Published in final edited form as:
Br J Clin Psychol. 2018 September 01; 57(3): 382–396. doi:10.1111/bjc.12181.

Impact of Culture on Autobiographical Life Structure in Depression

Laura Jobson[1], **Nazleen Miskon**[2], **Tim Dalgleish**[3], **Caitlin Hitchcock**[3], **Emma Hill**[3], **Ann-Marie Golden**[3], **Nor Sheereen Zulkefly**[4], **Firdaus Mukhtar**[4,a]

[1]School of Psychological Sciences, Monash University, Australia

[2]Universiti Kebangsaan, Malaysia

[3]Medical Research Council Cognition and Brain Sciences Unit, Cambridge UK

[4]Psychiatry Department, Universiti Putra, Malaysia

Abstract

Objectives—Distortions in autobiographical memory have been implicated in major depressive disorder (MDD). Those with MDD demonstrate a "depressogenic" autobiographical life structure. Research has not examined how culture influences this process. We investigated whether Malay individuals (members of an interdependent culture) with MDD demonstrated a "depressogenic" autobiographical life structure similar to that of British individuals (members of an independent culture) with MDD.

Design—A 2 (Culture; Malay, British) x 2 (Mood; depressed, control) cross-sectional design using a card sort task and self-report measures was used.

Methods—Malay individuals with MDD or no history of MDD completed the life-structure card-sorting task, which provided a novel method for investigating organisational structure of the life narrative. This data was compared to previously collected data in which British individuals with MDD or without MDD had completed the same task within the same experimental protocol.

Results—Pan-culturally those with MDD had greater negativity (i.e., used more negative attributes), negative redundancy (i.e., used the same negative attributes repeatedly across life chapters) and negative emodiversity (i.e., had greater variety and relative abundance of negative attributes) and reduced positive redundancy (i.e., used the same positive attributes repeatedly across chapters) in their structuring relative to controls. While the British MDD group had greater compartmentalisation (i.e., the negative and positive attributes were clustered separately across different chapters) than British controls, the Malay MDD group had lower levels of compartmentalisation than Malay controls.

Conclusions—The findings suggest culture may shape aspects of the autobiographical life structure in MDD.

[a]Corresponding author: Psychiatry Department, Universiti Putra Malaysia, Malaysia. Phone:+60389472543 Fax:+60389472621 drfircbt@gmail.com.

The authors declare no conflict of interest.

Europe PMC Funders Author Manuscripts

Keywords

Autobiographical memory; life structure; depression; culture

Europe PMC Funders Author Manuscripts

Major depressive disorder (MDD) is associated with significant disruptions in autobiographical memory. Depression has been associated with difficulties retrieving autobiographical memories of specific events (Williams et al., 2007), preferentially remembering negative content and experiences (Leppänen, 2006) and recall of intrusive negative memories (Mihailova & Jobson, in press). Explicating disturbances of autobiographical memory in depression is important because such disturbances have been implicated in the maintenance of the disorder (Dalgleish, Hill, Golden, Morant, & Dunn, 2011; Leppänen, 2006; Whalley, Rugg, & Brewin, 2012). While there have been extensive investigations of how particular aspects of the past are processed by those with MDD, little is known about how the overall body of autobiographical memories are arranged and organised (Dalgleish et al., 2011). Elucidating organisational themes that characterise the autobiographical life structure in depression will assist in understanding the mental organisation of the autobiographical past in those suffering from depression (Dalgleish et al., 2011).

While little research has considered the organisation of the life-structure in depression, considerable research has investigated the organisational themes that characterise the self-structure in depression. Those with depression tend to have a self-structure that is characterised by greater *negativity* (Dozois & Dobson, 2001), greater negative *redundancy* and reduced positive *redundancy* (the degree to which the same negative or positive information pervades multiple self-aspects) (Dozois & Dobson, 2001) and stronger valence-based *compartmentalisation* (a self-structure that is fully compartmentalised in terms of positive and negative aspects) (Showers & Zeigler-Hill, 2007) than those who have never suffered from depression. This research is important to consider because autobiographical memory has a bi-directional relationship with the self, whereby the self implements control over autobiographical remembering and autobiographical memories provide context for the self (Abdollahi, Moradi, Hasani, & Jobson, 2012; Rathbone, Moulin, & Conway, 2008, 2009). Given this relationship, these three organisational themes that characterize self-structure in depression should be reflected in autobiographical memory structure.

Dalgleish and colleagues (2011) investigated the organisation of autobiographical memory in those with recurrent MDD and compared it to that of healthy, never-depressed controls using these three overarching themes; *negativity*, *redundancy* and *compartmentalisation*. In order to investigate this they adopted a novel approach and modified the self-descriptive card-sorting task, which measures the content and organisation of the self-concept (Showers, 1992; Showers & Kling, 1996), to measure the content and organisation of the autobiographical life-structure. They found that, as hypothesized and mirroring the self-structure literature, across past life chapters the depressed group had greater negativity, compartmentalisation and negative redundancy and reduced positive redundancy, relative to controls; what the authors termed a “depressogenic” autobiographical life structure. More recently, [BLINDED] replicated these findings in a treatment-resistant depressed sample.

They also investigated the organisation of past knowledge in terms of emodiversity (the variety and relative abundance of the emotions that humans experience, Quoidbach et al., 2014). They found that those with depression reported significantly greater diversity of negative emotions across the life structure but reduced diversity of positive emotions, relative to controls.

Cultures vary in their expectations and norms regarding the autobiographical life structure (Haque & Hasking, 2010). Those from Asian and European Western cultural backgrounds provide autobiographical memories that differ in content, organisation and structure (Ross & Wang, 2010). Individuals from European Western cultural backgrounds tend to provide self-focused, specific and lengthier personal memories than those from Asian cultures, who tend to stress collective activities and significant others in their remembering (Jobson & O'Kearney, 2008; Jobson, Moradi, Rahimi-Movaghar, Conway, & Dalgleish, 2014; Ross & Wang, 2010; Wang & Conway, 2004). These cultural differences in remembering operate through culturally varying social orientations, especially those relating to the self (Ross & Wang, 2010). In Western individualistic cultures the self tends to be regarded as an independent, autonomous and unique entity (Markus & Kitayama, 2010). Such a conceptualisation of self emphasises a coherent, well-integrated life story with the individual playing the "lead" role; thereby, re-affirming the independent self (Ross & Wang, 2010; Wang, 2001). In Asian cultures there is an emphasis on interdependence and the manner in which the self fits in with others and the surrounding social context (Markus & Kitayama, 2010). Consequently, collective activities are often valued over a unique life story (Wang, 2001). As culture influences the remembering of everyday experiences and autobiographical memory plays a central role in MDD, questions arise regarding the role of culture in autobiographical remembering in depression. While considerable attention has been given to cultural differences associated with the presentation of depression, little attention has been paid to how culture influences the disorder (Chang, Jetten, Cruwys, & Haslam, 2017). An obvious next step, therefore, is to investigate whether the "depressogenic" autobiographical life structure is also evident in depressed patients from an Asian collectivistic culture; Malaysia.

The European Western emphasis on individuality drives the emergence of a personal event memory system that serves to construct the distinctiveness of the individual (Wang, 2006). Such cultural emphasis results in greater cognitive focus on developing detailed, elaborate personal histories when compared to those from Asian cultures (Wang, 2006). Therefore, we first hypothesized that Asian participants would provide less detailed and elaborate personal histories (less life chapters and attributes describing these chapters) when compared to British participants. Given Dalgleish et al. (2011) found that those with and without depression did not significantly differ in the number of cards or life chapters used, we predicted that pan-culturally depression would not influence the number of past chapters or total cards used.

Given the relationship between autobiographical remembering and the self, cross-cultural self-referent processing research was used to inform our following hypotheses. Those from European Western cultures endorse significantly more positive self-characteristics when compared to those from Asian cultures (Gage, Coker, & Jobson, 2015; Heine, Lehman, &

Markus, 1999). Positive self-representations align with the European Western cultural ideal of an independent self and are thus, perceived as desirable (Gage et al., 2015). In contrast, those from Asian cultures tend to hold more negative self-views, as identifying such self-aspects provide individuals with information about how they can work toward rectifying any shortcomings in order to adapt to their groups' needs and achieve interdependence (Chen, English, & Peng, 2006; Gage et al., 2015; Heine et al., 1999; Heine, Kitayama, & Lehman, 2001; Tsai & Lau, 2013). Therefore, we predicted that Asian group would have significantly greater negativity in their life story than the British group (Hypothesis 2). Despite this cultural difference, Gage et al. found that for both European Western and Asian participants consistently endorsing negative self-characteristics was associated with greater depression. Thus, pan culturally, undesirable self-characteristics was found to be important for depression. Therefore, we hypothesized that pan-culturally those with MDD would have significantly higher levels of negativity (Hypothesis 3) and greater negative redundancy and reduced positive redundancy (Hypothesis 4) in their life structures than healthy controls.

The need for a highly integrated self-structure is culturally variable. An internally coherent well-integrated self-structure is fundamental for mental health in European Western cultures, but less important for those from Asian cultural backgrounds (Suh, 2002). Westerners tend to employ an analytic style of cognitive processing, which is associated with pursing understanding by categorization of discrete experiences by the characteristics that differentiate them (i.e., positive and negative emotion are seen as exclusive) and the basic need to synthesize contradictory information (Spencer-Rodgers, Peng, Wang, & Hou, 2004). In contrast, Asians tend to adopt a holistic style of processing, which encourages greater tolerance of positive and negative emotional experiences, less emphasis on categorisation and acceptance of contrary judgments about oneself and one's life (Spencer-Rodgers et al., 2004) (see De Vaus, Hornsey, Kuppens, & Bastian, in press). Consequently, in Asian cultures a discrepant, contradictory self-view is considered normative and is not associated with psychological distress, including depression, when compared to those from European Western cultures (English & Chen, 2011; Spencer-Rodgers et al., 2004; Spencer-Rodgers, Williams & Peng, 2010; Suh, 2002).

Dalgleish et al. (2011) found that ideally the life story is represented as a highly integrated life structure comprised of aspects that contain a comparable ratio of positive and negative information – indicating resolution of incongruity and integration of information – across the large majority of life chapters. In contrast, a "depressogenic" life structure contained a high degree of compartmentalisation of positive and negative aspects. This premise seems less relevant for Asians who accept and value contradiction. Thus, we hypothesized that culture would interact with depression; while British individuals with MDD would have higher levels of compartmentalisation than British individuals without MDD, the difference between Malay individuals with MDD and Malay individuals without MDD would be less marked (Hypothesis 5).

Finally, Quoidbach and colleagues (2014) claim that emodiversity plays a unique role in human mental health. This is because a wide variety of specific emotions provides richer information about which behavior is appropriate for dealing with a particular affective situation, prevents specific emotions from dominating the emotional system increasing

resilience to negative events, signals an authentic life and is associated with well-being. We were not certain how culture would influence emodiversity. Therefore, in the current study this aspect of the investigation remained exploratory.

This aim of this study was to investigate whether the "depressogenic" autobiographical life structure was evident in depressed patients from an Asian interdependent culture; Malaysia. We hypothesized that Asian participants, regardless of depression, would provide less detailed and elaborate personal histories (Hypothesis 1) that contained greater negativity (Hypothesis 2) than British participants. We predicted that pan-culturally, participants with MDD would have greater negativity (Hypothesis 3), greater negative redundancy and reduced positive redundancy (Hypothesis 4) than those without MDD. We predicted that culture would interact with depression in terms of influencing compartmentalisation; specifically, while British individuals with MDD would have higher levels of compartmentalisation than British individuals without MDD, the difference between Malay individuals with and without MDD would be less marked (Hypothesis 5). Finally, in terms of emodiversity there was no clear research available to guide our predictions, thus, these investigations remained exploratory.

Method

Participants[1]

Ethical approval was obtained from [BLINDED] Malaysia. Four groups of participants were included in the study. Malay participants with MDD currently in a depressive episode (n=30) were recruited via advertisements in local health centres asking for volunteers to help with psychological research. MDD diagnosis and history and other Axis I psychiatric comorbidity according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM–IV*; American Psychiatric Association, 1994) were determined by having participants complete the Malay version of the Structured Clinical Interview for the *DSM–IV* Axis I Disorders–Clinician Version (SCID; First, Spitzer, Williams, & Gibbon, 1996) under the supervision of a clinical psychologist (FM). Prior reliability training on the presence versus absence of Axis I diagnoses in the SCID, between this assessor and FM resulted in complete agreement. All participants had experienced at least two depressive episodes. None of the MDD participants met the criteria for any other Axis 1 disorder. Malay never-depressed participants (control group; n=30) had no history of MDD or any other Axis 1 disorder according to the Malay SCID. They were recruited from general community via advertisements in local newspapers.

The data for the two British groups were drawn from previously collected data (Dalgleish et al., 2011). As in the instance of the Malay groups, the British MDD group (n=16) were allocated to the depressed group if they were currently in a depressive episode. These participants were recruited via advertisements in local newspapers and health centres asking for volunteers to help with psychological research. MDD diagnosis and history and other Axis I psychiatric comorbidity according to the DSM-IV (American Psychiatric Association,

[1]The sample size for each cultural group differed due to timing of the study. The Malay aspect of the study commenced following completion of the British component.

Europe PMC Funders Author Manuscripts

1994) were determined by having participants complete the SCID. The never-depressed participants (n=17) had no history of MDD according to the SCID and reported no other history of mental health difficulties. They were recruited from the Cognition and Brain Sciences Unit Volunteer Panel.

To be eligible for the study, participants had to be aged between 40 and 60 in order to provide sufficient chronology within which to examine life structure and also provided a degree of age homogeneity across groups. Exclusion criteria comprised a diagnosis of substance dependence, a history of psychosis, and organic brain injury. No participants were excluded on these bases.

Measures

Life-structure card-sorting task—The instructions provided to participants were identical to those used in Dalgleish et al. (2011) (see Dalgleish et al., 2011 for verbatim). Participants divided their past life into chapters. They were instructed to try and incorporate their whole life story since age 11–12. They were asked to generate as many chapters as they felt appropriate, that the chapters did not need to have a clear beginning and end and could run in parallel with other chapters, and that ongoing life chapters could be included. Participants were given a blank table and recorded their life chapters at the top of each column. Participants were then given a deck of 46 shuffled cards containing a positive (23 cards) or negative (23 cards) attribute that might be used to describe a period of one's life. The attributes used were identical to that used in Dalgleish et al.[2]. Participants were told to use the cards to describe each life chapter. Participants could use cards more than once (i.e. for multiple chapters) or not at all and that they did not have to use all of the cards. Participants recorded which of the attributes fell under each chapter. The card sorting task has been used in samples comprised of participants from diverse cultural backgrounds, including those identifying as Asian (e.g., Showers, Ditzfeld, & Zeigler-Hill, 2015).

Life Structure Metrics (from Dalgleish et al., 2011)

Proportion of negative items—This was the number of negative attributes, including repetitions, appearing in the card sort, divided by the total number of attributes used. It is a measure of the overall negativity.

Redundancy—Redundancy was computed separately for positive and negative attributes, with each redundancy score representing the degree of card repetitions across chapters, controlling for both the number of chapters in a given card sort and the number of cards used.

$$\text{Redundancy} = \frac{1}{n_{dw} \times n_{dg\,i}} \sum_{1-23} n_{ri}$$

[2]Before the study attributes were rated (n=15) for valence on 15-point Likert scales (1=strongly positive to 15=strongly negative) to ensure they were appropriately positive and negative for use in Malay. Paired t-tests found that there was a significant difference in the rating of the positive (M=2.83, SD=1.50) and negative attributes (M=12.23, SD=1.73), $t(14)$= 11.81, p< .001. These findings were similar to that reported in Dalgleish et al. (2011).

where n_{dw} equals the number of distinct attributes used in an individual's card sort, n_{dg} equals the number of chapters generated, and n_{ri} equals the sum of repetitions of each attribute.

Compartmentalisation—The measure of compartmentalisation is a phi (Φ) coefficient based on a chi-square statistic. The frequencies of positive and negative attributes in each chapter of the card sort were compared to those that would be expected, given the proportion of negative items for the sort as a whole (see Dalgleish et al., 2011). A chi-square statistic was then computed using the expected and observed frequencies. This was then normalized by dividing by the number of attributes in the sort (*N*) as follows:

$$\Phi = \sqrt{\chi^2 / \mathrm{N}}$$

where, Φ can range from 0 to 1 (0 represents a perfectly random sort and 1 represents a perfectly compartmentalized sort).

Emodiversity—We computed three emodiversity indices (positive emotions, negative emotions, global) using the following formula (Quoidbach et al., 2014):

$$\text{Emodiversity} = \sum_{i=1}^{s} \left(p_i \times \ln p_i \right)$$

where s equals the total number of emotions experienced and p_i equals the proportion of s made up of the ith emotions. In order to compute emodiversity, we divided the number of times an individual experienced emotion #1 by the total number of times he/she experienced all types of emotions, which gives p_1. This proportion is then multiplied by its natural log (p_1 x ln p_1). This process is repeated for each specific emotion assessed, and then all the (p_i x ln p_i) products are summed and the total multiplied by -1. High values are representative of more diverse emotional experiences.

Procedure

The procedure followed Dalgleish et al. (2011) exactly. Participants completed the tasks and measures in a quiet testing room with the experimenter present. Following informed consent, participants completed the SCID. In a separate session, approximately a week later, they then completed the life structure card sorts. Participants then completed the Beck Depression Inventory-Malay (Mukhtar & Oei, 2008), **Beck Anxiety Inventory-Malay** (Mukhtar & Zulkefly, 2011)[3] – psychometrically sound measures of depression and anxiety (in the current study BDI-Malay α=.90; BAI-Malay α=.92) – and the Malay version of the Positive Affect Negative Affect Scale (PANAS: Watson, Clark, & Tellegen, 1988) (contact senior author for further details) – used to assess mood at the time of the study. As in Dalgleish et al. these measures were designed to validate categorical participant group assignment by

[3]British participants completed the Spielberger State-Trait Anxiety Inventory (STAI: Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). In the current study the BAI-Malay was used because a Malay version of the STAI was not available.

verifying significantly worse self-reported mood/symptoms in the Malay depressed group compared to the Malay control group. After completing these measures, the Malay participants completed the Individualism-Collectivism Scale (Singelis, Triandis, Bhawuk, & Gelfand, 1995), as an attitudinal measure of individualism and collectivism (individualism α=.82; collectivism α=.86). All tasks and measures were administered in Malay. The card-sorting task and Individualism-Collectivism Scale were translated into Malay using the back translation-method. The original English instruments were forward-translated into Malay by the second author (a Malay native speaker who is fluent in English). The Malay version was then back-translated into English by a third independent translator who was fluent in both Malay and English and was blind to the original English instruments. The senior author, who is fluent in both Malay and English, then checked the Malay version in order to identify and resolve any ambiguities. The measures were piloted on a convenience sample in order to assess ease of comprehension and to identify any other ambiguities.

Results

Group Characteristics

Group characteristics are presented in Table 1. The groups did not differ significantly in terms of education level, Fisher's Exact test=13.68, *ns*, or age, $F(3, 89)=1.48$, *ns*, but did differ significantly in terms of gender ratio, $\chi^2(3, N= 93)=12.35$, $p<.01$. To examine PANAS scores, a 2 (Culture: Malay, British) x 2 (Depression: depressed, control) x 2 (Affect: positive, negative) ANOVA was used with PANAS scores as the dependent variable. The affect x depression interaction was significant, $F(1, 83)=16.73$, $p<.001$, $\eta^2=.17$. As expected, the depressed group scored significantly higher than the control group in terms of negative affect, $F(1, 88)= 12.67$, $p=.001$, $\eta^2=.17$, and significantly lower in terms of positive affect, $F(1, 87)= 4.99$, $p=.03$, $\eta^2=.11$. The affect x culture interaction was also significant, $F(1, 83)= 4.00$, $p<.05$, $\eta^2=.05$. Follow-up analyses found that the Malay group scored significantly higher than the British group in terms of positive, $F(1, 87)= 11.34$, $p=.001$, $\eta^2=.14$, and negative affect, $F(1, 88)= 39.61$, $p<.001$, $\eta^2=.35$. The culture x depression interaction was significant, $F(1, 83)= 5.36$, $p=.02$, $\eta^2=.06$. Follow-up analyses found that the Malay depressed group scored significantly higher overall on the PANAS than the Malay control group, $F(1, 52)= 5.66$, $p=.02$, $\eta^2=.13$, while the British depressed and control groups did not differ significantly, $F(1, 31)= 1.68$, *ns*, $\eta^2=.05$. The three-way interaction was not significant.

In terms of the BDI, a 2 (Culture: Malay, British) x 2 (Depression: depressed, control) ANOVA found that the culture x depression interaction was significant, $F(1, 83)= 5.23$, $p=.03$, $\eta^2=.06$. Follow-up analyses found that as expected the Malay depressed group scored significantly higher on the BDI than the Malay control group, $F(1, 58)= 27.01$, $p<.001$, $\eta^2=.30$. The British and Malay depressed groups did not differ significantly, $F(1, 44)= 2.24$, *ns*, $\eta^2=.05$. However, the Malay control group did score significantly higher than the British control group, $F(1, 45)= 5.04$, $p=.03$, $\eta^2=.12$. As expected, the Malay depressed group scored significantly higher on the BAI than the Malay control group, $F(1, 57)= 8.94$, $p<.01$, $\eta^2=.13$.

Life Structure Analyses

The life structure data are presented in Table 1 and Figure 1. Prior to hypothesis testing, we tested for metric invariance using AMOS (Byrne, 2004). This indicated that the life structure variables were measured in a similar way in both cultural groups. In terms of the Malay data, there were broad ranges across groups on the life structure metrics suggesting that across-group floor and ceiling effects were not evident in the data; proportion of negative cards (0-1.0), negative redundancy (0-1.0), positive redundancy (0-1.0), compartmentalisation (.01-.71), and emodiversity (0-1.92). For each of the hypotheses, we conducted a 2 (Culture: Malay, British) x 2 (Depression: depressed, control) ANOVA with the life structure metrics as the dependent variable.

Hypothesis 1: Life chapters and attributes—As predicted, the culture main effect was significant for life chapters, $F(1, 84)= 24.29$, $p<.001$, $\eta^2=.26$, 95%CI[$.11<\eta^2<.40$], and attributes, $F(1, 84)= 304.15$, $p<.001$, $\eta^2=.80$, 95%CI[$.72<\eta^2<.84$]; British participants used significantly more past chapters and attributes than Malay participants. These cultural differences were still evident when the BDI and PANAS scores were included as a covariate. The depression main effects (Life chapters, $F(1, 84)= 2.09$, *ns*, $\eta^2=.02$; Attributes, $F(1, 84)= 2.24$, *ns*, $\eta^2=.03$) and culture x depression interactions (Life chapters, $F(1, 84)= .67$, *ns*, $\eta^2< .01$; Attributes, $F(1, 84)= 1.24$, *ns*, $\eta^2=.01$) were all non-significant.

Hypotheses 2 and 3: Negativity—In support of Hypothesis 2, the culture main effect was significant; Malay participants had significantly greater negativity than British participants, $F(1, 89)= 4.44$, $p<.05$, $\eta^2=.04$, 95%CI[$<.001<\eta^2<.15$]. This cultural main effect was still significant when PANAS and BDI scores were included as a covariate suggesting cultural differences in mood and depression did not account for this finding. In support of Hypothesis 3, the depression main effect was significant; the depressed group had significantly greater negativity than the control group, $F(1,89)= 30.25$, $p<.001$, $\eta^2=.24$, 95%CI[$.11<\eta^2<.39$]. The interaction was non-significant, $F< 1$, $\eta^2<.01$.

Hypothesis 4: Redundancy—As predicted, the depression main effect was significant for both positive, $F(1, 89)= 8.05$, $p<.01$, $\eta^2=.08$, 95%CI[$.01<\eta^2<.20$], and negative redundancy, $F(1, 88)= 12.74$, $p=.001$, $\eta^2=.14$, 95%CI[$.03<\eta^2<.27$]. Those with MDD had significantly reduced positive redundancy and greater negative redundancy than those without MDD. The culture main effects and interactions were all non-significant (Fs< 1, η^2s$<.01$).

Hypothesis 5: Compartmentalisation—Only participants who included at least two cards per life chapter were included in the compartmentalisation analysis. The culture x depression interaction was significant, $F(1, 55)= 13.16$, $p=.001$, $\eta^2=.19$. Follow-up analyses found while the British depressed group showed significantly greater compartmentalisation than British controls, $F(1, 30)= 9.54$, $p<.01$, $\eta^2=.22$, 95%CI[$.02<\eta^2<.44$], the Malay depressed group showed significantly less compartmentalisation than Malay controls, $F(1, 25)= 4.99$, $p=.04$, $\eta^2=.20$, 95%CI[$.05<\eta^2<.37$]. We also investigated whether number of attributes endorsed influenced the findings. Thus we included number of attributes as a covariate and also considered just Malay participants that included an average of at least

three cards per chapter. In both instances, the Malay depressed group still had significantly less compartmentalisation than the Malay control group.

Exploratory Analysis: Emodiversity—The depression main effect was significant for negative emodiversity; the depressed group had significantly greater negative emodiversity than controls, $F(1, 84)= 19.33$, $p<.001$, $\eta^2=.18$, 95%CI[$.06<\eta^2<.32$]. The culture main effect was also significant; British participants had significantly greater negative emodiversity than Malay participants, $F(1, 84)= 25.19$, $p<.001$, $\eta^2=.19$, 95%CI[$.06<\eta^2<.34$]. The interaction was not significant, $F(1, 84)= 1.50$, *ns*, $\eta^2=.02$. In terms of positive and global emodiversity, only the culture main effects were significant; British participants had significantly greater positive emodiversity, $F(1, 84)= 53.87$, $p<.001$, $\eta^2=.40$, 95%CI[$.25<\eta^2<.54$], and global emodiversity, $F(1, 84)= 28.92$, $p<.001$, $\eta^2=.26$, 95%CI[$.11<\eta^2<.41$], than Malay participants. The depression main effects were non-significant (Positive emodiversity: $F(1, 84)= 2.35$, *ns*, $\eta^2=.03$; Global emodiversity: $F(1, 84)= 2.90$, *ns*, $\eta_p^2=.03$). The interactions were also non-significant, Fs<1, η^2s<.01.

Relationships with Individualism and Collectivism

For the Malay data, we investigated the relationships between the "depressogenic" autobiographical life structure and participants' individualism and collectivism responses. Using a 2 (depressed, control) x 2 (individualism, collectivism) mixed ANOVA, it was found that the Malay group scored significantly higher on collectivism than individualism, $F(1, 55)= 16.79$, $p<.001$, $\eta^2=.23$. The depression main effect and interaction were non-significant, Fs<1, η^2s<.01. When considering the correlations between the life structure components and individualism and collectivism, the only significant correlation found was between greater compartmentalisation and greater collectivism, $r(58)=.26$, $p<.05$, 95%CI[$.04<r<.47$].

Discussion

This study investigated the "depressogenic" autobiographical life structure in depressed patients from an Asian collectivistic culture. As hypothesized, Malay participants provided less detailed, elaborate and emotionally diverse personal histories compared to British participants. This provides evidence, using a novel methodology, that the European Western emphasis on individuality may result in greater focus on reporting detailed, elaborate, emotionally diverse personal histories when compared to those from Asian cultures, who downplay the reporting of detailed personal histories (Wang, 2006). Second, Malay participants had significantly greater negativity than British participants. This supports cross-cultural research that has found that those from Asian cultures tend to hold more negative self-related information (Gage et al., 2015) and report more negative affect than those from European Western cultures, who value positive emotions and perceive negative emotions as undesirable (see De Vaus et al., in press). In support of Hypotheses 3 and 4, pan-culturally those with depression had significantly greater negativity and negative redundancy and reduced positive redundancy than controls. In terms of Hypothesis 5, while British individuals with depression had higher levels of compartmentalisation than British individuals without MDD, Malay individuals with depression had lower levels of

compartmentalisation than Malay individuals without MDD. Regarding emodiversity, those with MDD had significantly greater negative emodiversity than controls. Overall Malay individuals with MDD seemed to hold a similar “depressogenic” autobiographical life structure to that found in British individuals with MDD. Pan-culturally endorsing negative self-related information may be associated with depression (Gage et al., 2015).

Our findings suggest that culture moderates compartmentalisation of autobiographical life structure in depression. An integrated coherent life story aligns with European Western cultural values and is consequently associated with positive mental health. Therefore, it follows that in the British Western sample, higher levels of compartmentalisation were associated with depression. In Asian cultures, value is placed on the acceptance of inconsistencies, discrepancies and incoherence (Spencer-Rodgers et al., 2010). For the Malay group lower levels of compartmentalisation (i.e., less incongruity and categorisation of positive and negative information) were associated with depression. These findings support recent conceptual frameworks (Hwang, Myers, Abe-Kim, & Ting, 2008; Jobson, 2009; Wong, Tran, Kim, Van Horn Kerne, & Calfa, 2010) and empirical findings (Chang et al., 2017) that indicate that cultural norms, beliefs and expectations shape psychological disorders. Specifically in this instance, if the autobiographical life story is compartmentalised in a manner which is contrary to the cultural norm it may play a role in shaping depression.

These findings can be considered in light of De Vaus and colleagues (in press) model accounting for how differences in systems of thought might explain cross-cultural differences in depression. De Vaus and colleagues propose that the way people think about negative emotions, based on Western holistic versus Asian analytic systems of thought, influences how well they manage negative emotions, which in turn influences depression. In holistic cultures, there is a tendency to value contradiction in emotion which influences people’s orientation to negative emotions; negative emotions are perceived as less negative, more manageable and less intrinsically associated with the individual self when compared to analytic cultures. Those from holistic cultures are proposed to develop a different relationship with negative emotion which promotes acceptance and curiosity rather than avoidance and distress. Our findings illustrated that compartmentalisation of emotional experiences in Malay individuals seemed beneficial to well-being. Thus, in Asian participants emotion contradiction and acceptance of co-occurring positive and negative emotion may predict greater adaption to negative emotion and associated experiences.

Limitations of the study include group differences in gender and mood at the time of testing which may have influenced findings. However, when these variables were included as covariates a similar pattern of findings emerged. Second, the sample size was modest. While the sample size did meet our pre-study targets and was deemed adequate to investigate our hypotheses, in some instances the lack of significant findings (i.e., the non-significant interaction and correlation analyses) may have been partly influenced by low statistical power. We have some confidence in our findings as the effect size for compartmentalisation was large, while the effect size for all other interaction terms was no effect to small effect (Cohen, 1988). Nevertheless, the study would benefit from replication with larger sample size. Third, the study provided participants with cards that that contained attributes (rather

Europe PMC Funders Author Manuscripts

than asking participants to self-generate attributes). However, this method replicated Dalgleish et al. (2011) allowing for a cross-cultural comparison. Fourth, cultural differences in the number of attributes used may have influenced findings, particularly the compartmentalisation results. However, when we conducted the compartmentalisation analyses using just a subset of the sample that used more than an average of three words per chapter, a similar pattern of results emerged. Fourth, it is important to note that while the current study focused on European Western and Asian cultural groups, cultures differ on a wide range of dimensions and there is within cultural variation in the emphasis placed on an independent versus interdependent orientation (Lee & Zane, 1998). Finally, only the Malay group completed the individualism-collectivism measure. Future research would benefit from investigating the role of this cultural construct in both cultural groups and the inclusion of a measure of analytic-holistic processing. This is important as it would further examine the mechanisms underpinning cultural differences in depression. In sum, Malay individuals with MDD had a similar ‘depressogenic’ profile concerning the way past autobiographical knowledge is organised to that of British individuals with MDD, with the exception of compartmentalisation; the ‘depressogenic’ autobiographical life structure for Malay individuals with MDD involved less compartmentalisation of past material.

Acknowledgments

The research was funded by a Postdoctoral Research Fellowship award (Laura Jobson) from the National Institute for Health Research (NIHR). This article presents independent research funded by the NIHR. The views expressed are those of the authors and not necessarily those of the National Health Service, the NIHR, or the Department of Health.

References

Abdollahi M, Moradi A, Hasani J, Jobson L. Investigating the relationships between autobiographical remembering, the self and posttraumatic stress disorder in individuals with HIV. Memory. 2012; 20:872–881. DOI: 10.1080/09658211.2012.703211 [PubMed: 22871136]

American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Washington DC: Author; 1994.

Byrne BM. Testing for multigroup invariance using AMOS graphics: A road less traveled. Structural Equation Modeling. 2004; 11:272–300. DOI: 10.1207/s15328007sem1102_8

Chang MX-L, Jetten J, Cruys T, Haslam C. Cultural identity and the expression of depression: A social identity perspective. Journal of Community and Applied Social Psychology. 2017; 27:16–34. DOI: 10.1002/casp.2291

Chen S, English T, Peng K. Self-verification and contextualized self-views. Personality and Social Psychology Bulletin. 2006; 32:930–942. DOI: 10.1177/0146167206287539 [PubMed: 16738026]

Cohen, J. Statistical power analysis for the behavioral sciences. Hillsdale, NJ: Erlbaum; 1988.

Dalgleish T, Hill E, Golden AJ, Morant N, Dunn BD. The structure of past and future lives in depression. Journal of Abnormal Psychology. 2011; 120:1–15. DOI: 10.1037/a0020797 [PubMed: 20973593]

de Vaus J, Hornsey M, Kuppens P, Bastian B. Exploring the East-West divide in prevalence of affective disorder: A case for cultural differences in coping with negative emotion. Personality and Social Psychology Review.

Dozois DJA, Dobson KS. Information processing and cognitive organisation in unipolar depression: Specificity and comorbidity issues. Journal of Abnormal Psychology. 2001; 110:236–246. DOI: 10.1037/0021-843X.110.2.236 [PubMed: 11358018]

English T, Chen S. Self-concept consistency and culture: The differential impact of two forms of consistency. Personality and Social Psychology Bulletin. 2011; 37:838–849. DOI: 10.1177/0146167211400621 [PubMed: 21398583]

First, MB, Spitzer, RL, Williams, JBW, Gibbon, M. The Structured Clinical Interview for DSM-IV Disorders (SCID). Washington DC: American Psychiatric Press; 1997.

Gage E, Coker S, Jobson L. Cross-cultural differences in desirable and undesirable forms of self-consistency and influence on symptoms of depression and anxiety. Journal of Cross-Cultural Psychology. 2015; 46:713–722. DOI: 10.1177/0022022115578475

Haque S, Hasking P. Life scripts for emotionally charged autobiographical memories: A cultural explanation of the reminiscence bump. Memory. 2010; 18(7):712–729. DOI: 10.1080/09658211.2010.506442 [PubMed: 20803371]

Heine SJ, Kitayama S, Lehman DR. Cultural differences in self-valuation Japanese readily accept negative self relevant information. Journal of Cross-Cultural Psychology. 2001; 32:434–443. DOI: 10.1111/j.1467-839X.2007.00222.x

Heine S, Lehman D, Markus H. Is there a universal need for positive self-regard? Psychological Review. 1999; 106:766–794. DOI: 10.1037/0033-295X.106.4.766 [PubMed: 10560328]

Hwang W, Myers HF, Abe-Kim J, Ting JY. A conceptual paradigm for Understanding culture's impact on mental health: The cultural influences on mental health (CIMH) model. Clinical Psychology Review. 2008; 28:211–227. DOI: 10.1016/j.cpr.2007.05.001 [PubMed: 17587473]

Jobson L. Drawing current posttraumatic stress disorder models into the cultural sphere: The development of the 'threat to the conceptual self' model. Clinical Psychology Review. 2009; 29:368–381. DOI: 10.1016/j.cpr.2009.03.002 [PubMed: 19344988]

Jobson L, Moradi AR, Rahimi-Movaghar V, Conway MA, Dalgleish T. Culture and the remembering of trauma. Clinical Psychological Science. 2014; 2:696–713. DOI: 10.1177/2167702614529763

Jobson L, O'Kearney RT. Cultural differences in retrieval of self-defining memories. Journal of Cross-Cultural Psychology. 2008; 39:75–80. DOI: 10.1177/0022022107312073

Lee, LC, Zane, NW. Handbook of Asian American psychology. Thousand Oaks. CA: Sage Publications, Inc; 1998.

Leppänen JM. Emotional information processing in mood disorders: A review of behavioral and neuroimaging findings. Current Opinion in Psychiatry. 2006; 19:34–39. DOI: 10.1097/01.yco.0000191500.46411.00 [PubMed: 16612176]

Markus HR, Kitayama S. Cultures and selves: A cycle of mutual constitution. Perspectives on Psychological Science. 2010; 5:420–430. DOI: 10.1177/1745691610375557 [PubMed: 26162188]

Mihailova S, Jobson L. Association between intrusive negative autobiographical memories and depression: A meta-analytic investigation. Clinical Psychology & Psychotherapy.

Mukhtar F, Oei TPS. Exploratory and confirmatory factor analysis and psychometric properties of Beck Depression Inventory-Malay. Malaysian Journal of Psychiatry. 2008; 17

Mukhtar F, Zulkefly NS. The Beck Anxiety Inventory for Malays: A preliminary study on psychometric properties. Malaysian Journal of Medicine and Health Sciences. 2011; 7:73–79.

Quoidbach J, Gruber J, Mikolajczak M, Kogan A, Kotsou I, Norton MI. Emodiversity and the Emotional Ecosystem. Journal of Experimental Psychology: General. 2014; 143:2057–2066. DOI: 10.1037/a0038025 [PubMed: 25285428]

Rathbone CJ, Moulin CJA, Conway MA. Self-centred memories: The reminiscence bump and the self. Memory and Cognition. 2008; 36:1403–1414. DOI: 10.3758/MC.36.8.1403 [PubMed: 19015500]

Rathbone CJ, Moulin CJA, Conway MA. Autobiographical memory and amnesia: Using conceptual knowledge to ground the self. Neurocase. 2009; 15:405–418. DOI: 10.1080/13554790902849164 [PubMed: 19382038]

Ross M, Wang Q. Why we remember and what we remember: Culture and autobiographical memory. Perspectives on Psychological Science. 2010; 5(4):401–409. DOI: 10.1177/1745691610375555 [PubMed: 26162186]

Showers C. Compartmentalisation of positive and negative self knowledge: Keeping bad apples out of the bunch. Journal of Personality and Social Psychology. 1992; 62:1036–1049. DOI: 10.1037/0022-3514.62.6.1036 [PubMed: 1619548]

Showers CJ, Ditzfeld CP, Zeigler-Hill V. Self-concept structure and the quality of self-knowledge. Journal of Personality. 2015; 83:535–551. [PubMed: 25180616]

Showers CJ, Kling KC. Organization of self-knowledge: Implications for recovery from sad mood. Journal of Personality and Social Psychology. 1996; 70:578–590. DOI: 10.1037/0022-3514.70.3.578 [PubMed: 8851742]

Showers CJ, Zeigler-Hill V. Compartmentalisation and integration: The evaluative organisation of contextualized selves. Journal of Personality. 2007; 75:1181–1204. DOI: 10.1111/j.1467-6494.2007.00472.x [PubMed: 17995462]

Singelis TM, Triandis HC, Bhawuk DPS, Gelfand MJ. Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. Cross-Cultural Research. 1995; 29:240–275. DOI: 10.1177/106939719502900302

Spencer-Rodgers J, Peng K, Wang L, Hou Y. Dialectical self-esteem and East-West differences in psychological well-being. Personality and Social Psychology Bulletin. 2004; 30:1416–1432. DOI: 10.1177/0146167204264243 [PubMed: 15448306]

Spencer-Rodgers J, Williams M, Peng K. Cultural differences in expectations of change and tolerance for contradiction: A decade of empirical research. Personality and Social Psychology Review. 2010; 14(3):296–312. DOI: 10.1177/1088868310362982 [PubMed: 20435801]

Spielberger, CD, Gorsuch, RL, Lushene, R, Vagg, PR, Jacobs, GA. Manual for the State-Trait Anxiety Inventory (Form Y): Self-Evaluation Questionnaire. Palo Alto, CA: Consulting Psychologists Press; 1983.

Suh EM. Culture, identity consistency, and subjective well-being. Journal of Personality and Social Psychology. 2002; 83:1378–1391. DOI: 10.1037//0022-3514.83.6.1378 [PubMed: 12500819]

Tsai W, Lau AS. Cultural differences in emotion regulation during self-reflection on negative personal experiences. Cognition & Emotion. 2013; 27:416–429. DOI: 10.1080/02699931.2012.715080 [PubMed: 22916683]

Wang Q. Culture effects on adults' earliest childhood recollection and self-description: Implications for the relation between memory and the self. Journal of Personality and Social Psychology. 2001; 81:220–233. DOI: 10.1037/0022-3514.81.2.220 [PubMed: 11519928]

Wang Q. Earliest recollections of self and others in European American and Taiwanese young adults. Psychological Science. 2006; 17:708–714. DOI: 10.1111/j.1467-9280.2006.01770.x [PubMed: 16913954]

Wang Q, Conway MA. The stories we keep: Autobiographical Memory in American and Chinese Middle-Aged Adults. Journal of Personality. 2004; 72:911–938. DOI: 10.1111/j.0022-3506.2004.00285.x [PubMed: 15335332]

Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. Journal of Personality and Social Psychology. 1988; 54:1063–1070. DOI: 10.1037/0022-3514.54.6.1063 [PubMed: 3397865]

Whalley MG, Rugg MD, Brewin CR. Autobiographical memory in depression: An fMRI study. Psychiatry Research: Neuroimaging. 2012; 201:98–106. DOI: 10.1016/j.pscychresns.2011.08.008

Williams JMG, Barnhofer T, Crane C, Hermans D, Raes F, Watkins E, Dalgleish T. Autobiographical memory specificity and emotional disorder. Psychological Bulletin. 2007; 133:122–148. DOI: 10.1037/0033-2909.133.1.122 [PubMed: 17201573]

Wong YJ, Tran KK, Kim S, Van Horn Kerne V, Calfa NA. Asian Americans' lay beliefs about depression and professional help seeking. Journal of Clinical Psychology. 2010; 66:317–332. DOI: 10.1002/jclp.20653 [PubMed: 20127962]

Europe PMC Funders Author Manuscripts

Practitioner Points

- The majority of the literature investigating depression pertains to individuals from European Western cultures, despite recognition that depression ranks as one of the most debilitating diseases worldwide.
- This raises questions as to whether current depression models and interventions can be applied universally or whether they are limited to European Western groups.
- The current study found that pan-culturally those with MDD had similar structuring of their life story relative to controls.
- However, there were some cultural differences that need to be considered (e.g., Malay individuals provided less detailed, less elaborate and less emotionally diverse life stories and while the British MDD group had greater compartmentalisation than British controls, the Malay MDD group had lower levels of compartmentalisation than Malay controls).
- Limitations of the study included group differences in gender and mood at the time of testing
- Cultural differences in the number of attributes used may have influenced findings
- Only the Malay group completed the individualism-collectivism measure.

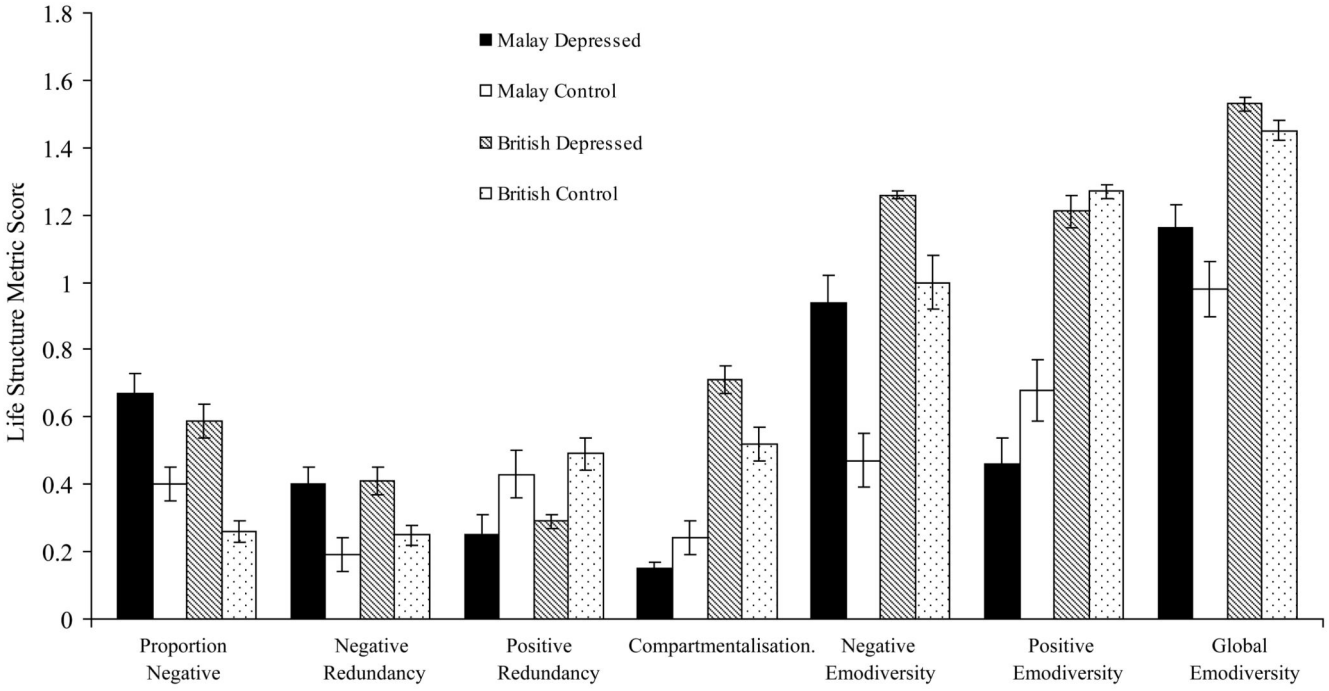

Figure 1.

Mean (±*SE*) performance for the Malay depressed, Malay control, British depressed and British control groups for life structure components.

Europe PMC Funders Author Manuscripts

Europe PMC Funders Author Manuscripts

Table 1

Descriptive data for participants

	Malay		British	
	Depressed (*n*= 30)	**Non-Depressed (*n*= 30)**	**Depressed (*n*= 16)**	**Non-Depressed (*n*= 17)**
Age	48.60 (9.56)	53.13 (5.65)	50.06 (12.21)	51.00 (6.01)
Sex (Male:Female)	4:26	16:14	8:8	11:6
Education[a]	1:12:3:14	1:16:5:8	0:5:8:3	0:5:4:8
PANAS-P	85.00 (22.92)	88.41 (19.04)	60.56 (15.49)	82.47 (13.83)
PANAS-N	79.27 (25.79)	61.22 (19.39)	48.88 (18.16)	32.29 (11.12)
BDI	16.97 (10.30)	6.24 (5.12)	22.31 (13.58)	2.58 (4.87)
BAI	15.97 (9.96)	9.17 (7.23)	-	-
Individualism	98.86 (15.65)	97.55 (19.48)	-	-
Collectivism	103.07 (14.87)	106.41 (19.52)	-	-
Past chapters	6.70 (2.84)	5.50 (2.70)	9.56 (2.89)	9.41 (3.16)
Cards used in sort	14.07 (9.37)	10.33 (8.39)	139.50 (51.34)	122.53 (47.33)

Notes. Data are means (SD) for all except sex and education. PANAS-P= Positive Affect Negative Affect Scale: Positive subscale; PANAS-N= Positive Affect Negative Affect Scale: Negative subscale; BDI= Beck Depression Inventory, BAI= Beck Anxiety Inventory

[a]Self-reported highest education level: primary school:high school:college:university