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The Schema Theory of Depression: A Cross-Cultural Validation in a Canadian and an Egyptian Sample

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The Schema Theory of Depression:

A Cross-Cultural Validation in a Canadian and an Egyptian Sample

by

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A THESIS

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Abstract

Depression is prevalent in all regions of the world. Population-based studies show that the lifetime prevalence of depression varies in different countries. The cognitive model of depression, which is the conceptual foundation for Cognitive-Behavioural Therapy, postulates that the thoughts of depressed individuals differ systematically from those of their non-depressed counterparts. These proposed differences have been validated among individuals of Western descent. Unfortunately, and despite the universal connotations of the cognitive model, the hypotheses generated by this model have seldom been tested among depressed individuals living outside the Western world. The study presented examined a number of hypotheses (e.g., negativity, exclusivity, severity, schema activation, and selective attention) among a group of depressed ($n = 29$) and non-depressed ($n = 29$) Egyptians. To this end, a number of self-report measures as well as an experimental attentional measure (the visual dot-probe) were used to test these hypotheses. The results were compared to a cultural control group of depressed ($n = 35$) and non-depressed ($n = 38$) Canadians (total $N = 73$). The results indicated that, in comparison to non-depressed Egyptians, depressed Egyptians harbored significantly more dysfunctional attitudes and negative thoughts about self and future, and significantly less positive thoughts about self. Contrary to predictions, depressed Egyptians and Canadians did not exhibit an attentional bias toward negative stimuli in comparison to non-depressed participants of both nations. Finally, Egyptians exhibited significantly more positive thoughts, and depressed Egyptians showed significantly higher positive attentional bias scores than their Canadian counterparts. These results, their implications, and the theoretical considerations of this research are further discussed.

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The global economic burden, disability and diminished quality of life associated with depression renders this disorder as one of the most debilitating worldwide (Murray & Lopez, 1997; Ustun et al., 2004; WHO, 2012). As such, cross-cultural research that examines the nature and associated features of this disorder is of great importance. Despite the high prevalence rates of this condition in the Middle East, there is a large gap in the literature regarding the cognitive profile of depression in this area. The current study attempted to close this gap by testing some fundamental hypotheses generated by the cognitive model of depression among a group of depressed, Egyptian individuals.

For the sake of clarity and consistency regarding the terms commonly used throughout this document, the discussion will commence with definitions of the target constructs. Following this discussion, a review of the nature and evidence-base of the schema theory of depression is provided. Given the cross-cultural nature of this study, a discussion which delves briefly into the phenomenology and nature of depression in different cultures is given, followed by a brief review of research which identifies possible universal risk factors for this condition. Finally, this section concludes with rationale and hypotheses for the current investigation. The literature review conducted in this section only included articles that were written in English which were found in major English databases and journals (e.g., PsychInfo; Google Scholar; etc.). As such, studies published in the Arabic language were not reviewed.

According to both the revised text of the Diagnostic and Statistical Manual, Fourth Edition, and the Diagnostic and Statistical Manual 5 (DSM-IV-TR and DSM -5, respectively; American Psychiatric Association, 2000; 2013), major depression is defined as a syndrome in which sadness and/or anhedonia (i.e., loss of pleasure in activities or with things that are

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otherwise enjoyable) have persisted for most days for at least the last two weeks. In addition to these fundamental symptoms, the criteria for clinical depression dictate that individuals must experience others of the following, for a total of at least 5 symptoms (e.g., appetite disturbance, sleep disturbance, psychomotor agitation or retardation, feelings of guilt, feelings of worthlessness, poor concentration, fatigue, and recurrent thoughts of death or suicidal ideation). Major depression is also recognized to occur for a single instance in some people, which is referred to as a Major Depressive Disorder – Single Episode, or in a recurrent form, known as Major Depressive Disorder (MDD) – Recurrent subtype. The current investigation relied on the DSM definition of Major Depressive Disorder but also employed a dimensional approach to the disorder. The reason for inclusion of a dimensional conceptualization of depression was that a number of researchers now argue that the adoption of a purely categorical formulations of depression in research may be underestimating the functional impairment and other pathological correlates of minor depression as existing on a continuum of symptoms (Bjelland, Lie, Dahl, Mykletun, Stordal, & Kraemer, 2009; Uher, Perlis, Henigsberg, Zobel, Rietschel, Mors ... McGuffin, 2012). Indeed, a number of taxometric analyses of depression symptoms confirm a dimensional, as opposed to categorical, conceptualization of the disorder (Ruscio & Ruscio, 2000). Finally, Ingram and Siegle (2008) indicated that the relationships between depression and other important concomitants may change as a function of severity, and so these authors suggested examining effects along the gradient of depression severity.

Unlike depression, culture is a more elusive construct and thus difficult to define. This study will employ Kroeber and Kluckhohn's (1952) classic definition of culture:

Patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols...including their embodiment in artifacts; the essential core culture consists of

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traditional...ideas and especially their attached values' culture systems may, on the one hand, be considered as products of action, on the other, as conditional elements of future action. (p. 181)

The definition by Kroeber and Kluckhohn acknowledges that culture exists both in the minds of its members as well as the external world (e.g., artifacts). Also in this definition, culture is viewed as an entity that is both influenced by and influences the actions of individuals (Chentsova-Dutton & Tsai, 2008), thus highlighting its reciprocal nature. Although this study uses place of birth and primary language to define culture, it is acknowledged that culture extends beyond just geographical location of birth, self-identification, and language in its scope or influence on its members.

Finally, the terms "Islamic" and "Arabic" are often used interchangeably throughout this document. It should be noted, however, that "Islam" is not necessarily synonymous with "Arabic", as "Islam" is a religious affiliation, and that there is considerable religious heterogeneity among the citizens of Arabic-speaking nations. There are a number of subtle differences, for example, between Egyptian culture and other Arabic cultures, and as such, the psychosocial constructs discussed in this paper may not be identical across these nations. Given the paucity of this type of research and the need for empirical grounding, however, it may be necessary to cautiously generalize from previous studies within this region. Finally, and although these Islamic and Arab cultures are relatively heterogeneous, there are important similarities between them that permeate such cultural divides (Nasr & Leaman, 2013).

PREVALENCE OF DEPRESSION

According to community surveys that employ screening scales, the subsyndromal rates of depression in a 1 week to 6 months period are approximately 20% in adults and 50% in children

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and adolescents (Kessler, Avenevoli, & Merikangas, 2001). Further, a study by Ibrahim, Kelly, Adams, and Glazebrook (2013) found that young adult and university populations reported 30.6% more depressive symptoms than individuals in the general population. The point prevalence of major depression in studies which employ structured diagnostic interviews are typically less than 1% in children (Merikangas & Angst, 1995), as high as 6% in adolescents (Kessler et al., 2001), and 2-4% in adults (WHO International Consortium in Psychiatric Epidemiology, 2000; WHO, 2012).

A national survey indicated that the 12-month prevalence of major depression in the United States was 6.6% (National Comorbidity Survey-Replication; Kessler & Merikangas, 2004). Lifetime prevalence estimates of major depression in surveys conducted among adults in the United States ranges widely from 6% (Weissman, Livingston et al., 1991) to as high as 25% (Lewinsohn, Rohde, Seeley, & Fischer, 1991). The estimates provided by the National Comorbidity Study – Replication, which interviewed people 18 and over, was 16.6% using DSM-IV criteria (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005).

Epidemiological studies indicate that there is large variability in the rates of depression around the world. For example, in the Ukraine or Canada, approximately 10% of adults report experiencing major depression in the last 12-months. This is compared to only 2% of adults in China or Korea (Chentsova-Dutton & Tsai, 2008). A few population-bases studies show that depression rates in the United States and Canada may be higher than most other countries around the world (Vasiliadis, Lesage, Adair, Wang, & Kessler, 2007).

A study by Kessler and Ustun (2008) found that the 12-month prevalence of depression in 18 countries ranged from 2.2 (Japan) to 10.4 (Brazil). However, these researchers indicated that there is striking similarity in the 12-month rates of depression across high-income and low to

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middle-income countries, as the rates generally fell around the 5.5% mark. On average, however, the lifetime prevalence of depression was slightly higher in high-income (14.6%) than in low to middle-income (11.1%) countries. The highest life-time rates were found in four high-income countries, such as the United States, New Zealand, France, and Netherlands (Bromet, Andrade, Hwang, Sampson, Alonso, et al., 2011; Kessler & Ustun, 2008). Kessler and Ustun (2008) also found that respondents in countries reporting the highest prevalence of depression also reported the lowest average of impairment associated with their depression, whereas depressed individuals in countries where the prevalence was lowest reported the highest average of impairment. Kessler and Bromet (2013) and Simon, Goldberg, von Korff, and Ustun (2002) argued that the cross-national differences in depression may partly be due to differences in the severity threshold for reporting depression.

A few studies conducted in Arabic-speaking nations indicate that depression is a ubiquitous condition in this region of the world. For instance, Okasha (1999) found the prevalence of depression in urban and rural Egyptian populations to be 11.4 and 19.7%, respectively. It is unclear, however, whether these estimates are based upon depressive symptomatology scales or diagnostic interviews. Moreover, using the Arabic version of the Diagnostic Interview Schedule, Karam and colleagues (1998) found that the lifetime rate of depression among Lebanese women after the Lebanese war was a staggering 32% (Karam et al., 1998). Similarly, Karam et al. (2006) found that the one-year prevalence of major depression in their Lebanese sample was 4.9% according to the Composite International Diagnostic Interview (CIDI). Similarly, Bromet and colleagues (2011) report a 10.9% and 4.0% lifetime and 12-month prevalence rates of depression in Lebanon. Another study (Daradkeh, Ghubash, & Abou-Saleh, 2002) found that the lifetime prevalence of depression among United Arab Emirates women to

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be 10.3% (according to the CIDI). Al-Issa (1990) has also reported high rates of depression in Algeria, although he did not provide specific estimates.

BECK'S SCHEMA THEORY OF DEPRESSION

Beck's (1967) early experimentation revealed that the cognitions of depressed individuals differed systematically from those of their non-depressed counterparts. In an attempt to explain such differences, Beck (1967; Beck, Rush, Shaw, & Emory, 1979) posited a schema theory wherein individuals' long-term or stable cognitive profiles were related to psychopathology in general, and depression in specific. The schema theory (or cognitive theory, as it is otherwise known) of depression suggests that individuals possess cognitive entities or structures, known as *schemas*, which connote existing memory representations and are thought to be responsible for the ongoing construction of reality (Beck & Dozois, 2011; Gotlib & Joormann, 2010). As such, the cognitive theory implies that humans are *meaning-making* organisms and not simply impartial consumers of external reality (Clark, Beck, & Alford, 1999). The word "schemas" is often used interchangeably with terms such as "core beliefs", and "irrational beliefs".

Beck (1967; Beck & Dozois, 2011) hypothesized that schemas are self-perpetuating, in that individuals process incoming information in a way that is consistent with the content and organization of the extant schemas. Depressive schemas are thought to possess themes of personal loss and failure (Clark et al., 1999). Thus, the schemas of depressed individuals might contain stable beliefs such as "I am unlovable" or "I am inept", which remain latent until activated by schema-pertinent environmental stressors (e.g., Losing one's job; ending a romantic relationship).

In addition to depressive schemas or core beliefs, Beck's theory hypothesized that depressive thinking is distinguishable from its non-depressive counterpart on two other levels

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(Dozois & Beck, 2008). First, depressed individuals harbor dysfunctional attitudes or assumptions, which usually exist in the form of “if-then” propositions (Dozois & Beck, 2008; Garratt et al., 2007). These intermediary attitudes are related to core beliefs, and set idiosyncratic standards to which depressed individuals adhere. For example, a person with a cognitive vulnerability to depression might believe that “if everyone does not love me, then I must be unlovable”. If such personal criteria are not fulfilled, then depression becomes the likely outcome. When these idiosyncratic standards become violated, either in veridical or imaged reality, a third distinguishing cognitive event occurs in the vulnerable mind, which is the activation of negative automatic thoughts about the self, world and future. Beck termed these three content areas as the negative cognitive triad.

Researchers have isolated nine core descriptive hypotheses that emanate from the cognitive theory for depression (Clark et al., 1999; Beck & Dozois, 2011). As the current project will evaluate five of these hypotheses, a discussion of the nature and empirical bases of these predictions is in order.

Negativity Hypothesis (Cognitive Triad)

As mentioned above, the activation of depressive schemas gives way to cognitive products in the form of negative, automatic thoughts regarding the self, world, and future. Beck and colleagues (1979) later called this phenomenon the “Cognitive Triad” as to express the tripartite nature of depressive thoughts. Simply stated, this hypothesis postulates that depressive, as opposed to non-depressive, thinking is characterized by negative and pervasive self-referent cognitions. This hypothesis later became viewed as foundational to the cognitive theory, as the presence and severity of negative thinking is indicative of the presence of deep-seated depressive schemas (Beck & Dozois, 2011).

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A number of investigations have shown the validity of the negativity hypothesis among depressed individuals of North-American, European descent. Blatt and his colleagues (1982) found that measures of self-criticism delineate between depressed and non-depressed patients. That is, depressed individuals exhibited significantly more negative, critical thoughts towards themselves than their non-depressed counterparts. This finding was true for both a clinical sample, and a nonclinical, dysphoric student sample (Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982). Similarly, Dobson and Shaw (1986) found that depressed participants endorsed significantly more negative self-descriptive adjectives than non-depressed participants. More recent studies also find this relationship between depressive symptoms and automatic thoughts. For instance, Hjmedal, Stiles and Wells (2012) found that frequency and severity of negative automatic thoughts were predictive of depression symptoms at the 3-month follow-up within their sample. Overall, the relationship between depression and negative automatic thoughts has been well-documented among individuals of Western descent (Beck & Dozois, 2011). Indeed, and given this robust relationship between the constructs, some (e.g., Coyne & Gotlib, 1983) have argued that negative thoughts toward self, world and future are indistinguishable from the broad construct of depression. However, LeGrange et al. (2011) reported that, although the constructs correlate highly with each other, depressive symptoms can predict negative cognitions over time, but not the latter, which signals that these construct are indeed distinct.

The Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980) evaluates the self-reported frequency of negative thoughts related to depression, and has been employed to evaluate the validity of the negativity hypothesis among depressed individuals. A number of studies (Lamberton & Oei, 2008; Dudek et al., 2007; Oei, Dingle, & McCarthy, 2010) have shown that depressed individuals score higher on this instrument than their non-depressed

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counterparts, which lends support to the negativity hypothesis among North American and some East Asian populations.

Beshai, Dobson and Adel (2012) administered the ATQ to a group of Egyptian students in Cairo, and found that students who showed signs of depression scored higher on this measure than students who did not show signs of the disorder. Other measures administered in this study supported the notion that dysphoric Egyptian students harbor negative thoughts about the self. In a similar pattern of results, El-Islam (1969) found that 62% of a depressed, Egyptian sample displayed elevated feelings of guilt and self-reproach. Similarly, Hamdi, Amin and Abou-Saleh (1997) identified guilt as one of the symptoms experienced by a group of depressed individuals from Dubai. However, a number of studies found that self-reproach and guilt are atypical features of depression in the Islamic and Arabic regions (e.g., Stompe et al., 2001; Sami & El-Gawad, 1995). Thus, although the findings obtained by Beshai et al. (2012) must be replicated with a depressed Egyptian sample, the negativity hypothesis is considered one of the most supported of the descriptive hypotheses in the cognitive theory for depression (Hagaa, Dyck, & Ernst, 1991; Clark et al., 1999; Gotlib & Joormann, 2010).

Exclusivity Hypothesis

The cognitive theory postulates that depressed individuals are not only characterized by an elevation in negative thought, but also diminished self-referent positive thoughts. As Beck (1987) noted, the exclusivity hypothesis refers to the “automatic exclusion of positive self-evaluations” (p. 8). Some researchers (e.g., Haaga et al., 1991) have argued that the exclusivity hypothesis adds no incremental value beyond the negativity hypothesis and that it should be deleted from revisions of the model. Others, however, see this diminution in positive thinking as integral to the depressive experience as the increase in negative thinking (Beck & Dozois, 2011;

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Clark et al., 1999), since this pattern indicates the relatively weak activation of constructive schemas during depression. For instance, some studies (e.g., Dozois et al., 2009) have found that cognitive therapy may work by changing the structure of the self-schemas, which include both positive and negative evaluations of self.

Although fewer investigations have directly examined the validity of the exclusivity hypothesis, some support for it can be found in the literature. The Positive Automatic Thoughts Questionnaire (ATQ – P; Ingram & Wisnicki, 1988) was created as a supplement to the ATQ, to measure the presence and frequency of positive self-referent thoughts. Numerous studies have found that depressed individuals score significantly lower than their non-depressed counterparts on this instrument, evidencing support for the exclusivity hypothesis (Ingram, 1989; Ingram, Atkinson, Slater, Saccuzzo, & Garfin, 1990; Ingram, Kendall, Siegle, Guarino, & McLaughlin, 1995). In addition, and as hypothesized, a few investigators found that the ATQ-P showed moderate, negative correlations with measures of depression, anxiety and general distress, and positive correlations with measures of positive affect, life adjustment and well-being (Burgess & Hagg, 1994; Crewdsen & Clark, 1997). However, some investigations (e.g., Wenze, Gunthert, & Forand, 2007) show that the association of positive automatic thoughts to depression is not as strong as is the relationship between negative automatic thoughts and the disorder. To the author's knowledge, this hypothesis has yet to be examined among individuals of Arabic descent.

Content-Specificity Hypothesis

As mentioned above, embedded within the cognitive model is the belief that each disorder has its own distinctive cognitive profile (Beck & Dozois, 2011). For example, depression is believed to differ from anxiety on all cognitive levels (schematically, attitudinally,

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and on the level of cognitive products or automatic cognitions). Anxious schemas, for instance, are believed to be dominated by themes of threat or danger toward self, and thus anxious automatic thoughts are believed to reflect a bias for injury and harm to self (e.g., “I’m going to die”; “I am going crazy”; Clark & Steer, 1996; Dozois & Beck, 2008).

The majority of studies have compared depressed and anxious individuals on a number of cognitive content questionnaires. Most of this research shows that depressed and dysphoric individuals evidence higher frequencies of thoughts related to personal failure or deprivation in comparison to anxious individuals (e.g., Beck, Steer, & Epstein, 1992; Sanz & Avia, 1994; Steer, Beck, Clark, & Beck, 1994). Sanz and Avia (1994) found that anxious individuals show a significant elevation of thoughts related to threat and personal danger compared to depressed individuals. Support for this hypothesis also comes from correlating measures of cognitive content (reflecting themes of loss and deprivation) with measures that assess depressive symptomatology. A few studies have confirmed this correlation among depressed individuals (e.g., Harrell, Chambless, & Calhoun, 1981; Steer et al., 1994). According to a meta-analysis by Beck and Perkins (2001) research generally supports the content-specificity hypothesis in depression. This notion also received support in a sample of dysphoric Spanish students (Calvete & Connor-Smith, 2005).

Severity Hypothesis

The cognitive theory hypothesizes that the extent of negative self-referent thinking and reduced positive thinking is linearly related to depression severity (Clark et al., 1999). As such, it is expected that negative cognitions to be few or inconsistent in very mild or transient dysphoria. The cognitive theory dictates that there will be a simultaneous rise in negative cognitions as the depressive states intensify.

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There are a number of studies (e.g., Dobson & Shaw, 1986; Steer et al., 1994) that have tested this hypothesis by administering measures of negative cognition (e.g., ATQ) and self-report measures of depression. The majority of such studies indicate that negative cognitions and depression severity are positively correlated. Some studies have even excluded cognitive content from their depression symptom measures and still found a positive correlation between them and other measures of negative cognitions (e.g., Jolly & Dykman, 1994). Thus, there seems to be some support for this hypothesis among Euro-American individuals. To the author's knowledge, however, this hypothesis has not been widely tested around the world. Beshai et al. (2012) found that a measure that assesses depressive symptomatology (the Center for Epidemiologic Studies – Depression Scale; Radloff, 1977) was positively correlated with other measures of negative cognitions of self, world, and future in a sample of Egyptian students.

Schema Activation Hypothesis

The cognitive theory postulates that states of depression are characterized by an increased access to negative self-referent schematic structures (Clark et al., 1999; Beck & Dozois, 2011). The presence of depressive schemas, which are often difficult to test directly, is inferred from the presence and severity of negative attitudes and cognitive products (Sheppard & Teasdale, 2000). Weissman and Beck (1978) created the Dysfunctional Attitude Scale (DAS), which was designed to “reflect the relative presence or absence of the appropriate distorted idiosyncratic beliefs that characterize depressed patients” (p. 9). Thus, this measure was designed to assess negative attitudes characteristic of depressive thinking, and in turn, measure the level of activation and access to negative schematic structures. As predicted by the schema model, a number of studies now support the stability of dysfunctional attitudes, even after the remediation of depression (Jarrett et al., 2012; Wang, Halvorsen, Eisemann, & Waterloo, 2010).

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A number of studies have found that depressed individuals score significantly higher on the DAS than their non-depressed counterparts (e.g., Beshai, Prentice, Swan, & Dobson, in press; Goldberg, Gerstein, Wenze, Welker, & Beck, 2008; Dobson & Shaw, 1986; Crandell & Chambless, 1986). Thus, there is good support for this hypothesis in the literature. With this said, a few studies (e.g., Zimmerman, Coryell, Corenthal, & Wilson, 1986) found that high scores on the DAS were not unique to depression and that this measure correlated with other forms of psychopathology. Clark et al. (1999) argued that “the DAS was never intended to apply only to depression because it was expected that dysfunctional beliefs would be found in other emotional disorders like anxiety” (p. 220). The DAS has been adapted and examined in a few countries around the world, such as Romania (Kallay, Degi, & Vincze, 2007), Spain (Cuellar, Guerrero, Marfil, & Ucles, 2007) and Iran (Fatemi, Younesi, Seyed, Azkhosh, & Askari, 2010). For instance, Mukhtar and Oei (2010) found that the DAS possessed adequate concurrent and factorial validity among a sample of Malaysian participants. In their study, Thomas and Altareb (2012) found that the DAS evidenced adequate concurrent validity among a sample of students from the United Arab Emirates. To the author’s knowledge, Thomas and Altareb’s (2012) study is the only study which examined the DAS among an Arabic-speaking sample, and thus the schema activation hypothesis remains untested in other Arabic-speaking regions of the world.

Selective Attention Hypothesis

Consistent with the cognitive theory for depression, depressed individuals are believed to process incoming information in a schema-congruent way (Gotlib & Joormann, 2010). Thus, depressed people process mood congruent negative self-referential information that is associated with current life concerns in a biased and more efficient manner (Clark et al., 1999; Beck & Dozois, 2011). The selective attention hypothesis of depression postulates that in the bouts of

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depression, individuals will also attend to, or fail to disengage from negative stimuli over other types of stimuli in the environment.

A number of methodologies have been used to test the selective attention hypothesis, one of which is the Stroop interference task. This task asks participants to name a color in which various typed words are printed. It is hypothesized that depressed individuals will exhibit decrement in performance (defined as longer latency to name the color of words) when the typed words are emotionally-valenced as opposed to neutral. This effect is believed to occur because depressed individuals are selectively attending to depressive words and thus the content of the words is interfering with the main task of naming the color. There is general support for a Stroop effect in depressed patients, although a number of studies have not found differences in interference between depressed individuals and controls using the Stroop task (e.g., Bradley, Mogg, Miller, & White, 1995; Mogg, Bradley, Williams, & Mathews, 1993). The Stroop task has been found to be unreliable, and so use of this measure to test the selective attention hypothesis has waned in recent years (see Epp, Dobson, Dozois, & Frewen, 2012 for review).

The visual dot-probe task has also been employed to test selective attention. In this task, two words or faces are presented simultaneously, sometimes for a very brief time (e.g., less than 500 milliseconds). One of the stimuli is neutral while the other is emotional. Participants are asked to identify the location of a probe (usually a dot) that replaces one of the stimuli. Response latencies to the probe reflect the allocation of attention to the spatial position of the stimuli.

Despite enthusiasm for the dot-probe research paradigm, some earlier studies that employed this methodology with words presented for short time intervals failed to find differences in response latencies between depressed and non-depressed controls (Mogg, Bradley, & Williams, 1995). In response, Williams, Watts, MacLeod and Mathews (1997) proposed that

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depressed individuals are not characterized by biases in the orientation of attention, but that they present the biases in postattentional elaboration, or disengagement from emotional stimuli. A number of studies have examined this refined hypothesis in depressed patients. For instance, with longer stimuli exposure, Mogg et al. (1995) found that depressed individuals exhibited a mood-congruent bias compared to control participants. Similarly, Bradley, Mogg, and Lee (1997) found the same attentional bias in a group of depressed participants but only when stimuli exposure was 500 or 1000 msec. Moreover, Gotlib, Krasnoperova, Yue and Joormann (2004) used faces as stimuli and found that clinically depressed participants exhibited attentional biases toward negative faces that were presented for 1000 msec. Joormann, Talbot and Gotlib (2007) replicated these results with the same methodology in a sample of remitted, depressed adults. As such, there is some support for the refined selective attention hypothesis in depression, but primarily when words or faces are presented at a somewhat longer time interval of 1000 msec or longer. Even with longer presentation times, however, the evidence casts doubt on the reliability and validity of the dot-probe paradigm in psychopathology (Schmuckle, 2005; Staugaard, 2009). For instance, using Monte Carlo simulations, LeBel and Paunonen (2011) found that the internal reliability of the dot-probe task to be less than .30. These authors argued that the use of such inconsistent implicit measures in psychology impedes the development of a cumulative science, given the lower likelihood to replicate findings based on such instruments.

More recently, support for the selective attention hypothesis among a dysphoric, Arabic-speaking sample has emerged. Thomas, Campbell, Altareb and Yousif (2010) examined the selectivity hypothesis using the Stroop interference task with a sample of students from the United Arab Emirates. These researchers found that response time differentials for depressive, but not neutral, words were positively correlated with a measure of depressive symptomatology.

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CULTURE AND DEPRESSION

There are several frameworks that guide cross-cultural depression research. A small number of studies have examined syndromes that resemble depression, as it is defined in the West, from *within* particular cultures (i.e., indigenous forms of depression). For instance, Tousignant and Maldonado (1989) describe the illness of *pena* in Ecuador, which is a culture-bound condition marked by crying spells, difficulty to concentrate, anhedonia, sleep and appetite disturbances, and social withdrawal. Although this condition typifies the Western definition of depression, the authors have argued that the social and personal impact of this condition is quite distinct from what is observed in the West. In like manner to Ecuador, a number of syndromes that bear semblance to Western Depression have been documented in Nepal (*jhum-jhum*; Kohrt, et al., 2005), Korea (*hwa-byung*; Lin, et al., 1992) and China (*neurasthenia*; Kleinman, 1982). It is important to note, however, that comparing these indigenous forms of distress to depression as stipulated by Western criteria is a misleading endeavor. As Chentsova-Dutton and Tsai (2008) have commented, these indigenous conditions may better map onto a spectrum of disorders that encapsulates major depression and other frequently co-occurring disorders.

Another principle that has guided the study of depression around the world attempts to examine depression as a universal phenomenon, which occurs in all regions of the world regardless of culture, religion or political affiliation. This approach compares the depressive experience in different cultures and attempts to identify the cultural variables that influence its nature and phenomenology. For instance, a large body of literature suggests that culture may influence the symptomatic profile of depression. More specifically, individuals in the West may exhibit psychological symptoms of the disorder (e.g., worthlessness, sadness, anhedonia, etc.) while individuals in other regions may present with somatic features of the condition (e.g.,

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appetite and sleep disturbance, agitation, etc.; Ryder, Yang, & Heine, 2002). As an illustration, South Asian immigrants to the United States are less likely than Americans of European descent to recognize and label a vignette based on emotional features as depression (Karasz, 2005). Similarly, Puerto Rican patients generated fewer and less varied reports of psychological than somatic symptoms of depression (Koss-Chioino, 1999). More pertinently, depressed individuals in the Arab region often report shortness of breath, agitation, and other physiological changes (Okasha, 1999). This tendency to emphasize somatic complaints of depression has been observed in other studies among individuals in the Islamic world (Al-Issa, 1990; Okasha, Kamel, Sadek, & Lotaif, 1977; Sami & El-Gawad, 1995). For instance, a study by Seifisafari, Firoozabadi, Ghanizadeh and Salehi (2013) found that pain and other somatic complaints were common among a sample of Iranian patients suffering from depression.

Some evidence now suggests that “psychologization” of depression may be a phenomenological aspect of the disorder among Westerners, and more so than is somatization in other regions of the world (Kalibatseva & Leong, 2011; Ryder, Yang, Zhu, Yao, Yi, Heine, & Bagby, 2008). This “psychologization” of symptoms among depressed individuals in the Western world may explain why cognitive concomitants have been found to be strongly associated with depressive symptoms in that region of the world. Indeed, some recent evidence suggests that the finding that Chinese somatization of psychopathology should not be over-applied, as Zhou and colleagues (2011) found that anxious Euro-Canadian participants were more likely than their Han Chinese counterparts to somatize their anxiety symptoms.

Further, emerging evidence suggests that this somatic emphasis in most regions of the world may be due to differences in symptom reporting patterns, as opposed to the nature and expression of the disorder in these regions. For instance, immigrant women from South Asia who

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lived in England recognized that depression is associated with both psychological and somatic symptoms, but they emphasized the latter since they perceived them as more legitimate than the former (Burr & Chapman, 2004). Similarly in Arab nations, psychological symptoms, such as guilt, may be associated with “sin” in Islam, and thus their presence may imply moral culpability (El-Islam, 1969). Moreover, Hamdi, Amin and Abou-Saleh (1997) have suggested that the emphasis on somatic features among Arab individuals who suffer from depression is due to the lack of available linguistic idioms to express psychological symptoms in this region. As such, it is possible that translated Western questionnaires and other diagnostic instruments administered to participants in this region may provide a lexicon for such idioms.

Some research suggests that individuals of Arabic descent express psychological symptoms of depression more readily when the mode of assessment takes the form of paper-and-pencil self-reports (Matthey, Barnett, & Elliot, 1997) than other formats. In contrast, disclosure is generally diminished during face-to-face interviews with researchers and/or clinicians, unless rapport is firmly established. Similarly, Simon, von Kroff, Piccinelli, Fullerton and Ormel (1999) have suggested that non-Western individuals do not necessarily experience fewer psychological symptoms in bouts of depression than non-Westerner sufferers. In contrast, somatization may reflect a reluctance to report symptoms that are less salient or more stigmatizing in particular cultures rather than the absence of these symptoms. In addition, some evidence suggests that nonverbal reinforcement of psychological versus somatic responses by clinicians may be related to the preferential reporting of the former in Western countries (Lam, Marra, & Salzinger, 2005). As Chentsova-Dutton and Tsai (2008) argued, both somatic and psychological features of depression are part of the disorder across cultures, and so the cultural emphasis of one set of

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symptoms over the other may reflect preferential reporting and comfort of disclosure rather than the experience itself.

A number of studies show that theories, explanatory models, and views of depression vary considerably across and within cultures. For instance, McClelland, Khanam and Furnham (2014) found that older British Bangladesh participants believed that depression is a condition which brought on a loss of dignity and shame to afflicted individuals and their family. This negative view of depression was not found among their control sample of older British Whites. Further, these researchers found that both groups of older participants believed that depression cannot be remediated by psychological interventions. Similarly, Dijman and colleagues (2011) found that the endorsement of somatic or psychological symptoms of depression depended on the model for depression adopted among a group of Fars, Kurds, and Turks in Iran. Finally, Loo and Furnham (2013) found that most participants in a sample of Indian Malaysians failed to identify symptoms of depression, who also reported that treatment of depression should involve a combination of religious observance and lifestyle changes.

Finally, a number of emerging investigations have revealed that, unlike North American culture, other cultures may not place a premium on high self-esteem and general positivity toward the self (Chentsova-Dutton & Tsai, 2008). For instance, Euro-American Individuals were significantly more likely to report feeling happy or enjoying life than their Japanese counterparts, despite the fact that both groups reported similar levels of negative affect and somatic symptoms of depression (Iwata & Buka, 2002; Kanazawa, White, & Hampson, 2007). The literature which examines positive affectivity has focused almost exclusively upon the differences between North American and Asian cultures. Thus, it is premature to draw inferences from this research and generalize the findings to other regions of the world, such as the Arab

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region. However, there are a few studies which point to buffers and other protective factors which may increase adaptive responding in the form of positivity, even among individuals showing signs of depression. For instance, Sarah and Beatriz (2012) found that sense of coherence mediated the relationship between self-criticism and depression among their Bedouin Arab and Jewish participants. Although this study did not utilize a parallel sample of Western controls in demonstrating this mediational relationship, the authors noted that previous studies only find tenuous relations between cohesion and depressive symptoms (Sarah & Beatriz, 2012). As such, the nomological network of depression may be different among individuals of Arab descent. As an illustration of this hypothesized difference in the nomological network of depression across-cultures, Chan, Zhang, Fung, and Hagger (in press) found that the relationship between negative affect and depression in countries such as China and Ghana is smaller than that found in countries like Mexico and Russia.

CROSS-CULTURAL RISK FACTORS FOR DEPRESSION

A number of cross-national studies indicate that there are variables which are found to consistently predict depression. For instance, Kessler and Bromet (2013) summarized that low education, teen pregnancy, marital disruption and dissolution, unstable employment status, poor marital satisfaction, and low income are among the demographic variables that consistently correlate with major depression across a number of cultures. A large body of cross-cultural literature indicates that gender is a risk factor for depression. Studies from North America (Ohayon, 2007), Central and South America (Chensova-Dutton & Tsai, 2008), and East Asia (Inaba, Thoits, Ueno, Gove, Evenson, & Sloan, 2005) have found that females are more vulnerable to depressive disorders than are males. At this juncture, it is unclear whether this emergent universal pattern for the vulnerability of women holds in Middle Eastern countries.

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Most data obtained in this region have been non-diagnostic in nature, and thus, a formal comparison of the rates of major depression among men and women in this region is unfeasible. According to an epidemiological study conducted in Lebanon, females evidenced a higher one-year prevalence of mood disorders (Karam et al., 2006). The authors are unclear, however, which specific mood disorders were responsible for this disparity between the genders. An earlier study from the same country revealed that the lifetime ratio of women to men who are afflicted with major depression is 1.6 (23.1 % for women and 14.7% for men; Weissman et al., 1996). Finally, Karam et al. (2008) found that Lebanese women were especially vulnerable to developing a mood disorder post exposure to war-related trauma. Other studies in the Arab region have used self-report questionnaires to assess depression. These studies indicate that females endorse more depressive symptoms than do males (e.g., Alansari, 2006; Kazarian & Taher, 2010).

Socioeconomic status (Van Hemert, Van de Vijer, & Poortinga, 2002) and stress (Kanazawa, White, & Hampson, 2007) have also been linked to depression in various countries. As these risk factors are often correlated, it is unclear which is distal and which is proximal to the disorder (Ingram, Miranda, & Segal, 1998). Karam et al. (2006) found that mood disorders were not related to income or education, thus this study did not support the link between socioeconomic status and depression in Lebanon. Karam and colleagues (1998) found that rates of depression assessed by a diagnostic interview were positively correlated with exposure to war in a sample of Lebanese participants. Similarly, Karam et al. (2008) found that exposure to war-related traumatic events (defined as witnessing death or injury, or having a close person die during the war) increased the likelihood of a mood disorder among a sample of Lebanese participants. Thus, evidence for the link between stress and depression does exist in Lebanon.

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Finally, marital status has been linked to depression in various regions around the world (Chentsova-Dutton & Tsai, 2008). Support for this link was found in a study conducted in Lebanon (Karam et al., 2006), wherein there was a two to four fold increase in the annual prevalence of mood disorders among single, never-married individuals.

THE CURRENT INVESTIGATION

The current investigation attempted to close the empirical gap in the literature concerning the cognitive features of depression in Arabic-speaking nations. The majority of research related to depression in the Middle East has focused exclusively on the measurement of clinical presentation, symptomatology, and epidemiology. Indeed, except for a handful of studies, the majority of research conducted in Arabic-speaking nations has employed analogue samples, which makes generalization from this research to a clinical population questionable.

Karam and colleagues (2006) found that only about 10% of those diagnosed with either a mood or anxiety disorder in their Lebanese sample sought help. Thus, despite the ubiquity of psychopathology in Arabic nations, very few seek professional help. Given the paucity of research, it is unwise to comment about the reasons as to why this population does not seek help for their distress. The lack of access to a variety of treatment options, however, may be in part responsible for this pattern. Cognitive-behavioural treatments have risen as the predominant paradigm to conceptualize and treat depression in the West. Indeed, a large body of literature demonstrates the efficacy of this modality with depressed individuals in Western regions (Beck & Dozois, 2011; Clark et al., 1999; Gloaguen, Cottraux, Cucherat, & Blackburn, 1998).

Given the ubiquity of depression in the Arab world and the efficacy of the cognitive-behavioural approach in Western countries, it is important to evaluate cognitive-behavioural models and techniques with depressed individuals in the Arab region. In order to successfully

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adapt these techniques to better serve Arab individuals, the theories upon which they were founded must also be examined with this population. The present study investigated the validity of fundamental elements of the cognitive-behavioural theory for depression among a clinically depressed, Egyptian sample. A depressed Canadian sample was also recruited for the purposes of this study, and the results obtained from depressed samples in both nations were directly compared. Also, two non-depressed groups were recruited in both countries to act as diagnostic controls for the depression condition within each country.

Hypotheses

The current investigation examined the following hypotheses:

1. *Negativity Hypothesis* – Negative thoughts towards the self and future.

Self – Depression: It was predicted that depressed individuals in both countries would exhibit more negative thoughts toward the self than their non -depressed counterparts.

Self- Country: It was predicted that depressed Egyptians would exhibit a greater frequency of negative thoughts toward the self than depressed Canadians (in accordance with Beshai et al., 2012).

Future - Depression: It was predicted that depressed individuals in both countries would exhibit more negative thoughts toward the future than their non-depressed counterparts.

Future - Country: No difference was predicted in the frequency of negative thoughts toward the future between depressed Egyptians and Canadians.

2. *Exclusivity Hypothesis* - Diminished positive self-referent thoughts.

Depression: It was predicted that depressed individuals in both countries would exhibit a significantly lower frequency of positive self-referent thoughts than their non-depressed counterparts.

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Country: It was hypothesized that depressed Egyptian individuals would show a lower frequency of positive thoughts than their depressed Canadian counterparts.

3. *Severity Hypothesis-* It was predicted that the extent of negative self-referent cognitions and reduced positive thoughts would linearly related to depression severity.

Negative - Country: It was hypothesized that negative cognitions toward self would be positively correlated with severity of depression in both the Egyptian and Canadian samples.

Positive - Country: It was also predicted that positive self-referent thoughts would be negatively correlated with severity of depression in both the Egyptian and Canadian samples.

4. *Schema Activation Hypothesis-* It was predicted that depressed individuals would show more/better access to negative schema content.

Depression: It was predicted that depressed individuals in both countries would exhibit significantly more dysfunctional attitudes than their non-depressed counterparts.

5. *Selective Attention Hypothesis -* Selective processing bias for mood-congruent negative self-referent information.

Depression: It was predicted that depressed individuals in both countries would exhibit shorter detection latency for the probe when it replaces depressive stimuli in comparison to positive and neutral stimuli than their non-depressed counterparts.

Method

Participants

To be included in the Egyptian sample (both depressed and non-depressed subsamples), participants indicated that: 1) Egypt is their country of birth, and 2) Arabic is their primary and

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first language. To be included in the Canadian sample (both depressed and non-depressed subsamples), participants: 1) were at least second generation Canadian, 2) were at least third generation European, and 3) identified English as their primary and first language.

The depressed sample in both countries fulfilled the following inclusionary criteria:

1) Suffering from Major Depressive Disorder in accordance with DSM-IV-TR Criteria (American Psychological Association, 2000) at time of assessment, and 2) not showing diagnostic criteria for Bipolar disorder and not showing psychotic features (i.e., meeting criteria for a psychotic episode or schizophrenia). Criteria for case-ness of depression are discussed below.

Non-depressed participants were included if they were not showing current signs for and of the above disorders, and reported no history of major depression.

Recruitment

Depressed Egyptians were recruited from a psychiatric clinic belonging to the collaborator (AA) in Cairo, Egypt. The collaborator in Egypt had access to a psychiatric clinic in Egypt, as well as supervised cases in Kasr-Al-Aini hospital (Cairo), and thus was responsible for the recruitment of depressed individuals in Egypt. Non-depressed individuals were recruited from the community at large. The clinic from which depressed Egyptians were recruited was located in an affluent Cairo neighbourhood. The Egyptian collaborator (AA) was a Christian Egyptian psychiatrist, and the majority of his patients reflected this religious orientation. This sample may not be representative of the Egyptian population.

Depressed Canadians were recruited from the community in Calgary, Alberta, Canada. Recruitment was via poster ads which were placed in various clinics, cafes, universities (University of Calgary, Southern Alberta Institute of Technology, and Mount Royal University)

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and other social venues around the city of Calgary. The ad identified the target sample (e.g., suffering from depression), and the nature of the study (e.g., “*We are interested in understanding how moods and thoughts influence each other, and how thoughts affect the course and nature of depression*”). The poster ad also featured brief information regarding the nature of participation and compensation (see below). Social media outlets, such as Kijiji and Facebook, were also used extensively to promote the study and recruit participants. Data on recruitment methods were collected systematically in Canada. Such data revealed that 20.4% of the Canadian sample was recruited via flyer and poster ads, 29.9% via Facebook, 25.9% via Kijiji, 4.6% through word-of-mouth and snowballing techniques, and 12.0% through other methods (e.g., recruitment through a workshop on depression held at the University of Calgary). Data regarding recruitment methods were missing for 7.2% of the sample.

The study took approximately 60-90 minutes to complete. Participants in the Canadian sample were compensated \$20 Canadian dollars for their participation in the study. Prior to the commencement of data collection, the author reasoned that compensation in both countries must be comparable, as such, the Egyptian collaborator indicated that \$20 Canadian dollars provided a purchasing power equivalent to approximately 100 Egyptian pounds (EGP). Thus, Egyptian participants were compensated 100 EGP for their participation in the study.

Participant Retention

Initial Screening and Self-Report Measures. In Canada, 233 participants (158 depressed and 75 healthy) were telephone screened prior to taking part in the study. Participants were excluded after this initial screening based on ethnicity (e.g., indicated a birth place other than Canada for self or for parents, or a birth place other than Europe or Canada for grandparents), no current depressive symptoms (e.g., no significant sadness or anhedonia present in the last

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month), or the presence of exclusion criteria (i.e., symptoms suggestive of psychosis, mania, or substance dependence). Of those individuals initially screened, a total of 93 participants (39.9%) took part in the study. Of those individuals, 20 were excluded from further analyses based on the secondary screening which took place in the first part of the study. Specifically, six individuals showed signs of psychosis, five showed signs of substance dependence, and nine did not meet criteria for depression on the BDI (i.e., less than 14) or PDSQ-Dep (less than 9; yet their scores on one of these measures was elevated beyond the cut-off to be included in the non-depressed sample). A total of 73 participants (35 depressed and 38 healthy) were included in the final analyses of scores on the self-report measures except for on the DAS. One Canadian participant in the depression group failed to complete the DAS, and so their data were excluded from analyses on this measure. There were 12 males (34.3%) and 23 females (65.7 %) in the depressed Canadian sample, and 8 males (21.1%) and 30 females (78.9%) in the non-depressed Canadian Sample.

In Egypt, there were a total of 58 participants (29 depressed and 29 healthy) who were included in final analyses of self-report measures. Data on excluded participants were not systematically collected, but anecdotal information provided by the research assistant in Egypt indicated that there were very few people who failed to meet the study criteria. Given that the initial screening of the study was done by a licensed psychiatrist and that he was a collaborator on this research project (A.A), it is assumed that the hit rate for inclusion was extremely high. Two individuals in the Egyptian (one in each the depressed and non-depressed groups) sample failed to complete the DAS, and so their data for this measure were excluded. There were 12 males (41.4%) and 27 females (58.6%) in the depressed Egyptian sample, and 12 males (41.4%) and 17 females (58.6%) in the non-depressed Egyptian sample.

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Attention Bias Task. Responses on the dot-probe task were considered an error if the participant took longer than 1000 msec or shorter than 100 msec to respond, and/or if the participant made an error in detecting the location of the probe (i.e., choose left for a right-positioned probe and vice versa). Participants were excluded from further analyses of the dot-probe task if they evidenced more than 10% error rate in response within each condition of the dot-probe task. In other words, if participants made a) more than four errors on the attention to sad faces condition (40 scored trials); b) more than four errors on the attention to happy faces condition (40 scored trials); c) more than two errors on the attention to sad words condition (20 scored trials); d) more than two errors on the attention to happy words condition (20 scored trials); and e) more than two errors on the attention to happy vs. sad words condition (20 scored trials), they were excluded from attentional analyses. This rule was followed given the rarity of errors in the dot-probe task (Joormann & Gotlib, 2007). Based on this criteria, the number of participants within the Canadian sample that were included in the final analyses were 55 (27 depressed), 54 (27 depressed), 55 (27 depressed), 53 (25 depressed), and 55 (27 depressed) for each of the five conditions, respectively. The number of participants within the Egyptian sample who were included in the final analyses were 38 (16 depressed), 36 (15 depressed), 38 (15 depressed), 38 (16 depressed), and 36 (15 depressed) for each of the five conditions, respectively.

Power Analysis

It is difficult to estimate the optimal sample size in this investigation given the paucity of extant research which examined cognitions and depression in the Middle East. The selectivity hypothesis was chosen as the basis for sample size estimation, given the documented unreliability of the dot-probe paradigm and the experimental nature of this hypothesis.

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According to a recent meta-analysis by Peckham, McHugh and Otto (2010), there is support for the selective attention hypothesis in depression. In other words, depressed individuals evidence attentional biases toward negative stimuli (exhibiting themes of sadness or loss) in comparison to their non-depressed counterparts. Peckham et al. (2010) found that there were significant differences between depressed and non-depressed individuals in studies using the visual dot-probe to examine attentional biases. Furthermore, the differences shown between depressed and non-depressed individuals in the dot-probe studies achieve an overall medium ($d = 0.52$) effect size. The methodologies of the studies which contributed to this estimate were examined, and three representative studies (Gotlib, Kasch et al., 2004; Gotlib, Krasnoperova et al., 2004; Joormann & Gotlib, 2007) that used a similar design to the one proposed here (i.e., dot-probe paradigm, using faces for stimuli, clinical sample) were selected as a basis for the power analysis. The average effect size of these representative investigations was $d = 0.81$, which is a large effect size. In accordance with Cohen's (1992) power primer, approximately 26 participants per group are required in order to detect a large effect, with an alpha level of .05, and a power of .80.

A G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) calculation confirmed that, in order to detect meaningful differences in a design which employs a multi-factorial Analysis of Variance (ANOVA) with an alpha level of .05 and an effect size of .81, approximately 23 participants in each group (times 4) would be optimal.

Given the paucity of research which assesses the target cognitive constructs in the Arab region, and given the documented unreliability of findings based on dot-probe procedures, it is possible that the above estimates are erroneous or inaccurate. Given the desire to detect group differences, if indeed these differences exist, it was determined that a slightly "overpowered"

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study would be preferable to one that is minimally powered to find a true effect. For this reason, a sample size of $N = 120$ ($n \sim 30$) was adopted for the study.

Measures

Structured Interview. The screening process involved a structured interview with 14 (and 4 additional follow-up; Appendix B) “yes” or “no” questions regarding ethnicity (e.g., “Were you born in Canada/Egypt”), current depressive symptoms (e.g., “in the last month, has there been a period of time when you were feeling depressed or down most of the day, nearly every day?”), and screening questions for psychosis (e.g., “in the last month, did you hear voices that other people didn’t hear?”), mania (e.g., “has there been a period of time when you felt so good, “high”, excited, or hyper that other people told you that you were not your normal self?”), and substance abuse (e.g., “did anyone in your family, friends, a doctor, or anyone else say that you were using alcohol/ drugs too much?”). The items were constructed loosely based on the Structured Clinical Interview for the DSM-IV (SCID, First et al., 1997) and on the Composite International Diagnostic Interview 3.0 (World Health Organization 1990). When respondents answered “Yes” to screening questions for psychosis, mania, or substance use, more questions were asked to ascertain the severity of psychopathology, abuse or dependence (e.g., “In the last 6 months, did you spend a lot of your time trying to get alcohol/drugs, drinking/using drugs, or recovering from the effects of alcohol/drugs?”), and whether this behaviour is primary or secondary to the depressive symptoms. Strict cut-offs were enforced and used for inclusion or exclusion from the present study. Research assistants in both Canada and Egypt were trained to use this screen and asked to do so prior to the inclusion of participants in the study.

The Psychiatric Diagnostic Screening Questionnaire. The Psychiatric Diagnostic Screening Questionnaire (PDSQ; Zimmerman & Mattia, 2001ab) is a 125-item self-report inventory in a

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“Yes” or “No” response format. The full questionnaire is comprised of 13 subscales assessing 13 common Axis I disorders (e.g., depression, generalized anxiety, panic, social phobia, bulimia, drug and alcohol use, psychosis, health anxiety, agoraphobia, bulimia, posttraumatic stress, and somatization). For the purposes of this experiment, I used the depression, psychosis, drug use, and alcohol use subscales (total of 39 items). The depression subscale (PDSQ-Dep) is a 21-item scale designed to screen for the presence and severity of depression. It possesses items that are designed to assess criteria for a mood disorders episode (e.g., “in the last two weeks, did you feel sad or depressed for most of the day, nearly every day”; “did you get less joy or pleasure from almost all of the things you normally enjoyed”; “did you have problems concentrating nearly every day”) in accordance with the DSM-IV-TR (American Psychological Association, 2000). The recommended cut-off for depression is 9, which provides a sensitivity of .9 and a specificity of .67. The recommended cut-offs for the psychosis, drug, and alcohol use subscales is 1, which provides sensitivities and specificities of .89 and .76, .85 and .80, and .85 and .87 for these disorders, respectively. As the scale does not differentiate between alcohol and drug “use” and “dependence”, individuals endorsing a score of 1 or higher were asked a number of follow-up questions to ascertain the severity of their substance abuse behaviour (and the relationship of substance use with depression symptoms).

All 13 subscales of the PDSQ demonstrated excellent test retest and internal consistency (Zimmerman & Mattia, 2001b). The scales possessed adequate concurrent validity, as scores were highly correlated with other self-report measures assessing similar constructs. For instance, scores on the PDSQ-Dep were found to strongly correlate with scores on the BDI-II (Zimmerman & Mattia, 2001b). Further, all scales demonstrated high sensitivity and specificity and high negative predictive value (Zimmerman & Chelminski, 2006). Finally, factor analyses of

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the subscales of the PDSQ demonstrated strong convergence with DSM nosology (Sheeran & Zimmerman, 2004).

Composite International Diagnostic Inventory – Mania Screen. The Composite International Diagnostic Interview Version 3.0 (CIDI 3.0; World Health Organization, 1990; Kessler & Ustun, 2004) is a fully structured, layperson administered diagnostic interview that produces both ICD-10 (International Classification of Diseases; World Health Organization, 1991) and DSM-IV (Diagnostic and Statistical Manual – Fourth Edition; American Psychiatric Association, 2000) diagnoses. For the purposes of this experiment, I adopted the two mania screening questions (e.g., “In the last month, have you had a period lasting four days or longer when you became so happy or excited that you either got into trouble, people worried about you, or a doctor said you were manic?”). The two questions used a “Yes” or “No” response format, and asked respondents whether they experienced symptoms or behaviours (e.g., being very talkative, needing little sleep, being very restless, etc.) typical of mania or hypomania. Only respondents scoring “No” on both items were asked to continue in the study.

Although no psychometric data exist specifically for the Mania Screen of the CIDI, the CIDI as a whole has demonstrated good concordance with the Structured Clinical Interview for the DSM-IV-TR (SCID; First, Spitzer, Gibbon, & Williams, 2002). The agreement between CIDI the SCID for lifetime diagnoses of anxiety, mood, and substance-abuse disorders range from .62 - .93 (using the area under the ROC curve; Haro et al., 2006). The CIDI-SCID concordance for the one-year prevalence of anxiety and mood disorders were .88 and .83, respectively. Similarly, Kessler et al. (2005) found good concordance between CIDI 3.0 and the SCID for anxiety, mood, and substance abuse disorders.

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Beck Depression Inventory-II. The Beck Depression Inventory II (BDI; Beck, Steer & Brown, 1996) is a widely used 21-item self-report inventory designed to measure the presence and severity of depressive symptoms. The scale measures various components of the depressive experience, thus the items capture the affective, cognitive, somatic, and motivational aspects of the disorder. Each item in the BDI consists of 4 statements from which the respondent was asked to pick. Such statements correspond to a 4 point Likert scale (from 0 – 3), thus the range of scores on this instrument is 0 – 63 with higher scores indicative of depression severity.

Barrera and Garrison-Jones (1988) found that the original version of the BDI exhibits excellent internal consistency, with alpha coefficients that range from .78 to .90. Beck et al. (1996) found that the BDI – II possessed adequate test-retest reliability. Kauth and Zettle (1990) found that the instrument successfully discriminated between depressed and non-depressed subjects. Beck, Steer, and Carbin (1988) found that the BDI was significantly correlated ($r = .72$) with other known measures of depression, such as the Hamilton Rating Scale for Depression (Hamilton, 1960).

The BDI has been used in a number of studies with Arabic-speaking populations. For example, Thomas, Campbell, Altareb and Yousif (2010) found that the Arabic translation of the BDI exhibited adequate internal consistency, with an alpha coefficient of .82, when used with a student sample in the United Arab Emirates. Alansari (2006) administered an Arabic-translated BDI to university students in 18 Arabic-speaking nations, such as Egypt, Lebanon, Palestine, Iraq and Jordan, and found that the instrument evidenced good internal consistency, with alpha coefficients ranging from .82 to .93. Finally, Al-Musawi (2001) administered the BDI to a student sample in Bahrain and found that it exhibited adequate internal consistency, with an

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alpha of .83, and good test-retest reliability ($r = .74$). This researcher also found that the BDI successfully differentiated between depressed and non-depressed participants.

A cut-off score of 14 was used as partial criteria for depression case-ness in the current study. Using this cut-off score among participants from the general population, Lasa, Ayuso-Mateos, Vazquez-Barquero, Diez-Manrique and Dowrick (2000) found that the BDI possessed a 100% and 99% sensitivity and specificity, respectively, and a positive and negative predictive values of .72 and 1, respectively. As such, this study utilized this cut-off score, in addition to the responses on the structured interview and a cut-off score of 9 on the PDSQ-Dep, to establish depression status.

Automatic Thoughts Questionnaire – Negative. The Automatic Thoughts Questionnaire – Negative (ATQ-N; Hollon & Kendall, 1980; Appendix G) is a 30-item test designed to assess the frequency of negative automatic thoughts in depression. The items are negatively-valenced and are answered on a 5-point likert scale (from 1, or “not at all”, to 5, or “all the time”), with scores ranging from 30 to 150 (higher scores corresponding to a greater number of negative thoughts). The instrument instructed respondents to indicate how frequently they thought of the presented statements (e.g., “I am a failure”, “I don’t think I can go on”, etc.) over the last day.

The ATQ-N was found to possess good internal reliability ($\alpha = .96$; Hollon & Kendall, 1980). Harrell and Ryon (1983) found strong convergent validity for the ATQ-N, as it was shown to significantly correlate with clinician rating of depression, the Minnesota Multiphasic Personality inventory Depression scale, as well as the BDI. Finally, Hollon, Kendall and Lumry (1986) found that the instrument discriminated between depressed individuals and those who suffer from other psychopathologies.

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The ATQ-N was culturally adapted and utilized in countries such as China (Wei & Zhang, 2010), Turkey (Gul, Yilmaz, & Berksun, 2009), and Japan (Shiraishi, Koshikawa, Nankai, & Domyo, 2007). Most pertinently, however, Beshai, Dobson, and Adel (2012) administered the ATQ to a sample of Egyptian students and found that it possessed an internal reliability of greater than .90, and that it significantly correlated with the Center for Epidemiologic Studies – Depression scale (Radloff, 1977).

Beck Hopelessness Scale. The Beck Hopelessness Scale (BHS; Beck & Steer, 1988) is a self-report measure that consists of 20 true and false items designed to assess the extent of positive and negative beliefs about the future in the past week. Each item is scored as 1 or 0 (range of 0-20, with higher scores more indicative of hopelessness), and the total score corresponds to the number of pessimistic items that are endorsed.

Beck and Steer (1988) found high scale score reliabilities (ranging from .87 to .93) and adequate test-retest reliability (.67) over a one-week period in a psychiatric outpatient sample. The BHS also evidenced adequate concurrent validity, as it was shown to moderately correlate ($r = .46$) with suicidal ideation in a sample of psychiatric outpatients (Beck, Steer, Beck, & Newman, 1993). Finally, the BHS was found to be predictive of suicidal behavior in prospective studies with psychiatric patients (e.g., Brown, Beck, Steer & Grisham, 2000).

The Automatic Thoughts Questionnaire - Positive. The Automatic Thoughts Questionnaire – Positive (ATQ – P; Ingram & Wisnicki, 1988; Appendix E) is a 30-item self-report inventory designed to assess the frequency of positive thoughts during the past week. The instrument instructed respondents to indicate the frequency of occurrence for thoughts such as “I am in a great mood”, or “I have many good qualities” on a 5-point scale from 1, or “never”, to 5, or “all

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the time”. Scores on the ATQ – P can range from 30 – 150, with higher scores indicating more positive thoughts.

Burgess and Haaga (1994) found that the ATQ - P possessed excellent internal reliability, with an alpha coefficient of .95. Ingram, Kendall, Siegle, Guarino, and McLaughlin (1995) reported that the ATQ – P successfully discriminated between psychopathological vs. non-psychopathological states. These researchers also found that the instrument negatively correlated with the BDI ($r = -.47$) and other measures that assess affective symptomatology, thus evidencing adequate discriminate validity.

Dysfunctional Attitudes Scale. The Dysfunctional Attitudes Scale, Form A (DAS; Weissman & Beck, 1978; Appendix F) is a 40-item scale originally designed to assess depressogenic schema content. The instrument instructed respondents to indicate their agreement, on a scale of 1 – 7 (where 1 = “Totally Agree”, and 7 = “Totally Disagree”) to statements such as “I am nothing if a person I love doesn't love me” and “If others dislike you, you cannot be happy”. The scale contains 30 negatively-oriented statements, and 10 positively-oriented statements (e.g., “It is possible for a person to be scolded and not get upset”). The negative items are reversed, so scores on the DAS range from 40 – 280, and higher scores indicate greater negative attitudes.

Beck, Epstein, and Harrison (1983) found that the DAS exhibited good reliability estimates, with coefficient alphas ranging from .84-.92. Secondly, Weissman and Beck, (1978) found good test-retest reliability for the measure over an 8-week period ($r = .80$). Depressed individuals were found to score significantly higher on the DAS than their non-depressed counterparts in a number of studies (e.g., Dobson & Shaw, 1986; Garber, Weiss, & Shanley, 1993). A study by Thomas and Altareb (2012) found that when the DAS was used among a

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sample of United Arab Emirates students, the scale possessed adequate internal consistency and concurrent validity, and a factorial structure comparable to those derived from Western samples.

Cane, Olinger, Gotlib and Kuiper (1986) conducted a factor analysis on the DAS using a student population and found a two-factor structure which explained 61% of the variance. These researchers labeled the factors Performance Evaluation and Approval by Others. The two-factor structure of the DAS has generally been accepted in the depression literature (Dozois, Covin, & Brinker, 2003).

Beck Anxiety Inventory. As depression and anxiety are often co-occurring conditions (Kessler et al., 2003), a tool was needed in order to differentiate between them. The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) was partly created in an attempt to reduce the overlap between anxiety and depression. This measure is used to assess current (past week) levels of anxiety. This instrument consists of 21 items that assess the cognitive, physiological, behavioral and affective components of anxiety. Each item is answered on a 4-point Likert (from “not at all” to “severely: I could barely stand it”) scale (range of 0-63), with higher scores indicative of higher anxiety.

Beck and his colleagues (1988) found that the BAI had excellent scale score reliability (Cronbach alpha of .92) and good test-retest reliability ($r = .75$) over a 1-week period in a sample of psychiatric patients. De Beurs, Wilson, Chambless, Goldstein and Feske (1997) also reported a high test-retest stability ($r = .83$) over a 1-month period. The scale evidenced convergent validity, as it was shown to correlate with the Hamilton Anxiety Rating Scale ($r = .51$). The BAI also evidenced discriminate validity, as it successfully discriminated between patients who suffer from anxiety disorders (e.g., Panic disorder, generalized anxiety disorder, etc.) and other patients suffering from non-anxious disorders (Beck et al., 1988, De Beurs et al., 1997).

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Although the BAI has been used in a number of cross-cultural studies, to the author's knowledge, this instrument has only been used with an Arab student population in two studies (Al-Issa, Bakal, & Fung, 1999; Al-Issa, Al-Zubaidi, Bakal, & Fung, 2000). Unfortunately, the authors of these studies failed to report the psychometric properties of the BAI in their Lebanese samples. It is noteworthy, however, that Lebanese students scored significantly higher on the BAI than their Canadian counterparts (Al-Issa et al., 1999; Al-Issa et al., 2000).

Visual Dot-Probe Task. The visual dot-probe task (VDP; MacLeod, Mathews, & Tata, 1986) is a computerized task designed to detect hypothesized attentional biases that correlate with varying psychopathology, such as depression (Beck, 1967; Beck & Dozois, 2011; Beck et al., 1979). In this task, participants were presented with a stimulus pair (often one emotional and one neutral) that flash for a predetermined period of time (e.g., 500, 1000, or 1500 Milliseconds). One of the words in the stimuli was then replaced with a dot probe, and the participant was instructed to identify (by clicking a button which corresponds to the location of the dot on screen), as quickly as possible, the location the dot. This is believed to be a sensitive measure of attentional bias, as participants generally take longer to respond to the dot probe if it replaced a neutral stimulus, as their attention has been drawn to the emotionally-valenced stimulus (Beck & Dozois, 2011; Clark, Beck, & Alford, 1999). However, questions have been raised over the dot-probe's reliability in measuring attention (see Schmuckle, 2005 for a discussion).

Attentional bias can be measured by subtracting the average latency when the probe replaces an emotional (or target) stimulus from the average latency when the probe replaced a neutral stimulus. According to Williams et al. (1997), the VDP is a superior attentional bias detection paradigm, as it is free from potential response bias.

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Several studies have used the dot-probe paradigm to detect attentional biases in depression. For instance, Bradley, Mogg, and Lee (1997) found that individuals who have undergone a negative mood induction evidenced an attentional bias for depressive words when the words were flashed for 1000 msec. Using the dot-probe task, Gotlib, Kasch, Traill, Joormann, Arnow, and Johnson (2004) found that depressed patients exhibited a specific attentional biases toward stimuli (pictures of faces) that connote sadness and loss. More recently, Joormann and Gotlib (2007) found that, in comparison to healthy controls, currently depressed and remitted participants evidenced selective attention to sad faces in the dot-probe task.

Materials

A set of stimuli were chosen from the MacArthur Network Face Stimuli Set (<http://www.macbrain.org/faces/index.htm>), developed by The Research Network on Early Experience and Brain Development. This network consists of 646 colored and validated photographs of different facial expressions. These facial expressions were depicted by a number of different actors representing a variety of different ethnicities of both genders. Of the 40 chosen actors (21 male, 19 female), each expressed happy, sad, and neutral faces (i.e. 120 total stimuli).

A total of 189 words were selected from the Myers Word List. These words were translated into Arabic using the same translation method followed for the study questionnaires. A total of 45 students from Cairo University were recruited and asked to rate the translated 189 words on their level of perceived sadness a 10-point Likert scale (“1” very sad, to 10 “Very happy”). The words were ranked based on their ratings, and the top 20, bottom 20, and middle 20 words were chosen as the happy, sad, and neutral words to be used in the attention bias dot-probe task. The English equivalent of the words in the three valence categories did not significantly differ on average length ($M_s = 6.70, 6.00, \text{ and } 7.30$ for the happy, neutral, and sad words,

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respectively), $F(2, 57) = 2.71, p = .075$. The English words also did not significantly differ on average frequency ($M_s = 48.10, 86.70, 33.15$, for happy, neutral, and sad words, respectively), $F(2, 57) = 2.15, p = .13$. The Arabic words significantly differed on happiness ratings: happy ($M = 9.23, SD = .16$), neutral ($M = 5.27, SD = .48$), and sad ($M = 1.67, SD = .15$). The Arabic words also significantly differed on mean length ($M_s = 4.05, 4.15, \text{ and } 5.05$ for the happy, neutral, and sad words, respectively), as the sad words were significantly longer than happy and neutral words ($p = .008$ and $.016$, respectively).

Design and Procedure

Upon arrival, individuals were greeted by a trained research assistant and handed the consent form (see Appendix A), which offered a brief description of the study and what participation will entail (e.g., time commitment, disclosure of symptoms, etc.). After informed consent was obtained, participants were given the “Pre Dot-Probe” questionnaire package, which contained a demographic information form, the PDSQ (Depression, Psychosis, Alcohol, and Drug subscales), CIDI Mania Screen (Appendix D), and BDI-II. The demographic form (Appendix C) gathered information on gender, age, place of birth for self and for parents, employment, education, marital status, religious affiliation, and primary and first languages). For inclusion in the depressed group, participants had to demonstrate a score of 9 or higher on the PDSQ-Dep and 14 or higher on the BDI-II. To be included in the non-depressed group, participants had to score 8 or lower on the PDSQ-Dep and 13 or lower on the BDI-II. For both groups in each country, participants who endorsed a score of 1 or higher on any of the other screening subscales of the PDSQ and CIDI Mania screen were asked a number of follow-up question to determine the presence of psychosis, mania, or substance dependence issues. Based on these follow-up questions, participants were either asked to complete the subsequent sections

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of the study or were thanked, debriefed, and provided with compensation. Scores from participants who were excluded in the first section of the study were excluded from final analyses. In addition to diagnostic inclusionary and exclusionary criteria, participants who reported being born outside of Canada or Egypt, or reported that their parents were born outside of Canada or Egypt were also debriefed early and were not included in further analyses.

For those who remained in the study after completion of the first questionnaire package, the research assistant loaded the DirectRT program (a widely used computer program designed to run dot-probe and other implicit tasks) on a computer present in the testing room. The research assistant then completed a thorough and standardized introduction and provided instructions for the attention task. In addition to verbal instructions provided by the research assistant, each section of the attention task was preceded by detailed instructions as well as six practice trials. As explained above, the attention task was divided into five scored conditions: Attention to Sad vs. Neutral Faces (40 trials), Attention to Happy vs. Neutral Faces (40 Trials), Attention to Sad vs. Neutral Words (20 Trials), Attention to Happy vs. Neutral Words (40 Trials), and Attention to Happy vs. Sad words (20 Trials), for a total of 140 scored trials.

Each trial began with the presentation of a fixation point (shape of a cross) in the centre of the screen. The fixation cross was presented for 1000 msec. Then, two faces (stimulus-pair of the same actor) or two words were presented simultaneously for 1000 msec and appeared on either the left or right sides of the screen. The stimuli then disappeared after the 1000 msec presentation, and a dot replaced one of them, and was shown in the centre of where one of the pictures or words appeared. Participants were instructed to respond as quickly as possible by pressing one of two buttons (left arrow or right arrow) that correspond to the location of the

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probe on screen (left or right sides). Each subject was presented with a fully randomized order for the stimulus-pairs within each of the five conditions.

In their study, Joormann and Gotlib (2007) excluded reaction times that were less than 100 msec and more than 1000 msec since these responses occurred at an extremely infrequent rate among their sample. Similarly, to minimize the influence of outliers in the current investigation, the data gathered through the VDP were analyzed and extreme latencies (less than 1% occurrence rate) were removed. Also in accordance with Joormann and Gotlib's (2007) design, this study analyzed only correct responses (i.e., correct identification of the location of the probe) and thus all erroneous responses were eliminated.

To test the attentional bias hypothesis, scores were computed for each facial expression (happy, sad) and word using the following equation provided by Mogg et al. (1995):

$$[1] \quad \text{Attentional bias score} = \frac{1}{2} [(RpLe - RpRe) + (LpRe - LpLe)],$$

where R = right position, L = left position, p = probe, and e = emotional face. RpLe corresponds to the mean latency when the probe is in the right position and the emotional face is in the left position, and so on. As Joormann and Gotlib (2007) describe,

This equation calculates the "attention-capturing" quality of emotional faces by subtracting the mean probe detection times for probes appearing in the same position as the emotional face from the mean probe detection times for probes appearing in a different position from the emotional face. Positive values of this bias score indicate a shift of attention toward the spatial location of emotional faces relative to matched neutral faces, and negative values indicate a shift of attention away from the spatial location of emotional faces relative to matched neutral faces. (p. 82)

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After completing the attention task, the research assistant asked participants to complete the second, “Post Dot-Probe” questionnaire package, which included ATQ-P, ATQ-N, BHS, BAI, and DAS. Following this, all participants were verbally debriefed and provided with a debriefing form which offered more details about the nature of the study as well as a list of mental health resources and materials (e.g., self-help books, in English and Arabic) that could be consulted at the participant’s discretion. Participants were thanked for their participation and given their compensation, as outlined in the advertisement and consent form. Research assistants were trained to assess and document suicidal risk. Participants who showed elevated risk for suicide were strongly encouraged to contact one of the resources provided on the debrief form (e.g., Calgary Distress Centre).

Translation

All measures used in Egypt, as well as the 40 words used as part of the VDP task, were translated in accordance with the World Health Organization’s Guidelines for the Process of Translation and Adaptation of Instruments (WHO, 2007). These guidelines are harmonious with previously developed guidelines for the translation of self-report medical and psychological measures (Beaton, Bombardier, Guillimen, & Farrezz, 2000), and stipulated a four step process in the adaptation of instruments: forward translation, expert back-translation, pre-testing, and finalizing. For the purposes of this study, two professional translators (each with a minimum of 5 years of experience) forward translated the original English instruments into Arabic. Subsequently, a third professional translator used the newly formed Arabic instruments to back-translate the instruments to English. The first author (who can speak, read and write both English and Arabic fluently) then compared the back-translated versions with the original instruments and noted discrepancies, and awkwardly worded, or what appeared to be culturally non-

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equivalent items. After flagging these “difficult” items, the author made a quick translational suggestion for each of these items. Such suggestions guided the forward translators who then retranslated these items to Arabic (with the suggestions in mind), and passed it on for back-translation. This process was repeated a total of three times until all apparent discrepancies from the originals were eliminated from the back-translations. Some of these difficult items included items 1 (“numbness and tingling”) and 9 (“terrified or afraid”) of the BAI, item 11 (“Irritability”) of the BDI, and item 21 (“I am happy with the way I look”) of the ATQ-P. Given financial and time constraints, I was unable to pre-test the instruments on the target population.

Training of Research Personnel

The project was completed over the course of two years (May 2011-May 2013). During the first two months of the study, the first author (SB) visited the Egyptian collaborator (AA) in Cairo and introduced him to a detailed study protocol, and familiarized him with the study materials and procedure. The collaborator nominated a research assistant to aid in data collection and management in Egypt. After this nomination was made and the assistant provided their consent, the first author (SB) visited and trained the nominated research assistant on the study protocol. This initial meeting and training was followed by two training sessions conducted via Skype. Further, the research assistant was provided with training videos which provided detailed instructions with respect to the study protocol, and described the nature of the consent and debriefing process, as well as provided descriptions of each of the utilized questionnaires and measures. The research assistant in Egypt was fluent in both English and Arabic, and thus her training and understanding of the instructions (which were in English), as well as her ability to administer the protocol in Arabic, were ensured. The research assistant was a qualified psychologist with over 10 years of experience in mental health.

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In addition to soliciting help from research personnel in Cairo, the first author trained research assistants to collect and manage data in Canada. Over the course of the study, six research assistants were recruited and trained. All research assistants were provided with the study protocol described above, and were trained over two sessions by the first author with respect to study procedure and risk management. Where possible, research assistants were trained during the same time, to ensure standardization of protocol administration. All research assistants were either completing or had obtained a bachelor's degree in Psychology at the University of Calgary, Canada.

Statistical Analyses

Prior to data analyses, all files were entered into a statistical package program (SPSS 19.0). Errors, deviant responses, and missing data were examined. If there were missing data, each data point was interpolated within each participant, within each diagnostic group and nationality. All dependent variables were then examined for normality, and reliability estimates for all employed primary outcome measures were calculated for each ethnic group. I employed a *priori* level of .025 for analyses of main hypotheses, as was suggested by Tabachnick and Fidell (2007) for parametric tests which violated the homogeneity of variance assumption. All other analyses employed an a priori alpha level of .05. First, demographic variables (e.g., age, years of education, income, gender, marital status, etc.) for all groups were analyzed using ANOVA or a chi-square analyses.

Secondly, a number of two-way (Nationality by Depression status) ANOVAs were conducted to compare the groups on each of the primary outcome variables: PDSQ- Dep, BDI, ATQ-N, ATQ-P, BHS, DAS, BAI, and attention bias scores. Specifically, to address the negativity hypothesis, two, two-way (Nationality and (Depression status) ANOVAs were

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conducted to compare scores on the ATQ – N (Negative thoughts toward self) and BHS (Negativity toward the future). To address the exclusivity hypothesis, a 2 X 2 ANOVA was conducted to compare scores on the ATQ – P. Subsequently, a 2 (Nationality) by 2 (Depression status) ANOVA was conducted comparing scores on the DAS, as to address the Negative schema content hypothesis. Finally, a series of five ANOVAs were conducted in order to compute the effects of depression status and nationality on attention bias to negative and positive stimuli. To test the severity hypothesis, Pearson's product-moment correlation coefficients were calculated for participants in both cultural groups.

In addition to these main analyses, I conducted a series of exploratory analyses to measure the effects of depression status and severity, nationality, and gender on each of the primary outcome variables.

Results

Data Checking and Cleaning

The data were checked carefully for accuracy, completeness, and for entry errors. This check revealed a small percentage of missing data (~ 1.5%), and in no apparent pattern. It is unlikely that this missing information systematically influenced the dataset. Further, data entry errors only occurred on 3 occasions and so this result was far less than 1%.

All of the dependent variables were evaluated for normality using three methods: the Shapiro-Wilk test of normality, examination of the skewness and kurtosis of each of the variables, and graphical examination of the Q-Q plots and histograms. In cases where the Shapiro-Wilk test indicated a beyond chance degree of skewness from normality (e.g., $p < .05$), the other methods (e.g., closer examination of the skewness and kurtosis, graphical examination, etc.) were employed to ensure that each of the dependant variables did not deviate sharply from

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normality. The recommended cut-off of ± 1 and ± 1.5 was used to gauge deviation from normality for skewness and kurtosis, respectively (Tabachnick & Fidell, 2007).

The Shapiro-Wilk test revealed significant deviation from normality for scores on the PDSQ- Dep, BDI, ATQ-N, BAI, BHS, and biased attention to sad faces. In contrast, the test revealed a non-significant difference from what is expected of a normal distribution for scores of attention to sad words, attention to happy faces, attention to happy words, DAS, and ATQ-P.

Skewness and kurtosis for the scales that deviated significantly on the Shapiro-Wilk test were as follows: PDSQ – Dep: 0.39 and -1.42 , respectively; BDI: 0.56 and -1.03 , respectively; ATQ-N: 0.71 and -0.76 , respectively; BAI: 1.05 and 0.47, respectively; BHS: 0.73 and -0.94 , respectively; biased attention toward sad faces: -0.59 and 0.87, respectively. As can be seen, none of the dependant variables showed skewness and kurtosis statistics that were beyond the set cut-offs (± 1 for skewness and ± 1.5 for kurtosis). Further, these measures showed distribution Q-Q plots and histograms that approximated what would be expected of a normal distribution. As such, the use of ANOVAs and other parametric analyses was considered justified, without the need for further consideration of data restriction or transformation.

Demographic Variables

The demographic information for study participants can be found in Table 1. Participant age was subjected to a two-way ANOVA, with nationality (Egyptian vs. Canadian) and depression status (Depressed vs. Non-depressed) as the between-groups variables. This analysis revealed a significant main effect for nationality, $F(1, 127) = 9.70, p = .002$, as Egyptian participants were younger ($M = 30.16, SD = 10.05$) than their Canadian ($M = 36.95, SD = 14.91$) counterparts, regardless of depression status. This analysis also revealed a significant interaction between nationality and depression status, $F(1, 127) = 4.78, p = .031$, as depressed Canadians

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($M = 41.26$, $SD = 13.45$) were significantly older than their depressed Egyptian ($M = 29.41$, $SD = 8.44$) counterparts.

Given the above effects, a Pearson product-moment correlation analysis was conducted to determine if age was significantly associated with any of the dependant variables. This analysis revealed a significant negative correlation between age and scores on the ATQ-P, $r = -.22$, $p = .021$, and a significant positive correlation between age and scores on the BHS, $r = .18$, $p = .04$. Given these results, Analyses of Covariance (ANCOVA) were conducted in addition to the planned ANOVAs for the scores on the ATQ-P and BHS.

A Chi-square analysis revealed no significant main or interaction effects for nationality or diagnostic status on gender composition and religion. There was a significant main effect for depression on marital status, as depressed individuals were less likely to be currently married and more likely to be separated or divorced, $X^2(2, N = 131) = 8.31$, $p = .016$. There was also a significant effect for nationality on employment status, as Egyptian participants were more likely to be unemployed than Canadians, $X^2(5, N = 131) = 13.28$, $p = .021$. Further, there was a significant effect for nationality on education, as there was a significantly larger number of Canadians with a high school education and a trade's diploma than their Egyptian counterparts $X^2(8, N = 131) = 21.11$, $p < .007$.

Two one-way MANOVAs comparing differing levels of a) economic status (from unemployment to over 100,000 dollars in income), and b) differing levels of education (from no secondary education to a doctorate equivalent) on the dependent measures of interest (BDI, PDSQ_D, ATQ-N, ATQ-P, BHS, DAS, Negative and Positive Attention Biases). The analyses revealed no significant differences between the various economic statuses ($p > .05$), and educational categories ($p > .05$) on any of the dependant measures.

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Table 1. *Demographic Variables of Depressed and Non-Depressed Individuals, Stratified by country.*

	Depressed (<i>n</i> = 64)		Non-Depressed (<i>n</i> = 67)	
	Egyptian (<i>n</i> = 29)	Canadian (<i>n</i> = 35)	Egyptian (<i>n</i> = 29)	Canadian (<i>n</i> = 38)
Demographics				
Female <i>n</i> (%)	17 (58.2)	23 (65.71)	17 (58.2)	30 (78.95)
Mean Age (<i>SD</i>)	29.41 (8.44)	41.26 (13.45)	30.90 (11.54)	32.97 (15.25)
Marital Status <i>n</i> (%)				
Single	21 (72.41)	19 (54.29)	17 (58.20)	22 (57.89)
Married	6 (20.69)	7 (20.0)	12 (41.8)	13 (34.20)
Divorced/Separated	2 (6.90)	9 (25.71)	0	3 (7.89)
Education <i>n</i> (%)				
Secondary	4 (13.79)	9 (25.71)	10 (34.48)	16 (41.11)
Trades/Diploma	4 (13.79)	12 (34.29)	9 (31.03)	8 (21.05)
Bachelor's Degree	14 (48.28)	9 (25.71)	8 (27.90)	9 (23.68)
Modal Income /Employment Range	Unemploy- ed/\$0 (51.70%)	\$10,000- 30,000 (28.90%)	Unemployed /\$00 (55.20%)	\$10,000-30,000 (36.8%)
Religious Affiliation <i>n</i> (%)				
Christian	23 (79.31)	20 (57.15)	17 (58.62)	22 (37.89)
Muslim	5 (17.24)	0	12 (41.8)	0
Agnostic/Atheist	0	8 (22.85)	0	10 (26.32)
Other	1 (3.45)	7 (20.0)	0	7 (18.82)

Note. Marital Status, Education, and Religious Affiliation only represent summaries of the responses. Some subcategories were not included in this table.

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Two one-way MANOVAs comparing differing levels of a) economic status (from unemployment to over 100,000 dollars in income), and b) differing levels of education (from no secondary education to a doctorate equivalent) on the dependent measures of interest (BDI, PDSQ_D, ATQ-N, ATQ-P, BHS, DAS, Negative and Positive Attention Biases). The analyses revealed no significant differences between the various economic statuses ($p > .05$), and educational categories ($p > .05$) on any of the dependent measures.

Reliability of the Utilized Measures

To the author's knowledge, this is the first study to use measures such as the PDSQ, BHS, and ATQ-P in an Egyptian sample. To establish the preliminary psychometric soundness of the used assessment tools, Cronbach's alpha and Gutmann's Split Half coefficients were computed for all measures. These analyses were stratified based on nationality (i.e., Canadian and Egyptian). Table 2 presents Cronbach's alpha and Gutmann's split half coefficients for each of the used measures. All of the used measures evidenced adequate to excellent internal reliability.

Levene's Test of Homogeneity and Alpha Adjustment

To test the assumption of homogeneity of variance, Levene's test of homogeneity of variance was conducted for all performed analyses. With the exception of analyses conducted on the five attention biases scores (e.g., Sad Faces, Sad Words, Happy Faces, Happy Words, and Sad vs. Happy Words), Levene's test produced significant findings, suggesting that the homogeneity assumption was violated. Tabachnick and Fidell (2007) suggested that when data violates basic assumptions for Analyses of Variance tests, researchers either divide the default .05 alpha by 2 (for minor violations) or by 3 (for major violations) to adjust for a possible inflation of Type I error. Consistent with these recommendations, the default alpha level of .05

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was divided by 2. Thus, the new *a priori* alpha of .025 was adopted and set as the criteria to define significance for all the following analyses. Although it is possible that some of the analyses conducted below represent major violations of ANOVA assumptions, the decision was made to set the alpha level at .025 (as opposed to .017) given the experimental and novel nature of the research, and so as not to be overly conservative in declaring effects non-significant. As such, an alpha of .025 likely represents a fair balance between Type I and Type II error rates.

Depression Severity and Culture

Table 3 presents the means and standard deviations for scores on the measures that reflect depression severity, and other self-report primary outcome measures.

PDSQ – Depression

A two-way ANOVA was conducted to compare depressed and non-depressed participants, in both countries, on PDSQ-Dep subscale scores. There was no significant main effect for nationality, $F(1, 127) = .923, p = .33$. There was a significant main effect for depression status, $F(1, 127) = 759.59, p < .001, (\eta^2_p = .86)$, wherein depressed individuals scored significantly more than non-depressed individuals on the PDSQ-Dep subscale. The analysis revealed a significant interaction between depression status and nationality, $F(1, 127) = 9.28, p = .003 (\eta^2_p = .07)$. Further testing revealed that depressed Canadians scored significantly higher than depressed Egyptians on the depression subscale of the PDSQ, $F(1, 62) = 5.30, p = .024 (\eta^2_p = .078)$ (see Figure 1).

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Table 2. *Cronbach's Alpha and Guttman's Split Half Coefficients for Self-Report Measures used in the Current Study, Stratified by Country.*

Measure	Canadian (n = 73)		Egyptian (n = 58)	
	Cronbach's	Guttman's Split	Cronbach's	Guttman's Split
	Alpha	Half Alpha	Alpha	Half Alpha
PDSQ - Dep ^a	.95	.93	.90	.86
BDI ^b	.97	.96	.94	.92
ATQ - N ^c	.98	.98	.98	.97
ATQ - P ^d	.98	.96	.95	.93
BAI ^e	.94	.93	.94	.93
BHS ^f	.94	.94	.94	.94
DAS ^g	.94	.84	.85	.77

Note. a = Psychiatric Diagnostic Screening Questionnaire – Depression Subscale; b = Beck Depression Inventory – II; c = Automatic Thoughts Questionnaire – Negative; d = Automatic Thoughts Questionnaire – Positive; e = Beck Anxiety Inventory; f = Beck Hopelessness Scale; g = Dysfunctional Attitudes Scale.

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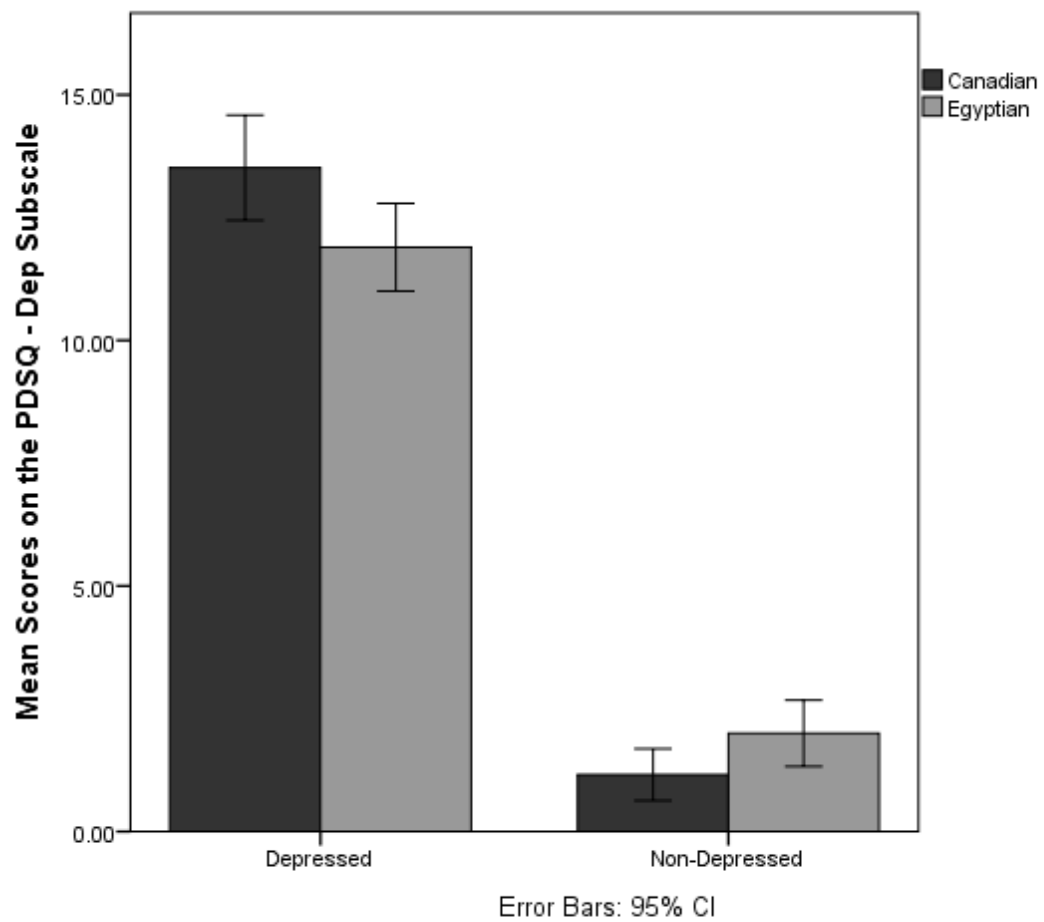


Figure 1. Differences between Depressed and Non-Depressed Egyptians and Canadians on Depression Severity According to the PDSQ- Dep

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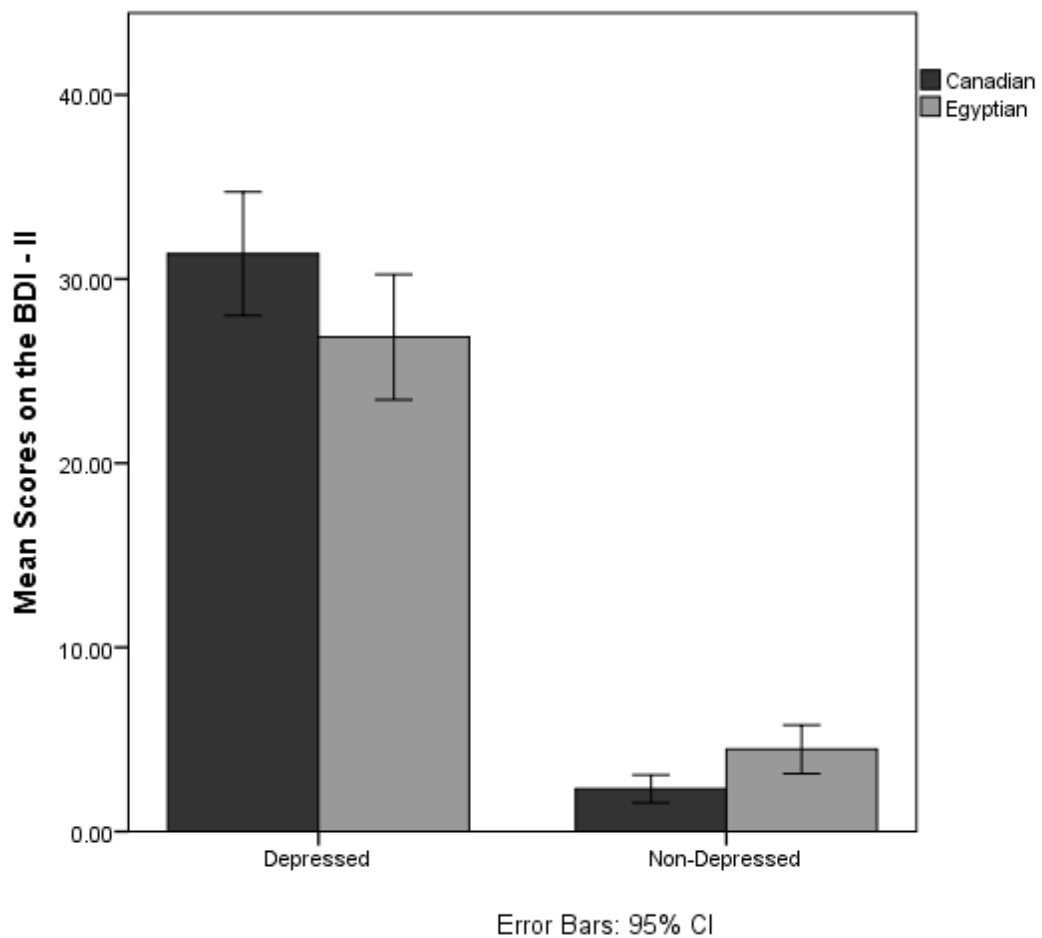


Figure 2. Differences between Depressed and Non-Depressed Egyptians and Canadians on Depression Severity According to the BDI- II.

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Table 3. Means and Standard Deviations of Depressed vs Non-Depressed Individuals on Depression and other Self-Report Measures Assessing the Primary Outcomes, stratified by Country.

Self-Report Measure	Depressed (n = 64)		Non-Depressed (n = 67)	
	Egyptian (n = 29)	Canadian (n = 35)	Egyptian (n = 29)	Canadian (n = 38)
	M (SD)	M (SD)	M (SD)	M (SD)
PDSQ ^a	11.90 (2.34)	13.51 (3.12)	2.00 (1.77)	1.16 (1.60)
BDI ^b	26.85 (8.94)	31.37 (9.77)	4.46 (3.48)	2.32 (2.29)
BAI ^c	24.14 (11.83)	19.35 (10.47)*	9.28 (8.92)	3.48 (2.55)
ATQ-N ^d	87.27 (30.73)	87.60 (24.46)	45.31 (12.73)	35.00 (8.21)
BHS ^e	10.59 (6.93)	13.00 (4.68)	2.90 (2.72)	2.44 (1.72)
ATQ-P ^f	78.54 (18.61)	61.84 (18.93)	102.65 (20.47)	97.73 (27.54)
DAS ^g	162.15 (35.01)	154.97 (28.17)	134.54 (18.21)	103.23 (23.81)

Note. a = Psychiatric Diagnostic Screening Questionnaire – Depression Subscale; b = Beck Depression Inventory – II; c = Beck Anxiety Inventory; d = Automatic Thoughts Questionnaire – Negative; e = Beck Hopelessness Scale; f = Automatic Thoughts Questionnaire – Positive; g = Dysfunctional Attitudes Scale.

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BDI

Similar to the analysis above, a two-way ANOVA was conducted to compare scores across nationalities and depression statuses on BDI-II scores. There was no main effect for nationality, $F(1, 127) = .96, p = .39$. There was a significant main effect for depression status, as depressed individuals scored significantly higher than their non-depressed counterparts on the BDI-II, $F(1, 127) = 451.32, p < .001 (\eta^2_p = .78)$. Further, there was a significant interaction between depression status and nationality $F(1, 127) = 7.59, p = .007 (\eta^2_p = .06)$. Further testing indicated that non-depressed Egyptians scored significantly higher than non-depressed Canadians on the BDI-II, $F(1, 65) = 9.26, p = .003 (\eta^2_p = .13)$ (Figure 2).

*Anxiety and Culture**BAI*

A two-way ANOVA was conducted to compare scores on the BAI for depressed and non-depressed participants in each of the two countries. There was a significant main effect for depression status, $F(1, 127) = 95.77, p < .001 (\eta^2_p = .43)$, as depressed individuals scored significantly higher than non-depressed individuals on the BAI. Further, there was a significant main effect for nationality, as Egyptians scored significantly higher than Canadians on the BAI, $F(1, 127) = 11.36, p = .001 (\eta^2_p = .08)$. There was no significant interaction between depression status and nationality, $F(1, 127) = .103, p = .75$.

*Negative/Positive Cognitions and Culture**ATQ – Negative*

The analysis revealed a significant main effect for depression status, as depressed individuals scored significantly higher than their non-depressed counterparts, $F(1, 127) = 170.43,$

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$p < .001$ ($\eta^2_p = .57$). There was no significant main effect for nationality, $F(1, 127) = 1.90$, $p = .17$, and no interaction effect, $F(1, 127) = 2.16$, $p = .14$.

BHS

The analysis revealed a significant main effect for depression status, $F(1, 127) = 142.00$, $p < .001$ ($\eta^2_p = .53$), indicating that depressed individuals scored significantly higher on the BHS than non-depressed individuals. There was no significant main effect for nationality, $F(1, 127) = 1.65$, $p = .20$, and no interaction effect between nationality and depression, $F(1, 127) = 3.50$, $p = .06$. Given the significant association between age and scores on the BHS, a secondary ANCOVA analysis was conducted controlling for age. As with the above results, the ANCOVA revealed a significant main effects for depression status $F(1, 127) = 136.78$, $p < .001$ ($\eta^2_p = .52$), but no significant main effect for nationality, $F(1, 127) = 1.13$, $p = .29$, and no significant depression status by nationality interaction, $F(1, 127) = 2.92$, $p = .09$.

ATQ – Positive

The ANOVA revealed significant main effects for depression status, $F(1, 127) = 59.87$, $p < .001$ ($\eta^2_p = .32$), and for nationality, $F(1, 127) = 7.78$, $p = .006$ ($\eta^2_p = .06$). These analyses demonstrated that depressed individuals in both cultures scored significantly lower than healthy individuals on the ATQ-P, whereas Egyptian individuals generally scored significantly higher on this measure than Canadians. There was no significant interaction between depression status and nationality on the ATQ-P, $F(1, 127) = 2.31$, $p = .13$.

Given the significant association between age and scores on the ATQ-P, a secondary ANCOVA analysis was conducted to determine if the above results held, after controlling for age. As with the above results, the ANCOVA revealed significant main effects for depression

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status $F(1, 127) = 56.35, p < .001 (\eta^2_p = .31)$, and for nationality, $F(1, 127) = 5.35, p = .022 (\eta^2_p = .041)$, but no significant interaction effect, $F(1, 127) = 1.50, p = .22$.

Dysfunctional Attitudes and Culture

Similar to the above analyses, total scores on the DAS were subjected to a two-way ANOVA. This analysis revealed significant main effects for depression status, $F(1, 124) = 68.83, p < .001 (\eta^2_p = .36)$, and for nationality, $F(1, 124) = 16.19, p < .001 (\eta^2_p = .12)$. Depressed individuals in both countries scored significantly higher on the DAS than non-depressed participants, and Egyptian participants scored significantly higher on the measure than Canadians. Further, there was a significant interaction effect between depression status and nationality, $F(1, 124) = 6.37, p = .01 (\eta^2_p = .05)$, as non-depressed Egyptians scored significantly higher on the DAS than their non-depressed Canadian counterparts (Figure 3).

In order to examine whether the differences discussed above were consistent for both factors of the DAS (Sociotropy and Autonomy), subscores for each of the factors were computed and these scores were subjected to a two-way MANOVA. Consistent with the results obtained for total DAS scores, this analysis revealed significant main effects for depression status and nationality for both of the DAS-Sociotropy and DAS-Autonomy scores. A significant main effect was found for scores on the DAS-Autonomy, $F(1, 124) = 5.62, p = .02 (\eta^2_p = .04)$, as non-depressed Egyptians scored significantly higher on the subscale than non-depressed Canadians. A non-significant trend for the interaction effect was observed for scores on the DAS-Sociotropy, $F(1, 124) = 4.65, p = .03$.

Attention toward Sad and Happy Faces

Table 4 shows the means and standard deviations of attention bias scores. Attention bias scores from the dot-probe task were calculated and subjected to 5 two-way ANOVAs. The first

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analysis examined the effects of depression status and nationality on attention bias toward sad faces and away from neutral faces. This analysis found no significant main effect for depression status when sad faces were presented with neutral faces, $F(1, 89) = 1.37, p = .25$, no significant main effect for nationality, $F(1, 89) = 1.04, p = .31$, and no significant interaction between depression status and nationality, $F(1, 89) = .17, p = .68$.

In the second analysis, the effects of depression status and nationality on attention toward happy faces and away from neutral faces were examined. This analysis revealed no significant effect main for depression status, $F(1, 86) = 1.00, p > .025$, and no significant main effect for nationality, $F(1, 86) = 3.37, p = .07$, although Egyptian participants showed a non-significant trend evidencing a bias toward happy faces in comparison to their Canadian counterparts. There was a significant interaction effect between depression status and nationality, $F(1, 86) = 8.82, p < .025$ ($\eta^2_p = .092$), as depressed Egyptians showed a bias toward happy faces and away from neutral faces in comparison to their depressed Canadian counterparts ($M = -99.48, SD = 339.90$) (see Figure 4).

Attention toward Sad and Happy Words

A third analysis examined the effects of depression status and nationality on attention toward sad words and away from neutral words. This analysis revealed no significant main effect for depression status, $F(1, 89) = .81, p = .37$, no significant main effect for nationality, $F(1, 89) = 1.59, p = .21$, and no significant interaction, $F(1, 89) = 1.41, p = .24$.

Using the same two independent variables as above, the fourth analysis examined the effects on attention toward happy words and away from neutral words. This analysis revealed no significant main effect for depression status, $F(1, 87) = .05, p = .83$. However, the analysis showed a significant main effect for nationality, $F(1, 87) = 7.17, p = .009$ ($\eta^2_p = .076$), as

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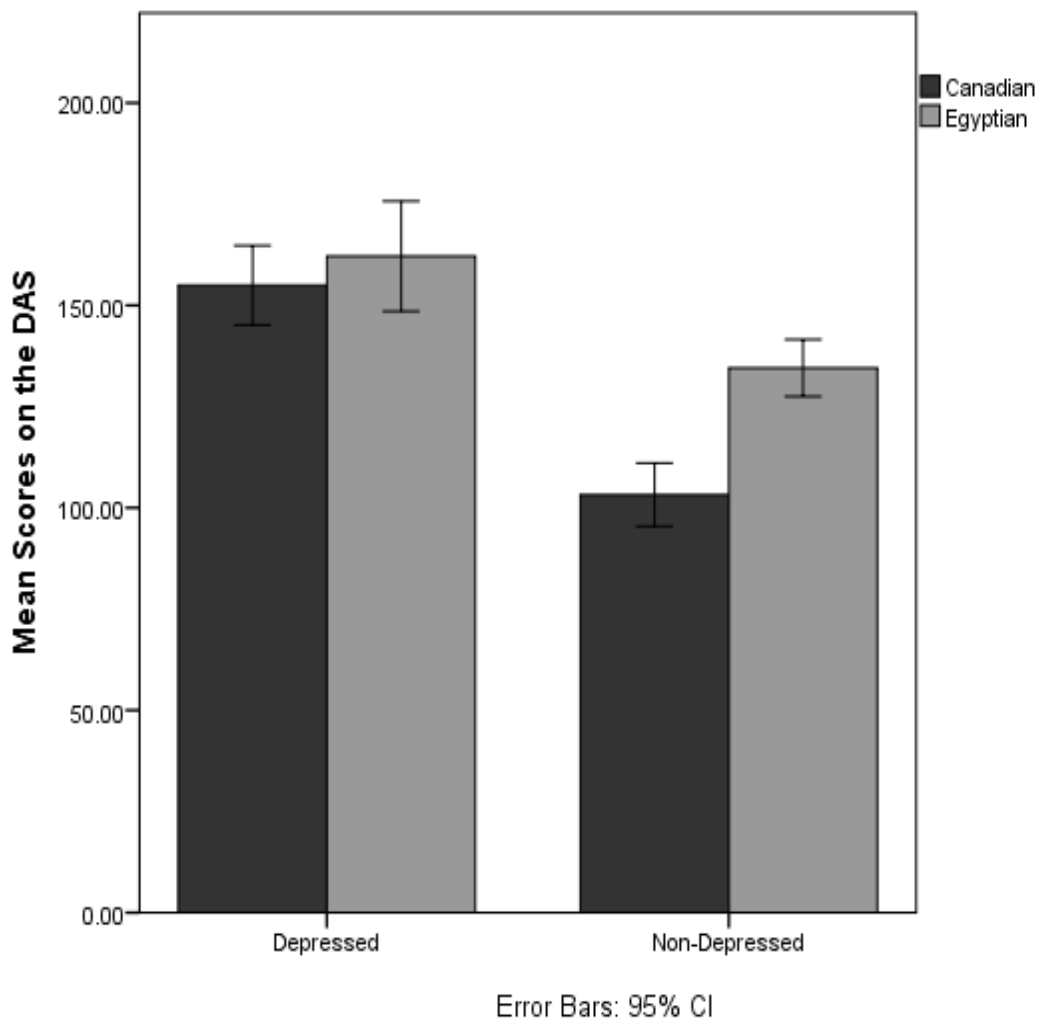


Figure 3. Differences between Depressed and Non-Depressed Egyptians and Canadians on Depression Severity According to the DAS.

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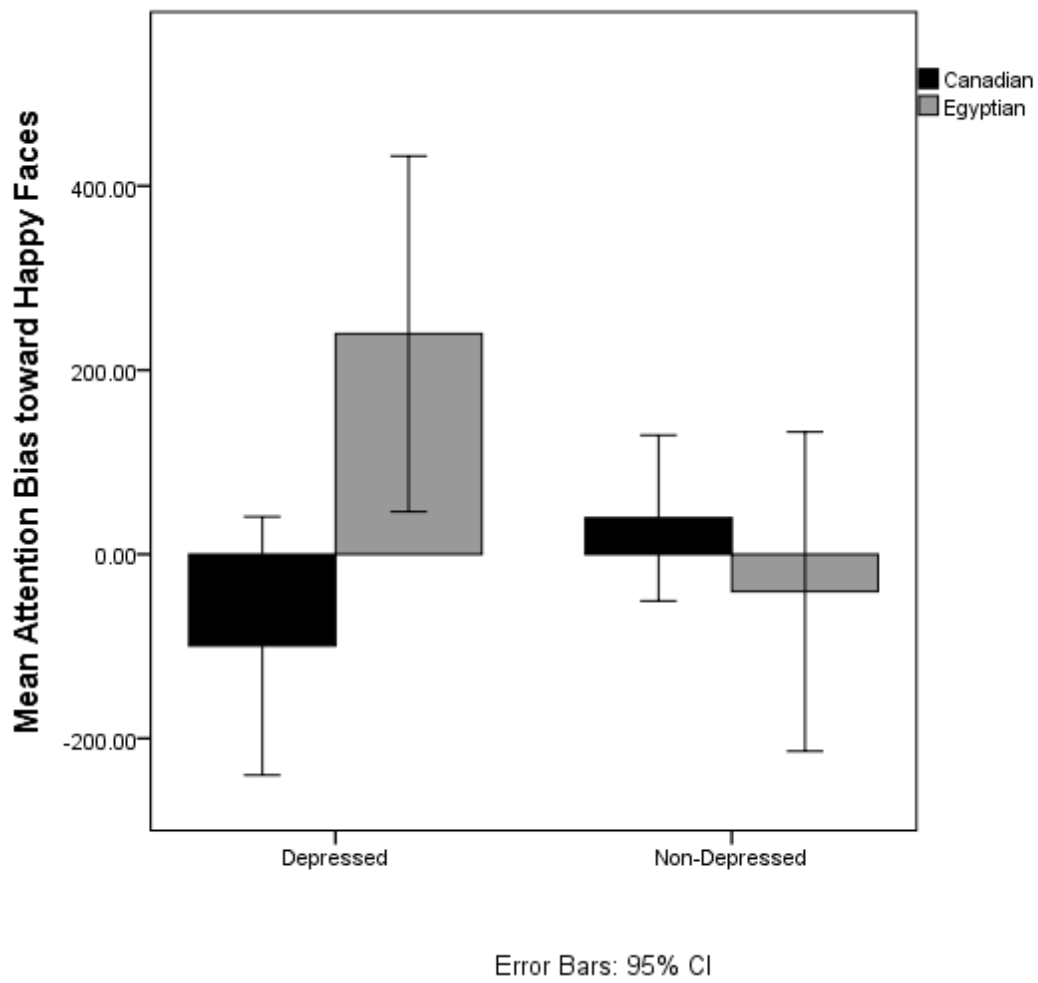


Figure 4. Differences between Depressed and Non-Depressed Egyptians and Canadians on Attention Bias Scores toward Happy Faces.

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Table 4. Means and Standard Deviations of Attention Bias Scores toward Sad and Happy

Stimuli.

Attention	Depressed (<i>n</i> = 64)		Non-Depressed (<i>n</i> = 67)	
	Egyptian <i>M</i> (<i>SD</i>)	Canadian <i>M</i> (<i>SD</i>)	Egyptian <i>M</i> (<i>SD</i>)	Canadian <i>M</i> (<i>SD</i>)
Toward Sad Faces (away from neutral faces) ^a	28.08 (303.43)	-72.38 (324.45)	81.08 (377.43)	38.50 (307.70)
Toward Happy Faces (away from neutral faces) ^b	239.34 (362.56)	-99.48 (339.90.47)	-40.50 (392.23)	39.35 (232.23)
Toward Sad Words (away from neutral words) ^c	82.67 (195.59)	79.57 (199.46)	94.87 (213.46)	-8.99 (177.02)
Toward Happy Words (away from neutral words)	56.87 (216.97)	-4.67 (167.04)	103.00 (263.13)	-69.95 (172.05)
Happy vs. Sad Word	59.80 (347.65)	-1.44 (226.59)	-121.48 (173.32)	-9.59 (109.75)

Note. a = positive values connote attention toward sad faces and negative values connote attention away from sad faces; b = positive values connote attention toward happy faces and negative values connote attention away from happy faces; c = positive values connote attention toward sad words and negative values connote attention away from sad words; d = positive values connote attention toward happy words and negative values connote attention away from happy words; e = positive values connote attention toward happy words and negative values connote attention toward sad words.

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Egyptians ($M = 83.78$, $SD = 242.75$) evidenced a significantly skewed attention toward happy words and away from neutral words in comparison to Canadian participants ($M = -37.90$, $SD = 171.23$). The analysis did not find a significant interaction effect between depression status and nationality, $F(1, 87) = 1.62$, $p = .21$. The final analysis examined the effects of depression status and nationality on attention toward happy words and away from negative words. This analysis revealed a significant main effect for depression status, $F(1, 87) = 5.35$, $p = .023$ ($\eta^2_p = .058$), as depressed participants ($M = 20.43$, $SD = 233.19$) were significantly more drawn toward happy words and away from sad words in comparison to non-depressed participants ($M = -57.54$, $SD = 149.74$). The analysis revealed no significant main effect for nationality, $F(1, 87) = .38$, $p = .54$. Finally, there was no significant interaction between depression status and nationality, $F(1, 87) = 4.47$, $p = .037$, but there was a non-significant trend which suggested that non-depressed Egyptians ($M = -121.48$, $SD = 173.32$) evidenced a greater bias toward negative words and away from happy words in comparison to non-depressed Canadians ($M = -57.54$, $SD = 149.74$) (Figure 5).

A number of one-sample t-tests were conducted in order to establish whether the group means on the five dot probe tasks were significantly different from 0. The results of these analyses are shown in Table 5.

Relationships of Cognition, Depression, and Attention to Emotional Stimuli

Table 6 presents Pearson's product-moment correlation coefficients between scores on self-report depression symptoms questionnaires, negative and positive cognitions, and attention bias scores to emotional faces and words. This analysis revealed a significant correlation between scores on the PDSQ-Dep and BDI, and scores on the ATQ-N, BHS, ATQ-P, and DAS in the expected direction for both the Canadian and Egyptian Samples. For the Canadian sample,

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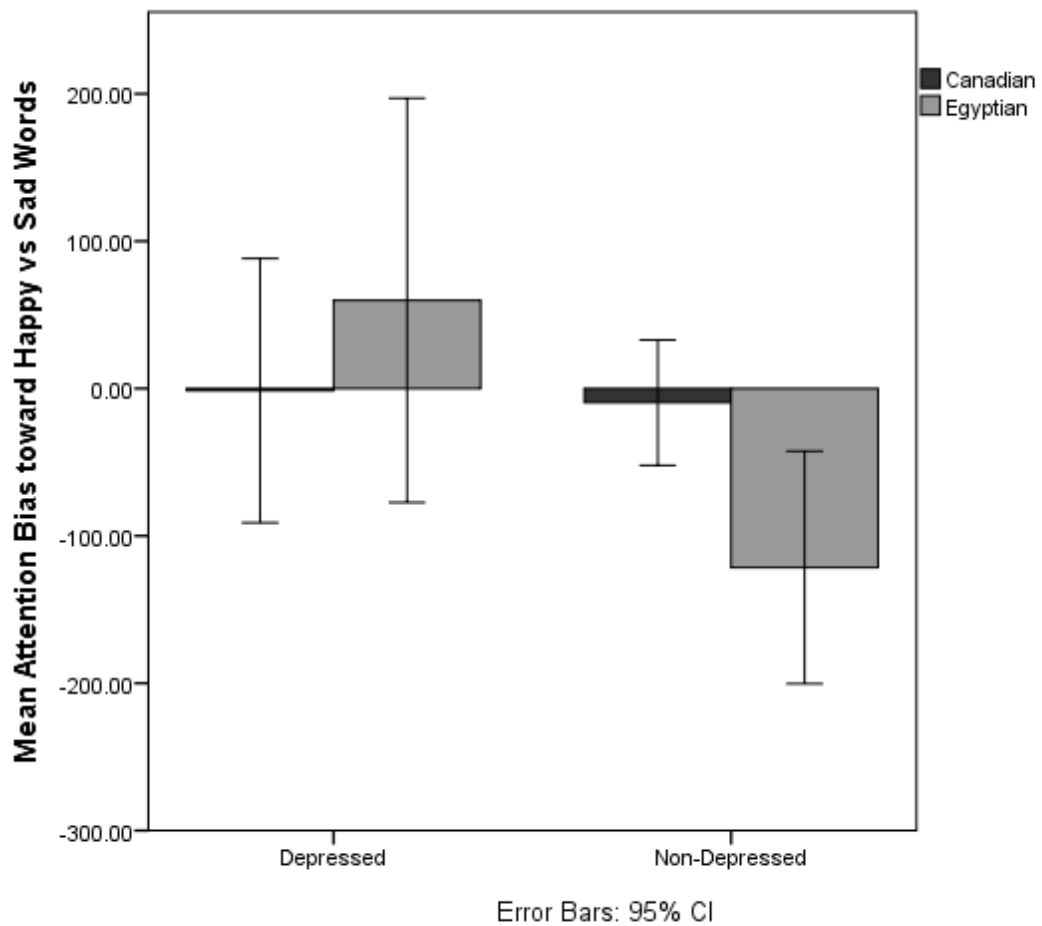


Figure 5. Mean Attention Bias Scores toward Happy words in the Presence of Sad Words.

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PDSQ- Dep scores were negatively correlated with attention to sad faces, $r(73) = -.34, p < .05$, and attention to happy faces, $r(73) = -.31, p < .05$. In the Egyptian sample, BDI scores were positively correlated with attention to happy faces, $r(58) = .36, p < .05$. BDI and BAI were significantly and positively correlated for both the Egyptian [$r(58) = .67, p < .01$] and Canadian [$r(73) = .76, p < .01$] samples. When correlations were significant among participants of both nationalities, Fisher's r-to-z transformations were conducted in order to compare statistical differences in the degree of association between depressive symptoms and the variable of interest. The first Fisher's r-to-z transformation compared the nationalities on the correlation of PDSQ-Dep and ATQ-N scores. This analysis revealed a significantly stronger correlation between scores on these measures among Canadians ($p = .02$). The second transformation compared the correlation between PDSQ-Dep and BHS scores. This transformation also revealed a significantly stronger relationship among these variables in the Canadian sample, $p < .001$. There was no significant difference between the samples in the degree of association between scores on the PDSQ-Dep and ATQ-P, $p > .05$. There was no significant difference between the samples in the degree of association between scores on the PDSQ-Dep and DAS.

A Fisher's r-to-z transformation revealed a significant difference between Egyptians and Canadians in the degree of association of BDI and ATQ-N scores, wherein Canadians scores on these measures were significantly more correlated, $p < .05$. Further, there was a significantly higher correlation among Canadians in comparison to Egyptians between scores on the BDI and BHS, $p < .01$. Finally, there was no differences among the samples in the degree of association between BDI and ATQ-P, and BDI and DAS scores, $p > .05$.

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Table 5. *Attention Bias Scores Significantly Different From Zero.*

Attention Measure	Depressed (<i>n</i> = 64)				Non-Depressed (<i>n</i> = 67)			
	Egyptian		Canadian		Egyptian		Canadian	
	t statistic	P value	t statistic	P value	t statistic	P value	t statistic	P value
Toward Sad Faces (away from neutral faces) ^a	.37	.72	-1.16	.26	1.00	.33	.66	.51
Toward Happy Faces (away from neutral faces) ^b	2.64	.02*	-1.46	.16	-.49	.63	.90	.38
Toward Sad Words (away from neutral words) ^c	1.64	.12	2.07	.04*	2.04	.055	-.26	.79
Toward Happy Words (away from neutral words) ^d	1.01	.33	-.15	.89	1.79	.08	-2.15	.04*
Toward Happy Words (away from sad words) ^e	.94	.37	-.03	.97	-3.21	.004**	-.46	.65

Note. a = positive statistic connotes attention toward sad faces and negative statistic connotes attention away from sad faces; b = positive statistic connotes attention toward happy faces and negative statistic connotes attention away from happy faces; c = positive statistic connotes attention toward sad words and negative statistic connotes attention away from sad words; d = positive statistic connotes attention toward happy words and negative statistic connotes attention away from happy words; e = positive statistic connotes attention toward happy words and negative statistic connotes attention toward sad words.

*connotes significance at the .05 level

**connotes significance at the .01 level

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*Ancillary Analyses**Depression Severity*

As suggested by Ingram and Siegle (2008), scores on the BDI were used to create three groups: Low (0-13), Moderate (14-29), and High (30-63) depressive symptoms. A two-way ANOVA (3 levels of depression X 2 levels of nationality) was conducted with ATQ - N as the dependant variable. The analysis revealed a significant main effect for level of depression on negative thoughts about self, $F(2, 125) = 122.68, p < .001$ ($\eta^2_p = .68$). A post hoc LSD analysis revealed that the low depressive symptom group scores significantly less on the ATQ-N than both the Moderate and High depressive symptoms groups ($p < .001$), the Moderate depressive symptoms groups scores significantly higher than low depressive symptom group and significantly lower than the high depressive symptoms group ($p < .001$). Finally, the post hoc analysis revealed that the high symptom group had significantly higher ATQ-N scores than both the low and moderate depression groups ($p < .001$). There was no significant main effect for nationality $F(1, 125) = 2.22, p = .13$, and no significant interaction effect between level of depression and nationality on ATQ - N scores, $F(2, 125) = 1.43, p = .24$. Scores on the ATQ-P were subjected to a two-way ANOVA using the same independent variables (i.e., levels of depression and nationality) as the above analysis. This analysis revealed a significant main effect for depression level $F(2, 125) = 50.08, p < .001$ ($\eta^2_p = .47$), and for nationality, $F(1, 125) = 7.23, p = .01$ ($\eta^2_p = .06$). For the latter analysis, Egyptians scored significantly higher than Canadians on the ATQ-P. A post hoc LSD analysis of the main effect of depression level revealed that individuals in the low depression group scored significantly higher on the ATQ-P than their counterparts in the moderate ($p < .001$) and high ($p < .001$) depression groups. Individuals in the moderate depression group scored significantly higher ($p < .001$) than those in the high depression group and lower ($p < .001$) than

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those in the low depression group on the ATQ-P. Individuals in the high depression group scored lower ($p < .001$) than those in the low and moderate groups on this instrument.

Similar to the above analyses, scores on the BHS were subjected to two-way ANOVA using levels of depression and nationality as the independent variables. This analysis revealed a significant main effect for depression severity, $F(2, 125) = 142.09, p < .001$ ($\eta^2_p = .71$). This analysis also revealed a significant interaction between ethnicity and depression level, wherein Egyptians in the moderate depressive symptom group scored significantly lower ($M = 5.86, SD = 5.11$) than their Canadian counterparts ($M = 10.33, SD = 4.61$) on the BHS, $F(2, 114) = 6.15, p = .003$ ($\eta^2_p = .10$). Similar to the above process, a post hoc LSD analysis of the main effect of depression revealed that individuals in the low depression group differed significantly than individuals in both the moderate and high depression groups on BHS scores ($p < .001$), individuals in the Moderate group differed significantly from those in the low and high depression groups ($p < .001$). Finally for this analysis, the high depression group differed significantly from the low and moderate depression groups ($p < .001$) on BHS scores.

Scores on the DAS were subjected to a two-way ANOVA, using three levels of depression and nationality as the independent variables. This analysis revealed a significant main effect for depression status, $F(2, 122) = 36.56, p < .001$ ($\eta^2_p = .39$), and significant main effect for nationality, $F(1, 122) = 8.66, p = .004$ ($\eta^2_p = .07$). There was also an interaction between level of depression and nationality, $F(2, 112) = 3.56, p = .032$ ($\eta^2_p = .06$); Egyptians in the low depressive symptom group scored significant higher ($M = 134.15, SD = 18.85$) than Canadians in the same symptom group ($M = 101.53, SD = 24.67$) on DAS scores, $F(1, 57) = 31.12, p < .001$ ($\eta^2_p = .35$). Post hoc LSD analyses of the main effect of depression showed that individuals in the low depression group scored significantly lower than those in the moderate and high symptom

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Table 6. *Pearson's Product-Moment Correlation Coefficients for Scores on Primary Outcome Measures, Stratified by Country.*

Measure	1	2	3	4	5	6	7	8	9	10
1. PDSQ-Dep ^a		.90**	.71**	.65**	-.59**	.50**	.04	.03	.25	-.10
2. BDI ^b	.90**		.80**	.75**	-.66**	.61**	-.05	.02	.36*	-.09
3. ATQ-N ^c	.86**	.92**		.82**	-.59**	.63**	.04	.04	.30	-.03
4. BHS ^d	.85**	.90**	.85**		-.70**	.48**	-.06	.03	.35*	-.09
5. ATQ-P ^e	-.58**	-.63**	-.56**	-.68**		-.42**	-.02	-.06	-.27	-.20
6. DAS ^f	.69**	.75**	.80**	.76**	-.64**		.09	.9	.21	-.06
7. Attnt Sad Faces	-.34*	-.20	-.26	-.26	.10	-.15		-.07	.08	.04
8. Attnt Sad Words	.15	-.24	.21	.15	-.11	.20	-.07		.01	-.07
9. Attnt Happy Faces	-.31*	-.24	-.21	-.20	.10	-.12	-.00	.00		-.21
10. Attnt Happy Words	.14	.08	.07	.09	-.01	.16	-.09	.40**	-.03	

Note. Coefficients for Canadian participants are presented on the bottom, whereas coefficients for Egyptian Participants are presented on the top. Note. a = Psychiatric Diagnostic Screening Questionnaire – Depression Subscale; b = Beck Depression Inventory – II; c = Automatic Thoughts Questionnaire – Negative; d = Beck Hopelessness Scale; e = Automatic Thoughts Questionnaire – Positive; f = Dysfunctional Attitudes Scale.

* significant at the .05 level

** significant at the .01 level.

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groups ($p < .001$), whereas those in the moderate group scored significantly lower on scores of the DAS than individuals in the high symptom group ($p = .003$). Finally, those in the high symptom group scored significantly higher than those in the low ($p < .001$) and moderate symptom groups.

Attention bias scores toward sad faces and away from neutral faces were analyzed as above. This analysis revealed no significant main effects for nationality, $F(1, 86) = 1.34, p = .25$, or depression severity, $F(2, 86) = 1.17, p = .32$, on scores indicative of attention toward sad faces. Further, there was no significant interaction between nationality and depression severity on this construct, $F(2, 86) = .08, p = .93$. A similar pattern of results were obtained for scores indicative of attention bias toward sad words. Specifically, there was no significant main effect for depression severity, $F(2, 86) = 1.00, p = .37$, nationality, $F(1, 86) = .54, p = .47$, or a significant interaction, $F(2, 86) = .52, p = .60$ for attention bias scores toward sad words.

The same analysis was conducted for attention bias scores toward happy faces and away from neutral faces. This analysis revealed a significant main effect of nationality, $F(1, 83) = 6.31, p = .014$ ($\eta^2_p = .08$), as Egyptians had a more pronounced bias toward happy faces, regardless of depression severity. Further, this analysis revealed a significant interaction between depression severity and nationality, in that Egyptian individuals in the high ($M = 338.83, SD = 430.34$) depression severity group had a more pronounced bias toward happy faces than Canadians in the same severity group ($M = -95.43, SD = 318.84$), $F(1, 19) = 6.54, p = .019$, ($\eta^2_p = .26$). Egyptian individuals in the moderate depression severity group had a similar pattern when compared to Canadians in the same depression category, however this comparison was only at the level of a non-significant trend, $F(1, 17) = 3.26, p = .089$.

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There was a marginal main effect of nationality, $F(1, 77) = 3.87, p = .053$ on attention bias scores toward happy words, wherein the trend indicated that Egyptians scored higher on this bias than Canadians. There was no significant main effect of depression severity, $F(2, 77) = .18, p = .83$, nor a significant interaction effect, $F(2, 77) = .74, p = .48$.

Gender Analyses

A series of three-way ANOVAs explored the effects of depression status, gender, and culture on the main outcome variables (ATQ-N, ATQ-P, BHS, DAS, Attention toward negative material, and Attention toward positive material).

The first of eight ANOVAs examined the effects of gender, depression status and culture on negative self-referent thoughts, as tested by the ATQ-N. The analyses revealed a significant main effect for depression status, $F(1, 123) = 145.38, p < .001, (\eta^2_p = .54)$, as depressed individuals reported significantly more negative automatic thoughts than their non-depressed counterparts, regardless of nationality and gender. The analyses revealed no main effect for nationality, $F(1, 123) = 1.60, p = .21$, no main effects for gender, $F(1, 123) = .61, p = .44$, and no significant three-way interactions, $F(1, 123) = .006, p = .94$.

Using the same independent variables, the second ANOVA examined the effects of these variables on positive thoughts (ATQ-P). The analysis revealed a significant main effect of depression status, $F(1, 123) = 49.24, p < .001, (\eta^2_p = .29)$, and a significant main effect for nationality, $F(1, 123) = 8.09, p = .005, (\eta^2_p = .06)$, as depressed individuals scored significantly lower on this measure than non-depressed individuals, and Egyptians scored significantly higher on the measure than Canadians. There was no main effect of gender, $F(1, 123) = 1.30, p = .26$, and no significant interactions between depression status and gender, $F(1, 123) = .58, p = .45$,

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nationality and gender, $F(1, 123) = 1.51, p = .22$, and no three way interaction between depression status, nationality, and gender, $F(1, 123) = .16, p = .69$

The third ANOVA examined the effects of the same independent variables on thoughts toward the future (BHS). This analysis revealed a significant main effect for depression status, $F(1, 123) = 119.96, p < .001 (\eta^2_p = .49)$. There was no main effect for nationality, $F(1, 123) = 2.20, p = .14$, no main effect for gender, $F(1, 123) = .57, p = .45$, and no significant interaction between depression status and gender, $F(1, 123) = .24, p = .62$, nationality and gender, $F(1, 123) = 1.68, p = .19$, or a three-way interaction between depression status, nationality, and gender, $F(1, 123) = .32, p = .57$.

The fourth ANOVA explored the effects of gender, nationality, and depression on dysfunctional attitudes (DAS). This analysis revealed a significant main effect for depression status, $F(1, 120) = 61.53, p < .001, (\eta^2_p = .34)$, and a significant main effect for nationality, $F(1, 120) = 14.99, p < .001, (\eta^2_p = .11)$, as depressed individuals scored significantly higher on the DAS than non-depressed individuals, and Egyptians scored significantly higher on the measure than Canadians. There was no main effect of gender, $F(1, 120) = .47, p = .50$, but there was a significant interaction between depression status and nationality, $F(1, 123) = 6.67, p = .011, (\eta^2_p = .05)$, as non-depressed Egyptians scored significantly higher than non-depressed Canadians on the DAS. There were no significant interaction effect for depression status by gender, $F(1, 120) = .19, p = .67$, nationality by gender, $F(1, 120) = .29, p = .59$, or a three-way interaction between depression status, nationality, and gender, $F(1, 123) = .36, p = .55$.

The fifth ANOVA examined the effects of gender, depression status, and ethnicity on attention bias toward sad faces. This analysis did not reveal any significant main for depression status, $F(1, 89) = 1.60, p = .21$, nationality, $F(1, 89) = .85, p = .36$, or gender, $F(1, 89) = .16, p =$

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.69. There were no significant interaction effects for depression status by gender, $F(1, 89) = .89$, $p = .35$, nationality by gender, $F(1, 89) = .099$, $p = .75$, or a three-way interaction for depression status by nationality by gender, $F(1, 89) = .22$, $p = .64$.

The sixth ANOVA investigated the effects of the same three independent variables on attention bias toward sad words. Similarly, this analysis did not reveal any significant main for depression status, $F(1, 89) = .93$, $p = .34$, nationality, $F(1, 89) = .89$, $p = .35$, or gender, $F(1, 89) = .49$, $p = .48$. There were no significant interaction effects between depression status and gender, $F(1, 89) = .62$, $p = .43$, nationality and gender, $F(1, 89) = .73$, $p = .40$, or a three-way interaction between depression status, nationality and gender, $F(1, 89) = .08$, $p = .77$.

The effects of gender, depression status, and ethnicity on attention toward positive material (faces and words) were examined in the seventh and eighth ANOVAs, respectively. In terms of attention bias toward happy faces, there was a non-significant trend for the effects of ethnicity, $F(1, 86) = 3.69$, $p = .058$, which indicated higher scores for Egyptians than Canadians in their attention toward happy faces. Further, there was a significant interaction effect for depression status by ethnicity, $F(1, 86) = 6.42$, $p = .013$, ($\eta^2_p = .07$), wherein depressed Egyptians evidenced a greater bias toward happy faces than their depressed Canadian counterparts. There was a three way interaction between gender, ethnicity and depression status, $F(1, 83) = 5.40$, $p = .023$, ($\eta^2_p = .06$). Further analyses revealed that depressed Egyptian women exhibited a greater bias toward happy faces than their depressed Canadian counterparts.

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Discussion

The current investigation examined five core hypotheses of the schema theory of depression, and contrasted the results based on these hypotheses in a sample of Canadian and Egyptian participants, who also varied in their depression status. As such, this investigation used a two (nationality) by two (depression status) group design in order to examine differences in the cognitive profiles of a) depressed Egyptians in comparison to their non-depressed counterparts, and b) depressed and non-depressed Egyptians in comparison to depressed and non-depressed cultural control groups in Canada. A primary set of analyses served to confirm that the participant groups varied on relevant criteria (nationality and depression status). As these groups were similar on inclusion and exclusion criteria, they could be directly compared. Once these criteria were established, the groups were then compared based on a series of hypotheses that were derived from the schema theory. In the sections that follow, the between group comparisons are reviewed, followed by the results that examined the hypotheses. In latter sections, the strengths and limitations of the current research are reviewed, followed finally by suggestions for future research in this relatively novel area of investigation.

Depression and Anxiety Symptoms

Depressed groups in both countries scored significantly higher than non-depressed individuals on self-report measures of depressive symptoms. Further, there were overall no significant differences in depression levels across nationalities, as depressed individuals in Canada scored significantly higher than depressed individuals in Egypt on the PDSQ-Depression subscale, non-depressed individuals in Egypt scored significantly higher than their Canadian counterparts on the BDI-II. This pattern of results suggests that depressed individuals in Canada had more severe symptoms than depressed individuals in Egypt. Depressed individuals in

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Canada scored 1.54 points higher than depressed individuals in Egypt ($SD = .56$ higher, based on the pooled standard deviation). Although this difference is statistically significant, the PDSQ manual (Zimmerman & Mattia, 2001ab) reports that any differences that are less than one standard deviation on the depression subscale are likely not clinically meaningful.

Non-depressed individuals in Egypt scored significantly higher than their Canadian counterparts on the BDI-II. Despite this difference, non-depressed Egyptian individuals' mean score was still well below suggested cut-offs for minor depression (Lasa, Ayuso-Mateos, Vazquez-Barquero, Diez-Manrique, & Dowrick, 2000). Further, the relatively elevated depression scores among non-depressed Egyptians may have been due to the political and social unrest that has affected the country during the study period (from 2010 to present). A number of sources have found that political and social unrest are associated with elevations in depressive symptoms (e.g., Chensova-Dutton & Tsai, 2008; Karam et al., 1998). Finally, it is possible that non-depressed Egyptians showed significantly higher BDI-II scores in comparison to their Canadian counterparts due to the low variance of depression symptoms among non-depressed individuals. As such, it is argued that these differences are only statistical in nature and not clinically meaningful.

Despite the presence of significant differences between individuals of both nationalities on measures of depression and other primary outcome measures, and although BDI and PDSQ-Dep scores were significantly correlated with these outcome measures, the author chose not to conduct ANCOVA analyses to control for the effects of depression across nationalities. Given the very strong correlations between depression measures and other measures of negative cognitions, statistically teasing apart the effects of depression would have likely created artificial groupings that would have reduced the interpretability of the results (Huitema, 2011).

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No direct predictions were made regarding anxiety symptoms in Egypt, however, the present study found cross-national differences on a common measure of anxiety symptoms (the BAI), as Egyptian participants scored significantly higher than Canadian participants on this scale. Further, and as expected from research on the comorbidity of anxiety and depression in the West (Clark & Watson, 1991) and emergent evidence from the Middle East (Karam et al., 2006), depressed individuals in both countries exhibited significantly more anxiety symptoms than their non-depressed counterparts. Much like depression, anxiety symptoms have been shown to increase in countries such as Lebanon as a result of political and social unrest (Karam et al., 1998), and this effect may therefore explain the cross-national differences in anxiety severity. Finally, this study found that depressive symptoms were positively associated with anxiety symptoms, which may underscore the transdiagnostic underpinnings of these conditions, and account for the elevated anxiety found in depressed samples of both cultures.

Negativity Hypothesis

As predicted, depressed individuals in both Egypt and Canada exhibited significantly more negative thoughts about the self, as was measured by the ATQ-N. However, contrary to prediction, depressed individuals in Egypt did not evidence a significantly greater frequency of negative thoughts toward the self than depressed Canadians. These results partially substantiate the negativity hypothesis among this sample of depressed Egyptians. Although an interaction was predicted, the study failed to find evidence for this interaction between nationality and depression on the presence and severity of negative self-cognitions. These results showed that depressed Egyptians endorsed negative thoughts about the self in comparison to their non-depressed counterparts, an experience which is typical of depression in Western nations (Beck & Dozois, 2011; Clark, Beck, & Alford, 1999). Some researchers have found that negative

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thoughts about the self (or self-reproach) are atypical features of depression in the Islamic and Arabic regions (see Beshai, Dobson, & Adel, 2012). This pattern of results has led some to conclude that the self-reproach that often accompanies affective disorders in the West is rare in non-Judeo-Christian patients (Stompe et al., 2001; Sami & El-Gawad, 1995). However, and consistent with results obtained with a sample of dysphoric Egyptian students (Beshai et al., 2012), Egyptians suffering from depression were as likely as their Canadian counterparts to experience self-reproach and guilt.

In line with the current results, Hamdi, Amin, and Abou-Saleh (1997) identified negative self-thoughts as one of the symptoms experienced by a group of depressed individuals from Dubai. Similarly, El-Islam (1969) found that 62% of his Egyptian, depressed sample displayed feelings of guilt. El-Islam found that those individuals who displayed negative thoughts in bouts of depression were more likely to be literate. In an attempt account for this finding, the researcher noted that “the association between guilt and literacy may be related to the relative complexity of the life of more educated people which is a basis for the complex imaginative experience of guilt” (p. 58). If this relationship between literacy and self-reproach in depression is substantiated, then the relatively elevated levels of negative thoughts toward the self that was displayed by depressed Egyptians in the current study may be understood as a function of their educational status, given that the majority of depressed Egyptians in this study had some form of post-secondary education. However, the relationship between education and negative thoughts in this sample of Egyptians is unlikely, given the null results obtained by the MANOVA which examined the effects of varying educational levels on the primary outcome measures.

As predicted, depressed individuals in both countries exhibited significantly more negative thoughts toward the future, as measured by the BHS, in comparison to non-depressed

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individuals. This result held even after controlling for age, which was found to correlate positively with BHS scores. The finding that Egyptians show negative thoughts toward the future during bouts of depression is consistent with the cognitive model. However, this finding goes against conventional wisdom regarding Middle Eastern countries and a few studies which suggest that Islamic ideals also urge their adherents to stay optimistic and cheerful in regards to the future. For instance, Al-Issa (1990) has commented that suicidal ideation and gestures, which tend to be highly correlated with one's view of the future in the West (Hirsch & Conner, 2006), are relatively low in Muslim nations. To support this view, suicidal rates seem to be at their lowest during the month of Ramadan in Arab nations (Al-Issa, 1990). Bazzoui (1970) found that only 13.7% of depressed Iraqi participants in his sample displayed suicidal ideas. This result was found despite the fact that suicidal ideation and hopelessness are believed to be highly correlated, and so it is assumed that if suicidality is low, hopelessness would be also. However, extrapolations from Western data to individuals of Arab descent may not be accurate, as the nomological network of constructs such as suicidality and hopelessness may differ depending on cultural constraints. For instance, Abdel-Khalek and Lester (1998) found that hopelessness was more prevalent in their sample of Kuwaiti students in comparison to American students. Secondly, the correlational analyses and Fisher's r -to- z transformations conducted in the current study reveal a slightly different constructual network of depression that may be in operation for this sample of Egyptians in comparison to Canadians.

Contrary to the results obtained by Beshai et al. (2012), which showed that non-dysphoric Egyptian students harboured significantly more negative thoughts toward the future, non-depressed Egyptians in this sample were no different in their hopelessness scores in comparison to non-depressed Canadians. Taken together, these results indicate that, much like Canadian

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sufferers, Egyptians who suffer from depression have elevated negative thoughts toward the self and the future in comparison to their non-depressed counterparts. This pattern of results provides support for the cognitive triad/negativity hypothesis among this group of Egyptians.

Exclusivity Hypothesis

As predicted, depressed individuals in both Egypt and Canada showed a significantly lower frequency of positive self-referent thoughts in comparison to their non-depressed counterparts. As predicted by the schema theory of depression, individuals in both cultures exhibited a lower frequency of positive thoughts about the self when gripped by depression. Interestingly, there was a main effect for nationality, wherein Egyptians showed significantly higher scores on the measure of positive thoughts than did Canadians. This finding is inconsistent with research on positivity in depression, which indicates that people from non-Western countries report experiencing relatively diminished positive emotions and cognitions toward the self (Mezulis, Abramson, Hyde, & Hankin, 2004). However, the majority of the existing research has been conducted with individuals of East Asian descent (Chentsova-Dutton & Tsai, 2008), and so extrapolations from this research to Egyptian individuals are tenuous at best. Finally, and contrary to what was predicted, there was no significant interaction between depression status and nationality, and thus depressed individuals in Egypt did not show a diminution of self-referent positive thoughts in comparison to depressed Canadians.

It is difficult to interpret the obtained pattern of results, given the paucity of research on positive self-referent thoughts and culture, let alone positive thoughts among individuals of Arab descent. Depression scores (on both the BDI and PDSQ-Dep) were moderately and negatively correlated with positive self-referent thoughts in both the Egyptian and Canadian samples. Further, there was no main effect for nationality on scores of depressive symptoms. As such,

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nationality differences in ATQ-P scores cannot be sufficiently accounted for by nationality differences in depressive symptoms.

A significant proportion of the Egyptian sample endorsed Christianity as their religion. There is some research done among Western (see Hackney, & Sanders, 2003, for review) and Arab (Abdel-Khalek & Lester, 2006; Abdel-Khalek & Naceur, 2007) samples which points to the effects of religiosity on positive affect and mental health. This research indicates that, as religiosity increases, so does positive affect (see Bergin, 1983, however, for some caveats regarding this relationship). As such, it is possible that while still suffering from the same levels of psychopathology (in terms of depressive symptoms and its negative concomitants), the Egyptian sample maintained a relatively higher frequency of positive thoughts as a function of their heightened religiosity. Put otherwise, religiosity may have acted as a moderator between depressive symptoms and positive automatic self-referent thoughts. However, given that religiosity was not directly measured in this study, this hypothesis cannot be empirically substantiated at this time.

Cross-national differences in recruitment strategies may also have had an effect on the results obtained regarding positive cognitions. Specifically, depressed Canadians were recruited from the community, whereas depressed Egyptians were recruited from a mental health clinic, and so they were either seeking treatment or have sought treatment from depression at some point in their lives. As such, it is possible that scores on the ATQ-P of depressed Egyptians were reflective of their hopefulness in regards to treatment, or reflective of actual treatment gains.

Severity Hypothesis

As predicted, depression severity was significantly associated with negative and positive thoughts, and dysfunctional attitudes among both Canadians and Egyptians. This pattern of

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results gives credence to the severity hypothesis among sufferers of Egyptian decent. Further, this pattern gives support to the convergent validity of the measures utilized among Egyptians in the present study. Furthermore, the preformed Fisher's r to z transformation revealed that depressive symptoms may be differentially associated with negative cognitions. This pattern of results is consistent with findings from studies with Asian participants, which show that the relationship between negative affect and negative health consequences is moderated by culture (Curhan et al., in press). In the current study, although depression was found to strongly correlate with negative cognitions in both cultures, as is predicted by the cognitive model, this degree of association was found to be stronger among the Canadian sample. This result may also underscore the phenomenological differences in the experience of depression found among Westerners, which maintains that this population of sufferers may "psychologize" (or in other words, "cognitize") depression in comparison to non-Western sufferers (Ryder, Yang, & Heine, 2002, Ryder et al., 2008).

Schema Activation Hypothesis

Consistent with hypotheses, the present study found that depressed individuals in both cultures endorsed a significantly higher score on a measure designed to assess dysfunctional attitudes in depression (i.e., the DAS). In line with the cognitive model, heightened depression symptoms among Egyptians seems to be associated with a preponderance of negative self-referent attitudes. This is a robust finding of research with dysphoric and depressed individuals in the West (Beshai, Prentice, Swan, & Dobson, in press; Clark, Beck, & Alford, 1999). Dysfunctional attitudes are believed to be the intermediary step between depressive schemas and negative automatic thoughts. As such, their presence and severity are a proxy for the presence and severity of negative schematic structures in depression (Beck, Rush, Shaw, & Emery, 1979).

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Unexpectedly, the present study found significant cross-national differences on scores of dysfunctional attitudes, wherein Egyptian participants endorsed significantly more dysfunctional attitudes than their Canadian counterparts. Further, there was a significant interaction effect, as non-depressed Egyptians endorsed significantly more dysfunctional attitudes than their non-depressed Canadian counterparts. Further analyses revealed that these differences were present for the Autonomy subscale of the DAS, but not for the Sociotropy subscale. The Autonomy subscale of the DAS measures dysfunctional attitudes regarding one's achievements and personal successes (Cane, Olinger, Gotlib, & Kuiper, 1986; Dozois, Covin, & Brinker, 2003). Research arising with East Asian individuals has shown that individuals of that culture are more likely to engage in self-effacement (Mezulis, Abramson, Hyde, & Hankin, 2004; Tsai, Ying, & Lee, 2001). Given the relatively diminished individualism present in the Egyptian culture (Oyserman, Coon, & Kimmelmeier, 2002), it is possible that individuals of that culture are more self-effacing, and so more likely to devalue their own achievements and successes. Further, a self-effacing stance is the norm in Islamic societies, given Islam's emphasis on modesty and humility (Hodge & Nadir, 2008; Esposito, 2005).

The heightened dysfunctional attitudes found among non-depressed Egyptians can be accounted for by the heightened depression and anxiety present in that culture. This suggestion is plausible, given that these three constructs (depression, anxiety, and dysfunctional attitudes) were found to be highly correlated among individuals of Egyptian culture in this study.

Selective Attention Hypothesis

Contrary to what was predicted, depressed individuals in both Canada and Egypt did not show an attentional bias toward negative stimuli (words or faces) in comparison to their non-depressed counterparts. This finding is inconsistent with a number of research findings which

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support a negative attentional bias in dysphoric and depressed individuals (Clark, Beck, & Alford, 1999; Gotlib & Joormann, 2010). In contrast, although no specific hypotheses were made regarding positive attentional biases, this study found that depressed Egyptians evidenced a significant attentional bias toward positive material (faces and words) in comparison to their depressed Canadian counterparts. This finding is also inconsistent with literature on the cognitive model of depression. The current research suggests that depressed or dysphoric individuals are less likely to process and hence pay attention to positive material in their environment (Sears, Thomas, LeHuquet, & Johnson, 2010; Thomas & Olatunji, 2012). In fact, in their eye-tracking study, Sears and colleagues found that dysphoric students did not evidence differences in their attentional biases toward negative faces in comparison to healthy individuals, but that the former group evidenced significantly diminished focus on positive or happy material than the latter group. The results of the current study partially support this finding. For instance, results from Pearson's product-moment correlation analysis revealed as their depressive symptoms increased, attentional biases toward emotional material (both positive and negative) decreased among Canadians.

Taken together, the pattern of results obtained from main and ancillary analyses reveal that depressed individuals in Egypt evidenced a bias toward positive material, and that this bias increased as a function of increasing depression severity. This pattern of results can be explained by examining the literature regarding protective factors against depression. Some evidence suggest that family and societal connectedness serve as a protective factor against depression (Costello, Swendsen, Rose, & Dierker, 2008). Although this study did not directly examine self-construal and collective orientation (Singelis, 1994), it is reasonable to assume from previous literature (e.g., Oyserman et al., 2002) that Egyptians are more collectivistic in their cultural

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orientation than Canadians. Thus, this heightened collectivistic self-identity, which by definition assumes heightened interconnectedness and cohesion with significant others, likely serves as a protective factor against depression for Egyptians. Selective attention toward positive material may be construed as a sequelae of this resilience.

In an idea termed the “cultural norm hypothesis”, Chentsova-Dutton and colleagues (2007) indicated that depression disrupts individuals’ ability to act in socially scripted ways. In accordance with this hypothesis, these researchers found that depressed European Americans showed significantly more dampening of negative emotional experiences in comparison to non-depressed controls, which is contrary to most literature that shows that the cultural norm for Euro-Americans is to express negative affect. In a more recent study, Chentsova-Dutton, Tsai, and Gotlib (2010) replicated these findings among groups of depressed and non-depressed Asian and Euro-Americans using positive stimuli. Findings of this study revealed that, in comparison to their non-depressed counterparts, depressed Asian Americans showed a tendency to heighten their positive emotions in reaction to an amusing film. This result supported the cultural norm hypothesis, as increased positive emotions is inconsistent with the Asian cultural norm which dictates the dampening of positive emotions. It is possible that the current pattern of results, which showed that depressed Egyptians had a positive attentional bias toward happy faces, may be accounted for by the cultural norm hypothesis. As such, it is believed that scripts for attentional orientation may be disrupted, and indeed reversed, as a result of depression.

Furthermore, the finding that Egyptians evidenced a bias toward positive faces and away from negative faces may also be situated in the literature on stigma and support seeking in mental health. For instance, a series of studies has compared Asian Americans to European Americans in their social support perceptions and seeking behaviours. Taylor, Sherman, Kim,

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Jarcho, Takagi and Dunagan (2004) found that, in comparison to European Americans, Asian Americans were less likely to seek social support. More recent empirical studies of this phenomenon have confirmed that Asian Americans are generally less likely to use social support in facing stressors in comparison to their European counterparts (e.g., Chu, Kim, & Sherman, 2008). These researchers found that, not only did Asian Americans seek support less often than their European counterparts, they also evaluated support seekers more negatively than Europeans. Chu et al. (2008) also found that these negative evaluations were related to exposure to Asian culture, wherein first generational Asians (those born in Asia) had poorer evaluations of support seekers than did second and third generation Asians. Kim, Sherman and Taylor (2008) reported that reluctance to seek support among Asian Americans was mostly due to their belief that, by revealing their distress, help seekers risk negative evaluations from others. From this line of research, it is hypothesized that these perceived negative consequences and stigma of support seeking among more collectivistic cultures are so great, that they may dictate attentional orientation in the social arena. For example, it is possible that negative stimuli, in the form of sad faces and words, may prime “calls for help” and notions of social ostracism among Egyptians. On the other hand, there may be a preference for positive emotional words and faces among Egyptians, which may be believed to be socially acceptable and encouraged among individuals of collectivistic cultures.

Based on results from the ancillary analyses, it appears that women with more severe forms of depression are more likely to exhibit more positive attentional biases than men and other women who display less severe depressive symptoms. Women, who represent an especially marginalized group in Egypt, may be more prone to the fears of stigma and ostracism, as discussed above. However, the gender analyses of attentional biases conducted in this study

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suffered from small cell sizes, and so firm conclusions regarding this finding cannot be drawn at this point. Finally, the positive attentional bias finding in the current study may be accounted for by methodological weaknesses and artifacts, as further discussed below.

THEORETICAL IMPLICATIONS

The findings of the current study have a number of implications regarding the applicability of the schema theory of depression in Egypt, and the universality of the depressive experience. First, four of the five forwarded descriptive hypotheses (negativity, exclusivity, severity, and schema activation) were supported among depressed individuals in both Canada and Egypt. This lends credence to the theory among this group of Egyptians and points to a possible universal experience of depression around the world. As Chentsova-Dutton and Tsai (2008) have argued, it is possible that individuals of varying cultures experience different constellations of subconstructs associated with a broader and universal construct of depression. This broad, universal construct may be composed of several cognitive, somatic, emotional, and behavioural factors. For example, sufferers of depression in the West may experience a constellation of cognitive products (e.g., negative thoughts about self, dysfunctional attitudes, selective attention of negative material, etc.) which closely overlaps with the experience predicted by the cognitive model. The cognitive products of Egyptian sufferers may also overlap with those predicted by the schema model, however, their cognitive experiences may provide a less ideal fit with the model than the experiences of their Western counterparts.

As is discussed below, it is important to replicate the current findings in order to get a more accurate picture of how well the schema model predicts the experience of depression among Egyptians. At this point, it appears that the model does well to describe some of the cognitive experiences associated with depression among the current Egyptian sample. However,

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whether the findings obtained in this study can be replicated and generalized, and whether inferential hypotheses generated by the model regarding cognitive mechanisms in depression apply to Egyptians remain open questions.

STRENGTHS AND LIMITATIONS OF THE CURRENT STUDY

This was one of the first studies to directly examine hypotheses derived from the cognitive model of depression in an Egyptian sample, and so addressed a huge gap in the literature. Cross-cultural research of this nature is the first of many steps necessary to address the endemic and universally prevalent problem of depression (World Health Organization, 2012). The results of this investigation support a number of hypotheses generated by the cognitive model. Therefore, it appears that the cognitive model is applicable to depressed individuals of Egyptian descent, however, and given the infancy of this research, this claim must be bolstered by future research which addresses the limitations of the current design. Furthermore, although some aspects of the cognitive model clearly apply to the experience of depression among Egyptian individuals, other aspects of the model do not appear to do so. This finding is important in our attempts to understand potentially universal and culturally-specific aspects of depression, and may have further implications in regards to the transportability of treatments for depression from one culture to another.

A major strength of the current design is the recruitment of a Western sample to act as parallel cultural controls. Most studies in the field of cross-cultural psychopathology collect data from one target country and compare such data to extant literature arising from the West. The internal validity of the latter designs is threatened by potential cohort and historical effects. Further, the current study used common measures in the depression literature, and thus continuity between the results of this study and previous research is possible. Moreover, the

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measures used here have established psychometric properties, and so the obtained results are not likely due to errors in instrumentation. Furthermore, a rigorous and systematic processes was followed in order to translate the English measures into Arabic. As a testament of the success of this process, the English and Arabic versions of the scale demonstrated almost identical Cronbach's alphas and inter-measure correlations. In addition, researchers in both countries involved in participant recruitment and data collection were highly trained. Supervision and further training was available to them throughout the duration of the data collection phase of the study. Finally, the study was amply powered to examine the main hypotheses initially forwarded by this investigation.

Despite these strengths, the study suffered from a number of limitations that potentially affected its internal and external validity. First, there were differences in the recruitment strategies utilized in both countries. Whereas depressed Canadians were recruited from the community at large, depressed Egyptians were recruited from a psychiatric clinic. As mentioned above, these differences in recruitment strategies across countries may have correlated with other important variables that have not been systematically measured, and thus these differences may have unduly influenced the study results. Similarly, there were demographic differences recorded between depressed and non-depressed, as well as Egyptian and Canadian participants. These demographic differences may have also correlated with other unmeasured variables that had a systematic effect on the results. However, the latter is unlikely, given the non-significant results rendered by analyses that measured the effects of select demographics on key measures. Third, the Egyptian sample had a higher socioeconomic status and had a higher proportion of Christians than is expected of the Egyptian population (Okasha, 1999). As such, the sample collected in Egypt may not have been fully representative of that population.

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Furthermore, although the use of common measures is a strength of this design, the measures demonstrated a few psychometric limitations. For instance, most of the measures possessed very high Cronbach's alphas among both the Egyptian and Canadian samples. Exceedingly high alphas can signal item redundancy (Streiner, 2003). Similarly, measures of depressive symptoms (e.g., BDI – II and PDSQ- Dep) were highly correlated with a number of primary outcome measures (e.g., ATQ-P and BHS). These high correlation coefficients potentially indicate that depressive symptoms and negative cognitions are not entirely orthogonal constructs (DeVellis, 1991). This argument of tautology between commonly used depressive measures, such as the BDI, and constructs proposed by the cognitive model, such as negative self-referent cognitions, has been levelled by a few researchers in the past (e.g., Coyne & Gotlib, 1983). This criticism is not without its flaws, however, given that the majority of research to date points to lack of negativity toward self in non-Western individuals with depression. As such, cognitive concepts that are highly associated with depression in the West may not necessarily be synonymous with the depressive experience in other parts of the world. Secondly, and as was shown in the current study, non-depressed individuals in Egypt showed elevated levels of dysfunctional attitudes in comparison to non-depressed Canadians. Thus, depression status is not entirely dependent on the presence or absence of negative cognitions and attitudes.

As noted above, the unsupportive results obtained in this study for the selective attentional hypothesis are difficult to interpret. A number of design choices may have worked to limit the statistical power of this task. For instance, the two dot-probe conditions which utilized faces as stimuli directly compared neutral to sad or happy faces. Although there is only little evidence to directly support this suggestion (see Leyman, De Raedt, Vaeyens, & Philippaerts, 2011), a better test of the selective attention hypothesis may have compared attentional

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orientation to sad versus happy faces, and not to neutral faces; as neutral faces may not provide a sufficient contrast with emotional faces, and so might have suppressed differences in attention toward or away from sad faces.

When words were used as stimuli in the dot-probe task, these words were not matched for emotionality (see Beshai, Prentice, Dobson, & Nicpon, in press, for a discussion of emotionality and valence in attention-related assessment and modification tasks). Thus, the finding that Egyptians favored happy words in comparison to neutral words may have been confounded by the heightened emotional content, and not necessarily the valence, of happy words in comparison to neutral words. This interpretation is unlikely, however, as there was no cross-national preferences found for sad words when presented together with neutral words, even though the former also has heightened emotionality. In addition, and given that attentional disengagement, as opposed to orientation, often typifies depression, it is unclear whether increasing the presentation time for the stimuli would have increased the power of the measure, although there is no evidence to support the latter hypothesis (Peckham et al., 2010).

There is emerging evidence (Beshai et al., in press; Schmuckle, 2005) that the dot-probe paradigm is an imprecise and inconsistent tool in the assessment of attentional biases in depression. For instance, how well the task does at finding differences in attentional biases among individuals of differing diagnostic categories depends largely on minor alterations and artifacts present within the task (e.g., colour and size of the dot, colour of background screen). This pattern of divergent results casts doubt on the measure's ecological validity. Furthermore, in the current study, a number of Canadian participants reported that they found the task to be uninteresting and disengaging in the debriefing process. As such, boredom and fatigue may have

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suppressed the results of this task, as these constructs have been shown to significantly influence assessment results (e.g., Sommers & Vodanovich, 2000).

Another limitation of the current design was the reliance on cut-offs on self-report measures to establish case-ness of depression. As Ingram and Siegle (2008), indicate, depressed individuals appear to have both quantitatively and qualitatively different experiences than healthy individuals. As such, diagnostic decisions made on the basis of self-reports may suffer from weaker sensitivity and specificity in comparison to the gold-standard, structured clinical interviews. However, it is likely that the majority of cases and non-cases identified in this study were accurately represented, given the fact that the current design a) used cut-offs on two self-report measures as opposed to just one, and b) relied on a structured (but not yet validated) clinical interview to assess presence of current depressive symptoms, which was later corroborated by data from the self-report measures. Further, and although the Diagnostic Interview Schedule (Robins, Helzer, Croghan, & Ratcliff, 1981) has been translated into Arabic, the Structured Clinical Interview for the DSM-IV (First, Spitzer, Gibbon, & Williams, 1997), which is considered the gold-standard for depression diagnosis, does not have an Arabic translation. As such, and given the scarcity of resources, a decision was made to use the combined data from the structured interview and two self-report measures to ascertain case-ness. A number of researchers have argued that depression is quantitatively different from health (Flett, Vredenburg, & Krames, 1997; Ruscio & Ruscio, 2000), and so the use of cut-off scores on self-report measures to classify depression is justifiable.

Lastly, this study relied entirely on the use of measures that are Western in origin and design. As such, it is possible that the results of this experiment are in part artifact of the methodology, given the paucity of locally-developed assessment measures. However, the latter

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account is less likely given the great deal of attention the first author paid to adapting the measures in order to make them linguistically and culturally appropriate. Further, the measures used showed strong reliability and convergent validity, thus giving credence to their use among this sample of Egyptians

FUTURE DIRECTIONS

The Global Burden of Disease for psychiatric conditions is staggering; Kastrup and Ramos (2007) report that four of the 10 diseases with the highest global burden are psychiatric, and that 25% of individuals worldwide will develop a psychiatric condition during their life. Depression is the principal mental health disorder associated with deficits in global health and burden of illness. Therefore, future research efforts that attempt to describe, understand, prevent, and treat psychological conditions worldwide are warranted (Patel & Prince, 2010). There is a growing effort and call to study and disseminate evidence-based treatments around the world, especially to developing countries (Patel, Flisher, Hetrick, & McGorry, 2007).

In addition to the general need to increase mental health research initiatives around the world, there is an even larger need for research activities in poverty-stricken and politically torn countries such those in the Middle East. Previous research indicates that political and economic turmoil are associated with a higher incidence of mood disorders (see Chentsova-Dutton & Tsai, 2008, for a review). As such, and given the recent unrest in the Middle East, these efforts are especially warranted.

Mental health research efforts that focus on depression have been lacking in the Middle East, despite its prevalence in that region. There is a huge body of literature arising from the West about the disorder's nature and diagnosis (Kanter, Busch, Weeks, & Landes, 2008), common comorbidities (Hirschfeld, 2001), associated risk and vulnerability factors (Ingram.

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Miranda, & Segal, 1998), course and recurrence (Burcusa & Iacono, 2007), prevention (Dozois & Dobson, 2004), and treatment (NICE, 2009). However, most depression research that has been conducted in the Middle East is still largely descriptive in nature, and focuses only on epidemiology and symptomatology. As such, future research should gradually increase our understanding of this disorder among individuals of Middle Eastern descent. Not only is theoretically-driven research important for the science of mental health, it is crucial for efforts to design or modify effective psychotherapies for sufferers of that region. For instance, Okasha (1999) commented that psychopharmacological treatments are the first line of defense against depression for sufferers in Egypt. This fact is unfortunate, given that we now have reliable data (from the West) which shows that there are psychotherapies that are as, if not more, effective to treat depression as pharmacological options (Butler, Chapman, Forman, & Beck, 2006; Dimijian et al., 2006).

Future research efforts in Egypt and the Middle East should be done in a bottom-up fashion. In the first stage of this effort, the cultural equivalence of depression, along with models (such as the cognitive model) that attempt to explain and predict elements of this construct, should be carefully established. The current study can be viewed as part of this initial stage of research. Future efforts should further establish the nomological network of depression (Cronbach & Meehl, 1955) and examine its convergent, discriminant, and predictive validity among individuals of Egyptian descent. This work will require attention to the adaptation of extant measures, as well as the creation of new measures that may be more appropriate for use with this population of sufferers (Naughton & Wiklund, 1993). Further, and once the psychometric groundwork is laid in this region, other hypotheses related to the cognitive model need to be examined. For instance, causal and cognitive vulnerability hypotheses (such as the

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stability of negative schemata; sociotropic and autonomic personality diathesis; etc.) have seldom been tested outside of the West (Clark, Beck, & Alford, 1999; Haaga, 1991; Ingram et al., 1998).

In the second stage of research, and after the establishment of the cognitive theory, future studies should tailor the extant cognitive treatments and pilot test their efficacy and acceptability among patients in the Middle East. For instance, the tailored cognitive treatments for Middle Eastern sufferers of depression may infuse Islamic elements in the treatment manual, even while they preserve basic principles of cognitive mediation (Beshai, Clark, & Dobson, 2013). Further, and drawing on findings of the current study, it appears that the depressed Egyptian individuals in this study possibly exhibited protective factors (e.g., a greater tendency to focus on or fail to disengage from happy faces and words) that are not associated with depression in the West. Future studies should examine these protective factors, and where appropriate, foster these factors during the course of cognitive treatment.

Pilot testing and feasibility trials should be followed by larger, more definitive randomized controlled trials (Rounsaville, Carroll, & Onken, 2001) to establish the efficacy of these tailored treatments among this target subpopulation of sufferers. The third and final stage in this recommended future research program should target the dissemination and proliferation of these evidenced-based treatments in the Middle East. The dissemination and use of evidence-based treatments remains a problem even in the West (Dobson & Beshai, 2013).

In line with the bottom-up approach to research recommended above, future endeavors should address criticisms that are found within the field of clinical psychology. Some researchers have argued that no significant advances in the treatment of mood disorders have been made in the last decade (Cuijpers et al., 2010). Indeed, it has been suggested that the effect sizes of some

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of our evidence-based, established treatments are on the decline (Schmidt & Keough, 2010). In light of this apparent stagnation, it is argued that the field of clinical psychology would strongly benefit from adherence to basic research endeavours, and that strong scientific theories will best inform the foundation of strong psychological treatments. Echoing arguments made by Barlow, Bullis, Comer and Ametaj (2013) and Westen, Novotny and Thompson-Brenner (2004), the author suggests that future research focus more directly on mechanisms of change.

Although the current study did not directly assess treatment effects, the cognitive model of depression underlies the cognitive therapy for depression (Beck, Rush, Shaw & Emery, 1979). Research into consistent predictors and mechanisms of change in cognitive behavioural treatments for mood disorders is currently taking place, but this body of literature is in its infancy (Driessen & Hollon, 2010). For instance, future studies utilizing advanced longitudinal techniques (e.g., hierarchical linear modeling) should examine session-by-session change of negative automatic thoughts, as to identify the mediational properties of cognitions in cognitive treatments.

Future research should isolate moderators (e.g., culture or other demographic variables) and mediators (e.g., cognitive change; Hollon, DeRubeis, & Evans, 1987) of outcome in the treatment of depression. These studies can then help to build treatment algorithms to support the case conceptualization process in psychotherapy for optimized efficacy. For instance, to date, it is unclear why individuals showing higher risk indicators of recurrence in depression benefit more from preventive cognitive-behavioral efforts (Beshai & Dobson, 2013). Future research should isolate the active ingredients which make these types of treatments more effective for clients with a more severe presentation. It is likely that the mechanisms involved in the onset of depression (e.g., deficits in problem-solving strategies) become increasingly less important with

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successive experienced episodes, whereas other strategies (e.g., reappraisal) become increasingly important in the prevention of relapse (Beshai & Dobson, 2013).

Finally, the current investigation adopted a universal, or etic (cross-cultural), approach to the conceptualization of depression. This approach assumes that the essential components of the experience of depression (but not necessarily how it is diagnostically defined) are universal, with some culturally-bound constraints and influences on the phenomenology of such experience (e.g., variant symptom expression, differing relationships with concomitants of the disorder, etc.) (Chensova-Dutton & Tsai, 2008). There are researchers who disagree with this view of depression, however, and who maintain that the disorder is culturally-bound, and so such researchers espouse an emic (from within one culture), or indigenous approach to studying the phenomenon. Indeed, these researchers assert that, given the culturally-bound nature of the disorder, cross-cultural approaches to examining the disorder are at best meaningless, and at worst ethnocentric, as measures, diagnostic criteria, and conceptualizations of depression extant in one culture would invariably need to be imposed on sufferers in another culture (Chentsova-Dutton & Tsai, 2008; Kleinman, 1982).

Results from this and a number of other cross-cultural studies provide sound evidence that depression, defined as extreme forms of sadness, may be a universal human experience. As such, examining how individuals of different cultures experience and express these universal experiences is especially of interest. Secondly, and given the comprehensive and universal nature of the cognitive model for depression, cross-cultural analyses examining the claims of this model are warranted. With this said, we believe that there is a need for both cross-cultural or etic, as well as indigenous or emic approaches to the study of depression. As suggested by Berry et al. (1992), sound cultural research should not be exclusively etic and nomothetic in nature. Cross-

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cultural adaptation of tests and constructs should be considered the initial steps of a more elaborate research program that involves both etic and emic elements.

CONCLUSION

The current study examined the validity of six hypotheses generated by the cognitive/schema model of depression among a sample of depressed individuals in Egypt. Overall, the findings of the present study are supportive of the cognitive model with sufferers of that region. For instance, both depressed individuals in Egypt and Canada displayed more negative automatic thoughts (toward self and future), more dysfunctional attitudes, and fewer positive self-referent thoughts in comparison to their non-depressed counterparts. Further, depressive symptoms were significantly and meaningfully associated with these cognitive concomitants of depression among the Egyptian sample.

Despite the above overall pattern of results, a few inconsistencies with the model were obtained, both arising from data among Canadian sufferers as well as from Egyptian sufferers. For instance, there was no support for the negative selective attention hypothesis among depressed Canadians and Egyptians. It is unclear whether this null finding is due to the elusiveness of this effect or to methodological limitations of the current design. Further, and inconsistent with the depression literature arising from Western samples, depressed Egyptians appeared to have a positive attentional bias in comparison to their depressed Canadian counterparts. Future research should replicate this finding and examine whether this bias is associated with known protective factors (e.g., family cohesion; religiosity, etc.) in depression in that region.

In addition to further studies of the nature, vulnerability, and course of depression in the Middle East, future endeavours should also focus on using basic research in order to isolate

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consistent predictors of outcome in depression treatments. This research, which has only just begun in Western societies, can be used to tailor treatments to make them more efficacious and appropriate for subpopulations of sufferers at home and abroad. The present study is an initial step in a systematic and targeted future research program on global mental health and depression intervention. Efforts such as the ones here are encouraged in order to provide better access to good treatments for depression for the millions of sufferers around the world.

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Appendix A

UNIVERSITY OF
CALGARY**Consent Form**

Title of Project

The Schema Theory of Depression: A Cross-Cultural Validation with a Depressed Egyptian Sample

Name of Researchers, Faculty, Department, Telephone and Email

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Email: ksdobson@ucalgary.ca

This consent form, a copy of which has been given to you, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this form carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study

This study is a cross-cultural, international study conducted as part of a Ph.D. project. We are interested in looking at how culture may affect different ways of thinking when people are feeling sad or down. To undertake this study, we are comparing a group of participants from Canada to a group of people from Egypt.

What Will I Be Asked To Do?

If you choose to participate, you will be asked to fill out a series of questionnaires which are designed to get an idea of any symptoms you may be suffering from as well as inform us about the different ways of thinking and behaving when you are feeling sad or down. You will also be asked to do a task on a computer where you have to look at words and faces and find a dot on-screen. And finally, you will be asked to recognize words from a given list. The whole process will take you approximately 60 minutes of your time. Participation in this study is completely voluntary, and your decision to participate or not participate will not impact the services you receive in this clinic in any way. The services you receive will also not be affected if you initially agree to participate but later decide to withdraw from the study.

What Type of Personal Information Will Be Collected?

No personal identifying information will be collected in this study, except on this form, and all participants shall remain anonymous. Should you agree to participate, you will be asked to provide some personal information such as gender, age, nationality, religion, country of birth, languages spoken, education, occupation, marital status, and income.

Are There Risks or Benefits if I Participate?

It is not expected that you will experience any risks, harm, or inconvenience while participating in this research. However, due to the fact that you will complete questionnaires about symptoms of different conditions, you may become aware of current health-related concerns. As such, the investigator will provide you with a document that contains information and resources about mental health problems. In return for your participation, you will also receive \$20 Canadian dollars.

What Happens To The Information I Provide?

All of the information that you provide will be kept anonymous and confidential. This consent form will be kept separate from the questionnaires that you complete, which will be identified with only a code number. Only group information will be summarized for any presentation or publication of results. The hard copy data that you provide, including this consent form, will be sent to Canada for analysis and storage, and kept in a locked cabinet in the Administration Building, Room 059, at the University of Calgary, Calgary, Alberta, Canada. If you choose to withdraw from the study at any point, the information that you provided up to then will be kept for analysis. Only Shadi Beshai, Keith Dobson, and Ashraf Adel will have access to the hard copy data for an indefinite period of time for possible future use. Following this period, the data will be destroyed.

Signatures (written consent)

Your signature on this form indicates that you 1) understand to your satisfaction the information provided to you about your participation in this research project, and 2) agree to participate as a research participant. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Participant's Name: (please print) _____

Participant's Signature _____ Date: _____

Researcher's Name: (please print) _____

Researcher's Signature: _____ Date: _____

Questions/Concerns

If you have any further questions, or want clarification regarding this research and/or your participation, please contact contact Dr. Ashraf Adel, at ashrafadel2000@yahoo.com.

The investigators from Canada are Shadi Beshai (tel: +1- 403- 220-4971; email: sbeshai@ucalgary.ca) and Dr. Keith Dobson (tel: +1- 403- 220 – 5096; email: ksdobson@ucalgary.ca).

If you have any concerns about the way you've been treated as a participant, you may contact the Senior Ethics Resouce Office, Research Services Office, University of Calgary at (403) 220-3782; email rburrows@ucalgary.ca

A copy of this consent form has been given to you to keep for you records and reference. The investigator has kept a copy of the consent form.



Appendix B

Mood Study Screen/Structured Interview

Participant #: _____ Interviewer Initials: _____ Date/Time: _____

Script for screen/phone call.

Hi, my name is _____. I want to start this call by thanking you for taking an interest in the mood study. This part of the study involves a very brief interview, to ask you whether you are, or are not experiencing certain problems and symptoms. My supervisor asks us to do this brief initial interview to figure out whether or not you are eligible to take part in the moods study; we certainly would not want to waste your time and energy coming down to the lab if you do not qualify for the study. This brief interview will take about 3-6 minutes. It would be good if you have 5 minutes or so where you will not be distracted.

1. Do you have 3-6 minutes to answer a few questions? Yes (*Move to question 2*) No
(*Move to ***)
2. Is it safe to talk right now? Yes (*Move to screen below, and read instructions*) No
(*Move to ***)

** When is a better time for us to call and conduct this brief 3 minute interview?

Date: _____ Time: _____

Would you like me to call back at this number? (*If new number, record*)

Place a check mark or “X” next to each statement in the appropriate box. If you agree or mostly agree with the statement, place a check mark or “X” in YES column, and if you disagree or mostly disagree with the statement, place the check mark or “X” in the NO column. (*ask all questions*)

Question	YES	NO
1. Were <i>you</i> born in Canada?		
2. Were <i>both of your parents</i> born in Canada?		
3. Were <i>your grandparents</i> (on both sides of the family) born in either Canada OR ANY European country?		
4. Have you ever been diagnosed with clinical depression?		

5. In the last month , has there been a period of time when you were feeling depressed or down most of the day, nearly every day?		
6. In the last month , have you lost interest or pleasure in things you usually enjoy?		
7. In the last month , have you experienced any of the following symptoms: Disruptions in sleep (sleep more or less than usual), disruptions in appetite (eat more or less than usual), low energy or fatigue, difficulty concentrating, thoughts of worthlessness or guilt, or suicidal thoughts?		
8. In the last month , has there been a period of time when you felt so good, “high”, excited, or hyper that other people thought you were not your normal self, or you were so hyper that you got in trouble?		
9. In the last month , did things happen that you believed were true, even though other people told you they were in your imagination?		
10. In the last month , did you hear voices that other people didn’t hear?		
11. In the last 6 months , did you think you were drinking alcohol too much?		
12. In the last 6 months , did anyone in your family, friends, a doctor, or anyone else say that you were drinking alcohol too much?		
13. In the last 6 months , did you think you were using drugs too much?		
14. In the last 6 months , did anyone in your family, friends, a doctor, or anyone else say that you were using drugs too much?		
If you Answered “Yes” to Questions 11-4:		
15. Did the low mood/depression come before you started drinking and/or using drugs?		
16. Did you try to stop, cut down, or control your drinking/drug use?		
17. Did you spend a lot of your time trying to get alcohol/drugs, drinking/using drugs, or recovering from the effects of alcohol/drugs?		
18. Because of your drinking and/or drug use, did you have problems in your marriage; at your job; with your friends or family; doing household chores; or in any other important area in your life?		

Appendix C



Mood Study

 Demographic Information

Today's Date (D/M/Y): _____

What is your gender? (Check box) Male Female

Age? _____

In which country were you born? (Check the appropriate box):

Canada----

Egypt-----

Other----- Please indicate: _____

In which country were your parents born? (Check box):

Mother: Canada----

Egypt-----

Other----- Please indicate: _____

Father: Canada----

Egypt-----

Other----- Please indicate: _____

What is your marital Status? (Check Box):

Single, never married -----

Married -----

separated/divorced -----

widowed -----

What is your approximate yearly income? (Check Box):

I'm unemployed/No yearly income ----

10,000 – 30,000 -----

30,000 – 50,000 -----

50,000- 75,000 -----

75,000 and over -----

None of the above ----- Please indicate: _____

What is the highest level of education you received?: (*check off highest level only*)

No degree, certificate or diploma -----

If so, please indicate the last grade you completed: _____

- Secondary (high) school graduation certificate or equivalent -----
- Trades certificate or diploma -----
- Other non-university certificate or diploma -----
- University certificate or diploma below bachelor level -----
- Bachelor's degree -----
- University certificate or diploma above bachelor level -----
- Degree in medicine, dentistry, veterinary medicine or optometry --
- Master's degree -----
- Earned doctorate -----

What religion/belief system do you follow? (Check box)

- Christianity (includes Catholic)--
- Islam-----
- Judaism-----
- Buddhism-----
- Atheism-----
- Agnosticism-----
- Other----- Please indicate: _____

What was your first language?

- English-----
- Arabic-----
- Other----- Please indicate: _____

What language is primarily spoken in your family's home?

- English-----
- Arabic-----
- Other----- Please indicate: _____

Appendix D



Mood Study

CIDI MN Screen

Instructions: Please read the following items carefully and place a check mark in the box right of the statements. Place a check mark in the “Yes” column if you agree with the statement, and place a check mark in the “No” column if you disagree with the statement.

	Yes	No
1. In the last month , have you had a period lasting four days or longer when you became so happy or excited that you either got into trouble, people worried about you, or a doctor said you were manic?		
1. A) If you answered “Yes” to question “1” : People who have periods like this often have changes in their behavior at the same time, like being more talkative, needing very little sleep, being very restless, going on buying sprees, and behaving in ways they would normally think are inappropriate. Did you ever have any of these changes during your periods of being very happy or excited?		

Appendix E



Mood Study

ATQ – P

Instructions: Listed below are a variety of thoughts that pop into people's heads. Please read each thought and indicate how frequently, if at all, the thought occurred to you over the last day. Please read each item carefully and circle the appropriate number next to each statement.

- 1 = Never**
2 = Sometimes
3 = Moderately often
4 = Often
5 = All the time

	Never	Sometimes	Moderately often	Often	All the Time
1. I am respected by my peers	1	2	3	4	5
2. I have a good sense of humour.	1	2	3	4	5
3. My future looks bright.	1	2	3	4	5
4. I will be successful.	1	2	3	4	5
5. I'm fun to be with	1	2	3	4	5
6. I am in a great mood.	1	2	3	4	5
7. There are many people who care about me	1	2	3	4	5
8. I'm proud of my accomplishments.	1	2	3	4	5
9. I will finish what I start.	1	2	3	4	5
10. I have many good qualities.	1	2	3	4	5
11. I am comfortable with life.	1	2	3	4	5
12. I have a good way with others.	1	2	3	4	5
13. I am a lucky person.	1	2	3	4	5
14. I have friends who support me.	1	2	3	4	5
15. Life is exciting.	1	2	3	4	5

16. I enjoy a challenge.	1	2	3	4	5
17. My social life is terrific.	1	2	3	4	5
18. There's nothing to worry about.	1	2	3	4	5
19. I'm so relaxed.	1	2	3	4	5
20. My life is running smoothly.	1	2	3	4	5
21. I'm happy with the way I look.	1	2	3	4	5
22. I take good care of myself.	1	2	3	4	5
23. I deserve the best in life.	1	2	3	4	5
24. Bad days are rare.	1	2	3	4	5
25. I have many useful qualities.	1	2	3	4	5
26. There is no problem that is hopeless.	1	2	3	4	5
27. I won't give up.	1	2	3	4	5
28. I state my opinions with confidence.	1	2	3	4	5
29. My life keeps getting better.	1	2	3	4	5
30. Today I've accomplished a lot.	1	2	3	4	5



DAS

This questionnaire lists different attitudes or beliefs which people sometimes hold. Read *each* statement carefully and decide how much you agree or disagree with the statement.

For each of the attitudes, indicate to the left of the item the number that *best describes how you think*. Be sure to choose only one answer for each attitude. Because people are different, there is no right answer or wrong answer to these statements. Your answers are confidential, so please do not put your name on this sheet.

To decide whether a given attitude is typical of your way of looking at things, simply keep in mind what you are like *most of the time*.

- 1 = Totally agree**
- 2 = Agree very much**
- 3 = Agree slightly**
- 4 = Neutral**
- 5 = Disagree slightly**
- 6 = Disagree very much**
- 7 = Totally disagree**

- _____ 1. It is difficult to be happy unless one is good looking, intelligent, rich, and creative.
- _____ 2. Happiness is more a matter of my attitude towards myself than the way other people feel about me.
- _____ 3. People will probably *think less of me* if I make a mistake.
- _____ 4. If I do not do well all the time, people will not respect me.
- _____ 5. Taking even a small risk is foolish because the loss is likely to be a disaster.
- _____ 6. It is possible to gain another person's respect without being especially talented at anything.
- _____ 7. I cannot be happy unless most people I know admire me.
- _____ 8. If a person asks for help, it is a sign of weakness.
- _____ 9. If I do not do as well as other people, it means I am a weak person.
- _____ 10. If I fail at my work, then I am a failure as a person.
- _____ 11. If you cannot do something well, there is little point in doing it at all.
- _____ 12. Making mistakes is fine because I can learn from them.
- _____ 13. If someone disagrees with me, it probably indicates he does not like me.

- _____ 14. If I fail partly, it is as bad as being a complete failure.
- _____ 15. If other people know what you are really like, they will think less of you.
- _____ 16. I am nothing if a person I love doesn't love me.
- _____ 17. One can get pleasure from an activity regardless of the end result.
- _____ 18. People should have a chance to succeed before doing anything.
- _____ 19. My value as a person depends greatly on what others think of me.
- _____ 20. If I don't set the highest standards for myself, I am likely to end up a second-rate person.
- _____ 21. If I am to be a worthwhile person, I must be the best in at least one way.
- _____ 22. People who have good ideas are better than those who do not.
- _____ 23. I should be upset if I make a mistake.
- _____ 24. My own opinions of myself are more important than others' opinions of me.
- _____ 25. To be a good, moral, worthwhile person I must help everyone who needs it.
- _____ 26. If I ask a question, it makes me look stupid.
- _____ 27. It is awful to be put down by people important to you.
- _____ 28. If you don't have other people to lean on, you are going to be sad.
- _____ 29. I can reach important goals without pushing myself.
- _____ 30. It is possible for a person to be scolded and not get upset.
- _____ 31. I cannot trust other people because they might be cruel to me.
- _____ 32. If others dislike you, you cannot be happy.
- _____ 33. It is best to give up your own interests in order to please other people.
- _____ 34. My happiness depends more on other people than it does on me.
- _____ 35. I do not need the approval of other people in order to be happy.
- _____ 36. If a person avoids problems, the problems tend to go away.
- _____ 37. I can be happy even if I miss out on many of the good things in life.
- _____ 38. What other people think about me is very important.
- _____ 39. Being alone leads to unhappiness.
- _____ 40. I can find happiness without being loved by another person.

Appendix G



Mood Study

ATQ – N

Instructions: Listed below are a variety of thoughts that pop into people’s heads. Please read each thought and indicate how frequently, if at all, the thought occurred to you over the last day. Please read each item carefully and circle the appropriate number next to each statement.

- 1 = Never**
2 = Sometimes
3 = Moderately often
4 = Often
5 = All the time

	Never	Sometimes	Moderately often	Often	All the Time
1. I feel like I am up against the world.	1	2	3	4	5
2. I am no good.	1	2	3	4	5
3. Why can't I ever succeed?	1	2	3	4	5
4. No one understands me.	1	2	3	4	5
5. I have let people down.	1	2	3	4	5
6. I don't think I can go on.	1	2	3	4	5
7. I wish I were a better person	1	2	3	4	5
8. I am so weak.	1	2	3	4	5
9. My life is not going the way I want it to.	1	2	3	4	5
10. I am so disappointed in myself.	1	2	3	4	5
11. Nothing feels good anymore.	1	2	3	4	5
12. I can't stand this anymore.	1	2	3	4	5
13. I can't get started.	1	2	3	4	5
14. What's wrong with me?	1	2	3	4	5
15. I wish I were somewhere else.	1	2	3	4	5
16. I can't get things together.	1	2	3	4	5
17. I hate myself.	1	2	3	4	5

18. I am worthless	1	2	3	4	5
19. I wish I could just disappear.	1	2	3	4	5
20. What's the matter with me?	1	2	3	4	5
21. I am a loser.	1	2	3	4	5
22. My life is a mess.	1	2	3	4	5
23. I am a failure.	1	2	3	4	5
24. I will never make it.	1	2	3	4	5
25. I feel so helpless.	1	2	3	4	5
26. Something has to change.	1	2	3	4	5
27. There must be something wrong with me.	1	2	3	4	5
28. My future is bleak.	1	2	3	4	5
29. It's just not worth it.	1	2	3	4	5
30. I can't finish anything.	1	2	3	4	5