

Selective Attention Hypothesis in Iranian Patients with Depressive Disorder

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ABSTRACT

Objective: The present study aimed to investigate the selective attention hypothesis in a group of Iranian outpatients with depressive disorder.

Methods: Causal-comparative and correlation methods were used to analyze the data. A total of 60 subjects participated in this study. Of them, 31 patients diagnosed with depression were assigned in the depressive group and 29 nondepressed individuals were observed as control (normal) group. Participation in this study was completely voluntary. Participants were screened by the structured clinical interview for the DSM-IV (SCID), answered to Beck depression inventory-II (BDI-II), and took part in the Visual Dot-Probe (VDP) task. The data were analyzed by correlation analysis and t test.

Results: The results showed that the depressed group got higher score in BDI compared to the control group and this difference was statistically significant. But the differences between two groups regarding attention biases were not large enough to be significant.

Conclusion: The following results could be because of the different reasons such as culture. Furthermore, there were several limitations to the current study which are discussed.

Keywords:

Depression, Attention, Culture

1. Introduction

The widely-used concept of cognition consists of many cognitive processes such as perception, memory, control, and attention. In particular, attention is a set of mechanisms that help regulate and control the search process inherent in perception and cognition. Moreover, it is divided into simpler parts such as early and late attentional processes (Sanislow et al., 2010). Selective attention, the process of selecting what to attend out of many stimuli in the environment, is considered to be one of the most important concepts in this field. Based on the biased model of attention, the individuals' capacity to process stimuli, is limited (Mueller-Pfeiffer et al., 2010). Besides, out

of many stimuli affecting one's sensory-perceptual system, attentional mechanisms choose the most noticeable stimulus for extracognitive processing (C. M. MacLeod & MacDonald, 2000).

Selective attention happens in many psychological disorders such as social phobia, obsessive-compulsive disorder (OCD), posttraumatic stress disorder (PTSD), anxiety, and depression, especially toward emotionally valued stimuli, despite the attempts of these patients to overlook them (Williams, Mathews, & MacLeod, 1996). Selective attention has various meanings in different disorders; for instance, individuals with social phobia fail to distract their attention from social threat; this issue has been indicated in several studies (Amir, Elias, Klumpp, & Przeworski, 2003; Asmundson &

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Stein, 1994; Mogg, Philippot, & Bradley, 2004; Stevens, Rist, & Gerlach, 2009). In disorders like OCD, there are many outcomes, which are either for or against the biased processing of threat-relevant information (Tallis, 1997). On one side, some studies state that the biased process of threat-relevant information is in congruent with the selective attention hypothesis. On the other hand, there are some other studies (Kyrios & Iob, 1998; van den Heuvel et al., 2005) which do not confirm the hypothesis or demonstrate any attentional biases toward threat-relevant information in individuals with OCD. The results of attentional bias research in individuals with PTSD showed that there are a lot of attentional biases in these people toward trauma-related stimuli (Beck J. G., Freeman, Shipherd, Hamblen, & Lackner, 2001; Buckley, Blanchard, & Neill, 2000). The emotional information processing in anxiety and depression also accompanies by biases, so patients with these disorders tend to attend the negative stimuli more than positive ones (Mathews & MacLeod, 2005).

Regarding depression, a complicated diagnostic construct with a range of symptoms such as depressed mood, loss of interest in the activities, and impairment of selective attention are common symptoms of depression. Therefore, depressed individuals cannot distract their attention from negative stimuli to other types of stimuli (Thomas, Raoux, Everett, Dantchev, & Widłcher, 1996).

In addition to attentional biases, culture has a role in shaping depression. According to this viewpoint, the results of the studies around the world have also shown the role of the culture in shaping and maintenance of depression (Davidson, 1998; Ferrari et al., 2013; Jenkins, Kleinman, & Good, 1991; Kirmayer, 2001). In order to investigate the role of culture in depression, we decided to study Iranian patients with depressive disorders.

Although the selective attention hypothesis has been already suggested by Beck, clinical research in different disorders showed various results. The results of studies on some disorders such as anxiety disorders, showed the congruency to the theory. However, in some other disorders such as OCD and depressive disorder, study results were not in congruent with the literature or ignored in the field of selective attention. To our knowledge, few studies have done in this field in Iran. Therefore, the current study aimed to determine whether Iranian patients with depressive disorder show biases toward mood congruent stimuli.

2. Methods

The present study was a case-control experiment. Causative-comparative and correlation methods were used to analyze the data.

A total of 60 depressed and nondepressed individuals (29 females) from Iranian people who lived in Tehran, Iran took part in this study; of them 31 were depressed (16 females). Participation in this study was completely voluntary. The mean ages of the depressed and nondepressed participants were 37 and 32 years, respectively. The participants were either married or single (Table 1).

The structured clinical interview for the DSM-IV (SCID) (First M. B., Spitzer R. L., Gibbon M., & Williams J. B., 1997a) is the most widely-used diagnostic instrument for evaluating disorders. It provides a range of questions to acquire the general information about the patient (First M. B., Spitzer R. L., Gibbon M., & Williams J. B., 1997b) such as the current depressive symptoms, as well as screening questions for detecting psychosis, mania, and substance abuse. So it helps us in the screening process too.

The Beck depression inventory II (BDI) (A. T. Beck, Steer, & Brown, 1996) is a 21-item self-report inventory designed to assess the presence and severity of depressive symptoms. The score ranges from 0 to 63 with higher scores pointing to the depression severity (Beck A. T. et al., 1996). The Persian version of BDI-II had high internal consistency (Cronbach $\alpha=0.87$) and acceptable reliability ($r=0.74$) (Ghassem-Zadeh, Mojtabei, Karam-Ghadiri, & Ebrahim-Khani, 2005). Another study in this field was conducted by Dobson and Mohammadkhani (2007) in a large clinical sample (354) of Iranian patients with major depressive disorder. However, during the time of research they were in a relatively recovery phase. The results of this study showed that BDI-II has excellent internal reliability with a Cronbach alpha of 0.91, as well as high validity ($r=0.87$). So, BDI-II is a reliable inventory to assess the depressive disorder.

The visual dot-probe task (VDP) (MacLeod, Mathews, & Tata, 1986) is a computerized task designed to identify hypothesized attentional biases that correlate with different psychopathology like depression (Beck A., Rush, Shaw, & Emery, 1979; A. T. Beck, 1967; A. T. Beck & Dozois, 2011). In this task, a stimulus pair (often one emotional and one neutral) was flashed to the participants for a prearranged period of time (e.g., 500, 1000, or 1500 ms). Then, one of the words or pictures

is replaced with a dot probe, and the participant must identify the location of the dot as fast as possible.

Upon arrival, participants were given the consent form by an assistant to sign, which comprised a brief description of the study and its procedure. After taking informed consent, participants were given the pre dot-probe questionnaire package, which contained demographic information on gender, age, marital status, and education, the structured clinical interview for the DSM-IV (First et al., 1997a) for screening process (mania, substance abuse, etc), and BDI-II. For inclusion in the depressed group, participants had to demonstrate a score of 14 or higher on BDI-II.

The depressed sample should fulfil the following criteria: 1) suffering from major depressive disorder in accordance with DSM-5 (American Psychiatric Association, 2013) at the time of assessment, and 2) not showing diagnostic criteria for bipolar disorder or psychotic features (i.e., meeting criteria for a psychotic episode or schizophrenia).

For those who passed the first questionnaire package, the research assistant loaded the visual dot-probe program on a monitor in the testing room. Then, the research assistant presented a thorough and standardized introduction and provided instructions for the attention task. The probe task was divided into 5 scored conditions: attention to sad vs. neutral faces (40 trials), attention to happy vs. neutral words (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 160 scored trials. The whole part of the procedure took about 60-90 minutes.

3. Results

According to Table 1, there were no significant differences between depressed and nondepressed groups regarding demographic characteristics. The observed small differences were not statistically significant regarding age ($t_{df=58}=1.94$, $P>0.05$), gender ($\chi^2_{df=1}=0.27$, $P=0.61$), marital status ($\chi^2_{df=1}=0.06$, $P=1.00$), and education ($\chi^2_{df=1}=0.43$, $P=0.58$).

Table 2 presents means and standard deviations of depression scores assessed by BDI and attention bias scores measured by VDP.

As expected, depressed group had higher score on the BDI compared to the control group and this difference was statistically significant ($t_{df=52.5}=-11$, $P=0.00$). However, the differences between two groups regarding attention biases were not significant. None of the attention biases toward sad faces ($t_{df=58}=1.4$, $P>0.05$), happy faces ($t_{df=58}=-0.017$, $P>0.05$), sad words ($t_{df=58}=-1.15$, $P>0.05$) and happy words ($t_{df=58}=1.6$, $P>0.05$) were significantly different between depressed and normal groups.

Correlational analysis also revealed that the association of BDI with attention bias scores was not significant except for attention toward happy words ($r=-0.34$, $P=0.007$).

Table 1. Demographic characteristics of depressed and non-depressed individual.

	Depressed (n=31)		Non depressed (n=29)		p
	M	SD	M	SD	Value
Age	37	2.06	32	1.72	>0.05
Sex					
Male n (%)	15	49	16	55	0.61
Female n (%)	16	51	13	45	
Marital status					
Single n (%)	15	48.4	15	52	1
Married n (%)	16	51.6	14	48	
Education					
<Diploma n(%)	11	35.5	8	27.6	0.58
≥Diploma n (%)	20	64.5	21	72.4	

4. Discussion

Selective attention as a key process of focusing attention (Austin, Mitchell, & Goodwin, 2001) damages the information processing in depression. Furthermore, it is associated with the negative information processing of stimuli and generally is one of the cognitive vulnerabilities to depression (MacLeod C., Rutherford, Campbell, Ebsworthy, & Holker, 2002). In this context, the main study aim was to investigate the selective attention in a group of Iranian patients with depressive disorder to illustrate the selective attention hypothesis in Iranian culture.

Although there was no significant difference in any of the emotional stimuli between two groups, these adverse effects somehow were different regarding faces and words. As expected, the attentional biases toward negative words in depressed participants, compared to controls, were more than positive ones. Nevertheless, the means of attention biases scores were equal between two groups; in contrast to our expectation the mean of attention biases score regarding sad faces in depressed participants were less than normal group. Moreover, the Pearson correlation between the severity of depression and attention biases scores in each emotional manners revealed that there is only an inverse significant relation with the severity of depression and attentional biases toward happy words.

Studies showed that individuals with depressive disorder have low tendency toward positive aspects of their environment. The results of the current study somewhat revealed the attention reduction regarding positive

stimuli in depressed participants, which was congruent with the previous studies and the literature of cognitive model of depression (Armstrong & Olatunji, 2012; Sears, Thomas, LeHuquet, & Johnson, 2010). Moreover, the results showed the lack of attention biases toward emotional faces just as the results of Koster et al. (2006) research. However, the results were inconsistent with the other studies (Bouhuys, Geerts, & Gordijn, 1999; Epp, Dobson, Dozois, & Frewen, 2012; Gur et al., 1992; Leung, Lee, Yip, Li, & Wong, 2009; Suslow & Dannowski, 2005), which supported the attention biases toward negative stimuli or sad faces in individuals with depressive disorder. On the other hand, based on finding of S. Baert, Raedt, Schacht, and Kaster (2010a) there is a relationship between attentional biases and the severity of depression. Therefore, the results of the current study is considered to be relevant to the severity of depression in depressed participants, as if this severity was not enough to affect the cognitive processing of information. In addition, in most previous studies, the sample group suffered from major depressive disorder. However, some of the participants of the current study were not shown high levels of depressive symptoms.

The results could also be explained by investigating the protective factors in depression. There is too much evidence indicating that family and social connections act as a protective factor in depression (Costello, Swendsen, Rose, & Dierker, 2008). Besides, family has a great value in Iranian culture and the people's collectivistic self-identity could be defined with the connections to the most important people in their life (Singelis, 1994). Moreover, it would probably affect the participants at

Table 2. Means and standard deviations of depressed vs. nondepressed individuals on depression and attention bias scores.

	Depressed (n=31)		Nondepressed (n=29)		p Value
	M	SD	M	SD	
BDI	27	7.06	10	4.7	0.001
Attention					
Toward sad face ^a	0.06	0.23	0.14	0.21	0.16
Toward happy face ^b	0.11	0.28	0.11	0.18	0.98
Toward sad words ^c	0.17	0.33	0.08	0.26	0.25
Toward happy words ^d	0.01	0.21	0.10	0.20	0.11

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

tention toward negative stimuli and somehow could cause a balance between negative and positive stimuli in their environment. So, to reach a definite conclusion regarding these assumptions, they should be investigated in intercultural and comparative studies in future.

Another explanation for these adverse effects, especially with respect to attention reduction in depressed group toward sad faces, can be the cultural norm hypothesis (Chentsova-Dutton et al., 2007). Based on this hypothesis, depression disrupts individuals' ability to act in socially scripted ways. Regarding this hypothesis, these researchers found that depressed Euro-Americans significantly dampen negative emotional experiences in comparison to nondepressed controls, contrary to most studies indicating expression of negative affects in the Euro-Americans cultural norm. In a more recent study, Chentsova-Dutton and associates (2010) replicated these studies among groups of depressed and nondepressed Asian-Americans and Euro-Americans using positive stimuli. Findings of this study revealed that, in comparison to their nondepressed 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 are inconsistent with the Asian cultural norm which dictates dampening of the positive emotions. In the current study, compared to controls, depressed participants paid less attention to sad faces which could indicate the tendency to suppress negative emotions or experiential avoidance from negative stimuli in Iranian culture. Presumably, there was a causative item for attention reduction toward sad faces.

We can add the role of stigma fear and call for help in psychological difficulties, which is noticeable in different cultures. For instance, in some studies that compared the supportive behavior in the Asian-American to the Euro-American (Taylor et al., 2004), it was found that seeking for social support in Asian-Americans were weaker than Euro-Americans. Recent research has confirmed that when Asian-Americans are in difficulties, they usually do not seek social support (Chu, Kim, & Sherman, 2008). They also understood that Asian-Americans not only seek less social support but also had negative attitudes toward seeking it in face of difficulties (Kim, Sherman, & Taylor, 2008). Kim et al. (2008) also claimed that their reluctance of seeking social support was due to their beliefs. Because they think that if people find out about their problem, they would be judged. And Asian-Americans are afraid of being judged by others.

There were several limitations to the current study that need to be acknowledged such as the methodology in designing and administration of the visual dot-probe task. The emotional words of this task should be translated and adjusted based on the linguistic paradigms and cultural limitations because in contrast to the face expressions, the concept is almost general and culture-free, and it is difficult to distinguish negative or positive words from neutrals. Furthermore, in the absence of a Western concurrent control group for comparing to the Iranian group, the emotional aspects of the selected words and faces for the current study cannot be the same as previous studies. In the future studies, there should be a cultural concurrent comparable group. Finally, the quality and quantity of the translation of the selected words should be the same as original ones. In that case, the results of such these studies would be more reliable.

Another limitation of the current study was the depressed group who was not assorted based on the severity of their depression (Saskia Baert, De Raedt, Schacht, & Koster, 2010b). Their tests showed that attentional biases toward negative stimuli were observed only in patients with major depressive disorder. Moreover, biases are not related to sadness or dysphoria. Therefore, considering the severity of depression for assorting the depressed participants in future research is recommended. In spite of decades of research, a number of issues have still remained unresolved in the field of attention bias in depression. For example, the future studies ought to evaluate the selective attention hypothesis in depression within the cultural contexts using various research approaches so as to investigate more clearly the cultural effects on other aspects of depression, including its treatment.

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