

Culture and Depression: A Cross-Cultural Meta-Analysis of the Zung Self-Rating Depression

Scale

By

Nicholas Davies

Thesis submitted to

Victoria University of Wellington

Te Whare Wānanga o te Ūpoko o te Ika a Māui

Wellington, New Zealand

June 2016

In fulfilment of the requirements for the degree of
Master of Science in Cross-Cultural Psychology

Acknowledgement: I'd like to thank my supervisors Taciano and Ron for all the hard work they've put in, this is almost as much their project as mine. Paul Jose for his help with HLM, and everyone at the CACR, you are legion too many to name, but without your commiseration, consultation and comments this wouldn't exist.

Abstract

Cultural differences in the prevalence and symptomatology of depression have been well documented. Eastern samples typically display lower prevalence rates of depression coupled with greater reporting of somatic symptoms, while Western samples have higher prevalence rates and report more psychological symptoms. Scholars have argued that both collectivism and economic factors might explain these cultural differences. Less emphasis has been placed on cultural differences of depression levels, and whether dimensions of cultural variability and country-level factors can explain any observed differences. This study reports a cross-cultural meta-analysis of studies using the Zung Self-Rating Depression Scale (SDS), examining mean scores of the SDS across 89,989 individuals from 30 countries. As expected, clinical samples showed higher depression scores compared to general population samples. Notably, income inequality (indexed by the Gini index) was weakly related to SDS scores, with higher levels of depression observed in nations with lower levels of inequality. In addition, SDS scores were not related to measures of collectivism. The results suggest that while economic factors do influence depression levels in a given society, differences in the emphasis societies place on the interdependence between individuals and the group do not exert any influence.

Culture and Depression: A Cross-Cultural Meta-Analysis of the Zung Self-Rating Depression Scale

According to Kline (1964) depression has resulted in more human suffering than any other disease affecting humankind. The World Health Organisation (WHO) has stated that depression is the fourth leading cause of disability worldwide, and predicts that by the year 2020 depression will be the second (WHO, 2002). Despite this, information on the prevalence of depression and its correlates does not exist for most countries (Kessler & Bromet, 2014). In addition, depression is often under diagnosed in many countries, particularly amongst ethnic minorities (Ahmed & Bhurga, 2007). As such, there is a need for a better understanding of depression from a more culturally appropriate standpoint, without relying on ‘Western’ conceptions of depression and treatment.

The definition of depression varies across cultures making depression difficult to identify or treat in cultures outside of a Western context (Tanaka-Matsumi & Marsella, 1976). One issue with the diagnosis of Depression is that the term “depression” holds multiple meanings. The most commonly used meaning is a particular feeling, but depression can also refer to a mental illness, and even a symptom of that illness. As such, it is important to note that Major Depressive Disorder (MDD) exists on a spectrum, with normal levels of depression being described by the commonly used definition and more serious levels being referred to as the mental illness that interferes with normal everyday functioning for extended periods of time, with significantly stronger and much more adverse effects (Smith et al., 2003). This paper will distinguish between the spectrum of depression (hereafter referred to as depression) and clinically significant levels of depression (hereafter referred to as MDD).

Moreover, Beck and Alford (2009) cautioned that simply thinking of depression as a mood disorder is misleading as there are many other symptoms of MDD, and that in some cases a patient may have depression without a change in mood presenting as a symptom.

They argue that there are multiple other components of depression, and it is unknown whether these components are organised in a hierarchical fashion, with some components being more important than others, or if these components all stem from some unknown process.

This variety in the symptoms of depression is partially demonstrated by the criteria for clinical depression outlined in the Diagnostic and Statistical Manual of Mental Disorders (5th ed.) (American Psychiatric Association):

- A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.
 - 1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad, empty, or hopeless) or observation made by others (e.g. appears tearful). (Note: In children and adolescents, can be irritable mood.)
 - 2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation).
 - 3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.
 - 4. Insomnia or hypersomnia nearly every day.
 - 5. Psychomotor agitation or retardation nearly every day (observable by others; not merely subjective feelings of restlessness or being slowed down).

6. Fatigue or loss of energy nearly every day.
 7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
 8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).
 9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.
- B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- C. The episode is not attributable to the physiological effects of a substance or another medical condition. (p. 161-162)

There are also differences in how depression is conceptualised across cultures (Marsella, 1980). Tanaka-Matsumi and Marsella (1976) argued that while cultures may have words that describe similar experiences to what is commonly known as depression, the connotative meanings of these words can be quite different.

In particular, Tsai and Chentsova-Dutton (2002) described three ways that the Western conceptualisation of MDD is distinct from other conceptualisations. First, it emphasizes positive emotions and feeling good about oneself; these are considered healthy ways of being in Western cultures, but this may not be culturally universal (Lutz, 1985). Second, the Western view of the individual as an independent being may lead to symptoms of depression being attributed to internal factors (Lewis-Fernandez & Kleinman, 1994). However in collectivistic cultures, where the self is seen as interdependent, these symptoms may be attributed to interpersonal factors. Finally, they argue that current conceptualizations

focus on depression being a disease of the mind, reflecting the Western assumption that the mind and body can be treated as separate (Lewis-Fernandez & Klienman, 1994).

In most non-Western cultures, the mind and body are seen as connected and related much more strongly to one another (Tsai & Chentsova-Dutton, 2002). These conceptual differences make studying depression across cultures quite difficult and may explain the recorded cultural differences in not only the prevalence of depression but also its symptomatology.

Depression is a Global Issue

Despite the conceptual differences, MDD is still a culturally universal issue as “even among those cultures not having conceptually equivalent terms, it is sometimes possible to find variants of depressive disorders similar to those found in Western cultures” (Marsella, 1980, p. 274). However the actual prevalence of depression in any given country, even at a clinical level, is difficult to determine.

There are multiple studies investigating MDD prevalence (e.g., Andrade et al., 2003; Ferrari et al., 2013; Moussavi et al., 2007; Weissman, 1996), but they vary in terms of countries selected, methodology, and even the measurement tools used to assess the participants. This variance leads to a wide array of different (and arguably unreliable) prevalence data amongst countries, implying that this wide variability in prevalence between countries may be partially due to substantive, measurement and study design factors rather than reflective of differences across cultures (Kessler & Bromet, 2013). This variance also makes it difficult to investigate protective (or harmful) factors associated with depression.

In addition while many studies investigate a wide range of countries that represent most of the regions in the world (i.e. the WHO World Health Survey, Moussavi et al., 2007), there is a wealth of data on depression in some regions, and a significant paucity in others. This inequality in the amount of data is not only found in the WHO World Health Survey or

Moussavi et al.'s (2007) work, but rather is indicative of a larger theme in the academic community. Essentially, depression is typically investigated in wealthier, Western nations (Henrich, Heine, & Norenzayn, 2010). There is a shortage of information on the prevalence, the symptomatology and even the conceptualization of depression in poorer, less developed nations.

Despite the issues in quantifying MDD, one notable pattern is evident. MDD appears to be less prevalent in Asian countries than in Western countries (Chiu & Hickie, 2004; Tsai & Chentsova-Dutton, 2002). This pattern has been demonstrated through multiple studies finding that an Asian country had the lowest prevalence of MDD; including China (Kessler et al., 2004), Taiwan (Weissman et al., 1994), Japan (Andrade et al., 2003; Ferrari et al., 2013; Kessler et al., 2010) and South Korea (Hwu & Compton, 1994). This has been found not only in the general population, but also in student and geriatric samples (Chen, Copeland, & Wei, 1999; Crittenden, Fugita, Bae, Lamug, & Lin, 1992). These studies used a variety of measures and methodologies and as such it appears that, regardless of methodological factors, Asian cultures typically have lower prevalence than the rest of the world. However, even amongst these studies there is variance in prevalence data, reflecting the difficulty of attempting to truly gauge which country has the highest or lowest prevalence of MDD.

While the large scale cross-cultural studies discussed above investigate the prevalence of clinical level depression in different cultures, there is a shortage of research investigating the level of depression using general population samples on such a large scale. This is another limitation to the study of MDD cross-culturally, as a) individual cultures may have higher or lower non-clinical levels of depression in the general population, b) this data would also help to track whether people are becoming more or less depressed over time, and c) subclinical symptoms of depression are even more common than clinical level MDD and have been shown

to have profound negative implications for functioning (Kessler, Zhao, Blazer, & Swartz, 1997). Simply investigating the prevalence of MDD does not address these limitations.

Cultural Differences in Depressive Symptomatology

In addition to cultural differences in the prevalence of MDD, the extant literature has found that cultures may also exhibit different symptoms of depression (Thornicroft & Sartorius, 1993; Jackson-Triche et al., 2000; Hwu & Compton, 1994; Yen, Robins, & Lin, 2000). Multiple studies have reported that patients in non-Western cultures or in developing countries, such as some Asian or African nations, report somatic symptoms more often and deny psychological symptoms more frequently than patients in Western cultures (Bhatt, Tomenson, & Benjamin, 1989; Brown, Schulberg, & Madonia, 1996; Mezzich & Raab, 1980). One possible explanation is that patients from less developed nations are less willing to express their distress emotionally and instead express it physically (Simon et al., 1999).

In contrast to this, some data suggest that there is little to no cultural difference in symptoms of depression with somatic symptoms of depression being present in many countries (Simon et al., 1999). Multiple studies have found that the reporting of somatic symptoms in Western cultures is widespread (Bhatt, et al., 1989; Escobar, Gomez & Tuason; 1994; Ebert & Martus, 1994) and there is a similar balance in psychological and somatic symptoms in both Western and non-Western cultures (Cheng, 1989). Furthermore, the World Health Organisation's (1983) report investigating depressive disorders in different cultures found that more than 76% of the depressed patients studied reported core depressive symptoms that are consistent with the Western definitions of depression; however 40% of patients displayed other symptoms, such as somatic complaints and obsessions, which were not consistent with the Western conceptualization. This supports the argument that the core symptoms of depression, including emptiness, loss, and helplessness, are universally

experienced (Shweder, 1985); but non-core symptoms may be experienced differently across cultures. As such, despite inconclusive research into cultural differences of depression, most psychologists agree that while the symptoms and conceptions of depression differ between cultures, similarities in depressive symptoms do exist (Thornicroft & Sartorius, 1993).

Another factor that may explain cultural differences is the social stigma of having a mental illness, which might influence the expression of the illness with some cultures being much more likely to express depression somatically, or to deny having depression at all (Parker, Gladstone & Chee, 2001). For example Raguram et al. (1996) found that reports of symptoms from patients in India may differ due to the stigma attached to some symptoms, with somatic symptoms being less stigmatized. This is consistent with Parker et al.'s (2001) findings amongst Chinese patients.

Differences in the level of depression have also been established across cultures (van Hemert, van den Vijver & Poortinga, 2002) with Asian cultures not only having lower prevalence of MDD but also typically having lower levels of depression than Western samples (Bland, 1997; Sato & Takechi, 1993; Yen et al., 2000). These studies typically use cultural or indigenous psychological approaches to investigate one or a few cultures when examining the effect that culture has on depression. This methodology enables greater depth and insight into how culture interacts with depression, and is useful in mapping the symptomatology of depression across cultural groups, but lacks a more global focus which would allow examination of pan-cultural aspects of depression. Furthermore, such cross-cultural comparisons tell us relatively little about depression globally. For example Chinese participants have been shown lower rates of depression on average than that of Americans (Yen et al., 2000). However, this does not tell us much about why the levels of depression differ. The lack of a broader, global focus creates a mass of relative relationships

between a few cultures with no comprehensive understanding of where each culture fits on a global scale.

Thus a pressing concern in the field of psychology is whether or not the cultural differences in the level of depression are reported when examining cultures with a global focus.

Hypothesis 1: There will be significant differences in the mean levels of depression across cultures.

Current Theories on Cultural Differences in Depression

Why do these cultural differences exist? Though the methodological issues outlined previously are a possible explanation, there are also important theoretical accounts of cross-cultural differences in depression that must be investigated. This study focuses on two of these accounts: the influence of collectivism and contextual, economic factors.

Individualism – Collectivism

Hofstede (2001) describes individualism/collectivism as a continuum with *individualism* being opposed to *collectivism*. These terms “describe the relationship between the individual and the collectivity that prevails in a given society” (Hofstede, 2001, p. 209). In individualistic cultures the ties between individuals are loose, with people being expected to look after their immediate family only. In collectivistic cultures people are integrated into strong, cohesive in-groups, which protect and care for them throughout their life in exchange for their loyalty and devotion to the group (Hofstede, 2001). The strong group focus, common in collectivistic cultures, has been shown to lead to strong social ties (Sinha et al., 1994), and these strong social ties have been shown to alleviate certain symptoms of depression (Radford, Nakane, Ohta, Mann, & Kalucy, 1991). Indeed, people with depression often have low levels of social ties (Tanaka-Matsumi, Seiden, & Lam, 2001).

Besides social ties, social support and coping have been postulated as protective factors against depression (Coyne & Downey, 1991). Cronkite and Moos (1995) argued that social interaction may affect mental health as it reflects how engaged one is with the larger society. Thus collectivistic countries may have lower levels of depression prevalence and symptomatology due to their strong focus on others, and the resulting social support.

Another explanation of cultural variance in depression related to individualism-collectivism is shame and guilt. Shame and guilt are commonly considered a central feature of depression and are commonly used in depression scales (Kim, Thibodeau & Jorgensen, 2011). They have also been shown to be both an enduring and fluctuating feature of depression (Ghatavi, Nicolson, MacDonald, Osher, & Levitt, 2002).

Shame and guilt are also differentially experienced across cultures (Kimura, 1967; Rao, 1973). Jackson (1986) observed that guilt is historically associated with individualism and with the Judeo-Christian tradition in Western cultures; however research has shown that several Asian cultures conceptualize, experience and communicate guilt differently to Western samples (Kimura, 1967; Rao, 1973). Sznycer et al. (2012) found that Japanese participants were much more prone to experience shame than participants in the United States of America (USA) or the United Kingdom (UK). These differences have also been shown in African cultures (Sow, 1980).

Shame and guilt are considered self-conscious emotions, unlike more basic emotions of anger, fear or happiness (Tangney & Fischer, 1995). Basic emotions should be universally experienced across cultures (Ekman, 1992), whereas self-conscious emotions may be experienced differently across cultures (Tangney & Fischer, 1995). This may explain the findings of the WHO report (1983) that the core symptoms of depression (which may relate to basic emotions) are experienced universally, and others (symptoms relating to self-conscious emotions) vary cross-culturally.

A more biologically based theory on how collectivism relates to depression is the culture-gene coevolution of collectivism and the serotonin transporter gene. Culture-gene coevolution posits that cultural traits are adaptive and they evolve and influence not only the physical environment but also the social one under which natural selection occurs (Boyd & Richerson, 1985; Cavalli-Sforza & Feldman 1981). Past research has indicated that the short allele version of the serotonin transporter is associated with increased negative emotions (Sen, Burmeister, & Ghosh, 2004) and attentional bias toward negative information as well as increased risk for depression (Caspi et al., 2003). It has also been shown that the prevalence of this short allele version is higher in East Asian cultures (70-80%) than in Western cultures (40-45%) (Gelernter, Kranzler, & Cubellas, 1997).

According to Chiao and Blinzinsky (2010) it is unclear why depression is less prevalent in East Asia, especially given that the short allele version of the serotonin transporter is more common there. However, they found that collectivism and the allelic frequency of the short allele version of the serotonin transporter interact to negatively predict the prevalence of MDD and other mood disorders globally.

It is worth noting that studies which investigate cultural differences in depression and attribute these differences to collectivism generally compare East Asian and Western nations. However not all collectivistic cultures are alike, and indeed, not all forms of collectivism are alike (Triandis, 2001). There are a wide variety of collectivistic cultures, and not all of them are Asian, which begs the question: do collectivistic cultures have lower rates of depression? Or is it due to some other cultural factor unique to Asian cultures?

Hypothesis 2: East Asian countries will have significantly lower depression levels than other countries in the sample.

Hypothesis 3: There will be a significant relationship between collectivism and mean depression rates per country, with more collectivistic cultures exhibiting lower rates than individualistic cultures.

Economic Factors

Urbanisation and Westernization have been theorised to have a negative effect on mental health, and increase the levels of depression within a population (Freeman, 1988). Blazer et al. (1985) found that participants who lived in urban areas of the United States were significantly more depressed than those who lived in rural areas. In contrast, a study in Indonesia found that poverty was associated with psychological symptoms, and that participants in villages that urbanised reported fewer psychological symptoms (Bahar, Henderson & Mackinnon, 1992).

However, these studies may not be reflective of the true reason behind the variance: poverty. In Asian countries urban or urbanising areas may be more affluent, whereas in the United States urban populations may be poorer than rural populations (Tsai & Chentsova-Dutton, 2002). Poverty has been shown to be associated with depression (Patel, Araya, de Lima, Ludermir, & Todd, 1999). As such, socioeconomic status may help explain the cross-cultural variance in depression. In support of this argument, Comstock and Helsing (1977) found that African Americans had higher levels of depression than European Americans, but these differences disappeared when group differences in socioeconomic status were controlled for.

Furthermore, Hagerty et al. (2000) found an association between skewed distributions of national income and lower levels of happiness. In support of this, Weich, Lewis and Jenkins (2001) found that income level and regional income inequality interacted with the prevalence of mental disorders; with low income samples having higher prevalence of mental disorders in regions with lower income inequality. These findings demonstrate that rather

than just raw affluence and poverty influencing the prevalence of MDD, income inequality may also be a valid predictor. In addition, rather than focusing on individual level economic factor, these studies focus on possible associations between MDD and country level economic factors.

A further country level analysis was conducted by van Hemert, et al. (2002) with a meta-analysis of 28 countries that investigated a possible association between economic factors and subjective well-being. Their findings indicated that higher levels of affluence were related to lower levels of depression, however they found no significant relationship between depression levels and income inequality.

In a large scale cross-cultural study of 23 countries, Steptoe, Tsuda, Tanaka, and Wardle (2007) found that both Gross Domestic Product (GDP) and income inequality did significantly relate to levels of depression. Whilst GDP was positively related to the level of depression, they found that income inequality was negatively related to depression levels. This latter finding supports Weich, Lewis, and Jenkin's (2001) finding with low income samples, namely that increased depression levels are associated with more economically equal societies. Given these inconsistent findings, further research into how country level economic factors influence levels of depression is needed.

Hypothesis 4: There will be a significant relationship between economic factors and depression rates, with less wealthy cultures exhibiting higher depression means. A negative relationship will be found between levels of depression and income inequality.

The Current Study

The present study investigates differences in the level of depression across cultures. In order to address methodological concerns, this study reports a meta-analysis of mean scores

on a single depression measurement tool, the Zung Self-Rated Depression Scale (hereafter referred to as SDS) developed by Zung (1965).

One of the issues discussed above is the use of different scales when determining the prevalence of depression (Kessler & Bromet, 2013). In order to accurately assess depression across cultures, the use of a single, well-validated measure is necessary for cross-cultural comparisons. Therefore, this study will focus on an instrument-based meta-analysis, where a specific instrument is selected and all studies chosen employed this instrument (van Hemert, 2003).

A literature search investigating large scale cross-cultural studies that focus on the use of one scale to assess the level of depression revealed only two studies: Steptoe et al. (2007) and van Hemert et al. (2002). The latter study mainly focused on the functional equivalence of the Beck Depression Inventory (BDI) and assumed that positive affect was inversely related to depression so as to use the BDI to investigate cross-national differences in subjective well-being. This study did find a significant negative relationship ($r = -0.45, p < .01$) between individualism and BDI scores, which surprisingly indicated that more individualistic cultures, rather than more collectivistic cultures, had lower depression levels. Steptoe et al. (2007) conducted a large scale study of students from 23 countries using the BDI finding inconsistent results in terms of economic factors as mentioned above, but a similar negative relationship between individualism and BDI scores.

It is worth noting that both studies used the BDI in order to assess depression (or an inverse of subjective well-being). While BDI has been used cross-culturally and validated in many countries, it was developed in the USA, Canada and the UK and as such it is reflective of a Western conceptualisation of depression (Naughton & Wiklund, 1993). This is evident through the cognitive focus of selected items in the BDI measure rather than somatic or affective symptoms (Naughton & Wiklund, 1993). This indicates that the BDI may not be as

accurate as the SDS when used for cross-cultural comparisons. For example Zheng et al. (1988) found that the BDI could not be effectively applied in China as, even when translated semantically, the items of the BDI did not fit with the Chinese conceptualisation of depression.

The methodology employed in the present study will be loosely based on van Hemert, et al.'s (2002) meta-analysis. However this study will use the SDS instead of the BDI as the SDS has been used and validated in more countries (Naughton & Wiklund, 1993). Rather than focusing on equivalence, this study will aim to synthesise the findings of past research into cultural differences in depression in order to test the four proposed hypotheses amongst a more varied sample than Steptoe et al.'s (2007) study. This meta-analytic approach will allow for a broader, more global perspective on how culture relates to depression and will help us understand cultural variance in the level of depression, its symptomatology, and possible factors related to depression; which may even further our understanding as to which causes of depression are culturally unique, and which are culturally universal.

Zung Self-Rating Depression Scale

The SDS is one of the most popular self-rating instruments of the symptoms of depression and is widely used in the field of psychology (Liu, Nagata, Shono & Kitamura, 2009). It is composed of 20 items rated on a four-point Likert-type scale anchored by *little or none of the time* (1) to *most of the time* (4). The items are designed to represent three domains of depression: mood (2 items), somatic symptoms (8 items) and psychological symptoms (10 items) (Basco, Krebaum & Ruch, 1997). The total score of the scale is calculated by dividing the sum of the raw scores by the maximum possible score of 80, then multiplying by 100. Thus the SDS indexed score ranges from 25-100. Zung (1965) also provided cut-off scores: below 50 is considered in the normal range with some depressive symptoms but at a non-clinical level, 50-59 indicates mild clinical level depressive symptoms, 60-69 indicates

moderate clinical level depressive symptoms, and 70+ indicates severe depressive symptoms.

Multiple studies have demonstrated that the SDS can effectively differentiate between depressed and control samples (Shapley, Bitsika, & Christie, 2013).

The SDS items were constructed based on clinical diagnostic criteria and several studies have demonstrated the reliability and validity of the SDS for measuring depressive symptoms (Agrell & Dehlin, 1989; Gabrys & Peters, 1985). In addition this scale serves very well to measure the intensity of depression and depressive symptoms regardless of the diagnosis (Coyne, 1976). As such, high scores are not interpreted as diagnostic but rather as indicating the presence of clinical level symptoms (Zung, 1965; Passik et al., 2000).

As mentioned above, the academic focus on the prevalence of MDD is flawed due to a lack of insight into subclinical symptoms. This limitation is partially addressed by the SDS's focus on the intensity of the depressive symptoms rather than on diagnosis. A scale that focuses on the symptoms and their intensity would allow for more accurate investigation into the subclinical symptoms of depression present in the general population.

In terms of cross-cultural validity, the SDS has been validated and its factor structure analysed in different languages (Chida, Okayama, Nishi & Sakai, 2004; Fountoulakis et al., 2001) and in diverse populations (Passik et al., 2000; Powell, 2003; Schrag et al., 2007). Translated versions have been used effectively with multiple Asian populations (Chen & Narsavage, 2006; Ward, Leong & Low, 2004; Chida et al., 2004; Xia, Xu, Hollon, and Zhang, 2014) which showed good reliability and convergent validity with other depression scales. Further versions have been used and validated in Greek (Fountoulakis et al., 2001), Italian (Trento et al., 2012), and Nigerian populations (Okulate & Jones, 2002) as well as many other cultural groups (Diegas & Cardoso, 1986; Aradilla-Herrero, Tomas-Sabadodo & Gomez-Benito, 2014; Krupitsky et al., 2002; van Peski-Oosterbaan et al., 1995).

Method

Sample of Studies

The literature search focused on the studies that cited the Zung (1965) article in which the Zung Self-Rating Depression Scale (SDS) was originally published. An online search was conducted in the PsycInfo database to identify studies to be included in the meta-analysis. The initial search yielded 2,340 results on August 14, 2015. A secondary search was conducted on the Scopus database yielding 4,085 results on March 17, 2016.

Selection Criteria

The resulting studies were then screened according to two inclusion criteria: (a) the study used the full length SDS in empirical research, and (b) the study reported the means, standard deviations, sample sizes, and the country the study was conducted in. In order to make the meta-analysis more representative of the general population an inclusive policy was adopted regarding the type of sample, meaning that no a priori exclusion criteria was used for the type of sample in the resulting studies.

After removing duplicates, studies that did not include the necessary information, and studies that used an alternate version of the SDS, a total of 150 studies were identified and coded. Details for the samples included in the meta-analysis can be found in Appendix A.

Moderators

The coding of each study included the following variables: the author(s), the year of publication, the country the study was carried out in, the sample size, the type of sample (e.g. students, clinically depressed, general population, elderly (70+), etc.), the percentage of males in a sample, mean age, maximum and minimum age where available, the raw mean score on the SDS, the indexed mean score on the SDS, the standard deviation, the language of the scale in each study, and the male and female mean scores and standard deviations on the

SDS where available. Studies with more than one unique sample were coded using the same study number, with a different identification number for each unique sample.

Country-Level Moderators

Collectivism: Individualism-collectivism scores for each country were obtained from Hofstede's (2001) Individualism-Collectivism measure which assesses where a country lies on the individualism-collectivism spectrum and rates whether people's self-image is defined in terms of "I" or "We". The score ranges from 0 to 100 with 0 being absolutely collectivistic, and 100 being absolutely individualistic. Data for each country's Collectivism score was taken from Hofstede's website. However Brewer and Vanaik (2010) argue the Hofstede's Individualism-Collectivism score only measures one facet of collectivism, and that the variable should in fact be relabeled as Self-Orientation vs Work-Orientation.

In order to counter Brewer and Vanaik's (2010) concern about Hofstede's (2001) measure of Individualism-collectivism, other measures of collectivism developed by the GLOBE project (House et al., 2004) were used. The GLOBE project splits the measure of collectivism into two components. While Institutional Collectivism measures how much organizational and societal institutional practices encourage and reward collective distribution of resources and collective action, In-group Collectivism measures how much individuals express pride, loyalty, and cohesiveness in their organizations or families (House et al., 2004). These components were then split again into practical (as is) and value (should be) measures, yielding four categories: In-Group Collectivistic Practices, In-Group Collectivistic Values, Institutional Collectivistic Practices, and Institutional Collectivistic Values.

As such, there are three distinct facets of collectivism (Self-Orientation vs Work-Orientation, In-Group Collectivism, and Institutional Collectivism) which are each assessed with a different scale. In order to assess the two other facets of collectivism not captured by

Hofstede's (2001) measure a decision was made to use the In-Group Collectivistic Practices, and the Institutional Collectivistic Practices sub-scales. The practices sub-scales were selected over their value equivalents as practices represent actual behaviors and, as such, were judged to be more likely to affect levels of depression.

Gross Domestic Product: GDP for each country was measured using the International Monetary Fund's April 2016 World Economic Outlook. Each country's GDP was averaged over the last 30 years, with three exceptions due to lack of data. In the case of these exceptions (Russia, Czech Republic, and Lithuania), GDP was averaged over 20 years.

GDP per Capita: In order to further assess the impact of poverty (or affluence), GDP per capita was also included in the analysis as this variable takes population size into account. GDP per capita was measured using the World Bank's database found online. Each country's GDP per capita was averaged over the last 30 years, except Taiwan, as the World Bank does not measure its GDP per capita. Data for Taiwan's 1999-2013 GDP per capita were taken from the CIA World Factbook and were then averaged.

The Gini index: The Gini index indicates the equality (or inequality) in a society with higher values indicating more inequality. Data on the Gini index used for calculations were found online from Quandl. The data sources for Quandl's statistics include the World Bank, The United Nations, the World Health Organization, and other national and international statistics. Scores on the Gini index vary between 0 and 1, with 0 being total equality of income, and 1 being total inequality (one citizen receiving or earning 100% of the income in any given country). Based on available data, this study used the rescaled version ranging from 0 to 100 (World Bank, 2008) with 0 representing total equality and 100 representing total inequality.

Computation of Effect Sizes

The effect size calculated was the indexed mean score of the SDS. Studies presented their participant's results in a variety of ways due to the indexing process. Some studies simply reported the raw score, others followed the process laid out in Zung (1965) of dividing the score by 80 and multiplying it by 100 in order to get the indexed score, others still only carried out the first step and divided their mean score by 80. Indexed means were calculated from all studies listing the raw score or the partially indexed mean.

Studies that did not indicate whether the reported mean scores were indexed or raw, were categorised based on examination of their reported means and indexed scores computed for those judged to be reporting raw scores. This resulted in all means falling between the indexed score of 25 (the lowest possible score) to 100 (the highest possible score). In regards to the clinical cut-off point of the SDS, any participant with a mean indexed score of 50 for the SDS can be classified as having depressive level symptoms.

Country-level means for the SDS were calculated by first weighting the indexed means of each study by the sample size of the study, and then averaging the resulting weighted means from all samples embedded in each country.

Preliminary Data Analysis

Initial analysis revealed 25 studies with participants who had been diagnosed with MDD. As expected, studies with clinical samples had significantly different weighed SDS mean scores than the rest of the database ($b = 20.02$, $p < .001$) indicating that the clinical samples had significantly higher levels of depression than the other sample types. This supports the ability of the SDS to differentiate depressed individuals, and the clinical samples provide known-group validity in this study. Due to this difference the data were then split into two data files, one containing all the studies that did not have clinical samples, and one

containing only clinical samples. Results for the non-clinical data are reported below. The results for the clinical data can be found in Appendix B. The final clinical dataset was significantly smaller than the non-clinical dataset, consisting of 24 studies, from 17 countries that reported 32 unique samples with a total N of 5,214.

Analytical Strategy

In order to test cultural variation of depressive symptomatology, a mixed-effects model was used (Lipsey & Wilson, 2001). Konstantopoulos and Hedges (2004) have shown that random effects models give more accurate representations of meta-analytic data sets.

Mixed-effects models allow greater generalization of the findings, beyond the particular studies and samples used in the meta-analysis (Leong & Fischer, 2011).

Mixed-effect models use the random effects model approach to consider both a subject-level sampling error and a study-sampling error. However, unlike random effects models, mixed-effects models also test whether variance in the effect size may be systematic, beyond random variation found in random effects models (Lipsey & Wilson, 2001).

An initial analysis was conducted using the weighted SDS mean scores for each country using the mean effects size macro from Lipsey and Wilson (2001) in order to assess the heterogeneity statistic, Q . The Q statistic reflects the amount of variability among the pooled effect sizes (in this case the weighted mean scores), with a significant Q value indicating significant variance within the pooled effect sizes (Lipsey & Wilson, 2001).

A multilevel analysis was conducted in HLM 7 (Raudenbush & Byrk, 2002), using Full Information Maximum Likelihood Estimation (see Fischer, 2013; Fischer & Boer, 2011). This analysis nests studies within country and as such is preferable to other meta-analytic methods that ignore dependencies due to country (Fisher, 2013). The weighted mean for the sample's SDS score was entered at Level 1 as the effect size. Study-level variables such as

the mean age of the participants, and the percentage of males in the sample were entered at Level 2. In addition, dummy codes were used to compare the general population to different sample types that were also entered at Level 2. An initial meta-analytic ANOVA using the Lipsey and Wilson (2001) macro revealed that the language the scale was administered in had no significant effect on the mean SDS score ($Q_{between} = 9.63, p = .56$), and therefore this variable was not included in the multilevel analysis.

Country-level variables (collectivism, GDP, and Gini index) were entered into Level 3. Dummy codes were used once again to compare East Asian cultures with the rest of the sample. Intra-class correlation coefficients (ICC) were calculated for significant moderators, in order to quantify the amount of variance that is accounted for by these moderating variables.

Results

Descriptive Statistics

The final non-clinical dataset consisted of 141 studies, from 30 countries that reported 211 unique samples with a total N of 87, 775. The overall sample size weighted mean for the SDS was 45.88 ($SE = .37$; 95% CI [45.16, 46.60]). This average mean is somewhat high as the cut-off value on the SDS for clinical level depressive symptoms is 50. However, it is significantly lower than the average mean for the clinical sample (see Appendix B). The Q statistic was statistically significant: $Q(205) = 33921.70, p < .000$. This indicated that there was significant variance amongst the weighted SDS means sampled, which will be further explored below. Table 1 displays the weighted SDS means, the standard deviations, the number of studies and the number of participants for each country.

Analyses of Effect Size

The unconstrained (null) model analysis using HLM was run first. The chi-square statistic was statistically significant at Level 1 and 2 ($\chi^2(29) = 541.11, p < .001$), and also at Level 3 ($\chi^2(29) = 78.45, p < .001$), indicating that there are significant differences amongst

the SDS means sampled both at the study level and the country level. The ICC that resulted was 0.7988, meaning that 79.88% of the variance of the sampled means was at the study and country levels, and 20.12% at the individual level. This statistically significant variation in the SDS means across countries confirms Hypothesis 1.

Moderator Analyses

Level 2 Moderators: The analysis of predictors at Level 2, the study level, first examined sample type. The results showed that samples of the general population were significantly different to samples of hospitalised participants and patients with illnesses other than MDD ($b = 4.20, p < .05$). The positive coefficient indicates that these samples of non-MDD diagnosed patients have higher weighted SDS means ($M = 48.21, SE = .04$) than the general population ($M = 43.97, SE = .06$).

There was no significant difference between the weighted SDS means of the general population samples and elderly ($b = 1.24, p = .65$) or student samples ($b = -.73, p = .58$). Further calculations revealed that sample type explained 17.86% of the variance at Level 2.

Further analysis at the study level found that the weighted SDS means were significantly related to both the age of the participant ($b = 0.07, p < .05$) and the percentage of males in the sample ($b = -0.07, p < .01$). Mean age was shown to account for 2.57% of the variance, and the percentage of males in the sample accounted for 15.42% of the variance at Level 2. These coefficients show that weighted SDS means increase with age, and that studies with more males in the sample typically have lower weighted SDS means, indicating that males may show less depressive symptomatology than females.

Level 3 Moderators: Dummy codes were used at the country level to compare the weighted SDS means of East Asian cultures (Japan, China, Taiwan, Singapore, and South Korea) to the rest of the sample. No significant differences were found ($b = 3.00, p = .12$), which does not support Hypothesis 2 that Asian cultures would display lower levels of

depression symptoms than individuals from other regions of the world. The average weighted SDS means for the five East Asian cultures ($M = 44.81$, $SE = .05$) was statistically similar to the average weighted SDS means for the rest of the sample ($M = 47.21$, $SE = .03$).

Furthermore, weighted SDS means were not significantly related to Hofstede's measure of collectivism ($b = -.06$, $p = .51$). Similar non-significant relationships were found between weighted SDS means and the two measures of collectivism chosen from the GLOBE study (Harris et al., 2004): Institutional Collectivism Practices ($b = -3.33$, $p = .28$), and In-group Collectivism Practices ($b = -2.43$, $p = .19$). These results are inconsistent with Hypothesis 3 and indicate that there is no significant relationship between levels of depression and collectivism.

Further analysis at the country level investigated Hypothesis 4 predicting a relationship between levels of depression and economic factors. Weighted SDS means were significantly related to the rescaled Gini index ($b = -.31$, $p < .01$) but not to GDP ($b = .0003$, $p = .34$) and GDP per capita ($b = -.00007$, $p = .31$). This reveals a slight negative relationship between income inequality (as indexed by the Gini index) and weighted SDS means indicating that levels of depression are lower in countries with more income inequality. These findings partially support Hypothesis 4 with the significant negative relationship between the rescaled Gini index and weighted SDS means. However, the lack of a significant relationship between weighted SDS means and either measure of GDP was not predicted. The association observed between depression and the Gini index suggests that depression levels are more prominent in economically equal societies. However, calculations revealed that the Gini index only accounted for 4.07% of the variance at Level 3, implying that its explanatory power is very weak.

Discussion

This study used a meta-analytic approach to investigate how depression varies across 89,989 participants from 150 studies in 30 countries, and then investigated how this variance related to cultural differences in collectivism and economic factors. Differences in the prevalence of MDD have been consistently shown by past research (Andrade et al., 2003; Ferrari et al., 2013; Moussavi et al., 2007; Weissman et al., 1996) with Asian cultures typically being reported to have lower prevalence of MDD and lower average levels of depression (Bland, 1997; Hwu & Compton, 1994; Sato & Takechi, 1993; Kessler et al., 2004; Yen et al., 2000).

Though there are some inconsistent findings, cultural differences in the symptomatology of depression have also been found (Bhatt et al., 1989; Mezzich & Raab, 1980; Simon et al., 1999). However, past research typically compares East Asian and Western nations when investigating cultural differences in depression, therefore a broader, more global focus is required in order to accurately assess any cultural differences.

This led to four distinct hypotheses: there will be significant differences in the mean levels of depression across cultures (Hypothesis 1); East Asian countries will have significantly lower depression levels than the rest of the sample (Hypothesis 2); there will be a significant relationship between collectivism and mean depression rates per country, with more collectivistic cultures exhibiting lower rates than individualistic cultures (Hypothesis 3); and there will be a significant relationship between poverty and depression rates, with less wealthy cultures exhibiting higher depression means, and a significant negative relationship will be found between levels of depression and income inequality (Hypothesis 4). The results for each of these hypothesis are discussed in detail below.

Table 1

Individual country means, standard deviations, number of studies and sum of participants for the non-clinical dataset.

Country	k (number	n (participants)	Effect Size (Weighted Mean)	Standard Deviation
Australia	9	2758	45.80	8.61
Austria	3	1053	40.41	10.54
Belgium	4	1126	42.41	10.40
Brazil	3	221	43.22	9.63
China	9	3703	43.82	9.49
Columbia	2	316	43.93	8.53
Czech Republic	3	121	60.47	4.02
Finland	6	2864	47.11	8.83
Germany	5	465	43.52	8.29
Greece	8	2117	44.39	8.65
Hungary	3	864	39.63	6.44
Ireland	2	279	44.88	8.59
Israel	2	167	45.44	10.00
Italy	17	3061	47.35	9.90
Japan	16	39951	45.11	12.72
Mexico	2	1070	47.72	12.42
The Netherlands	8	1783	43.84	9.42
Nigeria	2	294	47.80	9.02
Poland	2	144	49.88	11.80
Russia	2	120	45.81	9.11
Singapore	2	383	33.00	8.95
South Korea	3	75990	41.03	8.35
Spain	3	454	48.58	9.17
Sweden	2	251	49.06	8.99
Taiwan	3	486	50.40	9.56
UK	4	280	53.02	12.43
USA	15	5115	51.05	9.65
Venezuela	2	60	36.95	4.71

Previous Research

There have been two large-scale investigations of cultural differences in depression: one large scale study (Steptoe et al., 2007) and one meta-analysis (van Hemert et al., 2002). These studies have found that levels of depression are typically lower in individualistic cultures, and that economic variables are significant predictors of depression levels, albeit with some inconsistent findings. However, van Hemert et al.'s (2002) study was mainly focused on subjective well-being, and Steptoe et al. (2007) only used student samples in their analysis. In addition, both of these studies investigated depression with the BDI, and did not have homogenous comparable samples (Steptoe et al., 2007). Furthermore, despite the BDI's high internal consistency, it may not be equivalent in all countries (Byrne & Campbell, 1999), as evidenced by Zheng et al.'s (1988) finding that the Chinese translation of the BDI could not be effectively applied. This may be due to the BDI's focus on cognitive symptoms of depression (Naughton & Wiklund, 1993) when China has been shown to express depression somatically (Kleinman, 2004). As such, this scale may not effectively measure levels of depression cross-culturally. Both studies also relied on Hofstede's individualism-collectivism ratings but, as mentioned previously, these ratings may not fully assess collectivism. Brewer and Vanaik (2010) argue the Hofstede's ratings do not accurately measure collectivism and instead only measure Self Orientation vs Work Orientation. Hofstede's ratings were also derived from a specific sample of employees from the 1970's and may not be reflective of current cultural trends. Through the use of the SDS and multiple measures of collectivism, these limitations were addressed in the current study.

Cultural Differences

Significant differences in weighted SDS means were found in both the general population data and the clinically depressed population data. This demonstrated that there are significant cultural differences in terms of the level of depression not only in those diagnosed

with clinical MDD but also amongst the general population in terms of their sub-clinical level of depressive symptoms. This adds to the evidence for cultural differences in depression, and addresses the limitations of focusing only on clinical level MDD. This result is supported by past research that has found cultural differences in the prevalence of MDD and the level of depressive symptoms (Andrade et al., 2003; Ferrari et al., 2013; Moussavi et al., 2007; Weissman et al., 1996; Yen et al., 2000). This is the first study to investigate cultural differences in the level of depressive symptoms on such a large scale using a sample of both clinically depressed participants and the general population. As such, the significant variance in mean depression levels found in this study expands upon previous findings of differences between a few cultures, and implies that there are cultural differences in the level of depression on a global scale.

In addition to the cultural differences in the level of depression, the language the scale was administered in was found to have no effect on the weighted SDS means. This finding validates the use of translations of the SDS and supports previous instances of the use of the SDS in cross-cultural comparisons (Giltay et al., 2009; van den Brink et al., 2005) suggesting that the SDS can be useful cross-culturally in assessing the level of depressive symptoms, albeit with some limitations. The SDS scale is based on a Western conceptualisation of depression and, while it includes somatic items and items that investigate the core symptoms of depression that appear to be universal (Shweder, 1985), the scale may not be able to capture the wide array of other symptoms that may vary across cultures. To illustrate, the SDS does not include items to assess boredom, feelings of inner pressure, and symptoms of pain, dizziness, and fatigue which are common somatic symptoms found in China (Kleinman, 2004). In addition, the SDS does not have items that relate to the experience of guilt or shame (Kim et al. 2011) which, as discussed above, may play an important role in how depression varies across cultures (Tanaka-Matsumi et al., 2001).

In order to investigate cultural differences in symptomatology a large scale study that focuses on the item scores of the scale rather than the mean scores would be required. While the results of this study support the use of the SDS in multiple cultural contexts, the possible symptomatological differences between cultures suggests that an emic approach may be required when assessing the general population or treating clinically depressed patients, especially in non-Western contexts.

Sample Differences

The type of sample used in the study was also found to effect the level of depression reported. Hospitalised people and patients diagnosed with illnesses other than MDD were found to have significantly higher levels of depression than the general population. This is unsurprising as Prina, Deeg, Brayne, Beekman and Huisman (2012) found that patients in hospitals tend to have higher depression scores and are more likely to be depressed. This finding suggests that patients who do not develop MDD may nevertheless have worse depressive symptoms than the general population. It is possible that patients who are hospitalised for other medical conditions or mental illnesses may report depressive symptoms while not actually suffering from MDD. The results of this study argue for more focus being placed on the prevention and treatment of MDD for hospitalised people and patients diagnosed with illnesses other than MDD as they are a group at greater risk of depression. A possible remedy could be clinical assessment in hospitals and aged care facilities, and increased training in how to recognise depression for non-psychiatric staff.

Elderly samples were not found to be significantly different to the general population in terms of level of depression. However a further analysis using the mean age of the participant showed that the weighted SDS means increased as the sample's mean age rose. While this finding does suggest that depressive symptoms will become more severe with age

is interesting that elderly samples did not have significantly different depression levels to the general population samples.

This lack of a significant difference between sample types may be due to how old age is perceived across cultures. Collectivistic cultures are described as having positive stereotypes about the elderly, whereas individualist cultures view the elderly as incompetent (Zhou, 2007). Attitudes toward caring for the elderly and the amount of social contact and that the elderly experience also vary across cultures. Pyke and Bengtson (1996) found that in individualistic cultures family members were reluctant to be caregivers and minimized the amount of contact they had with older family members. However in collectivistic cultures caring for the elderly is used as an opportunity to build and strengthen family ties (Youn, Knight, Jeong, & Benton, (1999). It is therefore possible that due to the positive stereotypes and their stronger social ties, elderly people in collectivistic cultures have lower depression levels. This may be the reason for the significant effect of age but non-significant difference between the general population sample and the elderly sample as 33% of the elderly samples were from collectivistic cultures.

The last sample type, students, were not significantly different from the general population in SDS scores. As a large amount of psychological research is carried out on a Western, student population (Henrich et al., 2010) it is important to demonstrate that findings from student samples can be generalised to a wider population. The finding that there is no significant difference in SDS scores between the student sample and the general population in this study supports the generalizability of studies investigating depression with student samples using the SDS. Furthermore, the cross-cultural nature of this database implies that the generalizability of student samples is not only found in Western cultures but may be culturally universal.

The results also revealed that the gender of the participants affected the average levels of depression. While some studies did record mean values for each gender, there was insufficient data to conduct a viable analysis as to how gender differences in depression may vary across cultures. Instead the percentage of males in the sample was coded as this approach allowed the inclusion of more studies. Though this is not as compelling a finding as a significant gender difference in weighted SDS means would be, it does support the gender differences in depression found in past research with males typically having lower levels of depression than females (Angst et al., 2002; Milfont et al., 2008; Szabo et al., 2014). It is worth noting that the percentage of males in the sample predicted a much larger amount of variance in the clinical sample (74.43%) than in the non-clinical sample (15.42%), which suggests that, though there are gender differences in levels of depression amongst non-clinical populations, these differences are much larger amongst the clinically depressed.

At the same time, this finding may be due to a difference in reporting between males and females, as males often under-report depressive symptoms (Angst & Dobler-Mikola, 1984; O'Connor, Rosewarne, & Bruce, 2001). Further cross-cultural studies should investigate whether gender difference in depression is a true difference or a methodological artefact by conducting proper measurement invariance testing (see, e.g., Szabo et al., 2014). This may also allow for more focused investigation into depression, as other factors that have demonstrated gender differences (such as wealth; Blau, 2016) may also be associated with depression.

Collectivism

No significant differences were found in the level of depressive symptoms between East Asian countries and the rest of the sample. Despite past research that has found lower prevalence of MDD and levels of depression in East Asian cultures (Bland, 1997; Hwu & Compton, 1994; Sato & Takechi, 1993; Kessler et al., 2004; Yen et al., 2000) it appears that

Asian cultures do not have significantly different levels of depressive symptoms, whether amongst the general population, or the clinically depressed (see Appendix B).

This may be because, unlike studies focusing on the prevalence of MDD, investigations into cultural differences in the level of depression are typically on a smaller scale and compare an Eastern culture with a Western culture (e.g. Yen et al., 2000). While these individual comparisons may show significant differences in levels of depression, the results of this study demonstrate that when depression is examined in a global context these differences are not significant.

Similarly collectivism was not significantly related to levels of depression. As mentioned previously, there is a large amount of research that postulates a link between collectivism and levels of depression as an explanation for the low prevalence of MDD commonly found in Asian cultures. Collectivism is theorised to affect depression through increased social ties and support (Tanaka-Matsumi et al., 2001), cultural differences in the experience of shame and guilt (Ghatavi et al., 2002; Kim et al., 2011; Tanaka-Matsumi et al., 2001), or culture-gene coevolution (Chiao & Blinzinsky, 2010).

In addition, previous research has found a significant positive association between depression levels and individualism, with individualistic cultures typically having lower depression levels than collectivistic cultures (Stephoe et al., 2007; van Hemert et al., 2002). However, these studies have been limited by their choice of scale and investigation of only one facet of collectivism. As such this study used a more cross-culturally valid measure of depression and multiple measures of collectivism to investigate a possible relationship. Despite this, no significant relationship between collectivism and levels of depression was found.

This finding applies to both a general population sample and a clinically depressed sample, providing evidence for the lack of a significant difference between East Asian

cultures and the rest of the world even amongst participants who are clinically depressed. However, this study does not investigate the prevalence of MDD cross-culturally. It is possible that when measuring the prevalence of MDD rather than the levels of depression, East Asian cultures would be significantly different to the rest of the world, and collectivism may be a significant predictor.

This is an important distinction as significant global differences in the prevalence of MDD have been shown, with Asian cultures typically revealed to have lower MDD prevalence (Bland, 1997; Hwu & Compton, 1994; Sato & Takechi, 1993; Kessler et al., 2004; Yen et al., 2000). However, the results of this study suggest that while differences in the level of depression have been found when comparing East Asian to Western cultures (Steptoe et al., 2007; van Hemert et al., 2002; Yen et al., 2000), East Asian culture's mean depression levels do not significantly differ from the rest of the world's when viewed as a whole. Thus, we must consider why the prevalence of MDD in East Asian cultures is so low when their average depression levels are not significantly different to the rest of the world. If East Asian populations have normal levels of depression but lower prevalence of MDD when compared to the rest of the world then the implication is that the mechanism with which normal depression and depressed mood progresses into clinical level MDD is significantly different amongst East Asian populations.

A possible explanation for this different mechanism is the culture-gene coevolution finding of Chiao and Blinzinsky (2010) who found that Asian cultures, which typically have a high prevalence of the short allele version of the 5-HTTA gene and are collectivistic, also have lower prevalence of MDD. It is possible that the 5-HTTA gene may have a crucial role in the progression from normal levels of depression to clinical MDD. Furthermore, people in East Asian cultures may be less likely to become clinically depressed due to the stronger social ties found in collectivistic cultures (Sinha et al., 1994), which have been shown to

buffer against MDD (Coyne & Downey, 1991; Cronkite & Moos, 1995; Radford, Nakane, Ohta, Mann, & Kalucy, 1991), whilst nevertheless still experiencing equal levels of sub-clinical depression symptoms. In addition the typical length of a depressive episode in East Asian cultures may be significantly shorter than it is in the rest of the world due to this increased social support. This would also explain the non-significant relationship found in the current study as this gene and increased social support may not affect the level of depressive symptomatology, only the progression from normal to clinical depression and the length of a depressive episode.

However, it must be noted that East Asian cultures may have a radically different conceptualisation of depression which may lead to a different expression of MDD, with significantly different symptoms. For example, Kleinman (2004) observed that in many parts of Chinese society the experience of depression is physical rather than psychological. If the typical symptoms of MDD in East Asian cultures are significantly different to the typical presentation of MDD found in the rest of the world then measurement tools may not accurately assess MDD in these cultural contexts.

Furthermore it is possible that people in East Asian cultures may under-report the intensity of their depressive symptoms due to the stigma of having a mental illness (Golding, Gongla, and Brownell 1988; Hennessy and Reed 1992; Kashner et al. 1999), especially since this stigma has been shown to be worse in developing countries, and Asian cultures (Parke, Gladstone & Chee, 2001).

Economic Factors

The Gini index was found to be significantly negatively related to levels of depression in the general population sample which supports Hypothesis 4 and the findings of Steptoe et al. (2007). The results of this study imply that countries with less income inequality also have slightly higher depression levels. However, unlike both Steptoe et al. (2007); and van Hemert

et al. (2002), this study found no significant association between GDP or GDP per capita and levels of depression.

It is worth noting that in this study the Gini index, though significantly related to level of depressive symptoms, only explained four percent of the country level variance, indicating that economic factors have very little explanatory power when it comes to cultural differences in levels of depression. This lack of explanatory power also justifies the lack of a significant relationship between SDS score and both measures of affluence (GDP and GDP per capita) as economic factors may not be strongly related to levels of depression. The contradictory results of this study when compared to past research may be due to the use of the SDS rather than the BDI, or may be due to the nations selected as Inglehart and Kleinman (2002) have demonstrated that the range of nations included in the analysis affects the association between national wealth and well-being. However, it is possible that, since GDP and income inequality correlate (Naguib, 2015) and depression levels have been shown to correlate with increased GDP (Stephoe et al., 2007; van Hermet et al., 2002) this negative relationship is reflective of a significant predictor. Whilst GDP comparisons are all at a country level and do not reflect individual level affluence, the Gini index measures the income inequality in a given country and as such is reflective of income variance within that country. Therefore, it is possible that income inequality rather than GDP predicts levels of depression as economic factors within countries, which are on a more individual level, may be more salient than country level economic factors and thus may have more of an effect on the level of depression.

Unlike the general population sample, the level of depression in the clinical sample group was not related to any of the economic factors measured (GDP, GDP per capita, and the Gini index). Economic factors may therefore have an effect on the level of depressive symptoms in the general population, with people feeling more or less depressed within the

normal range depending on their economic context. However economic factors appear not to have an effect on the level of depressive symptoms of the clinically depressed population (and quite possibly on the prevalence of MDD).

Strengths and Limitations

As with all meta-analyses, this study was limited by the availability and quality of reported data in past studies. This limitation led to a lack of regionally representative data. This is reflected in the studies selected for this meta-analysis with only one African nation, one Middle Eastern nation, and no Pasifika nations being represented. As discussed above depression is commonly investigated in wealthier, first world nations (Henrich et al., 2010) and is often underdiagnosed in ethnic minority populations all over the world (Ahmed & Bhurga, 2007). As such, information on the levels of depression in less affluent, non-Western countries is difficult to obtain. While many past studies have focused on differences in depression between Asian and Western cultures, other collectivistic cultures have significantly less available data. While this study does include a more representative selection of countries; it is still weighted toward a Western vs Eastern analysis with most of the countries included being conducted in Western and Asian cultures.

A further limitation is the lack of item level data in order to investigate symptomatology. While this study does investigate the level of depressive symptoms, this was only using the studies' means. This gave a general value as to the level of depressive symptoms but did not provide any information as to the prevalence of the symptoms themselves. As mentioned previously, cultural variance in symptomatology may affect the mean depression score on various measurement tools. Past research is split as to whether there are cultural differences in depressive symptoms and due to the lack of item level data, conclusions cannot be made as to how symptoms may differ across cultures.

Despite these limitations, a clear strength in this study was its meta-analytic methodology. Through the use of a mixed model multi-level analysis this study not only investigated cultural difference in depression, but allowed for a large pooled sample of 92,098 participants from 30 countries; all taken from studies that took into consideration cultural differences with respect to data collection and analysis. Though the sample consisted predominately of English speaking ($k = 33$) and Asian ($k = 34$) nations, a significant portion of the sample consisted of Eastern European nations ($k = 14$), Western European nations ($k = 54$) and Latin American nations ($k = 9$) along with Nigeria, Turkey and Israel ($k = 7$), thus expanding the research into cultural differences in depression from the past binary West vs East mentality into a broader approach. This study also addressed methodological issues mentioned earlier, namely that previous studies investigating the prevalence and levels of depression utilise a wide array of measurement tools and typically select different countries to study, leading to inconclusive and contradictory results. The meta-analytic approach that focused on the mean scores of a single, widely used scale allows for a more standardized approach to investigating depression across cultures.

In addition, the meta-analytic methodology brought clarity and generalizability to previous research on cultural differences in depression. The previous research was typically more relativistic and comparative focusing on only one or a few cultures. This approach enables the use of indigenous and cultural psychology methodologies, and provides greater insight into the cultures and how they interact with depression. However, it does not factor in how these cultures rate on a global scale. The meta-analytic approach used in this study synthesised these smaller scale results allowing for a more comprehensive and systematic understanding of the relationship between depression and culture.

The current study also highlighted the usefulness of examining data from both the general population and the clinically depressed population and the utility of factoring in other

variables than the prevalence of MDD when studying depression across cultures. The SDS's ability to measure the level of depressive symptoms enabled the splitting of the data into both a clinical and a general population data set. This allowed for a deeper level of analysis, focusing not only on which moderators were significantly related to depression but also the level at which these moderators had an effect, whether clinically or sub-clinically.

Concluding Remarks

One of the main focus areas of this study was the investigation of possible links between depression and collectivism. This study found no significant results that might support such a link, though differences in the level of depressive symptoms between cultures, and a relationship between the level of depression and economic factors were found to be significant. Therefore it appears that collectivism, at least in isolation, does not account for current cross-cultural variance in the level of depressive symptoms in both the general population and the clinically depressed.

To address the limitations of this study, future research could use a longitudinal cross-cultural comparative methodology to investigate whether measurement tools of depression have functional equivalence in East Asian cultures, if East Asian cultures have significantly different MDD symptoms, and if the mean levels of depression in East Asian cultures over time are significantly different when compared to the rest of the world. Future research could also investigate whether the prevalence of the short allele version of the 5-HTTA gene in other collectivistic cultures accounts for any cultural variance in depression.

This study emphasizes the benefits of a meta-analytic method to investigate cross-cultural differences. Using a meta-analytic analysis of means allowed for studies conducted within a single country, or comparing two countries, to be useful for broader cross-cultural comparisons. Cultural variance in mental illness and culture bound syndromes have been brought to the forefront of psychology recently and the use of meta-analytic methodologies in

cross-cultural research allows for past research to be integrated, and generalised to a more global context. This study's results not only show significant differences in depression across cultures, but bring attention to missing areas of our understanding of depression, whether it be the focus on the prevalence of MDD, the paucity of information outside of the East vs. West context, or possible cultural variation in the conceptualisation and symptomatology of depression. Understanding which aspects of depression are culturally universal, and which are relative to unique cultural characteristics would allow for improved treatment, assessment, prevention and more educated discourse about depression and its causes. The findings of this study call for a renewed focus on cultural differences in depression and a re-examination of current theories as to why such differences exist.

References

- Agrell, B., & Dehlin, O. (1989). Comparison of six depression rating scales in geriatric stroke patients. *Stroke*, 20(9), 1190-1194.
- Ahmed, K., & Bhugra, D. (2007). Depression across ethnic minority cultures: diagnostic issues. *World Cult Psychiatry Research Review*, 2, 47-56.
- *Akinsulore, A., Aloba, O. O., Mapayi, B. M., Oloniniyi, I. O., Fatoye, F. O., & Makanjuola, R. O. A. (2014). Relationship between depressive symptoms and quality of life in Nigerian patients with schizophrenia. *Social Psychiatry and Psychiatric Epidemiology*, 49(8), 1191-1198.
- *Alciati, A., Starace, F., Scaramelli, B., Campaniello, M., Adriani, B., Mellado, C., & Cargnel, A. (2001). Has there been a decrease in the prevalence of mood disorders in HIV-seropositive individuals since the introduction of combination therapy? *European Psychiatry*, 16(8), 491-496.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Andrade, L., Caraveo-Anduaga, J. J., Berglund, P., Bijl, R. V., De Graaf, R., Vollebergh, W., . . . Wittchen, H. -. (2003). The epidemiology of major depressive episodes: Results from the international consortium of psychiatric epidemiology (ICPE) surveys. *International Journal of Methods in Psychiatric Research*, 12(1), 3-21.
- *André-Petersson, L., Elmståhl, S., Hagberg, B., Janzon, L., Reinprecht, F., & Steen, G. (2003). Is blood pressure at 68 an independent predictor of cognitive decline at 81? results from follow-up study 'men born in 1914', Malmö, Sweden. *Aging and Mental Health*, 7(1), 61-72.
- *Andriopoulos, P., Lotti-Lykousa, M., Pappa, E., Papadopoulos, A. A., & Niakas, D. (2013). Depression, quality of life and primary care: A cross-sectional study. *Journal of Epidemiology and Global Health*, 3(4), 245-252.

- Angst, J., & Dobler-Mikola, A. (1984). Do the diagnostic criteria determine the sex ratio in depression? *Journal of Affective Disorders*, 7(3-4), 189-198.
- Angst, J., Gamma, A., Gastpar, M., Lépine, J. -, Mendlewicz, J., & Tylee, A. (2002). Gender differences in depression: Epidemiological findings from the european DEPRES I and II studies. *European Archives of Psychiatry and Clinical Neuroscience*, 252(5), 201-209.
- *Annunziata, M. A., Muzzatti, B., Giovannini, L., Romito, F., Cormio, C., Mattioli, V., Barberio, D., Abate, V., De Falco, F., Mirabella, F., Picardi, A., Capocaccia, R., & Tirelli, U. (2015). Is long-term cancer survivors' quality of life comparable to that of the general population? An Italian study. *Supportive Care in Cancer*, 23(9), 2663-2668.
- *Antonogeorgos, G., Panagiotakos, D. B., Pitsavos, C., Papageorgiou, C., Chrysohoou, C., Papadimitriou, G. N., & Stefanadis, C. (2012). Understanding the role of depression and anxiety on cardiovascular disease risk, using structural equation modeling; the mediating effect of the mediterranean diet and physical activity: The ATTICA study. *Annals of Epidemiology*, 22(9), 630-637.
- *Anyfanti, P., Gavriilaki, E., Pyrpasopoulou, A., Triantafyllou, G., Triantafyllou, A., Chatzimichailidou, S., Gkaliagkousi, E., Aslandis, s., & Douma, S. (2016). Depression, anxiety, and quality of life in a large cohort of patients with rheumatic diseases: Common, yet undertreated. *Clinical Rheumatology*, 35(3), 733-739.
- *Aradilla-Herrero, A., Tomás-Sábado, J., & Gómez-Benito, J. (2014). Associations between emotional intelligence, depression and suicide risk in nursing students. *Nurse Education Today*, 34(4), 520-525.
- *Aragona, M., Bancheri, L., Perinelli, D., Tarsitani, L., Pizzimenti, A., Conte, A., & Inghilleri, M. (2005). Randomized double-blind comparison of serotonergic (citalopram) versus noradrenergic (reboxetine) reuptake inhibitors in outpatients with somatoform, DSM-IV-TR pain disorder. *European Journal of Pain*, 9(1), 33-38.

- *Aragonès, E., Piñol, J. L., & Labad, A. (2006). The overdiagnosis of depression in non-depressed patients in primary care. *Family Practice*, 23(3), 363-368.
- *Azibo, D. A. Y. (2013). Unmasking materialistic depression as a mental health problem: Its effect on depression and materialism in an African-United States undergraduate sample. *Journal of Affective Disorders*, 150(2), 623-628.
- Basco, M. R., Krebaum, S. R., & Rush, A. J. (1997). Outcome measures of depression
- *Bagalkot, T. R., Park, J. I., Kim, H. T., Kim, H. M., Kim, M. S., Yoon, M. S., . . . Chung, Y. C. (2014). Lifetime prevalence of and risk factors for suicidal ideation and suicide attempts in a Korean community sample. *Psychiatry (New York)*, 77(4), 360-373.
- Bahar, E., Henderson, A. S., & Mackinnon, A. J. (1992). An epidemiological study of mental health and socioeconomic conditions in Sumatera, Indonesia. *Acta Psychiatrica Scandinavica*, 85(4), 257-263.
- *Barefoot, J. C., Haney, T. L., Simpson, S. W., Blumenthal, J. A., & Williams Jr., R. B. (1990). Depression and the assessment of type A behavior in a clinical population. *Psychological Assessment*, 2(4), 483-485.
- Beck, A. T., & Alford, B. A. (2009). *Depression: Causes and treatment*. Philadelphia: University of Pennsylvania Press.
- Beck, A. T., & Beck, R. W. (1972). Screening depressed patients in family practice. A rapid technic. *Postgraduate Medicine*, 52(6), 81-85.
- Bhatt, A., Tomenson, B., & Benjamin, S. (1989). Transcultural patterns of somatization in primary care: A preliminary report. *Journal of Psychosomatic Research*, 33(6), 671-680.
- Bland, R. C. (1997). Epidemiology of affective disorders: A review. *Canadian Journal of Psychiatry*, 42(4), 367-377.
- Blazer, D., George, L. K., Landerman, R., Pennybacker, M., Melville, M. L., Woodbury, M., . . . Jordan, K. (1985). Psychiatric disorders: A Rural/Urban comparison. *Archives of General Psychiatry*, 42(7), 651-656.

Blau, F. D., Gielen, A. C., & Zimmermann, K. F. (2013). Gender, inequality, and wages.

Gender, inequality, and wages (pp. 1-576)

*Bitsika, V., & Sharpley, C. F. (2012). Comorbidity of anxiety-depression among Australian university students: Implications for student counsellors. *British Journal of Guidance and Counselling*, 40(4), 385-394.

*Bitsika, V., Sharpley, C. F., & Bell, R. (2009). The contribution of anxiety and depression to fatigue among a sample of Australian university students: Suggestions for university counsellors. *Counselling Psychology Quarterly*, 22(2), 243-255.

Boyd, R. & Richerson, P. J. (1985) *Culture and the evolutionary process*. Chicago, IL: The University of Chicago Press.

Brewer, P., & Venaik, S. (2011). Individualism-collectivism in Hofstede and GLOBE. *Journal of International Business Studies*, 42(3), 436-445.

*Brodaty, H., Cullen, B., Thompson, C., Mitchell, P., Parker, G., Wilhelm, K., . . . Malhi, G. (2005). Age and gender in the phenomenology of depression. *American Journal of Geriatric Psychiatry*, 13(7), 589-596.

Brown, C., Schulberg, H. C., & Madonia, M. J. (1996). Clinical presentations of major depression by African Americans and whites in primary medical care practice. *Journal of Affective Disorders*, 41(3), 181-191.

*Bruno, A., Micò, U., Lorusso, S., Cogliandro, N., Pandolfo, G., Caminiti, M., . . . Muscatello, M. R. A. (2013). Agomelatine in the treatment of fibromyalgia: A 12-week, open-label, uncontrolled preliminary study. *Journal of Clinical Psychopharmacology*, 33(4), 507-511.

Bryne, B. M., & Campbell, T. L. (1999). Cross-cultural comparisons and the presumption of equivalent measurement and theoretical structure: a look beneath the surface. *Journal of Cross-Cultural Psychology*, 30(1), 555-574.

- *Campo-Arias, A., Díaz-MARTÍNEZ, L. A., Rueda-Jaimes, G. E., Cadena, L. D. P., & Hernández, N. L. (2006). Validation of Zung's self-rating depression scale among the Colombian general population. *Social Behavior and Personality*, 34(1), 87-94.
- *Cantazaro, A., & Wei, M. (2010). Adult attachment, dependence, self-criticism, and depressive symptoms: A test of a mediational model. *Journal of Personality*, 78(4), 1135-1162.
- Caspi, A., & Moffitt, T. E. (2006). Gene-environment interactions in psychiatry: Joining forces with neuroscience. *Nature Reviews Neuroscience*, 7(7), 583-590.
- Cavalli-Sforza, L. L., & Feldman, M. W. (1981). Cultural transmission and evolution: A quantitative approach. *Monographs in Population Biology*, 16, 1-388.
- *Centanni, S., Di Marco, F., Castagna, F., Boveri, B., Casanova, F., & Piazzini, A. (2000). Psychological issues in the treatment of asthmatic patients. *Respiratory Medicine*, 94(8), 742-749.
- *Chagas, M. H. N., Tumas, V., Loureiro, S. R., Hallak, J. E. C., Trzesniak, C., de Sousa, J. P. M., . . . Crippa, J. A. S. (2010). Validity of a Brazilian version of the Zung self-rating depression scale for screening of depression in patients with parkinson's disease. *Parkinsonism and Related Disorders*, 16(1), 42-45.
- *Chagas, M. H. N., Tumas, V., Rodrigues, G. R., Machado-De-Sousa, J. P., Filho, A. S., Hallak, J. E. C., & Crippa, J. A. S. (2013). Validation and internal consistency of patient health questionnaire-9 for major depression in parkinson's disease. *Age and Ageing*, 42(5), 645-649.
- Cheng, T. A. (1989). Symptomatology of minor psychiatric morbidity: A crosscultural comparison. *Psychological Medicine*, 19(3), 697-708.
- *Chen, R., Chou, K, Huang, Y., Wang, T., Liu, S., & Ho, L. (2006). Effects of a SARS prevention programme in Taiwan on nursing staff's anxiety, depression and sleep quality: A longitudinal survey. *International Journal of Nursing Studies*, 43(2), 215-225.

- Chiao, J. Y. & Blizinsky, K. D. (2009) Culture-gene coevolution of individualism–collectivism and the serotonin transporter gene. *Proc. R. Soc. B* 277, 529–53.
- *Chida, F., Okayama, A., Nishi, N., & Sakai, A. (2004). Factor analysis of Zung scale scores in a Japanese general population. *Psychiatry and Clinical Neurosciences*, 58(4), 420–426.
- Chen, R., Copeland, J. R. M., & Wei, L. (1999). *A meta-analysis of epidemiological studies in depression of older people in the people's republic of china*
doi:10.1002/(SICI)1099-1166(199910)14:10<821::AID-GPS21>3.0.CO;2-0
- Ciagov. (2016). *Ciagov*. Retrieved 30 June, 2016, from
<https://www.cia.gov/library/publications/the-world-factbook/geos/tw.html>
- Chiu, E., & Hickie, I. (2004). Epidemiology of depression in the asia pacific region. *Australasian Psychiatry*, 12(SUPPL.)
- *Chrysohoou, C., Tsitsinakis, G., Vogiatzis, I., Cherouveim, E., Antoniou, C., Tsiantilas, A., . . . Stefanadis, C. (2014). High intensity, interval exercise improves quality of life of patients with chronic heart failure: A randomized controlled trial. *Quarterly Journal of Medicine*, 107(1), 25-32.
- *Clark, M. S., & Smith, D. S. (1999). Psychological correlates of outcome following rehabilitation from stroke. *Clinical Rehabilitation*, 13(2), 129-140.
- Comstock, G. W., & Helsing, K. J. (1977). Symptoms of depression in two communities. *Psychological Medicine*, 6(4), 551-563.
- Coyne, J. C. (1976). Depression and the response of others. *Journal of Abnormal Psychology*, 85(2), 186-193.
- Coyne, J. C., & Downey, G. (1991). Social factors and psychopathology: Stress, social support, and coping processes. *Annual Review of Psychology*, 42(1), 401-425.
- *Crawford, J., Cayley, C., Lovibond, P. F., Wilson, P. H., & Hartley, C. (2011). Percentile norms and accompanying interval estimates from an Australian general adult

- population sample for self-report mood scales (BAI, BDI, CRSD, CES-D, DASS, DASS-21, STAI-X, STAI-Y, SRDS, and SRAS). *Australian Psychologist*, 46(1), 3-14.
- Crittenden, K. S., Bae, H., un, C., Fugita, S. S., & Lamug, C. B. (1992). *A cross-cultural study of self-report depressive symptoms among college students*
doi:10.1177/0022022192232003
- Cronkite, R. C., & Moos, R. H. (1995). Life context, coping processes, and depression. In E. Beckman & W. R. Leber (Eds.), *Handbook of depression* (2nd ed., pp. 569-590). New York: Guilford.
- *Damasceno, A., Damasceno, B. P., & Cendes, F. (2015). Atrophy of reward-related striatal structures in fatigued MS patients is independent of physical disability. *Multiple Sclerosis*, 22(6), 822-829.
- *Day, C., Kane, R. T., & Roberts, C. (2003). The prevention of depressive symptoms in rural Australian women. *Journal of Community and Applied Social Psychology*, 13(1), 1-14.
- *de Tommaso, M., Shevel, E., Pecoraro, C., Sardaro, M., Losito, L., Lamberti, P., & Livrea, P. (2006). Topographic analysis of laser evoked potentials in chronic tension-type headache: Correlations with clinical features. *International Journal of Psychophysiology*, 62(1), 38-45.
- *Dekeyser, F. G., Thomas, S. A., Light, P., & Klassen, D. K. (1998). The effects of stress, anxiety and depression on markers of peritoneal immune function in CAPD patients: An exploratory study. *Psychology and Health*, 13(3), 387-398.
- *Demyttenaere, K., Bonte, L., Gheldof, M., Vervaeke, M., Meuleman, C., Vanderschuerem, D., & D'Hooghe, T. (1998). Coping style and depression level influence outcome in in vitro fertilization. *Fertility and Sterility*, 69(6), 1026-1033.
- Diegas, M., & Cardoso, R. M. (1986). Escalas de auto-avaliação da depressão (Beck e Zung) Estudos de correlação. *Psiquiatria clinica*, 7(2), 141-145.

- *Dixon, S. K., & Robinson Kurpius, S. E. (2008). Depression and college stress among university undergraduates: Do mattering and self-esteem make a difference? *Journal of College Student Development*, 49(5), 412-424.
- Ebert, D., & Martus, P. (1994). Somatization as a core symptom of melancholic type depression: evidence from a cross-cultural study. *Journal of Affective Disorders*, 32(4), 253-256.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, 6(3-4), 169-200.
- *Erdoğan, F. F., Öztürk, A., Ünalın, D., Mazicioğlu, M., Serin, I. S., & Tücer, B. (2012). Prevalence of and influencing factors for chronic headaches among pregnant women. *International Journal of Gynecology and Obstetrics*, 117(2), 144-147.
- *Erez, H. B., Weller, A., Vaisman, N., & Kreitler, S. (2012). The relationship of depression, anxiety and stress with low bone mineral density in post-menopausal women. *Archives of Osteoporosis*, 7(1-2), 247-255.
- Escobar, J. I., Gomez, J., & Tuason, V. B. (1983). Depressive phenomenology in north and South American patients. *American Journal of Psychiatry*, 140(1), 47-51.
- Ferrari, A. J., Charlson, F. J., Norman, R. E., Patten, S. B., Freedman, G., Murray, C. J. L., . . . Whiteford, H. A. (2013). Burden of depressive disorders by country, sex, age, and year: Findings from the global burden of disease study 2010. *PLoS Medicine*, 10(11).
- *Figueiredo-Ferraz, H., Gil-Monte, P. R., & Olivares-Faúndez, V. E. (2015). Influence of mobbing (workplace bullying) on depressive symptoms: A longitudinal study among employees working with people with intellectual disabilities. *Journal of Intellectual Disability Research*, 59(1), 39-47.
- Fischer, R. (2013). Belonging, status, or self-protection? Examining justice motives in a three-level cultural meta-analysis of organizational justice effects. *Cross-Cultural Research*, 47, 3-41.

- Fischer, R. & Boer, D. (2011). What is more important for national well-being: Money or autonomy? A meta-analysis of well-being, burnout and anxiety across 63 societies. *Journal of Personality and Social Psychology*, 101, 164-184.
- Fountoulakis, K., Iacovides, A., Samolis, S., Kleanthous, S., Kaprinis, S. G., St. Kaprinis, G., & Bech, P. (2001). Reliability, validity and psychometric properties of the Greek translation of the Zung depression rating scale. *BMC Psychiatry*, 1.
- Freeman, H. L. (1988). Psychiatric aspects of environmental stress. *International Journal of Mental Health*, 17(3), 13-23.
- *Fruewald, S., Loeffler-Stastka, H., Eher, R., Saletu, B., & Baumhacki, U. (2001). Depression and quality of life in multiple sclerosis. *Acta Neurologica Scandinavica*, 104(5), 257-261.
- Gabrys, J. B., & Peters, K. (1985). Reliability, discriminant and predictive validity of the Zung self-rating depression scale. *Psychological Reports*, 57(3 II), 1091-1096.
- *Gallegos-Orozco, J. F., Fuentes, A. P., Argueta, J. G., Pérez-Pruna, C., Hinojosa-Becerril, C., Sixtos-Alonso, M. S., . . . Kershenovich, D. (2003). Health-related quality of life and depression in patients with chronic hepatitis C. *Archives of Medical Research*, 34(2), 124-129.
- *Garcia, R. G., Zarruk, J. G., Guzman, J. C., Barrera, C., Pinzon, A., Trillos, E., . . . Tomaz, C. (2012). Sex differences in cardiac autonomic function of depressed young adults. *Biological Psychology*, 90(3), 179-185.
- *Gay, M. C., Hanin, D., & Luminet, O. (2008). Effectiveness of an hypnotic imagery intervention on reducing alexithymia. *Contemporary Hypnosis*, 25(1), 1-13.
- Geert-hofstede.com. (2016). *Geert-hofstede.com*. Retrieved 30 June, 2016, from <https://geert-hofstede.com/>
- Gelernter, J., Kranzler, H., & Cubells, J. F. (1997). Serotonin transporter protein (SLC6A4) allele and haplotype frequencies and linkage disequilibria in African- and European-

American and Japanese populations and in alcohol-dependent subjects. *Human Genetics*, 101(2), 243-246.

Ghatavi, K., Nicolson, R., MacDonald, C., Osher, S., & Levitt, A. (2002). Defining guilt in depression: A comparison of subjects with major depression, chronic medical illness and healthy controls. *Journal of Affective Disorders*, 68(2-3), 307-315.

*Giannaki, C. D., Hadjigeorgiou, G. M., Karatzaferi, C., Maridaki, M. D., Koutedakis, Y., Founta, P., . . . Sakkas, G. K. (2013). A single-blind randomized controlled trial to evaluate the effect of 6 months of progressive aerobic exercise training in patients with uraemic restless legs syndrome. *Nephrology Dialysis Transplantation*, 28(11), 2834-2840.

*Giltay, E. J., van Reedt Dortland, A. K. B., Nissinen, A., Giampaoli, S., van Veen, T., Zitman, F. G., . . . Kromhout, D. (2009). Serum cholesterol, apolipoprotein E genotype and depressive symptoms in elderly European men: The FINE study. *Journal of Affective Disorders*, 115(3), 471-477.

*Giovagnoli, A. R., Mascheroni, S., & Avanzini, G. (1997). Self-reporting of everyday memory in patients with epilepsy: Relation to neuropsychological, clinical, pathological and treatment factors. *Epilepsy Research*, 28(2), 119-128.

Golding, J. M., Gongla, P., & Brownell, A. (1988). Feasibility of validating survey self-reports of mental health service use. *American Journal of Community Psychology*, 16(1), 39-51

*Gonda, X., Fountoulakis, K. N., Juhasz, G., Rihmer, Z., Lazary, J., Laszik, A., Akiskal, H., Bagdy, G. (2009). Association of the s allele of the 5-HTTLPR with neuroticism-related traits and temperaments in a psychiatrically healthy population. *European Archives of Psychiatry and Clinical Neuroscience*, 259(2), 106-113.

*Gonda, X., Juhasz, G., Laszik, A., Rihmer, Z., & Bagdy, G. (2005). Subthreshold depression is linked to the functional polymorphism of the 5HT transporter gene. *Journal of Affective Disorders*, 87(2-3), 291-297.

- *Gonda, X., Juhasz, G., Laszik, A., Rihmer, Z., & Bagdy, G. (2005). Subthreshold depression is linked to the functional polymorphism of the 5HT transporter gene. *Journal of Affective Disorders*, 87(2-3), 291-297.
- *Gong, Y., Du, Y. S., Li, H. L., Zhang, X. Y., An, Y., & Wu, B. -. (2015). Parenting stress and affective symptoms in parents of autistic children. *Science China Life Sciences*, 58(10), 1036-1043.
- *Groleger, U., Tomori, M., & Kocmur, M. (2003). Suicidal ideation in adolescence - an indicator of actual risk? *Israel Journal of Psychiatry and Related Sciences*, 40(3), 202-208.
- *Guo, Y., Zhang, J., & Zhang, N. (2015). Character strengths and their influencing factors among nursing students in Changsha, China: The only-child versus non-only-child. *Archives of Psychiatric Nursing*, 29(6), 365-371.
- Hagerty, M. R. (2000). Social comparisons of income in one's community: Evidence from national surveys of income and happiness. *Journal of Personality and Social Psychology*, 78(4), 764-771.
- *Hassel, A. J., Danner, D., Schmitt, M., Nitschke, I., Rammelsberg, P., & Wahl, H. (2011). Oral health-related quality of life is linked with subjective well-being and depression in early old age. *Clinical Oral Investigations*, 15(5), 691-697.
- *Heaven, P. C. L., & Goldstein, M. (2001). Parental influences and mental health among some Australian youth: Crosscultural analysis. *Australian Journal of Psychology*, 53(3), 170-175.
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33(2-3), 61-83.
- Hennessy, K. D., & Reed, S. K. (1992). Validating self-reports of mental health service use in a chronic population. *Journal of Nervous and Mental Disease*, 180(6), 399-400.

- *Herbert, G. L., McCormack, V., & Callahan, J. L. (2010). An investigation of the object relations theory of depression. *Psychoanalytic Psychology*, 27(2), 219-234.
- Hofstede, G. (2001). *Culture's consequences: comparing values, behaviours, institutions and organizations across nations*. Thousand Oaks, CA: Sage Publications.
- House R.J. et al. (Eds). (2004), *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: Sage.
- Hwu, H., & Compton, W. M. (1994). Comparison of major epidemiological surveys using the diagnostic interview schedule. *International Review of Psychiatry*, 6(4), 309-327.
- *Ikenouchi-Sugita, A., Yoshimura, R., Sugita, K., Hori, H., Yamada, K., Sakaue, M., & Nakamura, J. (2013). The effects of a walking intervention on depressive feelings and social adaptation in healthy workers. *Journal of UOEH*, 35(1), 1-8.
- *Innamorati, M., Pompili, M., Lester, D., Tatarelli, R., & Girardi, P. (2008). Recreational drug use and suicidality among Italian young adults. *Journal of Addictive Diseases*, 27(4), 51-59.
- Jackson, S. W. (1986). *Melancholia and depression*. New Haven, CT: Yale University Press.
- Jackson-Triche, M. E., Greer Sullivan, J., Wells, K. B., Rogers, W., Camp, P., & Mazel, R. (2000). Depression and health-related quality of life in ethnic minorities seeking care in general medical settings. *Journal of Affective Disorders*, 58(2), 89-97.
- *Jang, J., Park, J., Oh, K., Lee, K., Kim, M. S., Yoon, M., . . . Chung, Y. (2014). Predictors of suicidal ideation in a community sample: Roles of anger, self-esteem, and depression. *Psychiatry Research*, 216(1), 74-81.
- *Jaracz, K., & Kozubski, W. (2003). Quality of life in stroke patients. *Acta Neurologica Scandinavica*, 107(5), 324-329.
- *Jaracz, K., Jaracz, J., Kozubski, W., & Rybakowski, J. K. (2002). Post-stroke quality of life and depression. *Acta Neuropsychiatrica*, 14(5), 219-225.

- *Joeng, J. R., & Turner, S. L. (2015). Mediators between self-criticism and depression: Fear of compassion, self-compassion, and importance to others. *Journal of Counseling Psychology*, 62(3), 453-463.
- *Joseph, S., Lewis, C. A., & Olsen, C. (1996). Convergent validity of the depression-happiness scale with measures of depression. *Journal of Clinical Psychology*, 52(5), 551-554.
- *Kamphuis, M. H., Geerlings, M. I., Tijhuis, M. A. R., Giampaoli, S., Nissinen, A., Grobbee, D. E., & Kromhout, D. (2007). Physical inactivity, depression, and risk of cardiovascular mortality. *Medicine and Science in Sports and Exercise*, 39(10), 1693-1699.
- Kashner, T. M., Suppes, T., Rush, A. J., & Altshuler, K. Z. (1999). Measuring use of outpatient care among mentally ill individuals: A comparison of self reports and provider records. *Evaluation and Program Planning*, 22(1), 31-39.
- Kessler, R. C., Abelson, J., Demler, O., Escobar, J. I., Gibbon, M., Guyer, M. E., . . . Zheng, H. (2004). Clinical calibration of DSM-IV diagnoses in the world mental health (WMH) version of the world health organization (WHO) composite international diagnostic interview (WMH-CIDI). *International Journal of Methods in Psychiatric Research*, 13(2), 122-139.
- Kessler, R. C., Birnbaum, H. G., Shahly, V., Bromet, E., Hwang, I., McLaughlin, K. A., . . . Stein, D. J. (2010). Age differences in the prevalence and co-morbidity of DSM-IV major depressive episodes: Results from the WHO world mental health survey initiative. *Depression and Anxiety*, 27(4), 351-364.
- Kessler, R. C., & Bromet, E. J. (2013). *The epidemiology of depression across cultures* doi:10.1146/annurev-publhealth-031912-114409
- Kessler, R. C., Zhao, S., Blazer, D. G., & Swartz, M. (1997). Prevalence, correlates, and course of minor depression and major depression in the national comorbidity survey. *Journal of Affective Disorders*, 45(1-2), 19-30.

- *Kim, H. S. (2010). Alcohol use and delinquent behavior among Korean adolescents. *Journal of Addictions Nursing*, 21(4), 225-234.
- Kim, S., Thibodeau, R., & Jorgensen, R. S. (2011). Shame, guilt, and depressive symptoms: A meta-analytic review. *Psychological Bulletin*, 137(1), 68-96.
- Kimura, B. (1967). Phenomenology of the guilt complex from a comparative psychiatric viewpoint. [Phänomenologie des Schuldgefühls in einer vergleichenden psychiatrischen Sicht.] *Bibliotheca Psychiatrica Et Neurologica*, 133, 54-65.
- *Kitagawa, R., Yasui-Furukori, N., Tsushima, T., Kaneko, S., & Fukuda, I. (2011). Depression increases the length of hospitalization for patients undergoing thoracic surgery: A preliminary study. *Psychosomatics*, 52(5), 428-432.
- Kessler, R. C., Abelson, J., Demler, O., Escobar, J. I., Gibbon, M., Guyer, M. E., . . . Zheng, H. (2004). Clinical calibration of DSM-IV diagnoses in the world mental health (WMH) version of the world health organization (WHO) composite international diagnostic interview (WMH-CIDI). *International Journal of Methods in Psychiatric Research*, 13(2), 122-139.
- Kessler, R. C., Birnbaum, H. G., Shahly, V., Bromet, E., Hwang, I., McLaughlin, K. A., . . . Stein, D. J. (2010). Age differences in the prevalence and co-morbidity of DSM-IV major depressive episodes: Results from the WHO world mental health survey initiative. *Depression and Anxiety*, 27(4), 351-364.
- Kessler, R. C., & Bromet, E. J. (2013). *The epidemiology of depression across cultures* doi:10.1146/annurev-publhealth-031912-114409
- Kessler, R. C., Zhao, S., Blazer, D. G., & Swartz, M. (1997). Prevalence, correlates, and course of minor depression and major depression in the national comorbidity survey. *Journal of Affective Disorders*, 45(1-2), 19-30.
- *Kim, H. S. (2010). Alcohol use and delinquent behavior among Korean adolescents. *Journal of Addictions Nursing*, 21(4), 225-234.

- Kim, S., Thibodeau, R., & Jorgensen, R. S. (2011). Shame, guilt, and depressive symptoms: A meta-analytic review. *Psychological Bulletin*, 137(1), 68-96.
- Kimura, B. (1967). Phenomenology of the guilt complex from a comparative psychiatric viewpoint. [Phänomenologie des Schuldserlebnisses in einer vergleichenden psychiatrischen Sicht.] *Bibliotheca Psychiatrica Et Neurologica*, 133, 54-65.
- *Kitagawa, R., Yasui-Furukori, N., Tsushima, T., Kaneko, S., & Fukuda, I. (2011). Depression increases the length of hospitalization for patients undergoing thoracic surgery: A preliminary study. *Psychosomatics*, 52(5), 428-432.
- *Kitamura, T., Hirano, H., Chen, Z., & Hirata, M. (2004). Factor structure of the zung self-rating depression scale in first-year university students in Japan. *Psychiatry Research*, 128(3), 281-287.
- *Kivelä, S. L., & Pakkala, K. (1986). Sex and age differences of factor pattern and reliability of the Zung self-rating depression scale in a Finnish elderly population. *Psychological Reports*, 59(2 Pt 1), 587-597.
- Kleinman, A. (2004). Culture and depression. *New England Journal of Medicine*, 351(10), 951-953.
- *Klemenc-Ketiš, Z., Kersnik, J., & Novak-Glavač, D. (2010). Determinants of depression and anxiety in family practice patients with comorbidities. *Wiener Klinische Wochenschrift*, 122(SUPPL. 2), 35-39.
- *Klemenc-Ketiš, Z., & Peterlin, B. (2013). Correlates of depression in the Slovenian working population. *Arhiv Za Higijenu Rada i Toksikologiju*, 64(4), 489-495.
- Kline, N. S. (1964). The practical management of depression. *JAMA: The Journal of the American Medical Association*, 190(8), 732-740.
- *Kobayashi, H., Yamazawa, R., Nemoto, T., Murakami, M., Kashima, H., & Mizuno, M. (2010). Correlation between attenuated psychotic experiences and depressive symptoms among Japanese students. *Early Intervention in Psychiatry*, 4(3), 200-205.

- *Kobayashi, H., Nemoto, T., Murakami, M., Kashima, H., & Mizuno, M. (2011). Lack of association between psychosis-like experiences and seeking help from professionals: A case-controlled study. *Schizophrenia Research*, 132(2-3), 208-212.
- Konstantopoulos, S., & Hedges, L. V. (2009). Analyzing effect sizes: Fixed-effects models. *The hand. of res. synthesis and meta-analysis*, 2nd ed. (pp. 279-293).
- *Krupitsky, E., Burakov, A., Romanova, T., Dunaevsky, I., Strassman, R., & Grinenko, A. (2002). Ketamine psychotherapy for heroin addiction: Immediate effects and two-year follow-up. *Journal of Substance Abuse Treatment*, 23(4), 273-283.
- *Krupitsky, E. M., Burakov, A. M., Dunaevsky, I. V., Romanova, T. N., Slavina, T. Y., & Grinenko, A. Y. (2007). Single versus repeated sessions of ketamine-assisted psychotherapy for people with heroin dependence. *Journal of Psychoactive Drugs*, 39(1), 13-19.
- *Kuhn, W., Heye, N., Muller, Th., Kraus, P., Klotz, P., Friedrich, B., . . .Przuntek, H. (1996). The motor performance test series in parkinson's disease is influenced by depression. *Journal of Neural Transmission*, 103(3), 349-354.
- *Lam, K., Marra, C., & Salzinger, K. (2005). Social reinforcement of somatic versus psychological description of depressive events. *Behaviour Research and Therapy*, 43(9), 1203-1218.
- *Lazary, J., Lazary, A., Gonda, X., Benko, A., Molnar, E., Juhasz, G., & Bagdy, G. (2008). New evidence for the association of the serotonin transporter gene (SLC6A4) haplotypes, threatening life events, and depressive phenotype. *Biological Psychiatry*, 64(6), 498-504.
- *Leonard, C. V. (1974). Depression and suicidality. *Journal of Consulting and Clinical Psychology*, 42(1), 98-104.

- *Leong, C. (2007). Predictive validity of the multicultural personality questionnaire: A longitudinal study on the socio-psychological adaptation of Asian undergraduates who took part in a study-abroad program. *International Journal of Intercultural Relations*, 31(5), 545-559.
- Leong, C. & Fischer, R. (2011). Is transformational leadership universal? A meta-analytical investigation of multifactor leadership questionnaire means across cultures. *Journal of Leadership and Organizational Studies*, 18, 164-174.
- *Leung, K., Lue, B., Lee, M., & Tang, L. (1998). Screening of depression in patients with chronic medical diseases in a primary care setting. *Family Practice*, 15(1), 67-75.
- Lewis-Fernandez, R., & Kleinman, A. (1994). Culture, personality and psychopathology. *Journal of Abnormal Psychology*, 103(1), 67-71.
- *Limbeek, J. v., Wouters, L., Kaplan, C. D., Geerlings, P. J., & Alem, V. v. (1992). Prevalence of psychopathology in drug-addicted Dutch. *Journal of Substance Abuse Treatment*, 9(1), 43-52.
- *Lin, C., Lu, M., Wong, J., & Chen, C. (2014). Comparison of physician-rating and self-rating scales for patients with major depressive disorder. *Journal of Clinical Psychopharmacology*, 34(6), 716-721.
- *Lin, C. H., Wang, F. C., Lin, S. C., Chen, C. C., & Huang, C. J. (2014). A comparison of inpatients with anxious depression to those with nonanxious depression. *Psychiatry Research*, 220(3), 855-860.
- Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.
- Liu, Q., Nagata, T., Shono, M., & Kitamura, T. (2009). The effects of adult attachment and life stress on daily depression: A sample of Japanese university students. *Journal of Clinical Psychology*, 65(7), 639-652.

- *Lobentanz, I. S., Asenbaum, S., Vass, K., Sauter, C., Klösch, G., Kollegger, H., Kristoferitsch, W., Zeitlhofer, J. (2004). Factors influencing quality of life in multiple sclerosis patients: Disability, depressive mood, fatigue and sleep quality. *Acta Neurologica Scandinavica*, 110(1), 6-13.
- Lutz, C. A. (1985). Depression and the translation of emotional worlds. In A. Kleinman & B. Good (Eds.), *Culture and depression: Studies in the anthropology and cross-cultural psychiatry of affect and disorder* (pp. 63-100). Berkeley and Los Angeles: University of California Press.
- *Luyten, P., Sabbe, B., Blatt, S. J., Meganck, S., Jansen, B., De Grave, C., . . . Corveleyn, J. (2007). Dependency and self-criticism: Relationship with major depressive disorder, severity of depression, and clinical presentation. *Depression and Anxiety*, 24(8), 586-596.
- Marsella, A. J. (1980) Depressive experience and disorder across cultures. In H.C. Traindis & J. G. Draguns (Eds.), *Handbook of cross-cultural psychology: Vol. 6. Psychopathology* (pp. 233-262). Boston: Allyn & Bacon
- *Matsunaga, H., Kiriike, N., Matsui, T., Iwasaki, Y., Koshimune, K., Ohya, K., & Stein, D. J. (2001). A comparative study of clinical features between pure checkers and pure washers categorized using a lifetime symptom rating method. *Psychiatry Research*, 105(3), 221-229.
- *Matsunaga, H., Kiriike, N., Matsui, T., Iwasaki, Y., & Stein, D. J. (2001). Taijin kyofusho: A form of social anxiety disorder that responds to serotonin reuptake inhibitors? *International Journal of Neuropsychopharmacology*, 4(3), 231-237.
- *Mbakwem, A. C., & Aina, O. F. (2008). Comparative study of depression in hospitalized and stable heart failure patients in an urban Nigerian teaching hospital. *General Hospital Psychiatry*, 30(5), 435-440.

- *McClure, K. S., Nezu, A. M., Nezu, C. M., O'Hea, E. L., & McMahon, C. (2012). Social problem solving and depression in couples coping with cancer. *Psycho-Oncology*, 21(1), 11-19.
- *Menter, A., Augustin, M., Signorovitch, J., Yu, A. P., Wu, E. Q., Gupta, S. R., Bao, Y., & Mulani, P. (2010). The effect of adalimumab on reducing depression symptoms in patients with moderate to severe psoriasis: A randomized clinical trial. *Journal of the American Academy of Dermatology*, 62(5), 812-818.
- Mezzich, J. E., & Raab, E. S. (1980). Depressive symptomatology across the americas. *Archives of General Psychiatry*, 37(7), 818-823.
- Milfont, T. L., Merry, S., Robinson, E., Denny, S., Crengle, S., & Ameratunga, S. (2008). Evaluating the short form of the reynolds adolescent depression scale in New Zealand adolescents. *Australian and New Zealand Journal of Psychiatry*, 42(11), 950-954.
- *Moriya, J., & Takahashi, Y. (2013). Depression and interpersonal stress: The mediating role of emotion regulation. *Motivation and Emotion*, 37(3), 600-608.
- *Mormont, E., Jamart, J., & Jacques, D. (2014). Symptoms of depression and anxiety after the disclosure of the diagnosis of alzheimer disease. *Journal of Geriatric Psychiatry and Neurology*, 27(4), 231-236.
- Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V., & Ustun, B. (2007). Depression, chronic diseases, and decrements in health: Results from the world health surveys. *Lancet*, 370(9590), 851-858.
- *Mozzetta, A., Antinone, V., Alfani, S., Neri, P., Bonda, P. G. F., Pasquini, P., . . . Picardi, A. (2008). Mental health in patients with systemic sclerosis: A controlled investigation. *Journal of the European Academy of Dermatology and Venereology*, 22(3), 336-340.

- *Mrochen, A., Marxreiter, F., Kohl, Z., Schlachetzki, J., Renner, B., Schenk, T., Winkler, J., Klucken, J. (2016). From sweet to sweat: Hedonic olfactory range is impaired in Parkinson's disease. *Parkinsonism and Related Disorders*, 22, 9-14.
- *Muris, P., Roelofs, J., Rassin, E., Franken, I., & Mayer, B. (2005). Mediating effects of rumination and worry on the links between neuroticism, anxiety and depression. *Personality and Individual Differences*, 39(6), 1105-1111.
- Naguib, C. (2015). *The Relationship between Inequality and GDP Growth: An Empirical Approach* (Vol. 631). LIS Working Paper No.
- Naughton, M. J., & Wiklund, I. (1993). A critical review of dimension-specific measures of health-related quality of life in cross-cultural research. *Quality of Life Research*, 2(6), 397-432.
- O'Connor, D. W., Rosewarne, R., & Bruce, A. (2001). Depression in primary care 1: Elderly patients' disclosure of depressive symptoms to their doctors. *International Psychogeriatrics*, 13(3), 359-365.
- *Oei, T. P., & McAlinden, N. M. (2014). Changes in quality of life following group CBT for anxiety and depression in a psychiatric outpatient clinic. *Psychiatry Research*, 220(3), 1012-1018.
- Okulate, G. T., & Jones, O. B. (2002). Two depression rating instruments in Nigerian patients. *The Nigerian Postgraduate Medical Journal*, 9(2), 74-78.
- *Ozdemir, H., Ergin, N., Selimoglu, K., & Bilgel, N. (2005). Postnatal depressive mood in Turkish women. *Psychology, Health and Medicine*, 10(1), 96-107.
- *Palomar-Lever, J., & Victorio-Estrada, A. (2012). Factors that influence emotional disturbance in adults living in extreme poverty. *Scandinavian Journal of Psychology*, 53(2), 158-164.

- *Papandreou, C. (2013). Independent associations between fatty acids and sleep quality among obese patients with obstructive sleep apnoea syndrome. *Journal of Sleep Research*, 22(5), 569-572.
- Parker, G., Gladstone, G., & Kuan Tsee Chee. (2001). Depression in the planet's largest ethnic group: The Chinese. *American Journal of Psychiatry*, 158(6), 857-864.
- *Parissis, J. T., Adamopoulos, S., Rigas, A., Kostakis, G., Karatzas, D., Venetsanou, K., & Kremastinos, D. T. (2004). Comparison of circulating proinflammatory cytokines and soluble apoptosis mediators in patients with chronic heart failure with versus without symptoms of depression. *American Journal of Cardiology*, 94(10), 1326-1328.
- *Passik, S. D., Kirsh, K. L., Donaghy, K. B., Theobald, D. E., Lundberg, J. C., Holtsclaw, E., & Dugan Jr., W. M. (2001). An attempt to employ the Zung self-rating depression scale as a 'lab test' to trigger follow-up in ambulatory oncology clinics: Criterion validity and detection. *Journal of Pain and Symptom Management*, 21(4), 273-281.
- Passik, S. D., Lundberg, J. C., Rosenfeld, B., Kirsh, K. L., Donaghy, K., Theobald, D., . . . Dugan, W. (2000). Factor analysis of the Zung self-rating depression scale in a large ambulatory oncology sample. *Psychosomatics*, 41(2), 121-127.
- Patel, V., Araya, R., De Lima, M., Ludermir, A., & Todd, C. (1999). Women, poverty and common mental disorders in four restructuring societies. *Social Science and Medicine*, 49(11), 1461-1471.
- *Payne, R., & Jahoda, A. (2004). The glasgow social self-efficacy scale - A new scale for measuring social self-efficacy in people with intellectual disability. *Clinical Psychology and Psychotherapy*, 11(4), 265-274.
- *Phillips, W. J., & Hine, D. W. (2013). Exploring the factor structure of implicit and explicit cognitions associated with depression. *Assessment*, 20(4), 474-483.

- *Piñerua-Shuhaibar, L., Prieto-Rincon, D., Ferrer, A., Bonilla, E., Maixner, W., & Suarez-Roca, H. (1999). Reduced tolerance and cardiovascular response to ischemic pain in minor depression. *Journal of Affective Disorders*, 56(2-3), 119-126.
- *Piñerua-Shuhaibar, L., Villalobos, N., Delgado, N., Rubio, M. A., & Suarez-Roca, H. (2011). Enhanced Central Thermal Nociception in Mildly Depressed nonpatients and Transiently Sad Healthy Subjects. *Journal of Pain*, 12(3), 360-369.
- *Pitkälä, K., Kähönen-Väre, M., Valvanne, J., Strandberg, T. E., & Tilvis, R. S. (2003). Long-term changes in mood of an aged population: Repeated Zung-tests during a 10-year follow-up. *Archives of Gerontology and Geriatrics*, 36(2), 185-195.
- *Pluck, G., Lee, K., Lauder, H. E., Fox, J. M., Spence, S. A., & Parks, R. W. (2008). Time perspective, depression, and substance misuse among the homeless. *Journal of Psychology: Interdisciplinary and Applied*, 142(2), 159-168.
- *Podlipný, J., Hess, Z., Vrzalová, J., Rosolová, H., Beran, J., & Petrlová, B. (2010). Lower serum levels of interleukin-6 in a population sample with symptoms of depression than in a population sample without symptoms of depression. *Physiological Research*, 59(1), 121-126.
- *Polaino, A., & Senra, C. (1991). Measurement of depression: Comparison between self-reports and clinical assessments of depressed outpatients. *Journal of Psychopathology and Behavioral Assessment*, 13(4), 313-324.
- Powell, R. (2003). Psychometric properties of the beck depression inventory and the Zung self rating depression scale in adults with mental retardation. *Mental Retardation*, 41(2), 88-95.
- *Qi, H., Ning, Y., Li, J., Guo, S., Chi, M., Gao, M., . . . Wu, K. (2014). Gray matter volume abnormalities in depressive patients with and without anxiety disorders. *Medicine (United States)*, 93(29), e345.

- Prina, A. M., Deeg, D., Brayne, C., Beekman, A., & Huisman, M. (2012). The association between depressive symptoms and non-psychiatric hospitalisation in older adults. *PLoS ONE*, 7(4).
- Quandlcom. (2016). *Quandlcom*. Retrieved 30 June, 2016, from <https://www.quandl.com/collections/demography/gini-index-by-country>
- Radford, M. H. B., Nakane, Y., Ohta, Y., Mann, L., & Kalucy, R. S. (1991). Decision making in clinically depressed patients: A transcultural social psychological study. *Journal of Nervous and Mental Disease*, 179(12), 711-719.
- *Raffaele, R., Rampello, L., Vecchio, I., Tornali, C., & Malaguarnera, M. (1996). Trazodone therapy of the post-stroke depression. *Archives of Gerontology and Geriatrics*, 22(SUPPL.1), 217-220.
- Raguram, R., Weiss, M. G., Channabasavanna, S. M., & Devins, G. M. (1996). Stigma, depression, and somatization in south India. *American Journal of Psychiatry*, 153(8), 1043-1049.
- Rao, A. V. (1973). Depressive illness and guilt in Indian culture. *Indian Journal of Psychiatry*, 15(3), 231-236.
- *Rawtaer, I., Mahendran, R., Yu, J., Fam, J., Feng, L., & Kua, E. H. (2015). Psychosocial interventions with art, music, tai chi and mindfulness for subsyndromal depression and anxiety in older adults: A naturalistic study in Singapore. *Asia-Pacific Psychiatry*, 7(3), 240-250.
- *Rektorová, I., Rektor, I., Bareš, M., Dostál, V., Ehler, E., Fanfrdlová, Z., . . . Velísková, J. (2003). Pramipexole and pergolide in the treatment of depression in parkinson's disease: A national multicentre prospective randomized study. *European Journal of Neurology*, 10(4), 399-406.
- *Revicki, D. A., & May, H. J. (1985). Occupational stress, social support, and depression. *Health Psychology*, 4(1), 61-77.

- *Riley, G. A. (2007). Stress and depression in family carers following traumatic brain injury: The influence of beliefs about difficult behaviours. *Clinical Rehabilitation*, 21(1), 82-88.
- *Rius-Ottenheim, N., Houben, J. M. J., Kromhout, D., Kafatos, A., Van Der Mast, R. C., Zitman, F. G., . . . Giltay, E. J. (2012). Telomere length and mental well-being in elderly men from the Netherlands and Greece. *Behavior Genetics*, 42(2), 278-286.
- *Romera, I., Delgado-Cohen, H., Perez, T., Caballero, L., & Gilaberte, I. (2008). Factor analysis of the Zung self-rating depression scale in a large sample of patients with major depressive disorder in primary care. *BMC Psychiatry*, 8.
- *Romito, F., Cormio, C., Giotta, F., Colucci, G., & Mattioli, V. (2012). Quality of life, fatigue and depression in Italian long-term breast cancer survivors. *Supportive Care in Cancer*, 20(11), 2941-2948.
- *Sakamoto, S., Kijima, N., Tomoda, A., & Kambara, M. (1998). Factor structures of the zung self-rating depression scale (SDS) for undergraduates. *Journal of Clinical Psychology*, 54(4), 477-487.
- *Salter, J. R. (1985). Gynaecological symptoms and psychological distress in potential hysterectomy patients. *Journal of Psychosomatic Research*, 29(2), 155-159.
- Sato, T., & Takeichi, M. (1993). Lifetime prevalence of specific psychiatric disorders in a general medicine clinic. *General Hospital Psychiatry*, 15(4), 224-233.
- *Sayar, K., Kose, S., Acar, B., Ak, I., & Reeves, R. A. (2004). Predictors of suicidal behavior in a sample of Turkish suicide attempters. *Death Studies*, 28(2), 137-150.
- *Schaefer, A., Brown, J., Watson, C. G., Plemel, D., DeMotts, J., Howard, M. T., . . . Anderson, D. (1985). Comparison of the validities of the Beck, Zung, and MMPI depression scales. *Journal of Consulting and Clinical Psychology*, 53(3), 415-418.

- Schrag, A., Barone, P., Brown, R. G., Leentjens, A. F. G., McDonald, W. M., Starkstein, S., . . . Goetz, C. G. (2007). Depression rating scales in parkinson's disease: Critique and recommendations. *Movement Disorders*, 22(8), 1077-1092.
- *Sehlen, S., Lenk, M., Herschbach, P., Aydemir, U., Dellian, M., Schymura, B., Hollenhorst, H., Dühmke, E. (2003). Depressive symptoms during and after radiotherapy for head and neck cancer. *Head and Neck*, 25(12), 1004-1018.
- *Seidel, S., Hartl, T., Weber, M., Matterey, S., Paul, A., Riederer, F., . . . Wöber, C. (2009). Quality of sleep, fatigue and daytime sleepiness in migraine - A controlled study. *Cephalalgia*, 29(6), 662-669.
- *Selič, P., Unger, J. D., Pesjak, K., & Kersnik, J. (2013). The factors associated with anxiety and depression in Slovenian armed forces members on a peacekeeping mission in the western Balkans. *Zdravstveno Varstvo*, 52(3), 191-200.
- Sen, S., Burmeister, M., & Ghosh, D. (2004). Meta-analysis of the association between a serotonin transporter promoter polymorphism (5-HTTLPR) and anxiety-related personality traits. *American Journal of Medical Genetics - Neuropsychiatric Genetics*, 127 B(1), 85-89.
- *Sharpley, C. F., Bitsika, V., & Christie, D. H. R. (2013). Do prostate cancer patients suffer more from depressed mood or anhedonia? *Psycho-Oncology*, 22(8), 1718-1723.
- *Shinba, T. (2014). Altered autonomic activity and reactivity in depression revealed by heart-rate variability measurement during rest and task conditions. *Psychiatry and Clinical Neurosciences*, 68(3), 225-233.
- Shweder, R. (1985). Menstrual pollution, soul loss, and the comparative study of emotions. In A. Kleinman & B. Good (Eds.), *Culture and depression: Studies in the anthropology and cross-cultural psychiatry of affect and disorder* (pp. 134-152). Berkeley and Los Angeles: University of California Press.

- *Silverplats, K., Lind, B., Zoëga, B., Halldin, K., Gellerstedt, M., Brisby, H., & Rutberg, L. (2010). Clinical factors of importance for outcome after lumbar disc herniation surgery: Long-term follow-up. *European Spine Journal*, 19(9), 1459-1467.
- Simon, G. E., VonKorff, M., Piccinelli, M., Fullerton, C., & Ormel, J. (1999). An international study of the relation between somatic symptoms and depression. *New England Journal of Medicine*, 341(18), 1329-1335.
- Sinha, J. B. P., Daftuar, C. N., Gupta, R. K., Mishra, R. C., Jayseetha, R., Jha, S. S., . . . Vijayakumar, V. S. R. (1994). Regional similarities and differences in people's beliefs, practices and preferences. *Psychology & Developing Societies*, 6(2), 131-149.
- *Slovacek, L., Slovackova, B., Hrstka, Z., & Priester, P. (2010). Incidence and relevance of depression among palliative care female inpatients. *European Journal of Cancer Care*, 19(5).
- Sow, I. (1980). *Anthropological structures of madness in Black Africa*. New York: International Universities Press.
- *Spyropoulou, A. C., Papageorgiou, C., Markopoulos, C., Christodoulou, G. N., & Soldatos, K. R. (2008). Depressive symptomatology correlates with phantom breast syndrome in mastectomized women. *European Archives of Psychiatry and Clinical Neuroscience*, 258(3), 165-170.
- *Steinig, J., Reess, T., Klösch, G., Sauter, C., Zeitlhofer, J., & Happe, S. (2013). Personality traits in patients with restless legs syndrome. *Somnologie*, 17(4), 281-283.
- Stephoe, A., Tsuda, A., Tanaka, Y., & Wardle, J. (2007). Depressive symptoms, socio-economic background, sense of control, and cultural factors in university students from 23 countries. *International Journal of Behavioral Medicine*, 14(2), 97-107.
- *Swoboda, J. S., Dowd, E. T., & Wise, S. L. (1990). Reframing and restraining directives in the treatment of clinical depression. *Journal of Counselling Psychology*, 37(3), 254-260.

- Szabo, A., Milfont, T. L., Merry, S. N., Robinson, E. M., Crengle, S., Ameratunga, S. N., & Denny, S. J. (2014). Equivalence of the short form of the reynolds adolescent depression scale across groups. *Journal of Clinical Child and Adolescent Psychology*, 43(4), 592-600.
- Szyncer, D., Takemura, K., Delton, A. W., Sato, K., Robertson, T., Cosmides, L., & Tooby, J. (2012). Cross-cultural differences and similarities in proneness to shame: An adaptationist and ecological approach. *Evolutionary Psychology*, 10(2), 352-370.
- *Takahashi, Y., Roberts, B. W., Yamagata, S., & Kijima, N. (2015). Personality traits show differential relations with anxiety and depression in a nonclinical sample. *Psychologia*, 58(1), 15-26.
- Tanaka-Matsumi, J., Seiden, D. Y., & Lam, K. (2001). Translating cultural observations into psychotherapy: A functional approach. In J. F. Schumaker & T. Ward (Eds.), *Cognition, Culture and Psychopathology* (pp. 193-212). Westport, CT: Praeger.
- *Tanaka-Matsumi, J., & Kameoka, V. A. (1986). Reliabilities and concurrent validities of popular self-report measures of depression, anxiety, and social desirability. *Journal of Consulting and Clinical Psychology*, 54(3), 328-333.
- Tanaka-Matsumi, J., & Marsella, A. J. (1976). Cross-cultural variations in the phenomenological experience of depression: I. word association studies. *Journal of Cross-Cultural Psychology*, 7(4), 379-396.
- *Tang, D., Li-Tsang, C. W. P., Au, R. K. C., Li, K., Yi, X., Liao, L., Cao, H., Feng, Y., & Liu, C. (2016). Functional outcomes of burn patients with or without rehabilitation in mainland china. *Hong Kong Journal of Occupational Therapy*, 26, 15-23.
- *Tang, J., Zhang, Y., Li, Y., Liu, L., Liu, X., Zeng, H., Xiang, D., Li, C. R., & Lee, T. L. (2014). Clinical characteristics and diagnostic confirmation of internet addiction in secondary school students in Wuhan, China. *Psychiatry and Clinical Neurosciences*, 68(6), 471-478.

- Tangney, J. P. E., & Fischer, K. W. (1995). *Self-conscious emotions: The psychology of shame, guilt, embarrassment, and pride*. Guilford Press.
- *Tao, C., Yongyi, B., Zongfu, M., Rappe, P., Edwards, G. D., & Shinfuku, N. (2002). Identifying factors influencing mental health development of college students in China. *Social Behavior and Personality*, 30(6), 547-560.
- *Tecchio, C., Bonetto, C., Bertani, M., Cristofalo, D., Lasalvia, A., Nichele, I., . . . Pizzolo, G. (2013). Predictors of anxiety and depression in hematopoietic stem cell transplant patients during protective isolation. *Psycho-Oncology*, 22(8), 1790-1797.
- Thornicroft, G., & Sartorius, N. (1993). The course and outcome of depression in different cultures: 10-year follow-up of the WHO collaborative study on the assessment of depressive disorders. *Psychological Medicine*, 23(4), 1023-1032.
- *Thurber, S., Snow, M., & Honts, C. R. (2002). The Zung self-rating depression scale: Convergent validity and diagnostic discrimination. *Assessment*, 9(4), 401-405.
- *Timonen, L., Rantanen, T., Timonen, T. E., & Sulkava, R. (2002). Effects of a group-based exercise program on the mood state of frail older women after discharge from hospital. *International Journal of Geriatric Psychiatry*, 17(12), 1106-1111.
- *Tramonti, F., Bongioanni, P., Di Bernardo, C., Davitti, S., & Rossi, B. (2012). Quality of life of patients with amyotrophic lateral sclerosis. *Psychology, Health and Medicine*, 17(5), 621-628.
- *Trento, M., Raballo, M., Trevisan, M., Sicuro, J., Passera, P., Cirio, L., . . . Porta, M. (2012). A cross-sectional survey of depression, anxiety, and cognitive function in patients with type 2 diabetes. *Acta Diabetologica*, 49(3), 199-203.
- Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality*, 69(6), 907-924.

- Tsai, J. L., & Chentsova-Dutton, Y. (2002). Understanding depression across cultures. In I. H. Gotlib & C. Hammen (Eds.), *Handbook of depression* (2nd ed., pp. 467–491). New York: Guilford.
- *Ukawa, S., Yuasa, M., Ikeno, T., Ikoma, K., & Kishi, R. (2012). The effect of a functioning improvement tool home visit program on instrumental activities of daily living and depressive status in older people. *International Journal of Geriatric Psychiatry*, 27(11), 1206-1208.
- *Van Den Brink, C. L., Tijhuis, M., Van Den Bos, G. A. M., Giampaoli, S., Nissinen, A., & Kromhout, D. (2005). The contribution of self-rated health and depressive symptoms to disability severity as a predictor of 10-year mortality in European elderly men. *American Journal of Public Health*, 95(11), 2029-2034.
- Van Hemert, D.A., Van de Vijver, F.J.R., & Poortinga, Y.H. (2002). The Beck Depression Inventory as a measure of subjective well –being: a cross-national study. *Journal of Happiness Studies*, 3, 257-286.
- *Van Peski-Oosterbaan, A. S., Spinhoven, P., Van Der Does, A. J. W., Willems, L. N. A., & Sterk, P. J. (1996). Is there a specific relationship between asthma and panic disorder? *Behaviour Research and Therapy*, 34(4), 333-340.
- *Vencill, J. A., Tebbe, E. A., & Garos, S. (2015). It's not the size of the boat or the motion of the ocean: The role of self-objectification, appearance anxiety, and depression in female sexual functioning. *Psychology of Women Quarterly*, 39(4), 471-483.
- *Vignatelli, L., Plazzi, G., Peschechera, F., Delaj, L., & D'Alessandro, R. (2011). A 5-year prospective cohort study on health-related quality of life in patients with narcolepsy. *Sleep Medicine*, 12(1), 19-23.
- *Wang, W., Li, J., Hu, F., Wang, R., Hong, Z., He, L., & Zhou, D. (2016). Anti-NMDA receptor encephalitis: Clinical characteristics, predictors of outcome and the knowledge gap in southwest china. *European Journal of Neurology*, 23(3), 621-629.

- Ward, C., Leong, C., & Low, M. (2004). Personality and sojourner adjustment: An exploration of the big five and the cultural fit proposition. *Journal of Cross-Cultural Psychology*, 35(2), 137-151.
- *Watanabe, C., Okumura, J., Chiu, T., & Wakai, S. (2004). Social support and depressive symptoms among displaced older adults following the 1999 Taiwan earthquake. *Journal of Traumatic Stress*, 17(1), 63-67.
- Weich, S., Lewis, G., & Jenkins, S. P. (2001). Income inequality and the prevalence of common mental disorders in Britain. *British Journal of Psychiatry*, 178(MARCH.), 222-227.
- Weissman, M. M., Bland, R. C., Canino, G. J., Faravelli, C., Greenwald, S., Hwu, H., . . . Yeh, E. (1996). Cross-national epidemiology of major depression and bipolar disorder. *Journal of the American Medical Association*, 276(4), 293-299.
- WHO; Lopez, A. D., Mathers, C. D., & Ezzati, M. (2002). (Eds.). Global burden of disease and risk factors. Geneva, World Health Organisation, 2002
- *Wojciechowski, F. L., Strik, J. J. M. H., Falger, P., Lousberg, R., & Honig, A. (2000). The relationship between depressive and vital exhaustion symptomatology post-myocardial infarction. *Acta Psychiatrica Scandinavica*, 102(5), 359-365.
- Worldbankorg. (2016). *Worldbankorg*. Retrieved 30 June, 2016, from <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>.
- World Health Organization. (1983). *Depressive disorders in different cultures: Report of the WHO collaborative study of standardized assessment of depressive disorders*. Geneva: Author.
- *Wright, F., O'Leary, J., & Balkin, J. (1989). Shame, guilt, narcissism, and depression: Correlates and sex differences. *Psychoanalytic Psychology*, 6(2), 217-230.

- Xia, L., Xu, X., Hollon, S. D., & Zhang, J. (2014). The relation of self-supporting personality, big five personality and depression. *Current Psychology*, 33(4), 630-643.
- *Yagi, A., Nishio, Y., Ugi, S., Kawai, H., Uzu, T., Imai, M., . . . Maegawa, H. (2011). The role of sleep disturbance and depression in patients with type 2 diabetes. *Diabetology International*, 2(2), 79-85.
- Yen, S., Robins, C. J., & Lin, N. (2000). A cross-cultural comparison of depressive symptom manifestation: China and the United States. *Journal of Consulting and Clinical Psychology*, 68(6), 993-999.
- Youn, G., Knight, B. G., Jeong, H. S., & Benton, D. (1999). Differences in familism values and caregiving outcomes among Korean, Korean American, and White American dementia caregivers. *Psychology and Aging*, 14(3), 355.
- *Yu, S., Zhao, Q., Wu, P., Qin, M., Huang, H., Cui, H., & Huang, C. (2012). Effect of anxiety and depression on the recurrence of paroxysmal atrial fibrillation after circumferential pulmonary vein ablation. *Journal of Cardiovascular Electrophysiology*, 23.
- Zheng, Y., Wei, L., Lianggue, G., Guochen, Z., & Chenggue, W. (1988). Applicability of the Chinese beck depression inventory. *Comprehensive Psychiatry*, 29(5), 484-489.
- Zung, W. W. K. (1965). A self-rating depression scale. *Archives of General Psychiatry*

Appendix A: Description of Studies in the Meta-Analysis

Table 2

Description of studies in the meta-analysis

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
Akinsulore et al. (2014)	Nigeria	Other Diagnosis	100	Yoruba	43.36	12.32
Alicati et al. (2001)	Italy	Other Diagnosis	94	Italian	35.90	9.30
André-Petersson et al. (2015)	Sweden	1. Other Diagnosis	24	Swedish	48.00	9.00
		2. Other Diagnosis	73	Swedish	45.00	8.00
		3. Other Diagnosis	46	Swedish	43.00	7.00
		4. Other Diagnosis	25	Swedish	41.00	7.00
Andriopoulos, Lotti-Lykousa, Pappa, Papadopoulos, & Niakas (2013)	Greece	Student	500	Greek	45.80	9.56
Annunziata et al. (2015)	Italy	Other Diagnosis	314	Italian	45.70	12.50
Antonogeorgos et al. (2012)	Greece	1. General Population	804	Greek	43.75	8.75
		2. Diagnosed with Depression	49	Greek	47.50	11.25
Anyfanti et al. (2016)		Other Diagnosis	514	Greek	41.90	8.90
Aradilla-Herrero, Tomás-Sábado, & Gómez-Benito (2014)	Spain	Student	93	Spanish	48.79	8.71
Aragona et al. (2005)	Italy	1. Other Diagnosis	14	Italian	39.40	11.70
		2. Other Diagnosis	15	Italian	45.50	10.70
Aragonès, Piñol, & Labad (2006)	Spain	1. Other Diagnosis	111	Spanish	48.10	10.60
		2. Other Diagnosis	75	Spanish	56.50	10.00
Azibo (2013)	USA	1. Student	128	English	37.92*	7.77
		2. Student	16	English	43.34*	8.01
Bagalkot et al. (2014)	South Korea	General Population	2964	Korean	42.90	8.40

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
Barefoot et al. (1990)	USA	Other Diagnosis	2066	English	47.30	10.10
Bitsika & Sharpley (2012)	Australia	Student	398	English	47.26	10.88
Bitsika, Sharpley, & Bell (2009)	Australia	Student	200	English	45.53	10.73
Brodaty et al. (2005)	Australia	1. Diagnosed with Depression	357	English	56.00	8.80
		2. Diagnosed with Depression	123	English	53.40	9.50
Bruno et al. (2012)	Italy	Other Diagnosis	15	Italian	56.80	9.12
Campo-Arias et al. (2006)	Columbia	General Population	266	Spanish	45.63	9.10
Cantazaro & Wei (2010)	USA	Student	424	English	45.41	10.13
Centanni et al. (2000)	Italy	1. General Population	40	Italian	39.88	9.56
		2. Other Diagnosis	40	Italian	41.25	9.56
		3. Other Diagnosis	80	Italian	45.75	9.56
Chagas et al. (2010)	Brazil	1. Elderly	60	Portuguese	46.23	10.14
		2. Diagnosed with Depression	18	Portuguese	62.01	7.93
Chagas et al. (2013)	Brazil	1. Other Diagnosis	82	Portuguese	46.69	8.08
		2. Diagnosed with Depression	28	Portuguese	62.96	7.66
Chen et al. (2006)	Taiwan	General Population	116	Chinese	61.00	9.20
Chida, Okayama, Nichi, & Sakai (2004)	Japan	General Population	5547	Japanese	49.00	9.75
Chrysohoou et al. (2014)	Greece	1. Other Diagnosis	33	Greek	46.25	10.00
		2. Other Diagnosis	39	Greek	46.25	10.00
Clark & Smith (1999)	Australia	Elderly	60	English	49.70	12.40
Crawford, Cayley, Lovibond, Wilson, & Hartley (2011)	Australia	General Population	759	English	42.70	11.39
Damasceno, Damasceno, & Cendes (2016)	Brazil	Other Diagnosis	49	Portuguese	38.68*	10.33
Day, Kane, & Roberts (2003)	Australia	1. General Population	38	English	47.44	8.59

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
de Tommaso et al. (2006)	Italy	2. General Population	38	English	47.14	9.90
		3. General Population	20	English	47.44	9.79
		1. General Population	12	Italian	34.38*	12.25
		2. Other Diagnosis	18	Italian	45.25*	6.13
Dekeyser, Thomas, Light, & Klassen (1998)	Israel	Other Diagnosis	32	Hebrew	60.20	14.09
Demyttenaere et al. (1998)	Belgium	Other Diagnosis	98	Dutch	52.50	9.80
Dixon & Kurpius (2008)	USA	Student	455	English	48.00	10.00
Erdoğan et al. (2012)	Turkey	1. General Population	1114	Turkish	41.50	9.56
		2. Other Diagnosis	243	Turkish	43.00	9.56
Erez, Weller, Vaisman, & Kreitler (2012)	Israel	Other Diagnosis	135	Hebrew	44.80	10.24
Figueiredo-Ferraz, Gil-Monte, & Olivares-Faundez (2015)	Spain	General Population	175	Spanish	45.41	9.56
Fruewald, Loeffler- Stastka, Eher, Saletu, & Baumhacki (2001)	Austria	Other Diagnosis	60	Not Specified	39.40	8.50
Gallegos-Orcozco et al. (2003)	Mexico	1. Other Diagnosis	97	Spanish	52.88	14.88
		2. Other Diagnosis	60	Spanish	54.88	12.25
Garcia et al. (2012)	Columbia	1. General Population	50	Spanish	34.90	5.80
		2. Diagnosed with Depression	50	Spanish	62.20	8.20
Gay, Hanin, & Luminet (2008)	Belgium	1. Student	14	Not Specified	42.07	9.56
		2. Student	17	Not Specified	42.24	9.56
Giannaki et al. (2013)	Greece	1. Other Diagnosis	123	Greek	44.70	12.70
		2. Other Diagnosis	123	Greek	45.10	6.50
Giltay et al. (2009)	1. Finland	1. Elderly	435	Finnish	47.14	10.50
	2. The Netherlands	2. Elderly	418	Dutch	43.10	9.80
	3. Italy	3. Elderly	236	Italian	49.80	11.40

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
Giovagnoli, Mascheroni, & Avanzini (1997)	Italy	1. General Population	57	Italian	40.59	9.49
		2. Other Diagnosis	100	Italian	49.64	12.51
Gonda et al. (2009)	Hungary	General Population	62	Hungarian	34.42	9.56
		General Population	83	Hungarian	37.63	9.56
		General Population	24	Hungarian	37.96	9.56
Gonda, Juhasz, Laszik, Rihmer, & Bagby (2005)	Hungary	General Population	128	Hungarian	35.81	9.56
Gong et al. (2015)	China	1. General Population	75	Chinese	41.28	11.24
		2. General Population	170	Chinese	45.25	9.44
		3. General Population	173	Chinese	49.43	10.82
Groleger, Tomori, & Kocmur (2003)	Slovenia	1. Diagnosed with Depression	2065	Slovene	53.60	12.80
		2. Student	2627	Slovene	43.80	11.40
Guo, Zhang, & Zhang (2015)	China	1. Student	219	Chinese	47.08	10.10
		2. Student	523	Chinese	47.50	9.11
Hassel et al. (2011)	Germany	Elderly	197	German	43.63	9.38
Heaven & Goldstein (2001)	Australia	1. Student	92	English	39.04	9.64
		2. Student	110	English	41.93	8.06
Herbet, McCormack, & Callahan (2010)	Ireland	Student	85	English	38.89	8.86
Ikenouchi-Sugita et al. (2013)	Japan	1. General Population	151	Japanese	43.38	11.69
		2. General Population	455	Japanese	48.25	9.75
Innamorati, Pompili, Lester, Tatarelli, & Girardi (2008)	Italy	Student	340	Italian	46.15	9.60
Jang et al. (2014)	South Korea	1. General Population	821	Korean	41.31	8.60
		2. Student	721	Korean	41.10	7.70
		3. Student	629	Korean	43.85	6.90
		4. Elderly	766	Korean	45.46	9.20
Jaracz & Kozubski (2003)	Poland	Other Diagnosis	72	Not Specified	49.86	11.80
Jaracz, Jaracz, Kozubski, & Rybakowski (2002)	Poland	Other Diagnosis	72	Not Specified	49.90	11.80

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
Joeng & Tunrer (2015)	USA	Student	260	English	38.18	9.38
Joseph, Lewis, & Olsen (1996)	Ireland	Student	194	English	47.51	10.59
Kamphius et al. (2007)	1. Finland	1. Elderly	268	Finnish	46.69	9.56
	2. The Netherlands	2. Elderly	380	Dutch	43.20	9.56
	3. Italy	3. Elderly	261	Italian	49.60	9.56
Kim (2010)	South Korea	1. Student	584	Korean	41.59	9.86
		2. Student	1128	Korean	31.18	11.53
Kitagawa, Yasui- Furukori, Tsushima, Kaneko, & Fukuda (2011)	Japan	Other Diagnosis	52	Japanese	50.50	11.13
Kitamura, Hirano, Chen, & Hirata (2004)	Japan	Student	28588	Japanese	43.88	14.70
Kivelä, & Pahkala (1986)	Finland	Elderly	1358	Finnish	46.39	7.87
Klemenc-Ketiš, & Peterlin (2013)	Slovenia	General Population	1474	Slovene	43.13	9.63
Klemenc-Ketiš, Kersnik, & Novak-Glavač (2010)	Slovenia	Other Diagnosis	712	Slovene	498.25	1.13
Kobayashi et al. (2010)	Japan	1. Student	496		41.00	7.50
		2. Student	285	Japanese	43.40	8.20
Kobayashi, Nemoto, Murakami, Kashima, & Mizuno (2011)	Japan	1. Diagnosed with Depression	199	Japanese	57.10	8.40
		2. Student	82	Japanese	44.60	9.30
Krupitsky et al. (2002)	Russia	1. Other Diagnosis	357	Not Specified	46.20	8.96
		2. Other Diagnosis	35	Not Specified	49.31	9.26
Krupitsky et al. (2007)	Russia	1. Other Diagnosis	266	Not Specified	41.20	9.56
		2. Other Diagnosis	27	Not Specified	44.70	9.56
Kuhn et al. (1996)	Germany	Other Diagnosis	54	German	55.13	7.03
Lam, Marra, & Salzinger (2005)	USA	Student	36	English	45.00	8.00

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
Lazary et al. (2008)	Hungary	General Population	567	Hungarian	38.71	5.11
Leonard (1974)	USA	Diagnosed with Depression	90	English	63.00	11.59
Leong (2007)	Singapore	1. Student	122	English	27.68	7.61
		2. Student	166	English	32.94	8.71
Leung, Lue, Lee, & Tang (1998)	Taiwan	Other Diagnosis	268	Chinese	50.29	9.56
Limbeek, Wouters, Kaplan, Geerlings, & Alem (1992)	The Netherlands	1. Other Diagnosis	50	Dutch	42.00	9.80
		2. Other Diagnosis	24	Dutch	45.60	9.20
		3. Other Diagnosis	19	Dutch	49.50	9.50
Lin, Lu, Wong, & Chen (2014)	Taiwan	Diagnosed with Depression	112	Chinese	60.30	8.50
Lin, Wang, Lin, Chen, & Huang (2014)	Taiwan	Diagnosed with Depression	174	Chinese	75.63	8.00
Lobentanz et al. (2004)	Austria	Other Diagnosis	504	Not Specified	52.38	13.00
Luyten et al. (2007)	Belgium	1. Student	501	Not Specified	41.20	8.93
		2. General Population	253	Not Specified	35.83	8.25
		3. Diagnosed with Depression	93	Not Specified	53.24	11.81
		4. Other Diagnosis	43	Not Specified	51.93	8.82
Matsunaga et al. (2001)	Japan	1. Other Diagnosis	33	Japanese	54.50	6.60
		2. Other Diagnosis	43	Japanese	56.50	6.80
		3. Other Diagnosis	30	Japanese	58.70	5.60
Matsunaga, Kiriike, Matsui, Iwasaki, & Stein (2001)	Japan	Other Diagnosis	48	Japanese	58.40	6.00
Matsuzaki, Hashimoto, Yuki, Koyama, Hirata, & Ikeda (2015)	Japan	Elderly	117	Japanese	29.88	9.56
Mbakwem & Aina (2008)	Nigeria	1. General Population	38	Yoruba	46.00	6.25
		2. General Population	44	Yoruba	47.00	8.02
		3. Other Diagnosis	65	Yoruba	54.00	8.35

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
		4. Other Diagnosis	47	Yoruba	51.00	6.59
McClure, Nezu, Nezu, O'Hea, & McMahon (2010)	USA	Other Diagnosis	63	English	44.00	11.00
O'Hea, & McMahon USA (2010)						
Menter et al. (2010)	USA	1. Other Diagnosis	44	English	42.90	12.40
		2. Other Diagnosis	52	English	45.80	14.00
Moriya & Takahasi (2012)	Japan	Student	152	Japanese	44.14	9.06
Mormont, Jamrat, & Jacques (2014)	Belgium	Elderly	200	Not Specified	45.20	10.40
Mozzetta et al. (2008)	Italy	1. Other Diagnosis	38	Italian	40.00	7.00
		2. Other Diagnosis	35	Italian	45.63	12.88
		3. Other Diagnosis	38	Italian	52.13	12.75
Mrochen et al. (2016)	Germany	1. General Population	46	German	37.20	7.70
		2. Other Diagnosis	57	German	47.50	11.20
Muris, Roelofs, Rassin, Franken, & Mayer (2005)	The Netherlands	Student	73	Dutch	42.75	7.88
Oei & McAlinden (2014)	Australia	1. Diagnosed with Depression	53	English	58.33	9.40
		2. Diagnosed with Depression	12	English	66.41	14.18
		3. Other Diagnosis	124	English	67.35	12.65
		4. Other Diagnosis	38	English	66.15	7.33
Ohara et al. (2015)	Japan	Elderly	897	Japanese	43.00*	11.25
Ozdemir, Ergin, Selimoglu, & Bilgel (2005)	Turkey	Other Diagnosis	912	Turkish	50.10	9.56
Palomar-Lever & Victorio-Estrada (2012)	Mexico	General Population	913	Spanish	46.73*	15.53
Papandreou (2013)	Greece	Other Diagnosis	63	Greek	42.10	11.50
Parissis et al. (2004)	Greece	Elderly	35	Greek	48.00	9.56
Passik et al. (2001)	USA	Other Diagnosis	50	English	47.37	10.40
Payne & Jahoda (2004)	UK	Other Diagnosis	38	English	51.30	10.10
Phillips & Hine (2012)	Australia	Student	355	English	50.63	9.56

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
Piñerua-Shuhaibar et al. (1999)	Venezuela	1. Diagnosed with Depression	116	Not Specified	59.00	9.56
		2. Student	32	Not Specified	37.00	9.56
Piñerua-Shuhaibar, Villabos, Delgado. Rubio, & Suarez-Roca (2011)	Venezuela	1. General Population	28	Not Specified	36.89	1.24
		2. Other Diagnosis	26	Not Specified	56.96	1.38
Pitkälä, Kähönen-Väre, Valvanne, Strandberg, & Tilvis (2003)	Finland	Elderly	411	Not Specified	49.38	9.56
Pluck et al. (2008)	UK	1. Other Diagnosis	50	English	62.14	9.72
		2. General Population	50	English	47.54	7.84
Podlipný et al. (2010)	Czech Republic	1. General Population	16	Czech	29.90	2.70
		2. Diagnosed with Depression	27	Czech	62.90	4.80
Polaino & Senra (1991)	Spain	1. Diagnosed with Depression	29	Spanish	63.75	3.32
		2. Diagnosed with Depression	18	Spanish	64.16	3.43
Qi et al. (2014)	China	1. General Population	28	Chinese	34.29	7.31
		2. Diagnosed with Depression	20	Chinese	64.31	11.49
		3. Diagnosed with Depression	18	Chinese	64.59	7.35
Raffaele, Rampello, Vecchio, Tornali, & Malaguarnera (1996)	Italy	1. Diagnosed with Depression	11	Italian	62.40	11.80
		2. Diagnosed with Depression	11	Italian	59.20	10.30
Rawtear et al. (2015)	Singapore	1. Elderly	26	Chinese	35.75	8.00
		2. Elderly	27	Chinese	38.75	8.10
		3. Elderly	21	Chinese	42.63	11.40

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
		4. Elderly	21	Chinese	44.00	9.90
Rektorová et al. (2003)	Czech Republic	1. Other Diagnosis	18	Czech	59.60	6.70
		2. Other Diagnosis	16	Czech	60.40	7.30
Revicki & May (1985)	USA	General Population	210	English	40.90*	8.13
Riley (2007)	UK	General Population	40	English	61.50	14.00
Rius-Ottenheim et l. (2012)	The Netherlands	Elderly	144	Dutch	46.30	9.56
Roemra et al. (2008)	Spain	Diagnosed with Depression	1150	Spanish	67.66	9.60
Romito, Cormio, Giotta, Colucci, Mattioli (2012)	Italy	Other Diagnosis	255	Italian	47.69	13.00
Sakamoto, Kijima, Tomoda & Kambara (1998)	Japan	Student	2187	Japanese	51.98	7.78
Salter (1985)	UK	Other Diagnosis	102	English	48.56	12.91
Sayar, Kose, Acar, Ak, & Reeves (2004)	Turkey	1. Diagnosed with Depression	76	Turkish	55.13	12.38
		2. Diagnosed with Depression	24	Turkish	60.88	2.34
Schaefer et al. (1985)	USA	1. Other Diagnosis	99	English	43.50*	12.25
		2. Diagnosed with Depression	101	English	56.25*	10.70
Sehlen et al. (2003)	Germany	Other Diagnosis	81	German	46.44	10.49
Seidel et al. (2009)	Austria	1. General Population	119	Not Specified	40.00	8.88
		2. Other Diagnosis	196	Not Specified	43.00	10.63
		3. Other Diagnosis	77	Not Specified	44.75	11.00
		4. Other Diagnosis	97	Not Specified	46.63	10.88
Selič, Unger, Pesjak, & Kersnik (2013)	Slovenia	General Population	203	Slovene	31.90	8.90
Sharpley, Bitsika, & Christie (2013)	Australia	Other Diagnosis	526	English	43.65	11.01
Shinba (2014)	Japan	1. General Population	47	Japanese	40.00	8.10

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
		2. Diagnosed with Depression	22	Japanese	54.10	8.20
Silverpats et al. (2010)	Sweden	Other Diagnosis	171	Swedish	53.75	9.56
Slovacek, Slovackova, Hrstka, & Priester (2010)	Czech Republic	Other Diagnosis	64	Czech	56.00	9.56
Spyropoulou, Papageorgiou, Markopoulos, Christodoulou, & Soldatos (2008)	Greece	Other Diagnosis	105	Greek	56.20	14.00
Seinig et al. (2013)	Germany	1. General Population	30	German	36.00*	10.75
		2. Diagnosed with Depression	30	German	49.88*	9.25
Swoboda, Dowd, & Wise (1990)	USA	1. Diagnosed with Depression	28	English	60.89	10.91
		2. Diagnosed with Depression	22	English	64.89	11.26
		3. Diagnosed with Depression	24	English	71.98	7.43
Takahashi, Roberts, Yamagata, & Kijima (2015)	Japan	Student	319	Japanese	52.75	10.59
Tanaka-Matsumi & Kameoka (1986)	USA	Student	391	English	36.97	7.47
Tang et al. (2014)	China	1. Student	940	Chinese	48.83	11.85
		2. Student	136	Chinese	56.83	10.69
Tang et al. (2016)	China	1. Other Diagnosis	25	Chinese	40.12	16.58
		2. Other Diagnosis	30	Chinese	43.23	8.60
Tao et al. (2002)	China	Student	1134	Chinese	37.33	8.20
Tecchio et al. (2013)	Italy	Other Diagnosis	107	Italian	38.10	9.27
Thurber, Snow & Honts (2002)	USA	General Population	259	English	66.05	15.69
Timonen, Rantanen, Timonen, & Sulkava (2002)	Finland	1. Elderly	34	Not Specified	47.30	7.80
		2. Elderly	34	Not Specified	48.10	10.10

<i>Authors/Year</i>	<i>Country</i>	<i>Sample Type</i>	<i>n</i>	<i>Language of Scale</i>	<i>SDS Indexed Mean</i>	<i>SDS Standard Deviation</i>
Tramonti, Bongioanni, Di Berdnardo, Davitti, & Rossi (2012)	Italy	Other Diagnosis	40	Italian	49.35	12.63
Trento et al. (2012)	Italy	Other Diagnosis	498	Italian	48.25	11.13
Ukawa, Yuasa, Ikeno, Ikoma, & Kishi (2012)	Japan	1. General Population	74	Japanese	46.10	11.75
		2. General Population	78	Japanese	46.10	11.13
van den Brink et al. (2005)	1. Finland	1. Elderly	324	Finnish	47.60	10.50
	2. The Netherlands	2. Elderly	469	Dutch	43.70	10.00
	3. Italy	3. Elderly	348	Italian	50.90	11.90
Van Peski-Oosterbaan, Van Der Does, Willems, & Sterk (1996)	The Netherlands	Depression	10	Dutch	58.38	8.75
		2. Other Diagnosis	68	Dutch	43.88	9.75
Vencill, Tebbe, & Garos (2015)	USA	General Population	462	English	45.09	11.79
Vignatelli, Plazzi, Peschera, Delaj & D'Alessandro (2011)	Italy	Other Diagnosis	54	Italian	49.13	14.13
Wang et al. (2016)	China	Other Diagnosis	51	Chinese	43.00	9.56
Watanabe, Okumura, Chiu, & Wakai (2004)	Taiwan	1. Other Diagnosis	268	Chinese	50.29	9.56
		2. General Population	116	Chinese	61.00	9.28
		3. General Population	54	Chinese	41.4	7.64
		4. General Population	48	Chinese	35.5	7.9
Wojciechowski, Strik, Falger, Lousberg, & Honig (2000)	The Netherlands	Other Diagnosis	128	Dutch	44.90	10.35
Wright, O'Leary, & Balkin (1989)	USA	Student	100	English	48.01	7.06
Yagi et al. (2011)	Japan	Other Diagnosis	270	Japanese	43.25	9.63
Yu et al. (2012)	China	1. Other Diagnosis	97	Chinese	45.01	9.71
		2. Other Diagnosis	102	Chinese	50.18	9.07

*=denotes the mean of a study which did not specify if the Indexed or Raw Version of the Zung SDS (1965) was used.

Appendix B: Results for clinical dataset

Descriptive Statistics

The final clinical dataset was significantly smaller than the non-clinical dataset, consisting of 24 studies, from 17 countries that reported 32 unique samples with a total N of 5, 214. The overall sample size weighted mean for the Zung SDS was 59.51 (SE = 8.93; 95% CI [53.25, 62.87]). This mean is to be expected as a score of 50 is seen as having clinically significant levels of symptoms. The Q statistic was statistically significant, $Q(30) = 3733.38$, $p < .000$, indicating that there is significant differences amongst the means sampled. Table B1 displays the weighted means, the standard deviations, the number of studies and the number of participants for each of the countries.

Analysis of Effect Size

The unconstrained (null) model was run on the clinical database. The chi-square statistic was statistically significant at Level 1 and 2 ($\chi^2(8) = 66.67$, $p < .001$), and at Level 3 ($\chi^2(16) = 42.45$, $p < .001$) which indicates the presence of significant variance amongst the means of the clinical samples at the study level and the country level. The ICC was calculated and yielded a value of 0.814, meaning that 81.40% of the variance of the sampled means was at the group level, and 18.60% at the individual level indicating that cultural variability was also confirmed in the clinical samples.

Moderator Analyses

Level 2 Moderators: Since the database only contained one type of sample no analyses were conducted testing differences in weighted means between sample types, and given that language has already been shown to be non-significant, this variable was not analysed as a possible predictor of SDS score. However, mean age of the sample and the percentage of males in the sample were investigated as possible predictor variables. These analyses found that the weighted SDS scores were significantly related to the percentage of

males in the sample ($b = -0.20, p < .05$) but not the mean age of the participants ($b = 0.21, p = .30$). This significant coefficient was calculated to explain 74.43% of the variance and may indicate that when males are clinically depressed, their mean level of depressive symptomatology may be lower than females.

Level 3 Moderators: Similar to the analysis conducted with the general population sample, dummy codes were used to compare the weighted mean SDS scores of East Asian cultures (Japan and China) to the rest of the sample. Once again no significant differences were found ($b = -3.81, p = .32$), indicating that even at a clinical level Asian do not have significantly different SDS scores than the rest of the world.

There was also no significant relationship between weighted mean SDS scores and Hofstede's measure of collectivism ($b = -.04, p = .79$). The two types of collectivism selected from the GLOBE study (Harris et al., 2004) also did not significantly affect weighted mean SDS score: Institutional Collectivism Practices ($b = 0.82, p = .91$) and In-group Collectivism Practices ($b = -0.54, p = .90$). As was found with the general population sample, even at a clinical that there is no significant relationship between collectivism and mean SDS scores.

Further analysis at the country level investigated whether economic factors explained any cultural variance in mean depression level. Weighted mean SDS scores were not significantly related to GDP ($b = -.000054, p = .34$) and the Gini index ($b = 0.27, p = .57$) or to GDP per capita ($b = .000084, p = .35$), indicating that economic factors do not have an effect on the level of clinically depressed participant's symptoms.

Table B1

Individual country means, standard deviations, number of studies and sum of participants for the clinical dataset.

Country	k (number of studies)	n (participants)	Effect Size (Weighted Mean)	Standard Deviation
Australia	3	657	57.76	9.00
Belgium	1	93	53.24	11.81
Brazil	2	46	62.59	7.77
China	1	124	51.55	5.85
Columbia	1	50	62.20	8.20
Czech Republic	1	32	62.90	4.80
Germany	1	30	49.88	7.40
Greece	1	49	47.50	9.00
Italy	2	22	58.20	10.40
Japan	5	327	61.28	7.74
Netherlands	1	10	58.38	7.00
Slovenia	1	2065	56.80	12.40
Spain	2	1197	67.51	9.35
Taiwan	2	286	69.61	8.20
Turkey	1	100	59.50	3.79
USA	4	265	61.18	10.77
Venezuela	2	58	58.09	5.58