

Moderating Role of Hope in Relationship between Anhedonia and Emptiness among Schizophrenic Individuals

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Abstract: The present study examined the moderating role of hope between Anhedonia and emptiness in schizophrenic patients. The term "Anhedonia" refers to the schizophrenic patient's lessened capacity to experience pleasant emotions and satisfaction in response to events and activities that normally trigger these sensations. Hope is thought to play a role in the recovery and rehabilitation process following mental illness and a major contributor to subjective well-being. The study was based on cross-sectional survey research design. Participants comprised of schizophrenic patients ($N = 300$) from hospitals situated in Multan and Sargodha. Both men and women participated in the study. Data were collected using purposive sampling technique. Four self-report measures including Demographic data sheet, Subjective Emptiness Scale, Hope in Schizophrenia Scale, Anhedonia in Adolescents Scale were used for data collection. Moderation analysis was applied for testing the hypotheses supposing that as the element of hope will increase in schizophrenic individuals, it will lessen the degree of anhedonia and emptiness among them. It was also hypothesized that hope would act as a moderator between anhedonia and emptiness. The findings revealed that the high level of hope in schizophrenic patients decreased the effect of anhedonia on emptiness. The findings empirically established that high level hope can be used to prevent the effects of Anhedonia on emptiness in schizophrenic patient.

Keywords: Anhedonia; Schizophrenia; Hope; Emptiness; Mental Health.

1. Introduction

The effects of schizophrenia on a person's thinking, behavior, emotional expression, sense of reality, and interpersonal connections are long-lasting and severe [1]. Schizophrenia can include hallucinations, delusions, and profoundly illogical thinking and behavior, making daily activities difficult and incapacitating. People suffering from schizophrenia require continual attention and therapy [2]. Van Gestel-Timmermans et al. [3] asserted that hope is regarded as a crucial component in the recovery from mental illness and is thought to enhance the quality of life for those who have schizophrenia.

Anhedonia, or a weakened sensation of enjoyment in life, is a symptom of a variety of medical conditions. It is a significant symptom of grieving and a warning indication [4]. Anhedonia is the diminished ability to feel pleasure and happy emotions in response to situations and actions that often generate these sensations. The hallmark of mood disorders historically has been anhedonia, which is defined by a sharp decline in interest or enjoyment in activities [5]. Anhedonia is a symptom frequently linked to psychopathological processes and reflects the sensation of diminished capacity for enjoyment. The delineation of its psychological mechanisms, neurobiological correlations, and more efficient treatment choices are still largely unknown, despite the fact that it is one of the key symptoms for diagnosing mental diseases as common as schizophrenia or serious depression [6].

Anhedonia may be characterized by prodromal or early symptoms of schizophrenia and may be a diathesis attribute of pre-psychotic personality. Schizophrenia patients experience as much pleasant

emotion as healthy controls when participating in enjoyable activities, according to reports of present experiences in the disease. However, the empirical evidence on the feeling of unpleasant emotions in schizophrenia is inconsistent, indicating that anhedonia could result in irregularities in the present-day perception of negative stimuli [7]. Anhedonia is probably a good indicator of emptiness in patients with schizophrenia. Because anhedonia is the primary factor of emptiness in a schizophrenic patient, when a person feels no pleasure or finds no interest in anything, it generates emptiness in a person and gradually develops into schizophrenia, a very severe condition [8].

A variety of emotions, such as sensations of isolation, grief, or feeling numb or disconnected, are all described by the adjective “emptiness.” When they arise in response to a loss, trauma, or other challenging life event, these feelings may be normal [9]. According to preliminary research, higher levels of emptiness are linked to a variety of negative outcomes, such as impulsive and self-harming behavior, and emotional dysregulation. Significant emptiness is associated with greater rates of psychiatric hospitalization, absenteeism from work, and reliance on disability payments, according to those who experience it [9]. However, hope is seen as a factor that facilitates healing and rehabilitation from mental illness [3].

Hope is a positive motivational mood and a significant driver of subjective well-being [10]. It's a good sensation that links hopes for the future with the likelihood that those hopes will come true and empowers one to take charge of their own life and achieve their objectives. A substantial cognitive vulnerability linked to an increased risk of suicide is indicated by hopelessness. Clinicians should be well-informed about the spirituality and quality of life of their patients.

According to the research, emptiness is a persistent emotion that cannot be alleviated by medication or therapy [11]. This feeling of emptiness is understudied and poorly understood, despite its pervasive and persistent qualities and its inclusion in widely used diagnostic guides [1]. In order to improve long-term outcomes for people with schizophrenia, it is now widely acknowledged that drugs alone are insufficient for managing the condition. Instead, a combination psychopharmacological psychosocial strategy is required [12].

1.1. Rationale of the study

The significance of this study lies in its focus on exploring the relationship between anhedonia, hope, and feelings of emptiness among schizophrenic patients. Schizophrenia, a severe mental disorder characterized by profound disruptions in thinking, emotional regulation, and behavior, often leads to significant challenges in daily functioning and requires continuous care and treatment [1]. Among the various symptoms associated with schizophrenia, anhedonia, or the diminished ability to experience pleasure, is particularly notable due to its impact on patients' quality of life [6].

This diminished capacity for pleasure can lead to a pervasive sense of emptiness, which is described as feelings of isolation, numbness, or disconnection [9]. Hope, on the other hand, is recognized as a critical component in the recovery process from mental illness, enhancing the quality of life for individuals with schizophrenia [3]. The link between anhedonia, a primary symptom of depression and schizophrenia, and elements like hope and social functioning has been the subject of recent research [13, 14]. Anhedonia, which is defined as a decreased capacity for experiencing pleasure, has been associated with worse quality of life and worse social outcomes in people with schizophrenia and other mental illnesses.

Despite the established roles of anhedonia and hope in the context of schizophrenia, there has been limited research investigating the moderating effect of hope on the relationship between anhedonia and feelings of emptiness in schizophrenic patients.

This study aims to fill this gap by examining how anhedonia influences feelings of emptiness in schizophrenic patients and whether hope can mitigate this effect. By understanding the interaction between these variables, the research seeks to contribute to more effective psychosocial interventions that incorporate hope as a key factor in reducing the negative impact of anhedonia on patients' emotional wellbeing. The findings of this study could inform clinical practices and support the development of comprehensive treatment strategies that address both the psychological and emotional needs of individuals with schizophrenia.

1.2. Objectives of the study

1. To find out the impact of anhedonia on emptiness in schizophrenic patients with a moderating role of hope.
2. To examine the impact of hope on emptiness in schizophrenic patients.

3. To identify mean differences in study variables across demographic variables including gender, age, family system, and education.

1.3. Hypotheses

H1: Anhedonia is likely to positively predict emptiness in Schizophrenic Patients.

H2: Hope is likely to negatively predict emptiness in Schizophrenic Patients.

H3: High level of hope will decrease the impact of anhedonia on emptiness in schizophrenic patient

H4: Women are likely to exhibit higher level of anhedonia and emptiness as compared to men counterparts.

1.4. Contributions of the Present Study

The present study aimed to investigate the moderating role of hope in the factors of anhedonia and emptiness in schizophrenic patients. It adds a valuable addition in understanding the pivotal role of hope in alleviating the negative factors that can adversely impact wellbeing and health of the individuals suffering from a severe psychological illness such as schizophrenia. The present study's focus on the moderating role of hope between anhedonia and emptiness elements in schizophrenics is a novel idea in its type as in spite of several researches in this domain, a clear lacking is also evident finding the combined association of these three variables especially in the case of schizophrenia.

2. Materials and Methods

The present study was based on cross sectional research design utilizing survey method. Data were collected from hospitals in two cities including Multan and Sargodha divided across gender, age, residential origin and family system.

2.1. Sample

In the present study, a sample of schizophrenic patients (N= 300) with age range from 19 to 50 years (M =16.81, SD = 6.58) was selected. The patients diagnosed with schizophrenia and currently under treatment in several hospitals in Multan and Sargodha were selected through Purposive sampling technique. Only those patients were included in the sample who were diagnosed with schizophrenia and were under treatment with any mental health professional. However, the Schizophrenic patients with comorbid psychological problems were excluded from the sample. Characteristics of the sample along with demographic factors are given in Table 1.

Table 1. Demographic Characteristics of Schizophrenic Patients (N=300)

Characteristics	<i>n</i>	%
Gender		
Men	207	69.0
Women	93	31.0
Age		
Early adolescents	80	26.7
Late adolescents	220	73.3
Education		
Undergraduate	202	67.3
Graduate	70	23.3
Post- Graduate	28	09.3
Family system		
Nuclear	170	56.7
Extended	130	43.3
Residence		
Rural	113	37.7
Urban	187	62.3

2.2. Instruments

Following scales were employed to collect the data from the sample:

2.2.1. Subjective Emptiness Scale (SES)

The scale was developed by Price et al. (2020) [15] and used for measuring emptiness in schizophrenic patients. The scale consisted of 7 items. Subjective Emptiness Scale is based on worded descriptive statements such as "I feel emptiness inside", and "I feel all alone in this world" for certainty subscale. Four-point Likert type response was used in scale which ranged from '1=Not at all true' to '4=Very true.' High scores on the scale means high emptiness level in schizophrenic patients and low scores on the scale means the low emptiness level in schizophrenic patients. There was no cut off score in the scale. Alpha reliability coefficients .72, in the Urdu translated version were reported significant respectively. Authors reported factorial, convergent and discriminant validity of the scale. The scale used in the present study is in open access.

2.2.2. Anhedonia Scale for Adolescents (ASA)

Watson et al. (2021) established the scale [16]. The Anhedonia Scale (ASA) was created to quantify anhedonia, which is characterized by a loss of enjoyment and interest in schizophrenia patients. This scale is frequently utilized. 14 elements made up the scale, which was based on declarative statements such "I didn't want to do anything" and "I should have been enjoying things but I couldn't." The measure employed a five-point Likert response pattern, with 1 denoting "Never" and 5 denoting "Always." Schizophrenic patients with high scores on the anhedonia scale have high levels of anhedonia, whereas those with low values have low levels of anhedonia. The scale had no upper bound on any given score. Similar to the English version, the Urdu version's Alpha reliability coefficient was 0.80, indicating acceptable internal consistency, while the English version's Alpha reliability coefficient was 0.79. The scale that is being utilized in this investigation is publicly available.

2.2.3. Schizophrenia Hope Scale (SHS)

This scale was developed to assess patients' levels of hope in schizophrenia [17]. The sample that comes from various cities has made extensive use of this scale. There are nine items on the scale. The hope scale is based on positive statements like "I will be happy in the future," "I have a better future ahead of me," and "I set goals and work toward achieving them." The scale utilized was a three-point Likert style response, with 1 denoting disagreement and 5 denoting strong agreement. Schizophrenic patients with high scores on the hope scale have high levels of hope, whereas those with low values have low levels of hope. The scale had no upper bound on any given score. The Urdu version's alpha reliability coefficient was 0.80, indicating satisfactory internal consistency, whereas the English version's alpha reliability coefficient was 0.79, indicating satisfactory internal consistency. The scale that is being utilized in this investigation is publicly available.

2.3. Procedure

Authority letter was acquired from the Institutional Review Board (IRB) to begin the research, confirming that the researcher is doing research after approval following the ethical guidelines. A list of hospitals in Multan and Sargodha was already compiled. On authorized letter, medical superintendents were called and written approval for data gathering from their hospitals was acquired. The researcher approached the schizophrenic patients in person to collect data. Personal details from schizophrenic sufferers was obtained. The mental health professionals were confronted with a query concerning the inclusion criteria, and only those schizophrenia patients who met the above-mentioned inclusion criteria were recruited to participate in the study. Excuses from hesitant participants were publicly acknowledged. It was explicitly stated to the mental health experts as well as the under treatment schizophrenic patients that the gathered information would indeed be kept confidential and used solely for research purposes. They were also allowed to withdraw their information prior to, throughout, and even after the completion of data. The schizophrenic patients were requested to complete an informed consent form. The researcher gave systematic directions for completing the scale, most notably regarding the nature of the questions and the rating scale. The researcher responded the schizophrenic patients' questions before, during, and after data collection. The patients were not actually given any time restrictions. The patients' general response seemed positive, and they demonstrated interest in the study. After accomplishing the scales, the researcher reviewed them for incomplete and double-rated questions. The researcher requested them to provide the details that was left unanswered. The researcher expressed admiration to the respondents for their time and commitment to participate in research without receiving any monetary compensation. The response rate was assessed to be 75% because 300 legitimate questionnaire sets were returned out of 400 sets for data collection.

3. Results

SPSS-25 was used to analyze the data. The demographic variables were initially derived using frequencies and percentages. We calculated descriptive statistics and alpha reliability coefficients. To investigate the correlations between variables, Pearson correlation was calculated. The influence of anhedonia on emptiness and moderating role of hope was investigated using multiple and hierarchical regression analysis. Finally, the One-Way ANOVA and independent samples t-test were used to investigate mean differences across demographic parameters.

3.1. Association between study variables

Association between anhedonia, emptiness, and hope were assessed using Pearson correlation (Table 2) that showed negative correlation of anhedonia with hope ($r = -.47$, $p < .001$) and moderate positive correlation with emptiness ($r = .56$, $p < .001$). Hope was negatively correlated with emptiness ($r = -.45$, $p < .001$).

Table 2. Pearson correlation between the study variables.

Variables	1	2	3
Anhedonia	-	-.47***	.56***
Hope	-	-	-.45***
Emptiness	-	-	-

*** $p < .001$.

3.2. Linear Regression Analyses

The first linear regression analysis (Table 3) examined the effect of anhedonia on feelings of emptiness among schizophrenia patients. The results indicated that anhedonia is a significant positive predictor of emptiness ($B = 0.32$, $\beta = .56$, $SE = 0.03$, $p < .001$). The standardized coefficient ($\beta = .56$) suggested a strong positive relationship between anhedonia and emptiness, meaning that as anhedonia increases, feelings of emptiness also increase. The R^2 value of .32 indicates that 32% of the variance in emptiness is explained by anhedonia, which is a substantial proportion, highlighting the strong impact of anhedonia on feelings of emptiness in this population.

Table 3. Effect of Anhedonia on Emptiness among Schizophrenia Patients (N=300)

Variables	B	β	SE
Constant	.22		.66
Anhedonia	.32***	.56	.03
R^2	.32***		

*** $p < .001$.

The second linear regression analysis (Table 4) investigated the effect of anhedonia on hope among schizophrenia patients. The findings revealed that anhedonia significantly negatively predicts hope ($B = -0.49$, $\beta = -.47$, $SE = 0.05$, $p < .001$). The negative standardized coefficient ($\beta = -.47$) indicated that higher levels of anhedonia were associated with lower levels of hope. The R^2 value of .23 suggested that 23% of the variance in hope is accounted for by anhedonia, demonstrating a significant inverse relationship between these two variables.

Table 4. Effect of Anhedonia on Hope among Schizophrenia Patients (N=300)

Variables	B	β	SE
Constant	8.40***		1.27
Anhedonia	-.49***	-.47	-.05
R^2	.23***		

*** $p < .001$.

The third linear regression analysis (Table 5) assessed the effect of hope on feelings of emptiness among schizophrenia patients. The results showed that hope is a significant negative predictor of emptiness ($B = -0.25$, $\beta = -0.45$, $SE = 0.03$, $p < .001$). The standardized coefficient ($\beta = -0.45$) indicated a strong negative relationship, suggesting that higher levels of hope are associated with lower levels of emptiness. The R^2 value of .20 indicated that 20% of the variance in emptiness was explained by hope, highlighting the importance of hope in reducing feelings of emptiness among schizophrenia patients.

Table 5. Effect of Hope on Emptiness among Schizophrenia Patients (N=300)

Variables	B	B	SE
Constant	2.81***		.61
Anhedonia	-.25***	-.45	-.03
R ²	.20***		

*** p<.001.

3.3. Moderation Analysis

To assess the role of hope as a moderator on relationship between anhedonia and emptiness among schizophrenia patients, the moderation analysis produced following findings in table 6.

Table 6. Effect of Hope on Emptiness among Schizophrenia Patients (N=300)

Variables	B	SE	β	p	95%CI LL, UL
Constant	42.33	7.64		.008	[-8.78, -1.31]
Anhedonia	-0.31***	0.09	-0.92***	.000	[0.29, 0.64]
Hope	-1.38**	0.50	-0.71**	.001	[0.16, 0.60]
Anhedonia x hope	0.01*	0.01	1.04*	.018	[-0.02, -0.02]
,R ²			.12		
ΔR^2			.02		

*p<.05. **p<.01. ***p<.001

The results demonstrated that both anhedonia and hope individually affect feelings of emptiness in schizophrenia patients. Notably, hope acted as a significant moderator, lessening the negative impact of anhedonia on emptiness. The findings indicated that Anhedonia has a significant negative effect on emptiness (B = -0.31, β = -0.92, SE = 0.09, p < .001). Hope also has a significant negative effect on emptiness (B = -1.38, β = -0.71, SE = 0.50, p = .001). The interaction between Anhedonia and Hope was significant (B = 0.01, β = 1.04, SE = 0.01, p = .018), indicating that hope moderated the relationship between anhedonia and emptiness. The positive interaction coefficient (β = 1.04) suggested that the negative impact of anhedonia on emptiness is buffered by higher levels of hope. The R² value of .12 indicated that 12% of the variance in emptiness can be explained by the predictors (anhedonia, hope, and their interaction). The change in R² (ΔR^2) is .02, reflecting the additional variance explained by including the interaction term in the model.

3.3. Gender differences

Table 7. Mean, Standard Deviation and t-Values for Men and Women on study variables (N=300)

Variables	Men		Women		t (300)	p	Cohen's d
	M	SD	M	SD			
Emptiness	7.53	4.17	17.74	4.10	5.10	.000	2.46
Hope	20.81	9.58	9.26	5.58	4.68	.000	1.47
Anhedonia	8.49	7.09	12.79	7.21	7.78	.000	0.60

Results indicated significant mean differences on Emptiness Scale with t (300) = 5.10, p < .05. Results indicated significant mean differences on Hope Scale with t (300) = 4.68, p < .05. Results indicated significant mean differences on Anhedonia with t (7.78) = 0.007, p < .05. Cohen's d value indicated that emptiness and anhedonia scale has small effect size (> .20) whereas hope has large effect size (< .80). The findings indicated significant gender differences as women reported higher levels of emptiness and anhedonia, while men reported higher levels of hope.

4. Discussion

The purpose of the current study was to investigate the anhedonia and emptiness in schizophrenia patients with hope serving as a moderator. Initially, frequencies and percentages were used to calculate the demographic characteristics. Additionally, the scale's validity, normality, and reliability have all been confirmed by the researchers. All scale's alpha coefficients were greater than or equal to .70, indicating that they can be used in studies with confidence [18].

As revealed by the Pearson correlation that anhedonia and emptiness are significantly associated in a positive manner, it is in accordance with the previous literature [19] that suggests emotional experiences of individuals with anhedonia demonstrates their inability to experience pleasure from social interactions contributes to a pervasive sense of emptiness. Hope was negatively correlated with anhedonia and emptiness as supported in the 2022 study by Whitton & Pizzagalli [20].

The studies by Craske et al. [21] and Li et al. [22] sheds light into the fact that the loss of hope is a significant predictor of increased feelings of emptiness and distress that can lead to anhedonia. These findings support our notion that anhedonia negatively predicts hope, suggesting that as anhedonia increased, hope decreased. This relationship highlighted the detrimental impact of anhedonia on the psychological state of hope in schizophrenia patients.

The regression analysis further revealed hope negatively predicted emptiness. This suggested that higher levels of hope are associated with lower levels of emptiness among schizophrenia patients. The finding highlighted that hope plays a crucial role in mitigating feelings of emptiness, which is essential for the emotional well-being of these patients. Prior research in-line with our findings also shows that hope negatively predicts feelings of emptiness in schizophrenic patients [23]. For example, a study [24] focusing on the quality of life and the emotional well-being of individuals with schizophrenia found that higher levels of hope were significantly associated with lower levels of emptiness and psychological distress. This suggests that fostering hope can be an important therapeutic target for reducing feelings of emptiness in these patients

The moderation analysis shows that hope significantly moderates the relationship between anhedonia and emptiness. The interaction effect indicates that the negative impact of anhedonia on emptiness is reduced when levels of hope are higher. This finding aligns with previous research demonstrating the moderating role of hope in psychological contexts. For instance, Karababa [25] found that hope moderated the relationship between maladaptive perfectionism and anxiety, suggesting hope's protective role. Similarly, Jiang et al. [26] highlighted hope's buffering effect on the association between depressive symptoms and self-injury, further supporting hope's moderating influence on negative psychological outcomes. These studies have been discussed because a specific study directly stating that hope significantly moderates the relationship between anhedonia and emptiness is lacking, the concept is supported in related literature on the psychological impacts of hope.

The findings are also in-line with a prior research that suggested anhedonia automatically declines when Hope goes high in a schizophrenic patient [2]. Because they can only feel hopeful about their lives, well-being, and future because of hope. Hope acts as a moderator, causing a patient to develop an interest in many things, start to enjoy life, and comprehend the significance of their health.

Studies have shown that people with psychological illnesses such as schizophrenia have far lower quality of life. Age, the severity of psychopathology, the frequency of psychiatric hospitalizations, the co-occurring conditions of depression, social anxiety, avoidance, poor or nonexistent partnerships, low education, unemployment, and low self-esteem are just a few of the numerous variables that may have a detrimental impact on the quality of life for psychiatric patients. Over the past few years, the emphasis has shifted to the softer elements that affect life quality that is hope.. Hope is associated with aspirations for one's life and the belief that one's own efforts will pay off [27].

The analysis of gender differences revealed significant disparities in the study variables. Women reported higher levels of emptiness and anhedonia compared to men, indicating that female patients may be more susceptible to these negative psychological states. Conversely, men reported higher levels of hope suggesting that they may possess more resilient psychological resources in the context of schizophrenia. Several studies support these findings. For instance, a review of gender differences in schizophrenia highlighted that women generally experience a higher severity of affective symptoms, including feelings of emptiness and anhedonia, compared to men [28, 29]. Additionally, research suggests that men may

demonstrate greater resilience and higher levels of hope, which can serve as a protective factor against the negative psychological states associated with schizophrenia[29].

A few limitations to this study however, were the effect of participants' general characteristics on recovery had not been sufficiently studied. Further studies are required to examine the ways in which general characteristics of individuals with schizophrenia, such as gender, marital status, educational attainment, and employment status, impact their prospects for recovery. Furthermore, the researchers gathered information from schizophrenic patients who were admitted to psychiatric hospitals in Multan. As a result, generalizing these conclusions to other populations has been limited. One impediment to such research, according to the researchers, is the apparent lack of measuring tool specifically designed to evaluate subjective emptiness regardless of schizophrenia.

5.1. Implications

Hope is most likely a negative predictor of emptiness in schizophrenic patients. Emptiness is a severe diagnostic and therapeutic symptom that has been linked to a wide range of psychological issues, significant psychological deficit and its clinical importance; there has been little focused research on the identification, causes, and therapeutic interventions of emptiness. Hope concerns the future, and higher purpose, along with standard of living, are main tenets of the recovery from mental illness phase. Evidently, people with mental illnesses who seem to have an elevated hopefulness do have good living quality. Implementing hope by acquiring it is an essential component of the healing process. On the other side, those who are coping with severe mental illness tend to have a lower quality of life when they lack hope. Emptiness is a strong indicator of psychological well-being in those with schizophrenia, including having a sense of direction in life. As predicted, this study found a negative correlation between hope and emptiness. As a result, researchers must investigate positive elements that contribute to hope while decreasing anhedonia and emptiness. Health professionals working together in the community need to step up their efforts to help individuals with schizophrenia feel less empty and more hopeful.

The impact of hope on emptiness differs from patient to patient, but researchers have noticed a beneficial impact of hope on emptiness as it has been suggested that hope is a key enabler of healing and rehabilitation from mental illness. Because patients who feel hopeless have no interest in anything or anything that makes them happy, hope has been used as a moderator in this research and has been used as a positive outcome of patients' emptiness. Therefore, a patient's level of emptiness will diminish as their hope level increases. People with emptiness need hope, and many interventions have been used in psychiatric settings to foster it [30].

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