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Research Article

A Study of Attentional Bias in Obsessive-Compulsive Disorder

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Abstract

The aim of the research is to study the Attention Bias in Obsessive-Compulsive Disorder in three variables. Three problems were formed: To study the difference in attention bias of OCD Patients and Healthy Controls. To study the difference in attention bias of Males and Females. To study the interaction effect between Type of Population and Gender. To study the mentioned problems; three hypotheses were assumed: 1-There will be significant difference in attentional bias of obsessive-compulsive disorder patients compared with healthy controls. 2-There will be significant difference in attentional bias of male and female. 3-There will be significant in interaction effect between type of population and gender in attention bias. There were two Independent Variables were taken: A- Types of Population (a1- OCD Patients and a2 Healthy Controls) B-Gender (b1-Male and b2-Females). The dependent variable was Attention Bias. In this study a 2x2 factorial design was used. The sample comprised 30 patients (15 males & 15 females) with current diagnosis of obsessive-compulsive disorder. The Yale-Brown Obsessive Compulsive Scale, sometimes referred to as Y-BOCS, is a test to rate the severity of Obsessive-Compulsive Scale (OCD) symptoms. The scale, which was designed by Goodman et.al (1989 a, b), is used extensively in research and research and clinical practice to both determine severity of OCD and to monitor improvement during treatment. The STROOP Neurological Screening Test was used to measure the dependent variable (Attention Bias). The Stroop Neuropsychological Screening Test, sometimes referred to as SNST, was developed with the goal of providing an efficient and sensitive neuropsychological screening measure based on the Stroop procedure. John Ridley Stroop introduced the basic format for the test in 1935. The results suggest that there is a significant difference in attention bias between OCD and healthy controls but there is no significant difference in attention bias in males and females.

Keywords: *Obsessive-Compulsive Disorder, Attention Bias, Y-BOCS, Stroop Neurological Screening Test.*

Introduction

Attention

Attention is a selective process. Man lives in an environment. The stimuli from the environment are always affecting him. But these stimuli do not affect him equally. It is a common place observation that some stimuli affect us more than others. This shows that man selects out of environmental stimuli. This tendency of selection shows that there is a motivational process in him which is known as attention. It is a selective process which includes motivation, set, and selection. For example, if a student is motivated, he will attend the class lecture. Again, while a professor is delivering a lecture in the class, there are several other sounds being made in other rooms and the surroundings. The student who hears the lecture selects the professor's voice out of the noise in the surroundings. While a student is attentively listening to the lecture, one can very well note his physical set which is also symbolic of his mental set. Receptor adjustment, bodily adjustment, postural adjustment, muscle attention, and central nervous adjustments are typical of body attitude in attention.

The word Attention seems to have many different meanings. When we talk about attending a lecture, we mean something like concentration. When we talk about attending a particular conversation in a crowded room, we mean a selection. When we talk about being able to attend to only so many things, we are referring to limits in capacity. When we talk about no longer having to attend to skills that we perform well, we are referring to automaticity.

Each of them recognizes that people cannot do an infinite number of different things at the same time. We cannot listen to a lecture on attention and think about the great party we attended on Friday night. We cannot process all the information about every conversation taking place at a party simultaneously, let alone all the sights, sounds, smells, and taste there. We all may be able to walk and chew gum, but without a lot of practice, it would be difficult to read one paragraph and take dictation about another. With a lot of practice, however, we do get better at doing different things at the same time.

Attention is the cognitive process of selectively concentrating on one aspect of the environment while ignoring other things. In other words, attention is the first step in observation. It is focusing the consciousness on a stimulus. It is a process of preferentially responding to a stimulus or a range of stimuli. Attention is one of the most intensely studied topics within psychology and cognitive neuroscience. Of the many cognitive processes associated with the human mind **(**decision-making, memory, emotion, etc.**)**,

attention is considered the most concrete because it is tied so closely to perception. As such it is a gateway to the rest of cognition.

"Everyone knows what attention is. Focalization, concentration, of consciousness is of its essence. It implies withdrawal from some things to deal effectively with others and is a condition which has a real opposite in the confused, dazed, scatterbrained state. "**(**James 1890**)**

"Attention is a state of sensory clearness with a margin and a focus. Attention is the aspect of consciousness that relates to the amount of effort exerted in focusing on certain aspects of an experience, so that they become relatively vivid". **(**Titchner**)**

"Attention is concentration of mental activity **(**Matlin, 1983**)**

"Attention is the term given to perceptual processes that select certain inputs for inclusion in our conscious experience or awareness at any given time **(**Morgan, king, Weisz & Schopler, 1986**)**

Conditions of attention -

As a selective act of mind, attention depends upon several conditions. These conditions may be of two types -

• Objective conditions:

Objective conditions are related to the environment. In the environment or surrounding of the individual there are several stimuli, but he does not attend to all of them at the same time, because some stimuli are stronger than others. The factors making these stimuli stronger than others are known as external determinants of attention.

• Subjective Conditions:

Besides the external conditions, the mental conditions, culture, and heredity also influence attention. Due to these internal conditions some objects attract our attention more than others. These internal factors are internal determinants of attention. The methods of achieving attention are based upon these external and internal determinants of attention.

Types of attention-

All attention is not conscious and selective, some attention is due to the nature of the stimulus, and some attention is due to habitual reaction. According to "Stout" there are three types of attention:

A. Voluntary Attention:

Voluntary attention is that which is willingly directed to an object for example, a student attends to his studies of his own account and not because of any external pressure; his attention will be called voluntary attention. An analysis reveals elements of desire and interest, aim and social adjustment in voluntary attention. The student directs his attention because of some aim like the passing of an examination, acquiring knowledge or one of a number of other goals. He takes interest in studying. Like other activities, attention is just another form of adjustment.

B. Involuntary Attention:

As has been explained above, involuntary attention is not only directed by the individual's desire or motivation, but it may also even be against it. It generally hinders the process of goal seeking. If, for example, your attention is attracted by a song while you are studying, your studies will suffer. Social adjustment is similarly obstructed by involuntary attention. The proper adjustment of a student can be the outcome only of an undisturbed attention to his studies. Because of the fact that one can pay attention to only one thing at a time, the student will not be able to attend to his studies if his attention continually wanders in other directions. Obviously, a person forgets his goal owing to involuntary attention and cannot affect his adjustment.

C. Habitual Attention:

Besides the two types mentioned above, there is a third type, habitual or non-voluntary attention. The difference between non-voluntary and in- voluntary attention is that the former type is the result of some habit or practice and the motivation is in the individual but the reason for the attention in the latter type is in the object. Habitual attention is different from voluntary attention because habitual attention has no need for a will as the latter does. But continued application of voluntary attention converts it into habitual attention. For example, a student pays voluntary attention to study in the beginning, but it is gradually

transformed into habitual attention towards reading and writing. Thus, the position of habitual attention is in between voluntary and involuntary types of attention.

Process of Attention-

Selective attention:

Selective attention refers to the differential processing of simultaneous sources of information. For example, selective attention is one in which a person can listen to a single voice in a room full of people talking at the same time, while apparently being oblivious to all other conversations. This instance of auditory selective attention was described Dy "Cherry" **(**1953**)** when he noted that while a person may have appeared to be selectively attending to only his or her own conversation while ignoring all other voices, that person sometimes noted important stimuli, such as his or her own name. Cherry referred to this so called "Cocktail-party phenomenon". Cherry did an experiment, selective attention makes cause of a dichotic listening task, in which two different auditory messages are presented simultaneously, one to each ear, via headphones. Participants are interested in attending selectively to one of the messages and repeat or shadow this relevant message quickly. Participants have little difficulty shadowing the message; that is, they can quickly and accurately repeat the relevant message in the attended ear while repeating very little, if any, of the irrelevant message in the unattended ear. Findings from modified dichotic listening task studies seem to indicate that selectivity occurs based on the spatial location of the messages, as well as on the e basis of frequency differences between the relevant and irrelevant messages.

Impairments in Selective Attention:

A person with good selective attention can ignore distractions in the environment and pay attention to important information. Impairments in this area are evident when individuals are easily distracted by surrounding noise in their environment. For example, after brain injury, a person may have difficulty paying attention to a conversation or task if traffic is going by the window, children are playing nearby, or other people are talking in the background. People with impairments in selective attention may become easily irritated and frustrated by such extraneous noise.

Sustained Attention:

Sustained attention, or vigilance, as it is more often called, refers to the state in which attention must be maintained over time. Vigilance refers to a person's ability to attend to a field of stimulation over a prolonged period, during which the person seeks to detect the appearance of a particular target stimulus of interest. Then being vigilant, the individual watchfully waits to detect a signal stimulus that may appear at an unknown time. Typically, vigilance is needed in settings where a given stimulus occurs only rarely but requires immediate attention as soon as it does occur. Military officers watching for a sneak attack are engaged in high-stakes vigilance tasks.

Training can help to increase vigilance. But in tasks requiring sustained vigilance, fatigue hinders performance. In vigilance tasks, expectations regarding location strongly affect response efficiency. In this case, efficiency involves the speed and accuracy detecting a target stimulus.

Impairments in Sustained Attention:

Sustained attention refers to the ability to stick with an activity over time. After a brain injury, individuals often have difficulty maintaining their attention or concentration on any one task. They may become easily tired or fatigued. Tasks that they carried out prior to the injury, automatically, or without much effort **(**such as holding a conversation, writing a sentence, driving a car**)**, may now require a greater amount of energy and concentration to complete. Problems with sustained attention may also show up as inconsistent performance on an activity or task. There may be periods of very accurate performance, and periods where the person makes lots of mistakes - or cannot do the task at all.

Focused Attention:

Focused attention is the ability to respond discreetly to specific Visual, auditory, or tactile stimuli. Focusing attention does not mean that all other input is suppressed. Salient stimuli, like a loud sonic boom, will typically cause people to attend to them. Most salient stimuli are often extreme along a key dimension, however. For example, salient noises are typically loud.

Thus, it would not be typical to assume that very loud sounds command attention by virtue of their extremeness.

When considering how the brain allows focused attention, it's important to first describe what is referred to as the dual processing model of attention, in other words, how the brain processes information in two - ways. The model says attention is either automatic or controlled. In automatic processing cognition occurs with little effort, is automatic given a specific stimulus, and doesn't interfere with other mental processes. Controlled processing is cognitively expensive, relies mainly on serial processing and is responsible for self-regulation. Focusing attention is dependent on top-down processing while automatic attention is more focused on bottom-up processing. Bottom-up processing is mainly triggered by the presence of environmental stimuli, while top-down processing is dependent on information in memory, including expectation of what might occur while engaging in the task.

It is generally assumed these different types of processes may involve different cortical circuitry. The ability to focus attention may be affected by the presence of various sensory cues. The ability to focus attention is limited, and the more complex the sensory environment the harder it is to focus on a particular task. The amount of effort required to complete a specific task is also important when considering the implications of the attentive process. If the task is routine little effort is required, but if the task is novel or not as familiar more effort is required.

Impairments in Focused Attention:

Focused attention refers to the most basic level of attention we can observe in others. Focused attention occurs when an individual takes notice of objects or events in the environment. With this ability, one may focus on specific sensory stimuli **(**things that can be seen, heard, or felt**)**. Focused attention impairments are seen mostly in people with a decreased level of consciousness, such as those emerging from coma. When individuals emerge from coma, they gradually progress from responding only to internal states **(**like pain or changes in body temperature**)** to noticing events in the external environment.

Divided Attention:

Divided attention is the task of actively paying attention to more than one task at a time, and it is both important and common in ever day life. It is rare for someone to be engaged in just one task.

Divided attention can be improved with practice. Spelke, Hirst, and Niesser **(**1976**)** studied accuracy and response time of performance by participants reading short stories and writing down dictated words. The

participants' initial performance was very poor when both tasks were performed simultaneously, but after participants practiced the tasks 5 days week for 85 sessions, their performance improved for both tasks (Sternberg & Sternberg, 2012). Spelke and others have proposed that it is possible that controlled tasks can be automatized, thus using fewer attentional resources. In addition, how well people divide their attention has to do with that person's intelligence (Hunt & Lansman, 1982, as cited in Sternberg & Sternberg, 2012). According to researchers, more intelligent people can timeshare between two tasks and effectively perform two tasks better.

There have been multiple theories regarding divided attention. One, conceived by Kahneman in 1973, explains that there is a single pool of attentional resources that can be freely divided among multiple tasks. This model seems to be too oversimplified, however, due to the different modalities (e.g., visual, auditory, verbal) that we perceive (Sternberg & Sternberg, 2012). When the two tasks are from the same modality, such as listening to a radio station and writing a paper, it is much more difficult to concentrate on both because the tasks are likely to interfere with each other. The specific modality model was theorized by Navon and Gopher in 1979. Although this model is more adequate at explaining divided attention among simple tasks, resource theory is another, more accurate metaphor for explaining divided attention on complex tasks. Resource theory demonstrates that as we automatize each complex task, performing that task requires less of our limited-capacity attentional resources (Sternberg & Sternberg, 2012).

Impairments in Divided Attention:

A person with good, divided attention skills can pay attention to two or more things at the same time. Normally our brains can take in information from several sources simultaneously. For example, we can drive our cars while listening to the radio or talking with a companion. After a brain injury. A person may have difficulty paying attention to more than one thing at a time.

The Stroop Effect –

Attention can also be involved the visual processing. One of the tasks most frequently used for this purpose was first formulated by "JohnRidley Stroop, 1935". The stroop effect named is after him. The Stroop effect is a demonstration of interference in the reaction time of a task. When the name of a color (e.g., "blue," "green," or "red") is printed in a color not denoted by the name (e.g., the word "red" printed in blue ink

instead of red ink**)**, naming the color of the word takes longer and is more prone to errors than when the color of the ink matches the name of the color.

In his experiments, Stroop administered several variations of the same test for which three different kinds of stimuli were created. In the first one, the names of colors appeared in black ink. In the second, names of colors appeared in a different ink than the color named. Finally in the third one, there were squares of a given color.

In the first experiment, 1 and 2 were used **(**see first figure**)**. The task required the participants to read the written color names of the words independently of the color of the ink **(**for example, they would have to read "purple" no matter what the color of its ink was**)**. In the second experiment, stimuli 2 and 3 were used, and participants were required to say the color of the letters independently of the written word with the second kind of stimulus and name the color of the dot squares. If the word "purple" was written in red, they would have to say "red", but not "purple"; when the squares were shown, the participant would have to say its color. Stroop, in the third experiment, tested his participants at different stages of practice at the tasks and stimulus used in the first and second experiments, to account for the effects of association.

Stroop noted that participants took much longer to complete the color reading in the second task than they had taken to name the colors of the squares in Experiment 2. This delay had not appeared in the first experiment. Such interference was explained by the automation of reading, where the mind automatically determines the semantic meaning of the word **(**it reads the word "red" and thinks of the color "red"**)**, and then must intentionally check itself and identify instead the color of the word **(**the ink is a color other than red**)**, a process that is not automatized.

Attention Biasness –

Attentional bias is the tendency for a particular class of stimuli to capture attention. Attentional bias can also refer to the tendency of our perception to be affected by our recurring thoughts.

Attentional bias is an occurrence wherein a person focuses more of his attention toward a specific stimulus or a sensory cue. Often, this leads to a poor sense of judgment or an incomplete recollection of a certain event or memory. Attentional biases can also lead to poor decision-making, as the person already has a bias towards one stimulus and may more likely base his decision on that preference.

Some psychologists believe that humans already tend to carry out an attention bias in some situations due to the "evolution of human intelligence" and the need to survive. For this reason, people usually give more of their attention to stimuli that pose a threat to them, such as a gun when a person is being mugged on the street. This "hyper attention" is usually associated with sensory responses such as a tunnel vision, in which the frightened person temporarily loses his peripheral vision and focuses on the threatening object. It also usually sets off some physiological responses such as an adrenaline rush and an increased heart rate, even a neurological reaction that allows the person to have a faster reflex when the situation becomes worse.

A moderate level of attentional bias may be innate in humans, but an elevated level may be a symptom or a result of a psychological disorder. One approach to measuring this bias is the "Stroop task." In this test, color- pertaining words are written out in different colors; for example, the word "blue" is written out in the color yellow. The patient is then asked to say out loud the color of the word, not the word itself; in the aforementioned example, the correct answer would be "yellow" and not "blue." A person with a high level of attentional bias may take longer to answer correctly. In some case studies, it was shown that participants who had severe anxieties and phobias had a difficult time saying the color of some suggestive words such as "spider" or "blood," as their inclination to focus on the word itself gets in the way of getting the main task done. Several types of cognitive bias occur due to attentional bias. One example occurs when a person does not examine all possible outcomes when making a judgment about a correlation or association. They may focus on one or two possibilities, while ignoring the rest.

Attentional bias has also been studied not only in relation to phobias and psychological disorders, but also in the context of alcoholism and substance abuse. In separate experiments, participants, consisting of drug users and drinkers, exhibited more responses to words or objects that implied drugs or alcohol, or had an increased craving for the substances. These results may give an explanation as to why it is helpful for recovering substance abusers to avoid any situations involving drugs or alcohol.

Attentional biases can also influence what information people are likely to focus upon. For instance, patients with anxiety disorders and chronic pain show increased attention to information representing their concerns **(**i.e., angry, and painful facial expressions respectively**)** in studies using the dot-probe paradigm. It is important to note that two different forms of attentional bias may be measured. A within-subjects bias occurs when an individual displays greater bias towards one type of information **(**e.g., painful faces**)** when compared to different types of information **(**e.g., neutral faces**)**. A between-subjects bias, alternatively, occurs when one group of participants displays greater bias than another group of participants **(**e.g., chronic

pain patients shown greater bias towards painful expressions than healthy control participants**)**. These two types of bias therefore arise due to different mechanisms, and both are not always present in the same sample of participants. Another commonly used paradigm to measure attentional biases is the Stroop paradigm.

Neurological Basis:

Attentional bias often seen in eye tracking movements is thought to be an underlying issue of addiction. Smokers linger on smoking cues compared the orbitofrontal cortex and the amygdala when presented with smoking with neutral cues. Researchers found higher activation in the insular cortex, Ques. The orbitofrontal cortex is known to be coordinated with drug-seeking behavior and the insular cortex and amygdala are involved in the autonomic and emotional state of an individual.

Neural activity is also known to decrease upon the beginning of smoking, focusing the smokers' attention on their upcoming cigarette. Therefore, when smoking cues are nearby it is harder for a smoker to concentrate on other tasks. This is seen in the activation of the dorsal anterior cingulate cortex, known for focusing attention on relevant stimuli.

Attentional Bias in Anxiety Disorders –

A second main finding in attentional bias research is that biases occur in all anxiety disorders. Attentional biases have been found in GAD **(**Bradley et al. 1999; Bradley et al. 1995; Mogg et al., 1993; Rinck et al., 2003**)**, social phobia **(**Amir et al., 2003; Becker et al. 2001**)**, PTSD **(**Bryant & Harvey, 1995; McNally et al., 1990a**)**, specific phobia **(**Ohman et al., 2001; Rinck et al., 2005**)**, panic disorder **(**Buckley, Blanchard, & Hickling, 2002; Horenstein & Segui, 1997**)**, and OCD **(**Foa et al., 1993; Tata et al., 1996**)**. In the case of OCD, Moritz, and colleagues **(**Moritz et al., 2008; Moritz & Muhlenen, 2008**)** have recently found null results for an attentional bias effect in OCD. In recent research, found that individuals with OCD display an attentional bias towards ideographically displayed stimuli in the dot probe task in the first third of the experimental trials. In the remainder of the trials the attentional bias effect diminishes. These findings, if replicated, suggest that the bias in OCD can be strategically overridden with sufficient practice and possibly implicate deficits in inhibition **(**cf.Chamberlain et al., 2005**)**. In any case, a recent meta-analysis found that the attentional bias effect appears to occur in equal magnitude in all disorders **(**Bar-Haim et al., 2007**)**. Accordingly, attentional biases do not appear to be a feature of any specific anxiety disorders, but likely

appear to be a component of elevated trait anxiety perse. This finding is theoretically relevant because it necessitates an explanation as to why attentional biases are robustly related to elevated trait anxiety.

Obsessive Compulsive Disorder

Obsessive Compulsive Disorder **(**OCD**)** is represented by a diverse group of symptoms that include intrusive thoughts, rituals, preoccupations, and compulsions. These recurrent obsessions and compulsions cause severe distress to the person. The obsessions and compulsions are time consuming and interfere significantly with the person's normal routine, occupational functioning, usual social activities, or relationships.

The essential features of OCD are the repeated occurrence of obsessions and compulsions of sufficient severity that they are time consuming or cause marked distress or impairment **(**DSM-IV-TR; APA, 2000**)**. Obsessions are unwanted, unacceptable intrusive and repetitive thoughts, images or impulses that are associated with subjective resistance, are difficult to control and generally produced distress even though the person having such thoughts may recognize their senselessness **(**Rachman, 1985**)**. Their content often focuses on troubling, repugnant or even nonsensical themes about dirt and contamination, aggression, doubt, unacceptable sexual acts, religion and orderliness, symmetry, and precision.

"An obsession is an idea or a thought that is silly, absurd or apparently meaningless yet one that the obsessive person can't get rid of." **(**Kisker, 1985**)**

Obsessions are repetitive thoughts, images or impulses that invade consciousness are often abhorrent and very difficult to dismiss or control." **(**Seligman and Rosenhan, 1988**)**.

Compulsions, on the other hand, are repetitive, stereotyped behaviors or mental acts that are usually performed in response to an obsession in order to prevent or reduce anxiety or distress **(**APA, 2000**)**. A compulsion is generally accompanied by an especially strong urge to carry out the rituals resulting in a diminished sense of voluntary control over the ritual **(**Rachman & Hodgson, 1980**)**. Subjective resistance is often present, but the person eventually gives in to the overpowering urge to perform the ritual. Washing, checking, repeating specific behaviour or phrases, ordering **(**rearranging objects to restore balance or symmetry**)**, hoardings and mental rituals **(**i.e., repeating certain superstitious words, phrases, or prayers**)** are the most common compulsions.

"Compulsions are obsessions carried into action. People who suffer from compulsions repeat certain actions over and over again, even though they realize that there is no sense to it". **(** kisker, 1985**)**

"A compulsion is repetitive behaviour that the person feels driven to perform in order to reduce distress or prevent some calamity from occurring."(Davison & Neale, 1996)

Diagnoses Of OCD-

The most common view is that the OCD should be classified as an anxiety disorder because it has a symptom profile like those of disorders like generalized anxiety disorder (GAD), specific phobias, hypochondriasis, and body dysmorphic disorder, which suggests the possibility of a common diathesis (Brown, 1998). More specifically features consistent with an anxiety disorder classification include:

1. A subjective feeling of anxiety or distress, which is elicited by most obsessions
2. A behavioral or cognitive compulsion in response to the obsession
3. An internal or external trigger for the obsession or compulsive urge
4. Anxiety or discomfort arising from a provocation
5. Anxiety reduction with completion of the compulsion
6. Reassurance seeking
7. Fear of disaster
8. Occurrence of disruptive events that can interfere or invalidate the compulsions
9. Avoidance behaviour (desilva, 1986)

According to DSM-V, a person must have either obsession(s) or compulsion(s) in order to have a diagnosis of OCD, and the vast majority of diagnosable individuals experience both types of symptoms (foa & Kozak, 1995). To qualify as an obsession, the thoughts, images, or impulses must be:

1. The persistent, intrusive, appropriate, and distressing
2. Subject to control efforts
3. Recognized as having an internal origin (i.e.., not due to thought insertion)
4. Distinct from worries about daily problems

Overt compulsions, on the other hand, are fairly easy to recognize, although mental covert rituals can present a more complicated picture. The purpose of an overt or covert compulsion is to release distress associated with the obsession or to prevent some anticipated dreaded outcome. It is not performed to obtain pleasure or gratification and so can be distinguished from impulse control disorders like sexual addiction and gambling.

Summary of DSM-V-TR Diagnostic Criteria for OCD Criterion A

Presence of obsession and compulsions:

Obsessions are repetitive and persistent thoughts, images, or impulses that, at some points, are considered intrusive and appropriate and cause marked distress; they are not worries about real life problems; they are accompanied by attempts to ignore, suppress, or neutralize **(**i.e.., subjective resistance**)**; and they are acknowledged as a product of the person's mind.

Compulsions are repetitive behaviors or the mental facts that the person feels compelled to perform in response to an obsession or certain rigidity applied rules; and the function of behaviors or mental act is to prevent or reduce distress or some dreaded event or situation. The rituals either are not connected in a realistic way with what they are intended to neutralize or are clearly perceived as excessive.

Criterion B

Recognition at some point during the disorder that the obsessions or compulsions are excessive or unreasonable.

Criterion C

Obsession or compulsions cause marked distress, are time-consuming **(**at least 1 hour per day**)**, or significantly interfere with daily activities or with social or occupational functioning.

Criterion D

Content of the obsessions or compulsions is not restricted to another Axis I disorder **(**obsessions and compulsions must be evident outside the context of a co-occurring condition.**)**

Criterion E

Obsessions or compulsions are not due to direct physiological effects of a substance or a general medical condition.

Specifier

With poor insight: For most of the current episode, the person does not consider his or her obsessions and compulsions excessive or unrealistic.

Methodology

Description Of the Sample-

Participants with obsessive compulsive disorder (OCD):

The sample comprised 30 patients **(**15 males & 15 females**)** with current diagnosis of obsessive-compulsive disorder. Patients were recruited for the study referred to from outsource. All patients fully met the criteria for current OCD of the DSM-V on the basis of the assessment using the Yale-Brown Obsessive Compulsive Disorder Scale and a structured interview. Subjects with a history of head injury, neurological disease or substance dependence were excluded. OCD patients were on psychotropic medication.

Healthy Controls:

OCD patients were compared with 30 healthy control subjects **(**15**)** males & 15 females recruited for the study on the basis of the availability in the Doha city. Only participants without a history of psychiatric or neurological disorder were studied. None was taking psychotropic drugs.

Tools Used in The Test-

YALE-BROWN OBSESSIVE COMPULSIVE SCALE STROOP NEUROPSYCHOLOGICAL SCREENING TEST:

DESCRIPTION OF THE TESTS-

YALE-BROWN OBSESSIVE COMPULSIVE SCALE:

The Yale-Brown Obsessive Compulsive Scale, sometimes referred to as Y-BOCS, is a test to rate the severity of Obsessive-Compulsive Scale **(**OCD**)** symptoms. The scale, which was designed by Goodman et.al **(**1989 a, b**)**, is used extensively in research and research and clinical practice to both determine severity of OCD and to monitor improvement during treatment. This scale, which measures obsessions separately from compulsions, specifically measures the severity and type of symptoms of obsessive-compulsive disorder without being biased towards the type of obsession or compulsion present. The scale is the clinician-rated, 10-items scale, each item rated from 0 **(**no symptoms**)** to 40 **(**extreme symptoms**)**. The scale is divided into two parts of five questions each, the obsessions subscale, and the compulsions sub scale. On each subscale five aspects of pathology are rated on a scale ranging from 0 **(**no symptoms**)** to 4 **(**extreme symptoms**)**: time spent, **(**2**)** degree of interference, **(**3**)** distress, **(**4**)** resistance, and **(**1**)** it **(**5**)** perceived control over the symptom. Unlike some other OCD measures, the YBOCS assign lower scores to greater resistance as an indicator of health. Score obtained from the subscales are summed to yield a YBOCS total score. The scale includes questions about the amount of time the patient spends on obsessions, how much impairment or distress the experience, and how much resistance and control they have over these thoughts. As well the same types of questions are asked about compulsions **(**e.g., time spent, interference, etc.**)**.

Psychometric Properties:

The results of tests of internal consistency, inter-rater reliability, and test- retest reliability in clinical and nonclinical samples have been excellent. The alpha reliability is 0.88 to 0.91, item-total correlation is r = 0.36 **(**item 4**)** to 0.77, inter-rater reliability of, YBOCS total r = 0.98, obsessions r = 0.97, compulsion r = 0.96, item = 0.860.97. The physical global convergent validity is r = 0.74.

Procedure:

Before administering the scale, the patient was seated in a suitable environment and was assured that the interview would be kept confidential. The rapport was established, and a short clinical interview was taken

about the presenting complaints, history of present illness and a short MSE was taken, through which it was ascertained whether the patient has the following or not, namely: head injury, neurological disease, and substance dependence. During the interview it was also assessed that the patient fully met the criteria for current OCD diagnosis.

For the assessment of Y- BOCS in general, the item depends on the patient's report; however, the final rating was based on the clinical judgment of the interviewer. The interviewer was free to ask additional questions for purposes of clarification. If the patient volunteered any information at any time during the interview, that information was considered. Ratings were based primarily on reports and observations gained during the interview. Before proceeding with the questions, "obsessions" and "compulsions" were defined for the patient as follows:

"OBSESSIONS are unwelcome and distressing ideas, thoughts, images or impulses that repeatedly enter your mind. They may seem to occur against your will. They may be repugnant to you, you may recognize them as senseless, and they may not fit your personality".

"COMPULSIONS", on the other hand, are behaviors or acts that you feel driven to perform although you may recognize them as senseless or excessive. At times, you may try to resist doing them, but this may prove difficult. You may experience anxiety that does not diminish until the behavior is completed".

Some examples of obsessions and compulsions were given below.

"An example of an obsession is: the recurrent thought or impulse to do serious physical harm to your children even though you never would."

"An example of compulsion is the need to repeatedly check appliances, water faucets, and the lock on the front door before you can leave the house. While most compulsions are observable behaviors, some are unobservable mental acts, such as silent checking or having to recite nonsense phrases to yourself each time you have a bad thought."

After defining obsessions and compulsions, instructions were given to the patient for the assessment of Y-BOCS.

Instructions:

The following were given to the patient:

"I am now going to ask several questions about your obsessive thoughts." **(**Specific reference was made to the patient's target obsession.**)**

"The next several questions are about your compulsive behaviors." **(**Specific reference was made to the patient's target compulsions.**)**

Scoring:

The results can be interpreted based on the scores. A score of 0 - 7 is subclinical; 8-15 is mild; 16-23 is moderate; 24-31 is severe; and 32 - 40 is extreme. Patient scoring in the mild range or higher should consider professional help in alleviating obsessive-compulsive symptoms. A self-rated version of the Yale - Brown Obsessive Compulsive Scale has been developed. The self-report and clinician - administered versions of the Y-BOCS are correlated to each other.

Stroop Neuropsychological Screening Test:

The Stroop Neuropsychological Screening Test, sometimes referred to as SNST, was developed with the goal of providing an efficient and sensitive neuropsychological screening measure based on the Stroop procedure. John Ridley Stroop introduced the basic format for the test in 1935. In its common form, the procedure consists of three sets of stimuli and corresponding tasks. The first set of stimuli is a series of color names **(**e.g., red, blue, green, purple**)** printed in black ink, which the subject reads aloud. The second color set is a series of red, blue, purple ink patches. The subject is required to identify the color of each patch. The third set of stimuli is a series of color names printed in non- matching color inks. Thus, the word red would not be printed in red ink, but only in blue, purple, or green. The subject's task for the color word portion of the test is to name the color of the ink used to print the word. The color word task reliably produces a strong interference effect in which the color name hinders the verbal performance. The Stroop procedures appear to a specific higher cognitive function or the ability to shift between conflicting verbal responses modes.

Stroop conducted three experiments with the normal subjects using a five-color version of the procedure. In the first experiment, he found that a group of 70 subjects could read color names printed in nonmatching color inks as quickly as they could read the color names when printed in black in the second experiment, Stroop asked 100 subjects to name the ink colors when printed in square patches and, in a second task, to

name the ink color used to print non matching color names. Subjects named the color patches much more quickly than they named the ink color of the printed color names.

In the third experiment, Stroop had 32 subjects complete four trials in which they named the color ink used to print nonmatching color names. The task was repeated daily for eight days, these daily practice sessions greatly reduced the subject's times to completion over the course of the experiment. Stroop's experiments provided the impetus for continuing research in the following years. The inference effect became known as Stroop effect or the procedure.

The present test was standardized by Trenerry, Crosson, DeBoe, & Leber in 1989. It includes Form C Stimulus Sheet, Form C - W Stimulus Sheet and SNST Record Form. The Form C Stimulus Sheet consists of 112 color names **(**red, green, blue, tan**)** arranged in four columns and 28 names. The names are printed in one of four different colors of ink **(**red, blue, green, tan**)**, but no name is printed in its matching color **(**e.g., the name red is never printed in red ink**)**. The Form CW Stimulus Sheet is the same as the Form C Stimulus Sheet, except for the color names.

Psychometric Properties:

According to the psychometric properties, discriminant analyses were performed using the presence or absence of brain damage. For these analyses all subjects were separated into 18-49 and 50+ age groups. For all the subjects in the 18-49 age group the obtained correlation was .62 and for 50+ age group produced a correlation of 83.

The Test-retest reliability was assessed by retesting 30 subjects over the time period of 60 days. The correlation of the Color - Word Scores from the first and second administration was 90, suggesting a high degree of temporal stability. The mean Color - Word Scores were 96.00 **(**SD=18:24**)** and 101.03 **(**SD= 17.01**)** for the first and second administrations, respectively.

Procedure:

The SNST was administered on OCD patients and normal population. Each participant was tested individually. Two tasks were involved in the administration of SNST. The first task, the Color Task required the Form C Sheet. The second task, the Color - Word task, required the Form C-W Stimulus Sheet. Responses were recorded on the second and third pages of the record form A stopwatch was required for administration.

Before administering the Color and Color - Word task, the subject's ability to identify accurately the four-color used in the SNST, was assessed. After the assessment of Y-BOCS and clinical interview with an OCD patient, the SNST was administered, and proper instructions were given to him/her. They were asked to clear doubts if any. After that Color Task were administered first and then Color Word Task by placing the C Stimulus Sheet and C-W Stimulus Sheet in front of the subject on the flat surface.

For administering the SNST on normal population, they were selected according to their availability. The subject was seated in a suitable environment and rapport was established. A short interview and their socio demographic data was taken through which it was ascertained whether the individual had any history of psychiatric illness or neurological disorder. It was also ascertained that none of them was taken any kind of psychotropic drugs. The SNST was administered with proper instructions. It was stressed that the information that was obtained would be kept completely confidential and would be used for research purposes only. The participants were thanked again for their voluntary participation in this study.

Instructions

The subjects were seated comfortably. A rapport was established, and instructions were given to the subjects. The Color Task was administered first and placed a Form C Sheet in front of the subject with the following instructions:

"There are some words on this page. I would like you to read these words aloud as quickly as you can, starting at the top of this first column. When you finish this column, go to the top of the next column and so on. Read the words aloud as quickly and as accurately as you can if you make a mistake, just correct yourself and keep on going. Ready? Begin."

Then the Color - Word Task was administered and placed a C - W Stimulus Sheet with the following instructions:

"Here is a page with more words on it. This time I would like you to name aloud the color of the ink- red, blue, green, or tan- in which the word is printed. Go as quickly as you can, going down the column as you did before. For this first one you would say "RED". Understand? If you make a mistake, just correct yourself and keep on going. Name the color of the ink as quickly and accurately as you can. Ready? Begin".

Using a stopwatch, the subject was allowed 120 seconds to complete each task. The correct responses were recorded by making a check mark next to the item as indicated in the record form. The incorrect responses

were recorded by entering an X next to the item. After 120 seconds had elapsed, the task was terminated, and the Form Stimulus Sheets were removed.

Scoring

The color and color-word scores are calculated by the following way -

Color Score: Number of correct responses or number of items completed minus incorrect responses, on the color task.

Color-Word Score: Number of correct responses or number of items completed minus incorrect responses, on the color-word task.

The color-word task score is the primary score used in interpretation.

Data Analysis

For analyzing the data Mean and Two-Way Analysis of Variance were calculated.

Results

The main purpose of this research was to study the Attentional Bias in Obsessive Compulsive Disorder. The data was obtained by using the Stroop Neuro-Psychological Screening Test. The scores were assigned for the responses on C task and C-W task and raw scores were obtained by subtracting the correct from the total items on C-W task.

After the scoring procedure Two Way Analysis of Variance and Mean scores were calculated to find out the difference related to main effect and interaction effect.

Table I represents the summary table of ANOVA of Attentional Bias Scores.

Table II represents the mean score of Attentional Bias of Type of Population.

Table III represents the mean score of Attentional Bias of Gender.

Table IV represents the mean score of Attentional Bias of Type of Population and Gender.

Table: I

Summary Table of Two Way ANOVA of Attentional Bias

Source of Variance	SS	df	MS	F
A	**22310.81**	**1**	**22310.81**	**78.93****
B	**660.01**	**1**	**660.01**	**2.33**
AB	**33.69**	**1**	**33.69**	**0.11**
Within Treatment (error)	**15828.34**	**56**	**282.64**	
Total	**38832.85**	**59**		

***denotes significance at .01 level.*

Table: II

Mean Scores of Attentional Bias for Type of Population

Type of Population (A)	Mean
Normal (a1)	**101.46**
OCD (a1)	**24.33**

Table: III

Mean Scores of Attentional Bias for Gender

Gender (B)	Mean
Male (b_1)	**69.53**
Female (b2)	**56.26**

Table: IV

Mean Scores of Attentional Bias for Type of Population and Gender

Gender	Type of Population	Mean
Male	**Normal**	**54.8**
	OCD	**14.73**
Female	**Normal**	**46.66**
	OCD	**9.6**

Discussion & Conclusion

During the last 100 years attention has become one of the major fields of cognitive psychology. Attention remains a major area of investigation within Psychology and Neuroscience. Research activity in attention began with the work of "William James" in early 1950s.

Attention is the cognitive process of selectively concentrating on one aspect of the environment while ignoring other things. In other words, attention is the first step in observation. It is focusing the consciousness on a stimulus. It is a process of preferentially responding to stimulus or a range of stimuli. Attention is one of the most intensely studied topics within psychology and cognitive neuroscience. Of the many cognitive processes associated with the human mind **(**decision-making, memory, emotion, etc.**)**, attention is considered the most concrete because it is tied so closely to perception. As such it is a gateway to the rest of cognition.

Attention Bias is an intriguing topic in the field of Attention. Attentional bias is an occurrence wherein a person focuses more of his attention toward a specific stimulus or a sensory cue. Often, this leads to a poor sense of judgment or an incomplete recollection of a certain event or memory. Attentional biases can also lead to poor decision-making, as the person already has a bias towards one stimulus and may more likely base his decision on that preference.

The main purpose of this research was to study the attentional Bias in OCD. The Independent Variables are type of population and gender; Dependent Variable is attentional bias. The findings related to these factors be discussed in the present context:

Attentional Bias in Type of Population:

Table I shows that the F ratio for type of population is 78.93 which exceeds the table value at .01 level. Thus, there is a significant difference in attentional has of OCD patients and Healthy Controls; therefore, the first hypothesis is accepted. It indicates that the type of population affects the attentional bias in a significant way.

The mean score of attentional bias in OCD patients and Healthy controls are given in Table II. On the basis of the mean table, it can be said that OCD patients have obtained lower scores as compared to normal individuals. It means that the OCD group showed an attentional bias towards C-W Stroop task and also showed delayed responses. The participants were told to ignore the word and to name the color of the printed word as quickly as possible. The OCD patients were distracted by separate color words. The performance of normal group was higher thanOCD group. The slower responses were correlated with the severity of symptoms. The extent to which color naming is delayed reflects the degree to which the person's attention was diverted to the meaning of the words. C-W task requires more focus of attention that produces anxiety, that's why OCD patients ignore the color of the word.

The rationale which could be given behind this finding is an attentional bias is a cognitive skew that allows us to concentrate on what is important in our environment by ignoring and down paying irrelevant information. Increased level of anxiety is associated with the working memory being consumed in the task irrelevant processing at the expense of task relevant operations According to this view, performance deficits associated with anxiety are caused by the cognitive interference of task-relevant information with the cognitive processing of task relevant information. Anxious individuals may perform poorly on difficult experimental tasks because difficult tasks increase anxiety levels. The OCD interferes with the thought process on severity of the illness. People with OCD may have significant difficulty paying attention to tasks assigned them to work or to everyday social conversation because of their preoccupation with intrusive obsessional thoughts and urges to engage in compulsive behaviour.

These findings can also be supported by the following studies:

Nejati et al. **(**2012**)** investigated attentional bias to obsessive - compulsive disorder; the purpose of the study is comparing attentional bias in the patient with obsessive-compulsive disorder **(**OCD**)** with matched healthy individuals. In this cross-sectional study 46 patients with obsessive - compulsive disorder are compared

with 46 healthy individuals by means of convenient sampling. Emotional stroop test is used for evaluation. Data were analyzed through Student t test. Findings suggested significant differences between the two groups. Correct response was more in healthy groups. Attentional bias in OCD patients is caused difficulties in dis engagement and inhibition of attention to threaten stimuli.

Sharma et al. **(**2011**)** also examined attentional bias in subjects diagnosed with obsessive- compulsive disorder and in control group **(**n=80**)** by using emotional stroop test. Results clearly indicated poorer performance across the board amongst patients diagnosed with obsessive- compulsive disorder compared to the control group, particularly in the case of anxiety related stimuli.

Nally **(**2000**)** also investigated attentional bias using stroop test. The participants are shown words of varying emotional significance that were printed in different colors. Participants are told to ignore the meaning of the word and to name the color of the printed word as quickly as possible. Findings suggested that the extent to which color naming is delayed reflects the degree to which the person's attention was diverted to the meaning of the words.

Attentional Bias in Gender:

Table I shows that the F. ratio for gender is 2.33 which does not exceed the table value at 05 level. Thus, there is no significant difference in attentional bias of males and females, therefore second hypothesis is rejected. It indicates that gender does not affect attentional bias in a significant way.

The mean scores of attentional bias of males and females are given in table III. On the basis of the mean score table, it can be said that males have obtained higher scores as compared to females. It indicates that attentional control was found more in males as compared to females. It means that females have more attentional bias in comparison to males.

The rationale which could be given behind this finding is that Attention is a selective process. Individual lives in an environment. The stimuli from the environment are always affecting him/her. But these stimuli do not affect him equally. It is a common place observation that some stimuli affect us more than others. This shows that individuals select out of environmental stimuli.

Attention in everyday life is often regarded as a process of selecting some stimuli over others and that is limited in capacity, i.e., we can experience problems when performing two or more tasks at same time. Apart from that research showed that women are more affected by anxiety than men when they are exposed

some difficult tasks (Craske, 2003).

Attentional Bias in Types of Population and Gender:

Table I shows that the F. ratio for type of population x gender is 0.11which does not exceed the table value at .05 level. Thus, there is no significant interaction in the attentional bias of types of population and gender therefore the third hypothesis is rejected. It indicates that the type of population and gender are not dependent on each other.

Conclusion

In the light of the present findings, it can be concluded that:

1. There is a significant difference in attention bias of OCD patients compared with healthy controls.
2. There is no significant difference in attentional bias of males and females.
3. There is no significant interaction effect between types of population and gender in attentional bias.

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