

THE RELATIONSHIP BETWEEN INTRUSIVE COGNITIONS AND DEFENSE MECHANISMS IN HEALTHY AND CLINICAL POPULATIONS

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Article History: Received on 26th December 2019, Revised on 02nd February 2020, Published on 25th February 2020

Abstract

Purpose: to examine the relationship between defense mechanisms and intrusive cognitions in normal healthy individuals and psychiatric patients.

Methodology: The study sample consists of a healthy group (n=60; 30 males & 30 females), whereas the clinical group (n=66; 34 males, 32 females) includes patients with major depressive disorder (12 patients, 5 males, 7 females), schizophrenia (31 patients; 14 males, 17 females), obsessive-compulsive disorder (23 patients; 15 males, 8 females). We used several scales to measure the following variables: intrusive cognitions, intrusive memories, and defense mechanisms.

Finding: The results show that there is a positive correlation between defense mechanisms and intrusive cognitions in healthy and clinical groups. Intrusive cognitions were more common in the patient than in a healthy group. Furthermore, there was no significant difference between males and females in measures of intrusive thoughts and memories in both groups.

Implications: These findings have implications for behavioral treatment. Treatments used for managing posttraumatic stress disorder can also be used for the treatment of a major depressive disorder, OCD, and schizophrenia.

Originality: This investigation the relationship between intrusive cognitions and defense mechanisms in healthy and clinical populations and its implication on the cue exposure therapy that can be the treatment of intrusive cognitions and thoughts in with major depressive disorder, OCD, and schizophrenia.

Keywords: *Intrusive Cognitions, Defense Mechanisms, Depression, Schizophrenia, Obsessive-compulsive Disorder (OCD).*

INTRODUCTION

In the current study, we investigated the relationship between intrusive cognitions and defense mechanisms. Defense mechanisms are often unconscious processes to defend the individual from negative experiences (Ruuttu et al., 2006). They can be adaptive or maladaptive depending on the context and frequency (Hovanesian et al., 2009). As we discuss below, defense mechanisms do occur in healthy individuals and also patient populations, including patients with clinical disorders as well as cancer and gastrointestinal disorders (Di Giuseppe et al., 2018; Di Giuseppe, Gennaro, Lingiardi, & Perry, 2019; Saeed et al., 2019; Ogawa et al., 2019; Nam, Ha, Choi, Park, & Ryu, 2019). Defense mechanisms may include the following elements: neurotic (e.g., dissociation and repression of one's feelings and desires), distortion (e.g. perceiving the environment in a different way to suits one's internal needs), self-denial (e.g., letting go of the self), and mature (e.g., altruism).

The current study attempts to understand the relationship between one of the psychoanalysis approaches which is defense mechanisms and one of the approaches of the cognitive trend which is intrusive cognitions to in healthy and clinical groups. Many researchers have attempted to explore the nature of different forms of involuntary knowledge. Some studies have compared this knowledge between clinical and non-clinical groups. Other studies have attempted to measure this knowledge and other studies have attempted to treat it. Some researchers attempted using different terminology to describe this type of cognitions that some studies have described them as "obsessive-compulsive thoughts-perceptions-unconscious memories." modern researchers view the term cognitions as an umbrella of ideas, memories and perceptions, both natural and intrusive. Yoshizumi and Murase (2007) found a relationship between intrusive memories and predatory tendencies. Pearson et al. (2012) found that intrusive memories develop from sensory interactions and contextual factors.

While there have several studies investigating the relationships between defense mechanisms and intrusive mechanisms, none has studied these relationships in several patient populations. Accordingly, the motive of our study is to investigate the relationship between defense mechanisms and intrusive cognitions in normal healthy individuals and several psychiatric patients, including a patient with major depressive disorder, schizophrenia, obsessive-compulsive disorder. Our objectives are to show that intrusive thoughts and memories are not only common in patients with PTSD, but also in other patient populations.

LITERATURE REVIEW

Intrusive cognitions: definition

Intrusive cognitions are a group of mental phenomena which impose themselves involuntarily and include the following: (a) thoughts (i.e., verbal and nonverbal thinking), (b) memories (i.e., perceptions of personal life in the past), and (c) perceptions (i.e., mental images). [Clark and Purdon \(1995\)](#) explained that intrusive cognitions are often unconscious, repetitive, linked to negative experiences such as anxiety and guilt, involuntary, and hard to adjust. Moreover, according to [Wells and Marsion \(1994\)](#), intrusive cognitions are thoughts, perceptions, memories, desires, and unwanted impulses that are difficult to control.

Intrusive cognitions can be negative or positive in terms of content and emotional value. Negative intrusive cognitions lead to a feeling of pressure, affect other cognitive processes, and eventually lead to behavioral dysfunction. [Thorsteinsdottir et al. \(2013\)](#) found that intrusive ideas also impact the quality of life. Intrusive memories were associated with negative emotions such as grief, loss, and fear. There have been numerous studies on intrusive cognitions in both healthy individuals and patient populations, which we discuss below.

Intrusive cognitions in clinical disorders

[Clark \(2004\)](#) has shown that intrusive cognitions are a common symptom in many clinical disorders, such as obsessive-compulsive disorder, posttraumatic stress disorder, anxiety, phobia, depression, and drug use disorders. Intrusive ideas were good predictors of avoidance behavior, which is key symptoms in several clinical disorders ([Abo Hamza, Elsantil, Moustafa, & Abdelhadi, 2019](#); [Emam, Abdelrasheed, & Omara, 2019](#); [Sheynin et al., 2013](#); [Sheynin et al., 2015](#); [Sheynin et al., 2016](#); [Moustafa et al., 2016](#); [Myers et al., 2013](#)). For example, the occurrence of intrusive ideas in patients with attention deficit hyperactivity disorder. [Gross, Boy, and Boykovec \(1982\)](#) reported intrusive cognitions in individuals with sleeping problems. Similarly, the patients with schizophrenia suffer from hallucinations and intrusive perceptions. [Emam et al., \(2019\)](#) found that negative cognitions predispose adolescents to depressive symptoms and that negative life events may precipitate such a process.

Several studies have reported the occurrence of intrusive cognitions in patients with posttraumatic stress disorder ([Abo Hamza et al., 2019](#); [Radell et al., 2017](#); [Gharib et al., 2018](#); [Moustafa et al., 2013](#); [Myers et al., 2013](#); [Iyadurai et al., 2019](#); [Clark & Mackay, 2015](#); [Hayes, Vanelzakker, & Shin, 2012](#)). For example, [McNally et al. \(2001\)](#) found a relationship between intrusive cognitions and posttraumatic stress disorder symptom severity. One limitation of this study is they did not investigate the relationship between intrusive cognitions and re-experiencing, avoidance, and hyperarousal. Along these lines, [Clark \(2004\)](#) found that the tendency to ruminate intrusive cognitions lasted for several weeks after the traumatic event in patients with posttraumatic stress disorder. Purdon and [Clark \(1993\)](#) additionally found that posttraumatic stress disorder patients have intrusive cognitions related to impending disasters.

Similarly, some studies have reported the occurrence of intrusive cognitions in patients with that obsessive-compulsive disorder. [Rassin et al. \(2001\)](#) showed that obsessive-compulsive disorder patients had a higher degree of panic on the measure of thought control compared with control individuals. [de Silva and Marks \(1999\)](#) explained that patients with the obsessive-compulsive disorder suffer from unwanted intrusive cognitions (ideas) such as infection of germs, sense of filth, sexual fantasies of coercion, aggression and inappropriate impulses. [Clark et al. \(1995\)](#) noted that the long duration of intrusion is associated with failure to sleep in these patients.

Intrusive cognitions also occur in major depressive disorder ([Newby, Lang, Werner-Seidler, Holmes, & Moulds, 2014](#); [Starr & Moulds, 2006](#); [Williams & Moulds, 2007](#)). For example, [Clark et al. \(1997\)](#) reported that depressed patients often are pessimistic about themselves, the world, and the future. For example, intrusive thoughts in depression patients are often on negative life events, while intrusive thoughts in anxiety are, for example, on fear of death. Along these lines, [Davey and Levy \(1998\)](#) noted that most psychiatric disorders are characterized by the occurrence of intrusive cognitions related to the same disorder. In other words, patients with anxiety have strong intrusive cognitions about the future and panic patients have strong intrusive cognitions regarding their physical sensations. Besides, some studies found that there was a relationship between intrusive cognitions and anxiety among cancer patients ([Whitaker et al., 2008](#)). [Bywaters et al. \(2004\)](#) and [Patel et al. \(2007\)](#) found that there is an influence of intrusive memories on the severity of depressive symptoms.

Intrusive cognitions in non-clinical populations

[Rachman and de Silva \(1987\)](#) were the first to show that intrusive ideas could occur in non-clinical groups, where 84% of the participants were living with intrusive ideas, perceptions, and impulses. [Janeck and Calamari \(1999\)](#) explained that the differences between clinical and non-clinical groups in intrusive cognitions are quantitative rather than qualitative. [Freeston et al. \(1991\)](#) agree that 80-90% of the non-clinical groups have had experienced such intrusive experiences. [Allsopp and Williams \(1996\)](#) found a correlation between intrusive cognitions with anxiety, depression and subclinical OCD symptoms in healthy individuals.

Study Hypotheses

The goal of this study is to investigate intrusive cognitions in healthy individuals and patient populations. Our hypotheses are as follows: We predict that there will be a significant correlation between defense mechanisms and intrusive cognitions (both thoughts and memories) in non-clinical individuals (Hypothesis 1) and the patient group (Hypothesis 2). The null hypotheses here are that there will be no correlations between defense mechanisms and intrusive cognitions (both thoughts and memories) in healthy and clinical populations. Further, we predict that there are significant statistical differences between males and females in measures of intrusive cognitions (both thoughts and memories) in non-clinical individuals (Hypothesis 3) and in the patient group (Hypothesis 4). The null hypotheses here are that there are no significant differences in measures of intrusive cognitions between non-clinical individuals and in the patient group and between males and females.

METHODOLOGY

Participants

We recruited two groups: clinical and non-clinical.

Non-clinical sample: We recruited 30 males and 30 females from the Faculty of Education, Tanta University, Tanta, Egypt. We excluded non-serious and random responses, in which the researchers noticed that the students neglected to answer some items or answer an item in the search tools using one choice in all tools. We also excluded healthy individuals who neglected to return all the measurements back to the researcher. The final sample was (30 males) and (30 females) healthy controls.

Clinical sample: patients were recruited from the Center of Psychiatry at Tanta University and Mental Health Hospital of the Ministry of Health in Tanta. The total number of patients was as the following: Depression (12 patients; 5 males, 7 females); Schizophrenia (31 patients; 14 males, 17 females), obsessive-compulsive disorder (23 patients; 15 males, 8 females). The total number of clinical subjects reached (66 cases). The age range was 17- 49 years.

In this study, the dependent variables are measures of defense mechanisms and intrusive cognitions. The independent variables are gender (male vs. female) and group (healthy vs. patient).

Scales

We used the following scales: Intrusive memories Scale (Authors), Intrusive Ideas Scale (Authors), and also the Defense Mechanism Rating Scale (Perry & Henry, 2004). Both scales were translated into Arabic and validated before use. See Appendix for more information about the scales.

Data collection

As for the healthy group, we recruited undergraduate students from the Faculty of Education at Tanta University during the academic year 2018/2019. Students are randomly selected from the various study grades, as shown in Table 1, Sample of the study.

Table 1: Students sample selected from various grades

The Grades	Science Majors	Art Majors	Total
The First Grade	15	20	35
The second Grade	25	20	45
The Third Grade	35	40	75
The Fourth Grade	25	25	50
Total	95	105	200

As for the clinical group, our patients were recruited from the Psychiatric Center at Tanta University and the Mental Health Hospital of the Ministry of Health in Tanta.

We excluded non-serious and random responses, which showed that students neglected to answer some items or answering an item in the research tools using one choice in all tools. We also excluded cases of students who neglected to return all the measures after answering them or returned one or two measures, but not all of them.

RESULTS

First Hypothesis

We calculated the correlation coefficients among the previously-described variables (see Table 2). The results showed that there is a positive correlation between intrusive memories and self-denial ($p < 0.05$).

Table 2: The correlation coefficients among the defense mechanisms and the intrusive ideas and memories in healthy individuals

Independent variables	Defense Mechanisms			
	Neurotic mechanism	Distortion mechanism	Self-denial mechanism	Mature mechanism
Intrusive ideas	.75	.14	.05	.06
Intrusive memories	.71	.20	.60*	.09

* Significant at level,05

Second hypothesis

The second hypothesis states that there is a significant correlation between defense mechanisms and intrusive cognitions in the clinical group. We calculated the correlation coefficients among the previous variables. Table 3 shows the correlation coefficients among the defense mechanisms and the intrusive ideas and memories in the patients. Table 3 shows that there is a statistically significant positive correlation between intrusive ideas, and neurotic, the self-distortion, and the self-denial mechanism. We did not find any correlations between intrusive memories and the mature mechanism.

Table 3: Correlations among the defense mechanisms and the intrusive ideas and memories in the clinical group

Independent variables	Defense Mechanisms			
	Neurotic mechanism	Distortion mechanism	Self-denial mechanism	Mature mechanism
Intrusive ideas	.84	.69	.72	.45
Intrusive memories	.72	.34	.89	.38

Third hypothesis

The third hypothesis states that there is a significant statistical difference between males and females in intrusive cognitions in healthy individuals. We calculated the difference between the measures of intrusive memories and ideas among males and females in the healthy group. Table 4 shows that there are no significant differences between males and females on the measures of intrusive ideas.

Table 4: Differences among males and females on intrusive memories and ideas in the healthy group

Variable	gender	Means	Standard Variation	T
Intrusive Thoughts	Males	23.59	2.241	24
	Females	22.85	1.811	32
Intrusive Memories	Males	17.77	2.568	24
	females	17.56	2.933	32

Fourth hypothesis

The fourth hypothesis states that there is a significant statistical difference between males and females in intrusive cognitions in the patient group. We calculated T values of intrusive memories and thoughts in males and females of the patient group. Table 5 shows the results of this procedure

Table 5: Differences among males and females on intrusive memories and ideas in the patient group

Variable	gender	T	Means	Standard Variation
Intrusive Thoughts	Males	24	22,1	2,61
	Females	23	24,	1,852
Intrusive Memories	Males	24	19,52	2,309
	females	23	17,36	1,988

Table 5 shows that there are no significant differences between males and females in the clinical group in the intrusive ideas' measurement.

DISCUSSION

We found a positive correlation between intrusive memories and self-denial in healthy individuals. This is possibly a kind of wish for the rejection of childhood or moments that are characterized by emotional charges (for discussion, see [Schank, 1999](#)).

We found a significant positive correlation between intrusive ideas, and neurotic, the self-distortion, and the self-denial mechanism in the patient group. To interpret these results, we argue that defense mechanisms increase in the patients more than in controls, as we discussed in the Introduction above. Unlike controls, patients seem to more often use defense mechanisms in all situations and events of life.

The neurotic defense mechanisms include cessation, withdrawal, projection, and isolation. We found a significant correlation between intrusive ideas and neurotic defense mechanisms. This conclusion is in line with prior studies of intrusive ideas in all clinical groups ([Wells & Qavis, 1994](#); [de Silva et al., 1999](#); [Wells & Mackman, 1993](#); [Clark et al., 1997](#)). Similar findings are also reported in general anxiety ([Abramowitz et al., 2003](#)) and social anxiety ([Rachman et al., 2003](#)). The relationship between intrusive ideas and the mature mechanism was not significant. Patient groups use neurotic mechanisms to cope with life events. The patient may find it hard to suppress their thoughts and cannot use the mechanism of expectancy and it is difficult for them to use altruism mechanisms.

We found a positive correlation between intrusive memories and the neurotic mechanism. The neurotic mechanism includes cessation, withdrawal, projection, isolation, denial, negation, causes the individual to resort to previous moments and drives the patient to return to bad memories as in depression. Withdrawal is associated with the recall of adverse events in similar situations as in social anxiety. In addition, projection is a common element in many clinical patients. This is in line with [Horowitz \(1975\)](#) who finds that traumatic memories remain active as long as the internal models have not been modified. [Horowitz \(1975\)](#) suggests that the non-modification of the internal models is characteristic of several patient groups characterized by cognitive rigidity.

We found a significant correlation between intrusive memories and self-denial. We attribute this finding to the difficulty of the action between one of the elements of the self-denial mechanism, namely the preoccupation with daydreams and memories of their different types, as well as the strong correlation between the items of reaction formation and involuntary memories.

Our results also show that intrusive ideas do occur in healthy individuals. These results are consistent with prior findings ([Rachman & Desilva, 1978](#); [Janeck & Calamari \(1999\)](#)). In the same vein, [Freeston et al. \(1991\)](#) provided support for the same finding, showing that 80-90% of ordinary people also showed intrusive experiences regardless of gender. Several studies attribute the occurrence of intrusive cognition in healthy individuals to being basic psychological processes that exist in all human beings.

CLINICAL IMPLICATIONS

Our findings show that intrusive thoughts and memories are not uncommon in healthy individuals and in patients with major depressive disorder, OCD, and schizophrenia. Importantly, our findings show that intrusive thoughts and memories are not only prevalent in posttraumatic stress disorder. These findings have implications for behavioral treatment. First, treatments used for managing posttraumatic stress disorder can also be used for the treatment of a major depressive disorder, OCD, and schizophrenia. Several studies have shown that intrusive cognition in posttraumatic stress disorder (PTSD) are due to strong associative learning between environmental cues and the traumatic memory ([Anastasides et al., 2015](#); [Ehlers, 2010](#); [Moustafa, 2015](#); [Moustafa, Myers, & Gluck, 2009](#); [Moustafa et al., 2013](#)). Accordingly, exposure to such neutral stimuli can elicit intrusive ideas ([Moustafa, 2015](#)). One common treatment for these symptoms is cue exposure therapy, which aims at reducing intrusive cognitions by reducing response to neutral stimuli related to trauma ([Javanbakht, 2018](#); [Nonkes, de Pooter, & Homberg, 2012](#)).

Cue exposure therapy can be also used for the treatment of intrusive cognitions and thoughts in with major depressive disorder, OCD, and schizophrenia. We predict that this treatment will help reduce ruminations in patients with major depressive disorder. Similarly, many studies found that some environmental cues can lead to hallucinations and intrusive thoughts in schizophrenia ([Snyder, 2006](#)). Accordingly, cue exposure therapy will help reduce hallucinations and intrusive thoughts in patients with schizophrenia. It has been found that external stimuli can trigger obsessive thoughts in OCD patients ([Brooks et al., 2018](#)). Thus, it is expected that cue exposure therapy can reduce anxiety and related obsessions in patients with OCD.

LIMITATIONS AND STUDY FORWARD

One limitation of our study is that we had a small number of participants in each patient group, and thus, it is not possible to compare them in measures of defense mechanisms and intrusive cognitions. Nonetheless, our study shows that intrusive cognitions do occur more in psychiatric patients than in healthy controls. Future work should explain why

there are gender differences in the prevalence of psychiatric disorders, such as depression and anxiety, which tends to be more common in women than in men (Assari & Lankarani, 2016; Karger, 2014; Parker & Brotchie, 2010), but no gender differences in the prevalence of intrusive ideas, as reported here. Furthermore, future work should investigate the relationship between symptom clusters and intrusive cognitions. For example, it is predicted that re-experiencing symptoms in posttraumatic stress disorder and the severity of rumination in depression may correlate with intrusive cognitions and ideas. Future work also should investigate the contents of intrusive cognitions in relation to the type of trauma in patients with posttraumatic stress disorder. It is expected that patients with posttraumatic stress disorder, due to, for example, natural disasters, may have intrusive ideas related to their trauma. The same is also true for patients' major depressive disorder, as their intrusive cognitions may be related to their negative feelings or issues that have triggered depression.

Specifically, clinicians should examine and diagnose intrusive thoughts not only in patients with PTSD, but also in patients with major depressive disorder, OCD, and schizophrenia. As discussed above, we argue that cue exposure therapy should be modified and used for the treatment of intrusive cognitions and thoughts. This treatment should take into account the environmental cues that lead to intrusive memories and thoughts.

AUTHORS CONTRIBUTION

Eid Abo Hamza, Ahmed Helal conceived and planned the experiments, carried out the experiments and both planned and carried out the simulations. Ahmed Moustafa contributed to the interpretation of the results. Mahmoud Emamtook the lead in writing the manuscript. All authors provided critical feedback and helped shape the research, analysis, and manuscript.

ACKNOWLEDGMENT:

Abo Hamza, E. obtained funding from Qatar National Research Fund (UREP grant).

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APPENDIX

The Intrusive memories scale includes the following questions:

1. When I remember an event, I feel that I am reliving it again.
2. When I recall an event, it comes to mind in the form of words.
3. When I remember an event, I feel like I am seeing before my eyes.
4. When I recall memories of an event, I see them blurry and disconnected.
5. As I remember an event, I feel the same emotions that I had during the original event.
6. I feel happy when I remember the past.
7. I feel sad when I remember the past.
8. My heart beats when I remember the past.
9. I sweat when I remember the past.
10. I get nervous when I remember the past.
11. When I remember the past, I can identify the places where the event took place.
12. I accurately recall details of past events including exact times and days.
13. When I remember the past I feel as if I have traveled through time.
14. When I remember the past I can pinpoint details.
15. Past memories come to mind without me trying to retrieve them.
16. When I remember the past, I can determine what clothes I was wearing then.
17. When I remember the past, I can identify the individuals who were with me then.
18. Past events are clear to me as they exactly happened.

The Intrusive ideas scale includes the following questions:

1. The positive thoughts come up to my mind instead of the intrusive thoughts.
2. I think among myself that I have to stop my intrusive thoughts.
3. I feel highly concentrated.
4. I try to replace my intrusive thoughts with another one.
5. I do not talk about my intrusive thoughts with anyone.
6. I reproach myself when I think intrusively.
7. I Exaggerate my feelings of panic due to the intrusive thoughts.
8. I kept these thoughts for myself and never share it with anyone.
9. I get busy with work, instead of thinking intrusively.
10. I try my best to avoid the intrusive thoughts.
11. I get so angry because of my intrusive thoughts.
12. I avoid the coexistence with these thoughts every moment.
13. Having these thoughts with me, made me worried.
14. I try to analyze my thoughts in a logical way.
15. I smack myself to wake from these intrusive thoughts.
16. I observe my friends' behaviors when they face these thoughts.
17. I get scared of the simple, and silly things.
18. I try to do any behavior that makes me happy.
19. I try to find an explanation for my intrusive thoughts.
20. I try to think about the future rather than the present.
21. I think many times about my problem even though it is simple.
22. I try to think differently.
23. I ask my friends whether they have the same intrusive thoughts or not.
24. I wonder among myself about the reason of these intrusive thoughts.
25. I try to distance from the intrusive thoughts by focusing on the other negative thoughts.
26. I alert myself that I will suffer from the inertia of these thoughts.
27. I keep busy with anything, instead of thinking.
28. I try to think of other people's business, rather than my own.
29. I avoid discussing these thoughts in a scientific way.