, Williams, Monahan, & Löwe, 2007) and International Neuropsychiatric Interview (MINI) (Beck et al., 2016), ICD10, and DSM-IV depression against depression. None of those studies has been compared with DASS-21. These reflect that the cut-off point varies depend on the comparison scale. This study used DASS-21-M since the scale is designed for research in both clinical and non-clinical populations. Its psychometric properties in both clinical and non-clinical populations are good (Ramli Musa, Ramli, Abdullah, & Sarkarsi, 2011). So, it is justifiable that we used DASS-21-M as a comparison among flood survivors. Furthermore, none of the items in DASS-21-M is bond to any culture, making it culturally neutral.

Lower cut-off point from this study can be explained by majority of Malay participants. Malay has limited expression of emotion, but rather somatized the psychological distress. Masking of psychological illness especially depressive illness is socially and culturally