PSYCHOMETRIC PROPERTIES OF LEIDEN INDEX OF DEPRESSION SENSITIVITY-REVISED (LEIDS-R) IN PERSIAN LANGUAGE

by

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DEDICATION

To:

My parents, my dear husband, Reza and my lovely daughter, Parmis, with much love and thanks

And

My late Daddy…

تقدیم به:

همسرم عزیزم عبدالرضا

دختر گلم پارمیس

و تقدیم به تمامی برادران و خواهران دلسوزم

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LIST OF ABBREVIATIONS

ACC	Acceptance
AGG	Aggression
APA	American Psychiatric Association
BDI	Beck Depression Inventory
CON	Control
CR	Cognitive Reactivity
CT	Cognitive Therapy
CTT	Classical Test Theory
DA	Differential Activation
DC	Dysfunctional Cognitions
DAS	Dysfunctional Attitudes Scale
DIF	Differential Item Functioning
DSF	Differential Step Functioning
DTF	Differential Test Functioning
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4th ed.
EST	Educational Testing Service
HADS	Hospital Anxiety and Depression Scale
HAM-D	Hamilton Depression Rating Scale
HOP	Hopelessness
IRT	Item Response Theory

LEIDS-R	Leiden Index of Depression Sensitivity-Revise
M	Mean
Max	Maximum
MDD	Major Depression
MDQ	Major Depression Questionnaire
MI	Mood Inventory
Min	Minimum
MMPI-2	Minnesota Multiphase Personality-2
ND	Never-Depressed
PCA	Principal Components Analysis
RAV	Risk aversion
RD	Recovered Depressed
RSM	Rating Scale Measurment
RUM	Rumination
SCID	Structured Clinical Interview for DSM
SCL-90-R	Symptom Checklist 90 Revised
SD	Standard Deviation
WHO	World Health Organization

CIRI PSIKOMETRIK "LEIDEN INDEX OF DEPRESSION SENSITIVITY-REVISED (LEIDS-R)" DALAM BAHASA PARSI

ABSTRAK

Kini, tiada sorotan kajian yang menunjukkan instrumen lapor diri yang sahih atau mempunyai kebolehpercayaan untuk digunakan untuk menilai kereaktifan kognitif (CR) pada individu yang pulih dari kemurungan. Kereaktifan kognitif ialah darjah perubahan dalam pemikiran negatif ketika respon terhadap suasana sedih dan didapati menjadi penyumbang utama dalam kemurungan ulangan.

Kajian ini bertujuan untuk membangunkan dan mengesahkan versi Parsi LEIDS-R untuk kegunaan ahli-ahli psikologi dan klinikal di pusat-pusat di Iran. LEIDS-R telah diterjemahkan kepada bahasa Parsi dan kandungannya disahkan oleh sekumpulan pakar rujuk. Instrumen ini diuji dengan 250 individu yang pulih dari kemurungan, RD (kumpulan fokus) dan 320 individu tidak pernah murung, ND (kumpulan kawalan) daripada empat belas pusat di Iran. Ketekalan dalaman dan uji -menguji semula LEIDS-R adalah tinggi. Analisis faktor dan keberbezaan fungsi item (DIF) digunakan untuk menentukan kesahan gagasan LEIDS-R. Analisis statistik Mantel Haenszel (M-H) Statistik kuasa dua Khi dan *Log-Odd Ratio* dengan kumpulan yang pulih dari kemurungan sebagai kumpulan fokus dan kumpulan yang tidak pernah murung sebagai kumpulan rujukan digunakan untuk mengesan item DIF. Keputusan-keputusan statistik M-H dan LOR menunjukkan bahawa LEIDS-R tidak ada item DIF. Pengesahan serentak LEIDS-R telah disahkan dengan menggunakan inventori DAS. Perbezaan respons antara dua kumpulan dicapai melalui skor kereaktifan kognitif. Dapatan kajian mempamerkan perbezaan skor CR yang signifikan antara kumpulan RD dengan kumpulan ND. Malah, kumpulan RD menunjukkan skor CR yang lebih tinggi berbanding dengan kumpulan ND. Kajian ini menunjukkan bukti untuk menyokong kesahan gagasan inventori LEIDS-R asal untuk sampel Iran.

PSYCHOMETRIC PROPERTIES OF LEIDEN INDEX OF DEPRESSION SENSITIVITY-REVISED (LEIDS-R) IN PERSIAN LANGUAGE

ABSTRACT

Currently no valid or reliable self-report instrument exists in the literature for recovered depressed (RD) individuals to use in evaluating cognitive reactivity (CR). CR is the degree of change in negative thinking in response to sad mood, and it has been found to play a key causal role in depressive relapse.

The present study aims to develop and validate a Persian-language version of LEIDS-R for use by psychologists' and clinicians' centers in Iran. LEIDS-R was translated into Persian and the content validated by experts' judgment. The instrument was administered to 250 recovered depressed, RD (focus group) and 320 non-depressed, ND (control group) individuals from fourteen centers in Iran. The internal consistency and test-retest reliability of the LEIDS-R were high. Factor analysis and Differential Item Functioning (DIF) were used to determine the construct validity of the LEIDS-R. Statistical analysis based on Mantel Haenszel (M-H) Chi Square statistics was used for identifying DIF and Log-Odd Ratio (LOR) across the recovered depressed and non-depressed groups. M-H and LOR statistical results displayed no DIF for LEIDS-R. Concurrent validity of the LEIDS-R was confirmed with a Dysfunctional Attitude Scale (DAS) inventory. Comparison of the differential response between the two groups was done using the CR scores. The results demonstrate a significant difference between RD and ND groups in CR

scores; the RD group score was significantly higher than the ND group score. This study yielded strong evidence in support of the construct validity of the original LEIDS-R inventory for this particular Iranian sample set.

CHAPTER 1

INTRODUCTION

This chapter presents an introduction to the present study, including the background, statement of the problem, purpose, research objectives, research questions, and significance of the study. This introduction is followed by the operational definition of terms used in this study.

1.1 Introduction

Depressive disorders are characterized by the impairment of mood regulation. They most commonly include major depression (Sadock & Sadock, 2007), which is a serious mental health disorder. It is predicted that by the year 2020, major depression will be the second major cause of disability in the world; presently it is ranked as the fourth leading cause of days and years lost due to disease (Chisholm, Sanderson, Ayuso-Mateos & Saxena, 2004; The, 2006).

The World Health Organization (WHO) has reported that in 2020 depression will be one of the leading causes of disease after AIDS, HIV and prenatal deaths (Chisholm *et al.*, 2004; Mathers & Loncar, 2006). In addition, the incidence of major depression disorder (MDD) among women is higher than men worldwide. Other depressive disorders are also highly prevalent conditions, as demonstrated by community and primary care studies. According to Lecrubier (2001), depressed individuals are often high users of medical services. A fourth (23.5%) of all depressed people and two-thirds of those with a lifetime history of depression have

an average of 15 visits or telephone calls to primary health care services. The recognition of depression by primary care physicians is complicated by the fact that depressed patients tend not to show psychosocial symptoms. In an international study, 69% of patients with depression reported only somatic symptoms, and 11 % denied psychological symptoms even on direct questioning (Simon, Vonkorff, Piccinelli, Fullerton & Ormel, 1999). Thus on a global scale, depressive disorder is responsible for as many as one in every five visits to primary care (Kleinman, 2004), yet many patients still do not receive appropriate treatment for depression, and over half of the primary care patients are not accurately diagnosed (Keyes & Godman, 2006). Furthermore, cultural causes of misdiagnosis might contribute to the problem (Okello & Musisi, 2006; The, 2006). There is, however, no evidence for misdiagnosis of depression in Iran. In the next subsection the situation of psychiatric disorders and depression in Iran will be discussed.

1.2 Prevalence of depression in Iran

Iran is a comparatively large Middle Eastern country with a population of over 74 million (75,636,372) in an area of 1,648,195 km^2, making it the 17th largest country in the world (in area). 70% of the population lies in the age range between 15-65 years. It is estimated that at least 60% (over 45 million) persons living in Iran suffer from depression disorders (Moeen, 2009). Previous studies were conducted on those above 18 years old, showing the prevalence of major depression to be in three locations: Tehran (18.5%), Ilam (20.3%) and Western Azerbaijan (30%) (Noorbala, Mohammad, Bagheri & Yasami, 2002).

Recently, several studies have been carried out on the prevalence of depressive disorders among children and adolescents in Iran. The empirical results indicated that depression in pre-school age was about 2% (Kaviani, Javaheri & Boheirai, 2004). In addition, according to national data collected from 2001 to 2003, 21 % of Iran's general adult population and 28% Iranian's students suffered from depression. This investigation displayed that there are significant association between the prevalence of depression and low socioeconomic class. The rate for women (25.9%) was 1.7 times higher than for men (14.9%). They are susceptible to condition and environmental stress (Noorbala, Yazdi, Yasamy & Mohammd, 2004). The higher rate of mental disorders among women has been shown to be prevalent throughout all areas of Iran (Raisi, 2001).

Marital and gender roles entrenched in the culture were considered as possible explanations for the higher rates and the consistency across the country.

The other cross-sectional, population-based epidemiological study in Iran that used the schedule for Affective Disorders stated that the estimated lifetime prevalence of MDD was 3.1% lower than in the USA (5-10%) (Mohammadi *et al.*, 2006). The apparently lower rate seen in Iran may be due to lack of ability to detect somatically-oriented depression. It may also be that depressive episode may be inherently somatic in manifestation in non-Western nations or ethnic groups. Thus, the current depression criteria, which are primarily psychologically based, might be insufficient to accurately assess depressive syndromes in countries like Iran, which may tend to normalize depression (Mohammadi *et al.*, 2005; Mohammadi *et al.*, 2006).

1.3 Background of the Study

Cognitive Reactivity (CR) (Scher, Ingram & Segal, 2005) is based on the dysfunction action approach (Lau, Segal & Williams, 2004). According to Raes, Dewulf, Van Heeringen and Williams (2009),

"Cognitive reactivity (CR) to sad mood refers to the degree to which a mild dysphoric state reactivates negative thinking patterns. The idea behind CR is that earlier episodes of depression establish an association between sad mood and negative thinking patterns and that subsequent depressed mood will reactivate these negative thinking patterns. According to this model, vulnerability ability does not so much refer to the precise content of thinking in vulnerable subjects, but rather to this process of thought-affect cycles, brought online at times of lowering mood" (Raes *et al*., 2009, p.623).

There are two ways to measure CR: (a) mood challenge and (b) self-report. In a mood challenge procedure, negative thinking is measured before and following a sad mood event. The typical observation is that recovered depressed individuals and non-depressed individuals do not differ on self-report of negative thinking before the mood challenge. Nevertheless, mood induction recovered depressed individual self-report raised levels of negative cognitions (Lau *et al.*, 2004).

Van der Does (2002a) designed the Leiden Index of Depression Sensitivity (LEIDS) inventory to assess CR. LEIDS is a self-report inventory in which individuals are supposed to imagine a low sad mood. It assesses CR by asking respondents to describe how they would feel and think if they were to experience such a lower sad mood; an example of a response might be, "When I feel sad, I feel

more that people would be better off if I were dead". A high score in CR to sad mood indicates the presence of dysfunctional cognitions (DC) and predicts depressive relapse (Fresco, Segal, Buis & Kennedy, 2007). Research has shown that previously depressed persons reported significantly higher scores on the LEIDS than never-depressed individuals (Moulds *et al.*, 2008), and LEIDS scores predict response to mood challenge as well. Furthermore, LEIDS is useful for exploring a person's history of past depression symptoms and suicidal tendencies when the person is in full remission, as well as determining behavioral reactivity to a mood challenge (Williams, Van der Does, Barnhofer, Crane & Segal, 2008).

The LEIDS Inventory created by Van der Does was first introduced in 2002. It was originally a self-report 52 multiple-choice item inventory, and was then revised in 2003 to a 34-item inventory known as LEIDS-R. Research studies indicated that it is accepted as one of the best self-report tools for measuring the cognitive reactivity. LEIDS-R is used in study of clinical practice (Moulds *et al.*, 2008; Zorica & Tatjana, 2010). A number of researchers have studied the psychometric properties of the LEIDS-R, and are in general agreement regarding its adequate test-retest reliability and internal consistency (Antypa & Van der Does, 2010). The LEIDS-R was originally created in the Dutch language. Van der Does has used LEIDS-R in his previous studies for measuring the CR in Dutch subpopulation samples. Since 2003, an increasing number of researchers have studied the LEIDS-R with different subpopulations. These studies were mostly in European countries but not in Iran. Due to its demonstrated effectiveness, there is a need to introduce the LEIDS-R inventory to the Persian culture to enable psychologists, counselors and clinicians to use in the clinic or center. Thinking ahead, it would be highly desirable to create a

new and related valid instrument that would enable psychologists to measure individuals' CR and provide assessment information of individuals by themselves. The aim of the present study was to adapt and validate a Persian version of LEIDS-R. The hypothesis is that an individual who was formerly depressed would have higher-levels of CR to sad mood than an individual who was non-depressed. If the hypothesis is true, it can be used as a measure of CR (Van der Does, 2005).

1.4 Statement of the problem

As previously stated, MDD is one of the prevalent disabling mental health problems and crucial health issues in the world (Monroe & Reid, 2009; Paolo & Maurizio, 2002). It is manifested in a variety of symptoms and behaviors, and thus is not easily diagnosed. Depression can seriously disrupt people's lives (Porter, Linsley & Ferrier, 2001), significantly reducing the quality of life by creating serious problems in several areas such as relationships, schooling and work (Rush *et al.*, 2006; Vitiello, 2009). According to the World Health Organization (WHO), a depression disorder is anticipated to become the second leading cause of cognitive disability in 2020 (Bayati, Beigi & Salehi, 2009; Khan, Sulaiman & Hassali, 2009; Willemse, Smit, Cuijpers & Tiemens, 2004). This prediction comes despite the fact that most countries, including Iran, are actively addressing depression. Recent studies have shown that Iran had increased in number of depression cases, suggesting the need to pay more attention to diagnosis and treatment of the disease.

Khayerabadi and Yousefi (2000) determined that as of about ten years ago, approximately 35.7% of Kurdistan people had mental problems. Sadeghirad *et al.*

(2010) reported that the current prevalence of depression was 38.6 % in Iranian urban and rural populations. In their study on depression in Iran, Modabbernia, Alis, Moosavi and Fallahi (2007) indicated that 34% of high school students suffered from depression. Mazhari and Nakhaee (2007) reported a high prevalence of depression and mental disorders in Iran population. Overall, Moeen (2009) found that in Iran more than 60% of the population suffered depression (Guilan, Kohkiloyeh-Boierahmad and Ilam). It is important to note that the rate of depression among Iranians was greater than that in other countries (Focus, 2005; Masoodzadeh, 2002; Yousefi, Mansor, Juhari, Redzuan & Talib, 2010). The prevalence of depression in Iran demonstrates the need for greater attention to mental health services. Further research would be beneficial for improving treatment and prevention of depression.

Previous studies yielded several instruments that have been used to assess depression disorder among English-speaking youth (Moulds et al., 2008; Raes, Dewulf, Van Heeringen & Williams, 2009). Among these instruments are Dysfunctional Attitude Scale (DAS), Beck Depression Inventory (BDI), Symptom Checklist-90-Revised (SCL-90-R) and Minnesota Multiphase Personality-2 Inventory (MMPI-2). MMPI-2 and SCL-90-R were designed to measure MDD and other traits of an individual (e.g. they include many questions which are not exactly related to depression), but they cannot diagnose the CR. Although BDI measures depression disorder, it cannot measure and diagnose the CR and all had serious limitations for use with recovered depressed individual.

The DAS measures dysfunctional beliefs that, according to cognitive theories, are core concepts of vulnerability to depression and cognitive reactivity. Currently DAS is available in Persian language, but this instrument is not able to distinguish

between recovered and never depressed individuales (Segal et al., 1999). Consequently, Van der Does (2005) emphasized that there is a need to adapt and validate an instrument that can measure individual's CR. In order to measure and diagnose CR specifically, LEIDS-R is the best and most efficient method (Van der Does, 2002a). At present, there are no published reports on the acceptability and psychometric properties of the LEIDS-R in the Persian language, which is the first language for more than 100 million people in Iran, Pakistan, Tajikistan and Afghanistan (Fareiran, 2011).

When an instrument is translated into other language, the validity of the instrument must be ascertained. A potential threat to instrument validity is the degree of equivalence between the adapted and original instruments. Some clinicians and psychologists use translated questionnaires to diagnose and evaluate cognitive vulnerability of depression without establishing the validity and reliability (Cai, 2004). According to the Standards for Educational and Psychological Testing AERA, APA, and NCME (1999):

"When a test is translated from one language to another, the methods used in establishing the adequacy of the translation should be described, and empirical and logical evidence should be provided for score reliability and the validity of the translated test's score inferences for the uses intended in the linguistic groups to be tested."(AERA, APA, and NCME, 1999; p.99)

Therefore, evaluating and assessing CR in a specific cultural context and developing a practical validity and reliability of instrument is very important. In some cases, psychological and mental health instruments established and developed for content validity and reliability in a special language and/or country have been

considered but without detailed attention to the cross-cultural adaptation (Knudsen *et al.*, 2000; Weiss & Berger, 2006).

Different cultures interpret similar situations in different ways. The way we come to know and interpret cultural situations may differ substantially from one context to another (Parry & Proctor, 2001). Certain words in one language may not even exist in another. Commonly no two words of the same language have exactly the same or very similar meaning. Non-equivalence of concepts, idiomatic expressions, and syntactical and grammatical language structures in different cultures are issues that need to be taken into account in cross-cultural research (Chang, Chau & Holroyd, 1999; Petersen *et al.*, 2003). Anastasi (1988) pointed out that tests in the cognitive domain are strongly affected by cultural factors.

Most cognitive researchers have developed instruments in a western-culture context (Jowkar, Friborg & Hjemdal, 2010) by western psychologists (e.g. BDI and LEIDS-R). Are LEIDS-R constructs as conceived in the western culture the same as those conceived in other culture? Furthermore, the LEIDS-R inventory consists of items related to daily life that are rooted in the Netherlands culture. Can LEIDS-R be used by other culture to measure or diagnose CR? These are questions that need to be addressed in cross-cultural study. To date, several others languages of LEIDS-R are in the process of being validated and developed. According to the Van der Does webpage, there have been translations of LEIDS-R into Slovenian, English, Italian and German (Persian or Farsi version After completion of this study) . Currently in Iran no valid or reliable self-report instrument exists in the literature for using CR in depression, so it is necessary and timely to adapt and validate a Persian version of LEIDS-R. The present study was conceived to fill this need and to validate an

instrument that enables psychologist to evaluate their clients. The findings from the current study should help Iranian psychologists and counselors to develop more comprehensive insight of individual's CR and improve treatment and prevention of MDD.

1.5 Purposes of the study

The main purpose of the current study is to adapt and validate the Persian version of Leiden Index of Depression Sensitivity-Revised (LEIDS-R) inventory for measuring CR in the Iranian context. In addition, the profile between the recovered depressed and never depressed groups was compared.

The objectives of this study are as follows:

1) To adapt LEIDS-R from English language to Persian language.

2) To establish the content validity of the Persian version of LEIDS-R.

3) To investigate the construct validity of the Persian version of LEIDS-R for measuring cognitive reactivity of Iranian sample in Iran.

4) To determine the reliability of the Persian version of LEIDS-R.

5) To investigate the concurrent validity of Persian version of LEIDS-R.

6) To compare the profile of CR between the recovered depressed (RD) and never depressed (ND) groups.

1.6 Research questions

The research questions are very important aspect in beginning the study. They are guiding the researcher or the study to understand the main procedures involved. This study attempts to answer the following research questions:

1) To what extent the content validity of the adapted Persian version of LEIDS-R inventory is the same as the original version?

2) To what extent the adapted Persian version of LEIDS-R display the construct validity of the original LEIDS-R's subscales?

3) What is the level of reliability of the adapted Persian version of LEIDS-R inventory?

4) To what extent the adapted Persian version of LEIDS-R display the concurrent validity with DAS inventory?

5) Is there any difference in CR responses between RD and ND groups?

1.7 Significance of the study

The significance of this study is several-fold. Firstly, in view of the fact that CR measure evidence are still very lacking, this study will provide significant contribution to validation of CR measures in the Iranian Context. Secondly, by adapting LEIDS-R, which measures the individual' CR, would help psychologists and clinicians or test-users to be conscious of issue of recovered depressed and can upgrade the measuring ability of the concerned parties in Iran. In addition, by

translating LEIDS-R to Persian, this study will provide the Persian culture with an instrument in measuring individuals' CR.

Third, the implementations of the adapted Persian version of LEIDS-R in the Iranian's contexts will provide information that enables researchers and psychologists to assess their individual and patients' CR. If the Persian version of LEIDS-R is validated in Iran, it will be an instrument to describe each person's cognitive reactivity and vulnerability to depression so they can predict a relapse into depression. Finally, it is hoped that the validation of a Persian version of LEIDS-R will then have a valid tool for researchers to conduct research that involve the measure of CR. Particularly, the development of Persian version of LEIDS-R enables researchers of this country to carry out more studies relating to CR for the Iranian populations.

1.8 Limitations

There are some limitations of the study that should be acknowledged. The sample size was relatively small; 205 centers for cognitive behavior therapy and depression center consultation clinic exist in Iran, but only fourteen centers agreed to participate in this study. Participants for the present study were all volunteers. No attempt was made to control for self-selection. The next limitation in this study was the choice of instrument. It was difficult to obtain instruments because they were expensive and some authors did not grant permission for the use of their inventory.

1.9 Definition of the terms

1.9.1 Operational definition

LEIDS-R

LEIDS-R is the acronym for Leiden Index of Depression Sensitivity-Revised, the instrument developed by Willem Van der Does (2002a) that covers the six subscales: Hopelessness/Suicidality (HOP), Acceptance/Coping (ACC), Aggression (AGG), Control/Perfectionism (CON), Risk Aversion (RAV) and Rumination (RUM) to assess CR.

Cognitive reactivity (CR)

It refers to the degree of change in negative thinking in response to sad mood and also CR has found to play a key causal role in depressive relapse (Gemar, Segal, Sagrati, & Kennedy, 2001; Segal, Gemar, & Williams, 1999). The CR is measured by six subscales: Hopelessness/suicidality (HOP), Acceptance/coping (ACC), Aggression (AGG), Control/perfectionism (CON), Risk aversion (RAV), and Rumination (RUM).

Hopelessness/suicidality (HOP)

HOP refers to pattern of negative thinking of individuals when in a sad mood, feel more hopeless about everything, nothing will ever get better, nothing can do to improve the situation. It is used as a sensitive indicator of suicide potential (Beck, Brown, Berchick, Stewart, & Steer, 1990). In this study hopelessness is a concept which is assessed by five (5, 9, 17, 30 and 34) items of LEIDS-R. Higher scores in

HOP subscale indicate that individual has higher degrees of suicidal tendency. The mean value of these items is used as the score of HOP in the LEIDS-R.

Acceptance/coping (ACC)

It is a pattern of thinking of individuals who feel somewhat depressed, more creative, intuitive, nicer and more helpful than usual. In this study Acceptance is a concept which is assessed by five (4, 10, 15, 24, and 28) items of LEIDS-R. Higher scores in ACC subscale indicate that individual has higher degrees of coping. The mean value of these items is used as the score of ACC in the LEIDS-R.

Aggression (AGG)

It is a negative behavior and thinking of individuals who feel bad, breaking things, bothered more by aggressive thoughts, easily become cynical or sarcastic, risky things, and lose temper easily (Van der Does, 2001). In this study Aggression is a concept which is assessed by six (7, 18, 21, 22, 26 and 29) items of LEIDS-R. The mean value of these items is used as the score of AGG in the LEIDS-R.

Control/perfectionism (CON)

CON is associated with thinking of individuals who are in a sad mood work harder when they feel down, keep everything under control, and pleasurable activities. In this study Control is a concept which is assessed by six (3, 8,12,16,19 and 31) items of LEIDS-R. Higher scores in CON subscale indicate that individual has higher degrees of perfectionism. The mean value of these items is used as score of CON in the LEIDS-R.

Risk aversion (RAV)

RAV refers to negative mood of individual who in a low mood inclined to avoid conflicts or difficulties, escaping everything, and take fewer risks. In this study, Risk aversion is a concept which is assessed by six (1, 2, 6, 11, 14 and 23) items of LEIDS-R. The mean value of these items is used as score of RAV in the LEIDS-R.

Rumination (RUM)

It is a pattern of negative thinking that individuals who feel down feel more overwhelmed by things, less able to be interested, neglect things, problems in concentrating, and thinking about the possible causes of mood. In this study Rumination is a concept which is assessed by six (13, 20, 25, 27, 32 and33) items of LEIDS-R. The mean values of these items are used as the score of RUM in the LEIDS-R.

Recover depressed

The individuals are at high risk of future episodes or depressive relapse (Michael, Zindel, Sagrati, & Kennedy, 2001) and higher scores of CR than never-depressed individuals (Booij, Merens, Markus, & Van der Does, 2006).

In each subscale the missing value should not be more than one item (Van der Does, 2010).

1.9.2 Conceptual definition

Cognitive therapy

Cognitive therapy is a treatment that helps individuals replaces dysfunctional, negative, and inaccurate thoughts and images (causing depression) with thoughts and images that are more accurate and decrease depression (Halford & Brown, 2009).

Construct validity

It refers to the extent to which evidence about whether a particular construct operationalizes adequately what is expected by the theoretical account of the construct being measured (Wiersma & Jurs, 1990).

Content validity

Content validity looks at the extent to which the test measures the construct in question. The test is a representative reflection of the knowledge domain (Corcoran & Fischer, 2000).

Concurrent validity

It refers to the degree to which compares scores on a test with current performance on some other validated measure at the same time (Paul, Claudia, Michael, Harris, & Ashiwel, 1991)

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

As the focus of this study is to validate the self-report LEIDS-R measure of cognitive reactivity to sad mood, this literature review covers the following topics: introduction, cognitive reactivity, cognitive reactivity as a measure of vulnerability to depression, ways of measuring CR, psychometric concepts of reliability and validity, LEIDS-R instrument and validity, ways of measuring depression in Iran, and conceptual framework and conclusion based on the literature.

Many studies have been performed throughout the world by Van der Does, Barnhofer and Williams (2003) to ascertain the state of LEIDS-R (Antypa, Van der Does, Smelt & Rogers, 2009; Barnhofer & Chittka, 2010; Driessen *et al.*, 2007; Merens *et al.*, 2005; Merens, Booij & Van Der Does, 2008; Van der Does, 2002b; Williams *et al.*, 2008). Until now, there has been no study reported using LEIDS-R in Iran, and thus there is no empirical data about LEIDS-R in Iran. The literatures here relate researches that have been done in other cultures in the world.

2.2 Depression

Seligman (1975) reported that depression is the "common cold" of psychiatry. For nearly forty years, the incidence of depression has continued to increase, and today it is the leading cause of disability. Segal, Williams & Teasdale (2002) stated that depression cannot be episodic, but rather is a disorder of long-term vulnerability. By

the year 2020 depression is predicted to be the second cause of disability worldwide (World Health Organization; WHO, 1996). According to WHO, depression disorder is currently affecting approximately 121 million people in the world (World Health Organization; WHO, 2001a).

In a study performed in Iran it was found that: (1) more than 60% of the population reported experiencing some level of depression in the last past year; (2) at any one time 20% had experienced clinical depression in the past year; (3) between 30-35% of the women and 14-25% of the men would suffer a clinical depression during their lifetime (Moeen, 2009).

The description and spectrum of depression varies widely, from everyday moods of feeling down to serious clinical depression with psychotic symptoms (World Health Organization; WHO, 2001b). According to the fourth edition of the Diagnostic Statistical Manual of Mental Disorder (APA, 1994) depression has been classified and identified as a mood disorder. It includes somatic, emotional, motivational and cognitive symptoms, and can be manifested through negative thoughts and feelings of hopelessness. Almost all individuals will experience at least some of these depression symptoms in more or less level in their lifetime (Raisi, Habibi, Nasehi & Muhammadi, 2006).

2.3 Cognitive reactivity

There are numerous studies on cognitive vulnerability to depression. Recently CR has been examined as one such vulnerability factor. It is defined as the degree of change in negative thinking in response to sad mood (Segal, Gemar & Williams,

1999; Van der Does, 2002b). Currently-depressed individuals and those with a history of depression are thought to be more reactive to the experience of negative effect (Miranda &Persons, 1998; Segal, Gemar & Williams, 1999)

Nowadays, research on cognitive reactivity as a vulnerability factor has focused primarily on negativistic or depressive attitudes, without attention to the potentially important buffering effects of positive cognitive reactions; it is possible that psychological well-being entails not just a lack of negative thinking in response to negative moods. Study in negative thinking has been largely laboratory-based, and typically relies on assessment of dysfunctional attitudes before and after a mood induction procedure (Van der Does, 2005).

The concept of the CR was based on Bower's theory (1987). Segal**,** Gemar, and Williams (1999) established the concept and index of CR. It refers to dysfunctional schemas activated in low mood. Many studies have been done on cognitive weakness related to depression and to dysphoric symptoms. Recently, cognitive reactivity has been investigated as one of the most important weakness factors. In 1999, Segal, Gemar & Williams defined CR as the degree of change in negative thinking in response to sad mood.

Many studies done in this area have been largely laboratory-based, which usually depends on assessment of dysfunctional attitudes before and after a mood induction procedure. Those studies are considered most useful in that they capture the phenomenon of cognitive weakness under specific circumstances. Several studies (Ingram, Miranda & Segal, 1998; Miranda & Persons, 1988; Taylor & Ingram, 1999; Van der Does, 2005) investigated the maladaptive cognitive processes as potentially

causal and maintenance factors in depression, and they found that chronically negative and maladaptive thinking might lead to depression.According to Mahoney (1990), cognitive theory suggests that individuals create and respond to their environments according to their own understanding, and that these cognitive representations affect a person's reactions more than the real environment itself.

Beck (1967) had suggested that negative attitudes are essential to the development and continuation of depression signs. Beck explained the stable belief systems that are activated in depressive situation or during times of stress which happened in some cases of individual. Individuals who tend toward inflexible thinking (for example, "It is important that everyone like me, and if I fail at my work, then I am a failure as a person") are more likely to develop depression. Beck (1967) explains such cases as follow: " When active, the schemas are thought to bring about depression typical of self-statements, fluent thoughts about the self, the world, and the future that are reflexive and strongly negative;" and this explanation has been confirmed by other researchers such as Ingram *et al.*(1998). Many researchers have supported Beck's cognitive theory of depression. Depressed individuals would show significant levels of negative cognitions, which return to normal after treatment (Haaga, Dyck & Ernst, 1991; Simons, Garfield & Murphy, 1984).

Riso *et al.* (2003) compared three groups of individuals: those in the first group were chronically depressed; in the second non-chronically depressed; and in the third never-depressed. It was found that both depressed groups showed elevated levels of negative attitudes in comparison to the never-depressed group. Meanwhile, in another study, Beever, Brussard, and Berger (2003) showed that negative attitudes might change into different degrees during cognitive therapy treatment for

depression. It has been found that negative effect can easily reactivate negative cognition for depression-recovered individuals.

Miranda and Persons (1988) investigated negative attitudes of depressed participants by exposing them to taped recordings of sad-mood-inducing statements and tested their reaction. Their results showed that participants with a previous history of depression reported a greater increase in negative attitudes than those without a depressive history. Based on this evidence, Miranda and Persons proposed their hypothesis for mood-state dependence: reporting of negative attitudes depends on current effects. Their suggestion was that negative schemas are traits that constitute a cognitive weakness factor for depression.

Negative thinking is generated during a depressive situation. This was proven by a comparison between a recovered-depressed person and a non-depressed person when instructed to complete an assessment of negative attitudes under unbiased affect. Both groups appear similar because the depressed symptoms remain covered, but negative thinking can be quickly triggered when the individual is induced to sad mood (Van der Does, Barnhofer & Williams, 2003).

The idea that hidden depressive schemas are triggered by negative moods has been supported by many researchers. Some studies have confirmed incremental changes in negative cognition, based on a laboratory induction course that involved stimulation of sad mood for individuals with a depression history. Those who have never-depressed did not have any negative cognition after the same induction course was given (Jeanne, Gross, Persons & Hahn, 1998). Many researches have since confirmed these results (Miranda, Persons & Byers, 1990). It was found that negative thoughts were correlated to depressed participants' self-reported best and worst

moods throughout the day. Participants were instructed to document the dysfunctional attitudes after reporting the time of their best and worst mood, and the results showed a significant relationship between mood and negative attitudes for these depressed individuals; their thoughts were negative when mood was worst (Weissman & Beck, 1978).

However, the relationship between mood and thinking remains unclear, as it is unknown whether negative mood precedes negative thinking ("cognitive reactivity") or whether negative thinking precedes negative mood. The time or the mood situation was tested at uncontrolled times and intervals (as was stated by the participants) so it was unclear whether these points represent the real best and worst moods, or whether they were biased by the participants' previous expectations about what their moods would be.

In a report by Fresco, Heimberg, Abramowitz & Bertram (2006), participants with and without a history of depression were measured for negative mood and attitudes. It was found that negative thinking of participants with no history of depression was unrelated to naturally-occurring mood, but there was a significant connection between negative thinking and negative mood for those with a history of depression. These results further supported the notion that cognitive reactivity might be a weakness factor for depression.

Participants with a history of depression generally develop a pattern of negative attitudes, thoughts and self-esteem. However, Roberts and Kassel (1996) suggested that there is a difference in cognitive processes between depression-level and non-depression-level individuals, and that these cognitive reactions might lead to depression. They reasoned that this difference would help to explain the strong

relationship between negative thinking and negative mood for those with a depressive history.

Recently many researchers have suggested that fixed levels of negative attitudes are not alone in their relation to depression, but rather that the change of these attitudes in response to mood and stressors is also related. These hypotheses were tested by assessing participants' maladaptive attitudes and negative thoughts before and after experimentally influencing their mood. The results led Segal *et al.* (1999) to suggest that such change in individuals' thoughts with response to a mood challenge be named “cognitive reactivity”.

The response to negative-mood training with negative cognitions appears to be a significant risk factor for prediction of depressive decline. Segal *et al.* (1999) studied cognitive reactivity in participants who had recovered from depression through cognitive-behavior therapy or pharmacotherapy. Those who had been treated with cognitive-behavior therapy showed less cognitive reactivity after induced sad mood. Members of both groups with higher levels of cognitive reactivity experienced a depressive reversion one year after recovery from depression. The finding that cognitive reactivity contributes significantly to prediction of depressive degeneration has important implications for the diagnosis and treatment of depression.

Over fifty percent of individuals previously diagnosed with depression experience a relapse. However, it is more likely to occur in individuals whose depression was treated with anti-depressants than with those whose treatment was cognitive psychotherapy. Segal *et al.* (1999) suggest that sad mood can lead to dysfunctional thinking evolving towards depressive thinking. Previous research had shown that

some people who recovered from depression still showed patterns of thinking associated with depression.

Ingram and Ritter (2000) suggested that cognitive reactivity might have more immediate effects on susceptible individuals. For example, cognitive reactivity might interfere with concentration processes in those with a depressive history. Overall, there is increasing evidence that levels of cognitive reactivity differ amongst individuals with and without vulnerability to depression. This reactivity might have important consequences, such as concentration interference, as well as long term consequences, such as increased likelihood of demonstrated depressive degeneration.

CR to the experimental induction of sad mood has been found to predict relapse in recovered-depressed people. It has long been established as an important risk factor for depression (Ingram, 2003; Ingram *et al.*, 1998; Van der Does, 2001). Additionally, it is a measures of negative thinking patterns reactivated during a dysphoric state (Scher, Ingram & Segal, 2005). Raes *et al.* (2009) reported that CR is a potential causal risk factor for depressive relapse/recurrence. Depression episodes that establish association between sad mood and subsequent depressed mood will reactivate these negative thinking patterns known as 'differential activation' (Lau *et al.*, 2004).

There are two procedures to assess CR: mood self-report and challenge. By using these procedures between Previously-depressed and never depressed patients, previously-depressed have a higher cognitive reactivity (CR) than never-depressed groups (Scher, *et al.*, 2005; Segal *et al.*, 2006; Van der Does, 2002b). Surprisingly, the high level cognitive reactivity (CR) scores even during times of remission have been shown to predict increased risk of depressive relapse (Teasdale, Moore,

Hayhurst, Pope, Williams & Segal, 2002). According to, Lau *et al.* (2004), following the mood induction, previously-depressed patients typically self-report elevated levels of dysfunctional cognitions indexed by LEIDS-R cognitive reactivity is dysfunctional cognitive activated in response to low mood.

2.4 Cognitive reactivity as depression measurement of vulnerability to depression

Mood induction procedures (also known as sad mood induction) have been used extensively as measure of CR for both recovered-depressed and never-depressed individuals. Study results show high-dysfunction cognitive scores for recovered-depressed individuals compared to never-depressed. At present, sad mood induction procedures have become common procedures for researching the role of dysfunctional cognitions in depression disorder (Van der Does, 2002a).

Nowadays a dysfunctional attitude is a central concept in cognitive therapy of depression (Meyer *et al.*, 2003; Wenze, Gunthert & Forand, 2010) since researchers have developed a number of procedures that have made cognitive vulnerability (CV) to depression assessable. Segal, Gemar and Williams (1999) demonstrated the concept of cognitive reactivity (CR) and found recovered-depressed group CR scores to be higher than those of the never-depressed group. Moreover, studies on cognitive reactivity have shown high CR to be an initial prediction of depressive relapse, regardless of the post-treatment given.