

# Effect of Positive Emotion Training Program on Negative Symptoms, Motivation, and Enjoyment among Patients with Schizophrenia.

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## **Abstract:**

**Background:** Negative symptoms, motivational deficits, and lack of enjoyment are key symptoms among patients with schizophrenia and the most debilitating aspects of functioning. Positive emotion training program (PEPS) is a form of positive psychotherapy used for patients with schizophrenia to improve anhedonia and apathy. **Objective:** To investigate the effectiveness of positive emotion training program on negative symptoms, motivation, and enjoyment among patients with schizophrenia.. **Setting:** The study was conducted in the private inpatient wards of EL-Maamoura Hospital for Psychiatric Medicine. **Subjects:** 60 inpatients with schizophrenia. **Tools:** Socio-Demographic and Clinical Data Structured interview Schedule, Scale for the Assessment of Negative Symptoms of schizophrenia (SANS), Behavioral Inhibition and Activation Scale (BIS/BAS) and Savoring Belief Inventory (SBI) were used as tools for data collection. **Results:** Findings of the present study revealed a statistically significant decrease in the total mean scores of negative symptoms and avoidance motivation among the study group after intervention ( $p < 0.001$ ). In addition, a significant increase level of approach motivation and savoring (enjoyment) belief in the study group compared to the control group ( $p < 0.001$ ). **Conclusion:** Patients with schizophrenia who participate in positive emotion training program exhibit fewer negative symptoms, higher motivation and enjoyment compared with those who follow the traditional hospital routine care. **Recommendations:** Psychiatric hospitals may adding PEPS to the standard care for patients with schizophrenia. Future studies are needed to determine the sustainability of the effect of PEPS on patients' mental health and their ability to return to the community.

**Key words:** Schizophrenia, Positive Emotion, Negative Symptoms, Motivation, and Enjoyment.

## **Introduction**

Schizophrenia is a serious mental health disorder directly impacts on the lives of individuals (Kring & Elis, 2013; Mohamed & Abdelsalam, 2017). Symptoms of Schizophrenia are described in terms of positive and negative symptoms (American Psychiatric Association, 2018; Cerveri et al., 2019;

Correll & Schooler, 2020; Kahn et al., 2015).

Negative symptoms are resistant to pharmacotherapy and account for a large part of the long-term morbidity (Galderisi et al., 2018). Negative symptoms are associated with motivational deficits which play a large role in determining functional disability and poor quality of life

(Campellone & Kring, 2018; Pillny et al., 2020; Worswick et al., 2018). In addition patients with schizophrenia have reduced capacity for enjoyment in general and engagement in activities (Campellone et al., 2016; Fiszdon et al., 2016). Loss of enjoyment is a particularly challenging characteristic of patients with schizophrenia (Hartmann et al., 2015).

Recently there has been growing interest in combining medications with psychological, behavioral, supportive and other interventions in the treatment of negative symptoms. One of these interventions is positive emotions training program for schizophrenia (PEPS) (Cella et al., 2023; Favord et al., 2019; Nguyen et al., 2016; Raffard et al., 2013; Serper et al., 2017).

PEPS is a new emotional regulation training strategy that aims to increase the frequency, intensity, and duration of positive emotional experiences. It increase cognitive control of positive emotions, including anticipation and maintenance of these emotions. Emotional regulation strategies include changing defeatist performance beliefs into more positive expectations, anticipating or remembering enjoyment, expressing emotions via non-verbal behaviors, directing controlled attention towards occurring positive experiences, sharing positive experiences with others and anticipating pleasant moments in the future (Favord et al., 2015; Favord et al., 2019a). This intervention may form a new effective method in the treatment of negative symptoms to improve enjoyment and motivation by targeting emotion regulation and cognitive skills (Favrod et al., 2019; Mohamed & Abdelsalam, 2017; Strauss, 2013).

### ***Aims of the study***

This study aims to investigate the effectiveness of positive emotion training program on negative symptoms, motivation, and enjoyment among patients with schizophrenia.

### ***Research hypothesis:***

Patients with schizophrenia who participate in positive emotion training program will exhibit fewer negative symptoms than those who receive usual hospital treatment.

Patients with schizophrenia who participate in positive emotion training program will exhibit higher level of motivation than those who receive usual hospital treatment.

Patients with schizophrenia who participate in positive emotion training program will exhibit higher level of enjoyment than those who receive usual hospital treatment.

### ***Materials and Method***

#### ***Materials:***

**Research design:** A quazi-experimental research design was used in this study

**Settings:** The study was conducted in the private psychiatric inpatient wards of EL-Maamoura Hospital for Psychiatric Medicine affiliated to the Ministry of Health and population and serving three governorates Alexandria, Matrouh, and El-Beheira.

**Subjects:** The subjects of the study consisted of 60 patients who were diagnosed with schizophrenia with no comorbidity, communicating coherently and relevantly. They Can read and write. Having at least mild level of negative symptoms and duration of illness <10 years.

Subjects were equally divided into a study and control group matched as much as possible.

**Tools:** Four tools for data collection were used in this study:

**Tool I: Scale for the Assessment of Negative Symptoms of schizophrenia (SANS):** This scale developed by Andreasen (1983) and consists of 25 items

evaluating five symptoms namely: affective flattening/blunting, alogia, avolition/apathy, anhedonia/asociality and inattention. The scale is rated on 6-point Likert scale (0 none to 5 severe). SANS scale has been found to be valid and reliable scale (Mach et al., 2015). Also, it was used and standardized in previous study on Egyptian patients with schizophrenia and it was found to be valid and with strong internal consistency (Cronbach's Alpha = 0.906) (Mohamed et al., 2019).

**Tool II: The Behavioral Inhibition and Activation Scale:** This Scale is a self-reported scale developed by Carver and White (1994). It comprised 2 subscales: behavioral inhibition (BIS) and behavioral activation (BAS). It consisting of 20 items graded on a 4-point Likert scale, ranging from 1 (strongly agree) to 4 (strongly disagree).

**Tool III:- The Savoring Belief Inventory:** This scale is a self-reported scale (SBI) developed by Bryant (2003) for measuring beliefs about one's capacity for enjoying things. It consists of 12 positive items and 12 negative items. It measuring a person's thinking regarding capacity to enjoy positive past experiences, current experiences, and future anticipated experiences.

In addition, a demographic and clinical data structured interview schedule developed by the researcher were used.

### ***Method:***

Official written permissions were obtained from the General Secretariat of Mental Health at the Ministry of Health and Population in Cairo and from the hospital director and director of Training Unit at EL-Maamoura Hospital for Psychiatric Medicine, in Alexandria.

Tool (I) and tool (II) were tested for reliability using test-retest and Cronbach's alpha. The Cronbach's alpha for tool 2 was 0.906 and for tool 3 was 0.768,0.778

Tool (III) was translated into Arabic language by the researcher and back translation was done by bilingual expert and professors in the field of Psychiatric Nursing and Mental health department and was tested for content validity by a jury of seven experts in the field of psychiatric nursing and psychology. Reliability of tool (IV) was tested using test-retest and Cronbach's alpha. The Cronbach's alpha was 0.965.

A pilot study was carried out on 10% of the total subjects' size and these patients were excluded from the actual study subjects.

### ***Actual Study***

Data were collected from four psychiatric private wards in the hospital using simple random sampling technique to determine the first, second, third and fourth' selected ward.

The first and second selected wards were assigned for the study groups.

Five patients with schizophrenia who met the inclusion criteria were selected randomly from patients' list to receive 8 sessions of positive emotion training program over period of four weeks. Then the selection of another five patients was repeated until the required number of the study subjects was achieved.

The control groups were chosen from the third and fourth ranked inpatient's wards to avoid contamination between the two groups and were matched with the study group as much as possible. Patients in the control group were left to undergo the traditional hospital routine care only.

Each patient was interviewed and observed by the researcher individually to apply tool I (SANS), tool II (BAS/BIS) and tool III (SBI).

Post evaluations of patients were carried out immediately after termination of the positive emotion training program, using the same tools of data collection.

### **Positive emotion training program (PEPS).**

Positive emotion training program is composed of 8 sessions. Session frequency is as follows; one session / day (2 sessions / week; 8 session / month).

Each session started with a brief relaxation exercise using slowed breathing and patients asked to focus on enjoying a pleasant experience as Chocolates, fruits and other joyful things as flowers.

The positive emotion training program sessions took place in a quiet room in the hospital ward. Each session included a number of the following steps. Step 1 began with a welcome, followed by a 5-min relaxation–meditation exercise. In step 2, group members go over the homework task given during the previous session. Step 3 involved an exercise in challenging specific defeatist thoughts

#### ***Ethical considerations:***

An informed written consent was obtained after explaining the aim of the study. They were told that participation was voluntary and they have the right to refuse or withdraw from the study at any time. Patients' privacy and data confidentiality were assured and maintained.

#### ***Results:***

**Table (1)** shows the socioeconomic characteristics of patients in the study and control groups. Regarding sex, an equal percentage (83.3%) of both the study and control groups are males and 16.7 are females. According to age group, 60% of the study group and 46.7% of the control are in the age between 25 to less than 35 years. As regards patients level of education, an equal percentage (36.7%) of both the study and control groups have a university education, while more than one third of both study group (36.7 %) and control group (33.3 %) completed their secondary education.

**Table 2** shows the clinical characteristics of patients in the study and control groups. The duration of illness ranged between 5 to 10 years for 53.3% of patients in the study group and 70% for those in the control one. As regards the age of onset of illness, around half (53.3 %) of the study group started to develop the illness at the age of 20 to less than 25 years compared to 63.3 % of the control group.

No statistical significant differences were found between the study and control groups, in all socioeconomic and clinical characteristics. The patients in the two groups are matching ( $P>0.05$ ).

**Table 3** highlights the levels of negative symptoms pre and post intervention (PEPS) among the study and control groups. The table shows that before intervention 56.7% of the study group have severe level of negative symptoms, while after intervention the levels of negative symptoms dropped to a mild level (36.7%). The variation was statistically significant ( $MH = 53.0^*$ ,  $P = (<0.001^*)$ ). On the other hand, the control group demonstrate moderate levels of negative symptoms pre and post intervention (56.7%, 73.3%) respectively with no statistical significant difference ( $MH = 0.000$ ,  $P = (0.782)$ ).

**Table 4** presents the mean scores of avoidance motivation among the study and control group pre and post intervention. The table shows that the mean scores of avoidance motivation among the study group was significantly decreased after implementing the positive emotion training program with a statistically significant difference ( $t=7.970^*$ ,  $P = <0.001^*$ ). As for the control group, there is no statistical significant difference ( $t=0.603$ ,  $P = 0.551$ ).

**Table 5** highlights the means scores of approach motivation among the study and control groups at pre and post positive emotion training program. The table shows that the mean scores of the total approach

motivation among the study group were significantly increased immediately after applying the program ( $t=12.849^*$ ,  $p<0.001$ ). In relation to control group, there was no statistical significant difference ( $t=1.638$ ,  $p=0.112$ ). There was no statistical significant difference between study and control groups in total mean score of the approach motivation at pre intervention phase ( $t=1.173$ ,  $p=0.246$ ). On the other hand, a statistical significant difference was found after implementing the intervention between the study and control groups in total mean score of approach motivation ( $t=14.823^*$ ,  $p<0.001^*$ ).

**Table 6** highlights the mean scores of savoring(enjoyment) belief among the study and control groups pre and post positive emotion training program. The table shows that the mean scores of the total savoring (enjoyment) belief among the study group were significantly increased immediately after applying the program ( $t=22.752$ ,  $p<0.001$ ).

In relation to control group, there was no statistical significant difference ( $t=0.189$ ,  $p=0.851$ ). There was no statistical significant difference between study and control groups in total mean score of the savoring (enjoyment) belief at pre intervention phase ( $t=0.074$ ,  $p=0.942$ ). On the other hand, a statistical significant difference was found after implementing the intervention between the study and control groups in total mean score of savoring (enjoyment) belief ( $t=27.483^*$ ,  $p<0.001^*$ ).

### **Discussion**

Despite a legacy of empirical research and the development of several types of pharmacological and psychosocial interventions, patients with schizophrenia continue to suffer from negative functional outcomes and long term morbidity (Barabassy et al., 2018; Beyene et al., 2021; Correll & Schooler, 2020; Fakorede et al., 2020). Several attempts have been

made to minimize the effect of negative symptoms and enhance motivation and enjoyment among patient with schizophrenia. In general few studies addressed the effective intervention for negative symptoms and developed several interventions to overcome these symptoms (Galderisi et al., 2021; Galderisi et al., 2018a). Accordingly, many types of psychosocial interventions have been used in conjunction with antipsychotics medications for successful management of schizophrenia (McDonagh et al.,2021). Positive emotion training program for schizophrenia (PEPS) developed by Favord et al., (2015) is one of these interventions. The present research was conducted to investigate the effectiveness of positive emotion training program (PEPS) on negative symptoms, motivation and enjoyment among patients with schizophrenia.

The present study reveal a significant improvement in negative symptoms as well as motivation and enjoyment among studied patients with schizophrenia after termination of positive emotion training program (PEPS). In relation to negative symptoms, the study results indicate a highly significant effect of Positive Emotions Training Program for patients with Schizophrenia (PEPS) on the overall negative symptoms among patients in the study group. The explanation of these findings and improvement of negative symptoms could be related to the fact as mentioned in the literatures that the (PEPS) is one of the most effective program that can alleviate a patient's negative and distressing experiences and help individuals with schizophrenia control negative emotions by changing their way of thinking (Favord et al., 2019; Favord et al., 2015a; Nguyen et al., 2016) .

As regard domains of negative symptoms. The current study results showed that patients who attended the positive emotion trainig sessions displayed improvement in all domains of negative

symptoms. In this respect, several researches reported that positive emotion training programs can be used as an adjunctive non-pharmacological treatment modality to tackle negative symptoms of schizophrenia through development of an alternative and more positive way of thinking. Modifying defeatist thinking appear to be an essential to treat negative symptoms that are usually due to repeated failures in thinking among patients with schizophrenia (Couture et al., 2011).

Consistent with the present study results, Favord et al., (2015) and Nguyen et al. (2016) reported that patients with schizophrenia showed significant reduction in negative symptoms after implementation of positive emotion training program. In relation to improvement of different negative symptoms domains, the present study results reveal improvement in both studied types of motivation as avoidance motivation and approach motivation. the findings of the current study revealed that there is a significant improvement in the total of avoidance and approach motivation among the patients in the study group after implementing the positive emotion training program.

During the program patients learned that negative emotions (fear, anger, depression and shame) result from repeated failures and lead to negative behavior and avoidance of new experiences. They reported that to be motivated, positive emotion should be exceed negative emotion. This could be related to the fact of immediate positive effect of positive emotion regulation strategies in decreasing higher sensitivity to threat and punishment. The same was reported by Favrod et al., 2015; Horan et al., 2014; Nguyen et al., 2016.

As regard, the savoring(enjoying) belief. the current study results showed a significant increasing of savoring belief after implementing the positive emotion training program in the study group. Previous research suggests that patients

with schizophrenia may be impaired in their ability to savor pleasant events and believe that everyday tasks are excessively difficult to complete so that they attempt these tasks less frequently (Bentall et al., 2010; Cassar et al., 2013). It is possible that teaching patients with schizophrenia to savor could help them to experience greater levels of positive emotion which in turn could improve general motivational levels and pleasure sensation.

The results of the present study were in agreement with Favord et al. (2019) who indicated that positive emotion intervention had improved the savoring (enjoying) belief in patients with schizophrenia. Savoring can be used as a strategy to up-regulate positive affect, increasing the intensity of pleasurable feelings and extending the amount of time which is spent experiencing these feelings (Bryant, 2003; Klibert et al., 2022)

### **Conclusion:**

In conclusion, the findings of the present study support the hypothesis that Patients with schizophrenia who participate in positive emotion training program will exhibit fewer negative symptoms and higher motivation and enjoyment than those who receive usual hospital treatment. This study showed that the negative symptoms, motivation, and enjoyment among patients with schizophrenia can be managed effectively by using positive emotion training program in conjunction with antipsychotic drugs and it can be utilized as one of the psychiatric nursing interventions.

### **Recommendations**

*Based on the findings of the current study, the following recommendations have been generated:*

- Positive emotion training program should be used as an integral part of the hospital routine for managing patients with schizophrenia and be a part of patients` activities of daily living.

- Future studies are needed to determine the sustainability of the effect of positive emotion training program after patients have been discharged from the hospita

**Table (1): Distribution of patients in the study and control groups according to their socio-demographic characteristics:**

Socio-demographic data	Study (n = 30)		Control (n = 30)		$\chi^2$	p
	No.	%	No.	%		
<b>Sex</b>						
Male	25	83.3	25	83.3	0.000	1.000
Female	5	16.7	5	16.7		
<b>Age in year</b>					1.217	MC p= 1.000
15-25	3	10.0	5	16.7		
25-35	18	60.0	14	46.7		
35-45	9	30.0	11	36.7		
<b>Educational level</b>					7.247	MC p= 0.053
Read and write	2	6.7	2	6.7		
Primary / Preparatory	6	20.0	7	23.3		
Secondary	11	36.7	10	33.3		
University	11	36.7	11	36.7		
<b>Monthly income</b>						
Not enough	30	100.0	30	100.0	-	-

$\chi^2$ : Chi square test p: p value for comparing between the studied groups

**Table (2): Distribution of patients in the study and control groups according to their clinical characteristics.:**

Clinical data	Study (n = 30)		Control (n = 30)		$\chi^2$	p
	No.	%	No.	%		
<b>Duration of illness in years.</b>					4.111	MC p= 0.124
>2 years	6	20.0	1	3.3		
2-5years	8	26.7	8	26.7		
5-10 years	16	53.3	21	70.0		
<b>Age of onset (years)</b>					7.101	0.329
15 > 20	11	36.7	3	10.0		
20 – <25	16	53.3	19	63.3		
25 – 30	3	10.0	8	26.7		

$\chi\chi^2$ : **Chi square test** p: p value for comparing between the studied groups

\*: Statistically significant at  $p \leq 0.05$

**Table (3): Comparison between levels of negative symptoms at pre and post intervention (PEPS) among patients in the study and control groups.**

Assessment of Negative Symptoms	Study (n = 30)				Control (n = 30)				Test of Sig. (p <sub>1</sub> )	Test of Sig. (p <sub>2</sub> )
	Pre intervention		Post intervention		Pre intervention		Post intervention			
	No.	%	No.	%	No.	%	No.	%		
Mild negative symptoms	0	0.0	11	36.7	0	0.0	1	3.3	$\chi^2=1.067$ (0.302)	$\chi^2=21.590^*$ (<0.001*)
Moderate negative symptoms	13	43.3	19	63.3	17	56.7	22	73.3		
Severe negative symptoms	17	56.7	0	0.0	13	43.3	7	23.3		
<b>MH(p<sub>0</sub>)</b>	53.0* (<0.001*)				0.000 (0.782)					

\*: Statistically significant at  $p \leq 0.05$

**Table (4): Comparison of total mean score of avoidance motivation among the study and control groups at pre and post intervention (PEPS).**

Avoidance motivation	Study (n = 30)		Control (n = 30)		Test of Sig. (p <sub>1</sub> )	Test of Sig. (p <sub>2</sub> )
	Pre intervention	Post intervention	Pre intervention	Post intervention		
<b>Total score</b>	<b>(7 – 28)</b>					
Min. – Max.	12.0 – 19.0	14.0 – 23.0	10.0 – 20.0	10.0 – 18.0	t=0.179 (0.858)	t=7.577* (<0.001*)
Mean ± SD.	14.17 ± 1.88	18.70 ± 2.23	14.07 ± 2.41	14.33 ± 2.23		
Median	13.0	19.0	13.50	14.0		
<b>t<sub>0</sub>(p<sub>0</sub>)</b>	7.970* (<0.001*)		0.603 (0.551)			

**NB: Behavioral inhibition (BIS) measures avoidance motivation**

p<sub>0</sub>: p value for comparing **Pre intervention** and **Post intervention** in the study and control group

p<sub>1</sub>: p value for comparing the studied groups in **Pre intervention**

p<sub>2</sub>: p value for comparing the studied groups in **Post intervention**

\*: Statistically significant at  $p \leq 0.05$

**Table (5): Comparison between the study and control groups according to total mean score of approach motivation at pre and post intervention (PEPS).**

Approach motivation	Study (n = 30)				Control (n = 30)				Test of Sig. (p <sub>1</sub> )	Test of Sig. (p <sub>2</sub> )
	Pre intervention		Post intervention		Pre intervention		Post intervention			
	No.	%	No.	%	No.	%	No.	%		
<b>Total score</b>	<b>(13 – 52)</b>									
Min. – Max.	28.0 – 49.0		17.0 – 32.0		27.0 – 51.0		25.0 – 46.0		t=1.173 (0.246)	14.823* (<0.001*)
Mean ± SD.	38.40 ± 5.84		23.67 ± 3.76		40.13 ± 5.61		37.73 ± 4.64			
Median	37.50		23.50		40.0		38.0			
<b>t<sub>0</sub>(p<sub>0</sub>)</b>	12.849* (<0.001*)				1.638 (0.112)					

**Table (6): Comparison between study and control groups according to total mean score of Savoring Belief Inventory (SBI)**



The Savoring Belief Inventory (SBI)	Study (n = 30)		Control (n = 30)		Test of Sig. (p <sub>1</sub> )	Test of Sig. (p <sub>2</sub> )
	Pre intervention	Post intervention	Pre intervention	Post intervention		
<b>Total score</b>	<b>(24 – 168)</b>					
Min. – Max.	26.0-70.0	94.0-155.0	33.0-66.0	36.0-71.0		
Mean ± SD.	52.13±12.57	137.67±14.16	51.90±7.98	51.23±9.65	t= 0.074, p=0.942	t= 27.483*, p<0.001*
Median	55.0	142.0	52.0	51.0		
<b>t<sub>0</sub>(p<sub>0</sub>)</b>	22.752* (<0.001*)		0.189(0.851)			

SD: Standard deviation p<sub>1</sub>: p value for comparing between the studied groups in **Pre intervention**

p<sub>2</sub>: p value for comparing between the studied groups in **Post intervention**

\*: Statistically significant at p ≤ 0.05

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