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Understanding Empathy and Mental Health

Jamie Choate
Psychology; Neuroscience
The University of North Carolina at Asheville
One University Heights
Asheville, North Carolina 28804 USA

Faculty Advisor: Dr. Laura Jones

Abstract

As empathy becomes a more debated topic within the literature, many authors have been exploring that variables may affect the human empathic experience. Recent research has provided a better understanding of how mental health disorder symptoms may impact empathic experience. This study examines correlations between the severity of mental health symptoms and an individual's experiences with empathy. Forty nine individuals completed assessments determining current symptoms of mental health disorders (i.e., depression, posttraumatic stress disorder (PTSD), and psychosis) and empathic concern for others. It was expected that participants scoring high on assessments of PTSD, depression, and negative symptoms of psychosis would experience lower levels of empathic feelings towards others. The Empathic Experience Scale (EES) was used to determine levels of empathy, using a two-factor model, where one dimension is the act of vicariously experiencing someone's feelings and the other is being able to intuitively understand what the other person is going through. Social desirability was accounted for through the addition of the Marlowe Crowne Social Desirability Scale (MC-SDS). Survey data was collected and analyzed using SPSS 27.0 software. Results found correlations between mental health symptom severity and empathic responsiveness. Difficulty with empathic concern has been related to impaired social functioning, which could further exacerbate individuals' symptoms.

1. Introduction

1.1 Empathy

Empathy is the human ability to sense and vicariously experience another person's emotions.[1] Such experiences have been found to be a foundation of social experience.[2] In an act of empathy, an individual can create a mirror of another human's emotions without directly taking on their feelings and react in a manner conducive to social engagement.[3] This is critical to our lives, as it helps us to work more effectively in groups, get along with others, and thrive as a community. Incorporating empathy into everyday life is important for the creation of healthy relationships, which require a great deal of nurturing, kindness, and understanding. However, empathic experience is very complex, and there are multiple ways in which someone can experience and subsequently show empathy. According to most models of empathy, empathy embodies three core components, "1) recognizing emotions in facial expressions, speech or behavior 2) effectively responding to emotional states of others (affective empathy), and 3) taking over the perspective of another person, though the distinction between self and other remains intact (cognitive empathy)".[4] These components are used to assess the way individuals experience empathy towards others.

Many studies use this multifaceted model of empathy to examine how mental health disorders may impact empathic experience. Experiences of empathy first require an individual to understand the concept of empathizing and have an appreciation of self versus other. This allows the individual to internalize the feeling that the other person may be experiencing.[5] It requires the presence of a sophisticated Theory of Mind (ToM), which is the ability to intuitively

understand another person and their thoughts.[6] Being able to appropriately understand another individual's emotions requires certain levels of social competence. Poor social skills have been correlated with decreased empathic response.[7] Previous studies have shown decreased empathic concern in specific mental health disorders as well, such as Posttraumatic Stress Disorder (PTSD), depression, and psychosis.[8]

1.2 Empathic Abilities in Mental Health Disorders

In recent research, many scientific studies have shown a correlation between mental health disorders and difficulties with perceiving or expressing empathy.[9] Researchers have found that individuals struggling with depression, PTSD, and psychosis experience decreased levels of empathy. Past studies speculate that certain aspects of these disorders such as social dysfunction, lack of energy, or trouble understanding social cues may contribute to such challenges.[10] Gaining further knowledge of empathic concern in individuals with these symptoms can help to further improve treatment in sociobehavioral aspects of these disorders.

1.2.1 major depressive disorder (MDD)

In major depressive disorder (MDD), the ability to empathize is affected by defining features of MDD, such as anhedonia and overall depressed mood.[11] There have been several theoretical reasons for this change in empathy in individuals who struggle with depression. Lack of behavioral empathic response is hypothesized to be due to decreased emotional recognition. One concept suggests that depressed individuals are more likely to be attentive towards negative emotions in others, this being called 'negativity bias'. This includes negative responses to even happy faces, deeming them as less happy or more sad than compared to health control groups, it is also characterized by the tendency to interpret all stimuli negatively.[12]

Alternatively, there are theories of attentional bias, where individuals will avoid paying attention to recognition of sad or happy faces. In other words, depressed individuals seem to have impaired functioning in decoding the mental state of others. Explained in another way, this is the 'emotional context insensitivity (ECI)', which provides evolutionary reasons for this action in depressed individuals. The evolutionary explanation says that action in a situation that has not previously been effective is categorized as a waste of time and resources. Lack of empathic concern in depressed individuals then can be described as a defensive state, whereby a lack of energy promotes individuals to participate in environmental disengagement, given past experiences of showing empathy have been ineffective. Disengaging from others may manifest into not recognizing general emotional displays without higher complexity stimuli involved, such as facial expressions, speech, and prosody that correspond to sadness.[13]

Further research has shown that emotion is a multifaceted construct, where in physiological testing, depressed individuals were showing autonomic response to emotion but flattened emotional behavior. This may be explained by the 'limbic-cortical dysregulation' model, where depressed individuals tend to show hyper-activity in limbic regions, which are correlated with emotional processing and physiological response to arousal. There is also a trend of hypo-activity in the prefrontal cortex, also associated with emotion processing, although involving emotional decision making and reactivity.[14] As such, it would be expected that individuals may experience increased difficulty in emotion processing and empathy as symptom severity of depression increases.

1.2.2 posttraumatic stress disorder (PTSD)

Posttraumatic Stress Disorder (PTSD) has been shown to impair feelings of intimacy and connectedness to others and themselves. PTSD can be split into several diagnostic criteria, including reexperiencing, avoidance, negative alterations in mood and cognitions, and hyperarousal. The Posttraumatic Stress Disorder Checklist for the DSM-5 (PCL-5) is an assessment that measures an individual's symptom severity in criteria characterized by the DSM-5. Those with PTSD may have difficulty forming and maintaining close interpersonal connections with others. This disconnectedness is theorized to be a part of an unconscious act of preventing more overwhelming experiences and may impact particular aspects of one's empathic ability.[15] Patients with PTSD showed impairments in implicit and explicit displays of empathy, although shared similar responses to the controls in cognitive empathy.

There are networks in the brain that directly relate to the multidimensional nature of empathy. "The neural network associated with empathic functioning supports this multidimensional model and includes cognitive (e.g., dorsolateral prefrontal cortex), memory (e.g., hippocampus; temporal poles; anterior and posterior cingulate), and affective systems (e.g., amygdala; orbitofrontal and medial frontal cortices)".[16] When an individual experiences trauma, these networks may become altered and empathic functioning may be compromised as a result. In a previous study done on

the empathic abilities of adult women diagnosed with PTSD from experienced childhood trauma (Parlar et. al. 2014) it was found that Empathic Concern was significantly less than that of the control group.[17] However, this same study showed that although individuals with PTSD struggled with empathic concern, the personal distress felt when learning of others negative experiences was much higher in those with PTSD than in controls.

1.2.3 psychosis/schizophrenia

Disorders involving psychosis, specifically schizophrenia, have shown the most significant impairment in empathic performance.[18] Multiple studies have used the three components of empathy; emotion recognition, perspective taking, and affective responsiveness, to test the emotional capacity of those with psychosis. A study showed schizophrenia patients were found to have a general emotional deficit.[19] Those diagnosed with schizophrenia showed a particular decrease in emotional perspective taking and affective responsiveness, when compared to other disorders.[20] Some of the deficits shown in emotional processing may be due to problems with social functioning. Past studies have shown that reduced facial recognition has been associated with decreased social competence, social interest, and hygiene.[21] A typical response to show someone else that their emotions are understood is mirroring through physiological response. Sharing physiological states with another person who is having an emotional response is difficult for those with schizophrenia as well.

Similarly, emotional resonance, the act of sharing a deep emotional harmony with another person, is hard for those showing negative symptoms of psychosis. Past studies have used videos displaying acts of resonance, such as contagious laughing and yawning, to examine the reaction of patients with schizophrenia. Patients showed significantly lower rates of contagion compared to healthy controls, which further correlated to social dysfunction.[22] Further studies of schizophrenia find impairment in domains of cognitive functioning as well, [23] which similarly may influence social functioning and affect experiences of empathy.

Understanding relationships between symptoms of schizophrenia and empathic concern can provide researchers with more knowledge on the social interactions and relationships individuals struggling with psychosis may have. We expect that positive symptoms of psychosis will be relatively low, given the population of this study being individuals who have not been diagnosed with schizophrenia, while negative symptoms may be somewhat more prominent. Overall, however, increases in both positive and negative symptoms of psychosis are expected to be inversely related to empathy. Having this knowledge may lead to enhanced treatment for individuals who have schizophrenia.

1.3 Present Study

The current study sought to understand the correlation between those who experience symptoms of mental health disorders (i.e. depression, PTSD, and psychosis) and their current levels of empathic experience. Previous studies showed a decrease in empathy in those struggling with a mental health disorder, which led us to our hypothesis that increasing severity of symptoms in depression, PTSD, and psychosis, will lead to struggles with empathic ability. This study is being performed to increase knowledge of the way that empathy, as measured by the two factor Empathic Experiences Scale, changes and is being experienced among individuals with mental health struggles. Aspects of each mental health struggle may relate differently to each dimension of empathy, although we hypothesize that levels of empathy in both categories will be negatively correlated with increasing symptom severity. We expect increasing symptoms of depression, PTSD (i.e. hyperarousal, avoidance, negative alterations, and reexperiencing) to be negatively correlated with levels of empathy reported. The Marlowe-Crowne Social Desirability Scale-Short Form (MC-SF) was incorporated to statistically control for any influence social desirability may have on the way an individual provides answers during assessments, where individuals are giving answers only to appear more socially desirable.

2. Methods

2.1 Participants

Sixty four individuals were recruited via volunteer sampling to participate in this study. Participants were excluded from the study only if they were below the age of 18, as parental consent would be required, and empathic understanding is variable in children and young adults. Of those individuals, 49 participants completed all survey questions and were included in final analyses. Individuals ranged in age from 19 to 48, with a mean age of 26.

Participants were mostly female, with a total of 81.3% being female and 10.9% male. Participants varied in ethnicity, with a majority identifying as White/Caucasian.

2.2 Materials

2.2.1demographics

Demographic questions were asked to gather related background characteristics for each participant. Questions were created based on variables that have been shown to impact empathic response. These questions included; age, sex, gender, ethnicity, highest level of education, and medications being taken for any current diagnosed mental health disorder. Participants were asked to list any current medication being taken and to provide a further understanding on how these factors may influence empathy.

2.2.2 empathic experience scale (EES)

Previous studies have explored validity of empathy scales, giving rise to the creation of the Empathic Experience Scale (EES). The EES was based on the bidimensional nature of empathy as having two core components. "Corresponding to the dichotomy between perceptual and cognitive levels, two constructs can be distinguished: vicariously experiencing and intuitively understanding others' emotions".[24] The questions in this assessment are designed to exhibit how the participant regularly feels when encountering another person's emotions. This 30 item question is in a Likert scale format, with answers listed as follows: (1) Not at all true, (2) Slightly true, (3) Somewhat true, (4) Very true, (5) Completely true. Participants are asked not to linger on a single question too much, but to answer each question as genuinely as they can. When the assessment is complete, the researcher sums up odd items scores for 'Vicarious Experience' and even items for 'Intuitive Understanding'. The higher the score for each dimension the more the participant experiences that dimension of empathy. A study done by Innamorati et al. shows that the EES could be 'considered reliable and valid with consistencies of 0.93 and 0.95 for vicarious experience and intuitive understanding, respectively'. The two-factor structure of this scale on empathy shows researchers that vicarious experience of anothers' emotion and being only cognitively aware of the way another may feel, can be assessed as distinct structures.[25] The EES can be further recognized in reliability by its responses being shown to not be significantly affected by social desirability measures, such as the Marlowe-Crowne Social Desirability Scale (MC-SDS).

2.2.2 patient health questionnaire - 9 (PHQ-9)

The Patient Health Questionnaire (PHQ-9) is a self-report measure for detecting changes in signs and symptoms of depression in an individual. This is a short assessment, having only nine questions. These questions inquire about the patient's everyday health in regards to mood, sleeping pattern, energy levels, and concentration. All items consist of the 9 criteria upon which the DSM-IV depressive disorders are based.[26] Answers are in a Likert scale format to determine how often the patient is feeling these symptoms. They are listed as follows: (0) Not at all, (1) Several days, (2) More than half the days, (3) Nearly every day. This score provides the healthcare professional with an understanding of the severity at which the patient may be experiencing depressive symptoms. The validity of the PHQ-9 was established in over 3,000 patients in 8 primary care facilities and 7 obstetrics-gynecology clinics.[27] Although it is much shorter than many other depression assessments, it has been known to be comparable in sensitivity and specificity.[28] By incorporating this assessment into the current experiment, the severity of depression symptoms can be recorded for each individual, and further used to understand its correlation to feelings of empathy.

2.2.3 *posttraumatic stress disorder checklist (PCL-5)*

The Posttraumatic Stress Disorder Checklist (PCL- 5) is a self-report questionnaire that assesses the 20 symptoms of PTSD listed in the DSM-5. In recent years, this assessment has been revised to conform to the DSM's four-factor criteria of posttraumatic stress disorder: 're-experiencing, avoidance, negative alterations in cognition and mood, and increased arousal and reactivity'.[29] Assessment questions are used to explore the severity of each of these symptom clusters. Answers are in a Likert scale format, to obtain an overall and subscale scores reflecting severity of PTSD symptoms an individual may be experiencing. The answers are listed as follows: (0) Not at all, (1) A little bit, (2)

Moderately, (3) Quite a bit, (4) Extremely. Assessment scores were determined through the addition of scores associated with each answer, final score indicates the severity of one's overall PTSD symptom experience. Current likely to benefit from treatment.

2.2.4 the positive and negative symptoms questionnaire (PNS-Q)

The Positive and Negative Symptoms Questionnaire (PNS-Q) is a self-report measure that has been used to determine whether an individual exhibits symptoms of psychosis. There are a total of 68 items, and each item provides the participant with a statement describing different experiences and thoughts that someone may have. Individuals are prompted to answer 'yes' or 'no' to each item, depending on whether or not they relate to the experience described. Both positive and negative symptoms of schizophrenia are examined in this assessment. Positive symptoms are those that add to the individuals experiences in psychosis, and are usually shown through hallucinations, delusions, or repetitive movements. Negative symptoms are those that are reduced from experiences, such as lack of emotion, struggles with coherent thought processing and communication, withdrawal from relationships, and apathy. The assessment was scored by allocating one point to each "yes" response, where negative and positive symptoms were scored separately.

The PNS-Q has been used in many clinical settings to determine information about patients' current mental state, although questions of validity have been raised due to lack of insight from the patient on their current illness. "In other words, a lack of insight is the inability to do self-introspection regarding affect, behavior, and cognition such that you have a discrepancy in how you perceive those three constructs and how others perceive you functioning in those three realms".[30] When an individual does not understand that the things they are thinking and feeling are disordered, it could cause issues in reporting symptoms on a self-report measure. However, the PNS-Q has proven to be functional for assessing symptoms in patients whether they lack insight of their disorder or not. Using this assessment in a study such as this allows researchers to assess psychosis symptoms in participants in relation to empathic experiences.

2.2.5 marlowe–crowne social desirability scale - short form (MC-SF)

The Marlowe-Crowne Social Desirability Scale is a 33 questions self-report assessment used to examine social desirability. Levels of social desirability were assessed through the 13-item short form (MC-SF). There are three short forms available for use in investigating social desirability tendencies in individuals, one of 11, 12, and 13 items. "Comparisons made between the short forms examined in this investigation suggest the 13-item form as a viable substitute for the regular 33-item Marlowe-Crowne scale".[31] The 13-items included in this assessment are answered by the participant deciding whether the statements listed are true or false as it pertains to them. Attempting to be socially desirable may create the tendency for some participants to report answers that would consider them as more socially acceptable, rather than reporting a truthful answer. It is not uncommon for participants' empathic experience scale scores to be invalid due to Socially Desirable Responding (SDR). The MC-SF is scored by assigning each respondent to a score based on their answers to specific questions in the scale. If participants answer "True" to any of the statements 5, 7, 9, 10, and 13, they receive a point, and zero points if they answer "False". Conversely, participants answering "False" to statements 1, 2, 3, 4, 6, 8, 11, and 12 received a point for each. The final score determines the amount the participant is influenced by the necessity to appear socially desirable. Out of all current assessments for social desirability, the Marlowe Crowne has shown to be successful in examining response style tendencies in participants.[32] Implementing this form at the end of all assessments will allow us to control for social desirability in examining the correlations between the aforementioned variables.

2.3 Procedures

This quantitative quasi-experimental study used self-report assessments to form a better understanding of the connection between mental health symptom severity and empathic response for three specific mental health struggles, namely psychosis, PTSD, and depression. Once the final version of the research was approved by the University's Institutional Review Board, participants were recruited using convenience and snowball sampling. Flyers were placed around campus with the words "Want to participate in Empathy and Mental Health Research?". QR code was placed at the bottom of the flyer that could be scanned and the participant was brought directly to the survey. The survey was also placed on the UNCA student portal in a tab where students in the psychology department are allowed to choose research studies in which to participate. Students who participated in the survey were allowed to gain class credit by completing an external form provided by the professor. Additionally, emails were sent to all university department

chairs, and they were all encouraged to share the link with their faculty and students to gain more diverse participation. The link to the survey was also posted on various social media websites, such as Twitter and Facebook.

All assessment responses were entered into Qualtrics to create an online version of the study. The final online survey had a total of 156 questions and took approximately 20 minutes to complete. The first question on the survey asked if the participant read and understood the terms of the informed consent. If an individual answered 'no' to the informed consent section of the survey, they were forwarded to the end of the survey and thanked for their time, where the survey ended.

Following the demographic questions, participants responded to additional assessments in the following order: Empathic Experiences Scale (EES), Patient Health Questionnaire - 9 (PHQ-9), Posttraumatic Stress Disorder Checklist (PCL-5),The Positive and Negative Symptoms Questionnaire (PNS-Q), Marlowe–Crowne Social Desirability Scale - Short Form (MC-SF). The format and wording of the questions from all assessments were precisely copied in order to ensure reliability when computing final data. The collection period for this survey was approximately three weeks long, from the second week of October to November 2. Once data was collected, data was downloaded into SPSS and entered into the statistical software SPSS 27.0. Partial correlations, controlling for Social Desirability, were generated for subscales of empathy and measures of symptom severity for depression, posttraumatic stress disorder, and psychosis. Cases were excluded listwise, meaning that participants who missed any assessment questions were removed from all data analysis and therefore excluded in results.

3. Results

3.1 Demographics

There were a total of 49 participants who fully completed all assessments. Demographic material was recorded by each participant entering their age, sex, level of education, and ethnicity. Individuals ranged in age from 19 to 48, with a mean age of 26. Participants were mostly female, with 10.9% male. Participants varied in ethnicity, although a majority listed themselves as White/Caucasian (76.6%).Table 1 shows more information regarding ethnic differences in the study, with some identifying as Hispanic/Latinx (6.8%), Native American and Black/African (1.6%), and those identifying with an ethnicity that were not listed (6.3%) . Highest level of education was recorded. Most participants noted that they had completed "Some College" (43.8%), while others ranged from a High School Diploma (4.7%) to terminal degrees (1.6%) (e.g., JD, MD, PhD). Individuals taking medication for a diagnosed mental health disorder were recorded, along with the name of the medications they were taking. Results showed that the majority were not taking any medication (64.1%), with just over a quarter of respondents answering "yes" (28.1%). Medications listed for those currently taking medication for a diagnosed mental health disorder included the following: Abilify, Adderall, Citalopram, Cymbalta, Lexapro, and Zoloft. Certain psychotropic medications, such as antidepressants, ADHD medication, and antipsychotics, have been shown to affect the way that an individual may experience empathy.[33] Assessments were used to further determine symptom severity of mental health disorders.

Table 1. Ethnic differences across individuals taking the survey.

Ethnicity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Black/African	1	1.6	1.7	1.7
	Caucasian/White	49	76.6	83.1	84.7
	Hispanic/Latinx	4	6.3	6.8	91.5
	Native American	1	1.6	1.7	93.2
	Other	4	6.3	6.8	100.0
	Total	59	92.2	100.0	

3.2 Internal Consistency Reliability

Prior to using the results of the assessments in statistical analyses, internal consistency reliability was assessed for each scale. All scales in the current study showed high internal consistency reliability, as assessed using Cronbach's Alpha. Cronbach's Alpha, a measure of internal consistency, shows scale reliability and how closely related the items in the assessment are. Internal consistency reliability is important for researchers to ensure that a sufficient number of items have been included to capture the true concept of the assessment.

Table 2: Cronbach's Alpha,Internal Consistency Reliability among assessments involved in this study.

Variable	**No Items**	**Cronbach's Alpha**
PCL-5	20	.94
PHQ-9	9	.89
EES - Vicarious Experiencing	15	.91
EES - Intuitive Understanding	15	.94
PANS-Q - Negative	33	.84
PANS-Q - Positive	35	.87

3.3 Means and Standard Deviations of Scales

3.3.1. empathic experience

The Empathic Experience Scale (EES) was used to determine levels of empathic experience among individuals in a two-factor model. Factors are measured through assessment questions that are produced to determine each participant's severity in empathic concern. The highest score possible for both dimensions was 75, where experiencing empathy for others is prominent in the individuals lifestyle. Data shows that the vicarious experience dimension of empathy is relatively average (M=43.16, SD=12.87). Intuitive understanding results showed higher scores (M=57.16, SD=10.30), as seen in Table 3.

Table 3. Mean and standard deviation scores for involved assessments; including expanded criteria for PTSD and both dimensions of empathy (intuitive understanding and vicarious experience).

Descriptive Statistics

	Mean	Std. Deviation	N
EES_VicariousExp	43.1633	12.87334	49
EES_IntuitiveUnderstand	57.1633	10.30038	49
PANSS_Negative	14.0816	6.41884	49
PANSS_Positive	6.7959	4.31074	49
PHQ_Total	15.4082	7.24258	49
PCL_HyperArousal	10.1837	6.20374	49
PCL_Avoid	3.5306	2.43329	49
PCL_NegAlterations	13.0000	7.52773	49
PCL_ReExp	7.7143	4.74342	49
PCL_Total	34.4286	18.70272	49

3.3.2. posttraumatic stress disorder

Symptoms of Posttraumatic Stress Disorder (PTSD) were measured using the PCL-5. Hyperarousal in subjects (M=10.18, SD= 6.2) was found to be much lower than the maximum score of 20. However, means show that hyperarousal in subjects was slightly higher than the cutoff score of 10. Avoidance was found (M=3.53, SD=2.43) to be much lower than the maximum score of 8 and slightly lower than the cutoff score of 4. Negative alterations have a cutoff score of 14, and a maximum score of 28. Participants were lower than both (M=13.0, SD=7.52). Lastly, the criteria of reexperiencing, has a cutoff score of 12, with a maximum score of 24. Participants showed to be lower than both of those scores (M=7.7, SD=4.74). Overall results showed individuals did have an average score (M=34.43, SD = 18.70), higher than the cutoff for the inclusion criteria used in clinical practice (31-33).

3.3.3 depression

The PHQ was used to further understand the severity of depression symptoms that individuals taking the assessment may have. The total overall mean score for the PHQ (M=15.41, SD=7.24) was just above the threshold for clinically defined moderately severe depression. Symptom severity of depression in this study was significantly and positively correlated with all other assessments.

3.3.4 psychosis

Levels of psychosis were defined by assessment questions relating to positive and negative symptoms of schizophrenia. As predicted, results showed extremely low mean scores for the experience of positive symptoms (M=6.79, SD=4.31). Negative symptoms of psychosis were reported to be higher (M=14.08, SD=6.43). Neither negative or positive symptoms of schizophrenia found using the PANSS were found to surpass the clinical cutoff.

3.4 Correlations Among Variables

Significant correlations were found both between the mental health assessments as well as between some mental health assessments and dimensions of empathy. Correlations show that depression scores (PHQ_Total) were positively correlated with all other mental health assessments, but only with the vicarious experience ($r(44)=0.353$, $p=0.013$) subscale of the EES. The intuitive understanding dimension of empathy was found to have no significant relationship to depression severity scores ($r(44)=0.164$, $p=0.157$). PHQ scores showed a strong positive significant correlation with

the hyperarousal criteria of PTSD (r(44)=0.832, p=0.00) and negative alterations (r(44)=0.737, p=0.00) of mood and cognition. PHQ scores were also positively correlated with severity of symptoms individuals experience shown in the total scores recorded for the PCL assessment (r(44)=0.752), p=0.00). Depression symptoms were also positively correlated with both symptom subsets of psychosis, namely positive symptoms (r(44)=0.479, p=0.01) and negative symptoms (r(44)=0.619, p=0.00). Total scores of the PCL were positively correlated with the vicarious experience (r(44)=0.369, p=0.012) dimension of empathy, but not with intuitive understanding (r(44)=0.251, p=0.092).

Results showed that levels of psychosis were positively correlated with other assessments including PCL scores. Specifically positive symptoms (r(44)=0.538, p=0.00) showed a significantly positive correlation with PCL assessment scores. Additionally, negative symptoms (r(44)=0.641, p=0.00) showed a significant positive correlation to PCL scores. Significantly positive correlations were also found among positive symptoms of psychosis and particular criteria for PTSD, such as negative alterations (r(44)=0.50, p=0.00), and hyperarousal (r(44)=0.573, p=0.00). Negative symptoms showed similar results, where PANSS negative scores were significantly positively correlated to negative alterations in PTSD (r(44)=0.695, p=0.00), and hyperarousal (r(44)=0.565, p=0.00). Final scores of the PANSS showed no significant correlation to either dimension of empathy.

The MC-SF assessment scores were used as a control variable to understand the relationship that social desirability has with the final scores of all assessments. Table 3 shows correlations that have been controlled for social desirability, using responses to the MC-SF.

Table 4. Partial correlations between assessment total and subscores, controlling for social desirability, as measured by the Marlowe-Crowne Social Desirability Scale-Short Form (MC-SF).

Correlations

Control Variables			PCL_Total	PCL_ReExp	PCL_Avoid	PCL_NegAlterations	PCL_HyperArousal	EES_VicariousExp	EES_IntuitiveUnderstand	PHQ_Total	PANSS_Positive	PANSS_Negative
Marlowe_Total	PCL_Total	Correlation	1.000	.766	.749	.929	.897	.369	.251	.752	.538	.641
		Significance (2-tailed)	.	.000	.000	.000	.000	.012	.092	.000	.000	.000
		df	0	44	44	44	44	44	44	44	44	44
	PCL_ReExp	Correlation	.766	1.000	.543	.548	.587	.219	.160	.425	.341	.406
		Significance (2-tailed)	.000	.	.000	.000	.000	.144	.287	.003	.020	.005
		df	44	0	44	44	44	44	44	44	44	44
	PCL_Avoid	Correlation	.749	.543	1.000	.676	.527	.129	.177	.499	.325	.367
		Significance (2-tailed)	.000	.000	.	.000	.000	.395	.238	.000	.028	.012
		df	44	44	0	44	44	44	44	44	44	44
	PCL_NegAlterations	Correlation	.929	.548	.676	1.000	.794	.384	.174	.737	.500	.695
		Significance (2-tailed)	.000	.000	.000	.	.000	.008	.247	.000	.000	.000
		df	44	44	44	0	44	44	44	44	44	44
	PCL_HyperArousal	Correlation	.897	.587	.527	.794	1.000	.395	.331	.772	.573	.565
		Significance (2-tailed)	.000	.000	.000	.000	.	.007	.025	.000	.000	.000
		df	44	44	44	44	0	44	44	44	44	44
	EES_VicariousExp	Correlation	.369	.219	.129	.384	.395	1.000	.445	.365	.071	.091
		Significance (2-tailed)	.012	.144	.395	.008	.007	.	.002	.013	.639	.547
		df	44	44	44	44	44	0	44	44	44	44
	EES_IntuitiveUnderstand	Correlation	.251	.160	.177	.174	.331	.445	1.000	.212	.027	-.131
		Significance (2-tailed)	.092	.287	.238	.247	.025	.002	.	.157	.858	.386
		df	44	44	44	44	44	44	0	44	44	44
	PHQ_Total	Correlation	.752	.425	.499	.737	.772	.365	.212	1.000	.479	.619
		Significance (2-tailed)	.000	.003	.000	.000	.000	.013	.157	.	.001	.000
		df	44	44	44	44	44	44	44	0	44	44
	PANSS_Positive	Correlation	.538	.341	.325	.500	.573	.071	.027	.479	1.000	.654
		Significance (2-tailed)	.000	.020	.028	.000	.000	.639	.858	.001	.	.000
		df	44	44	44	44	44	44	44	44	0	44
	PANSS_Negative	Correlation	.641	.406	.367	.695	.565	.091	-.131	.619	.654	1.000
		Significance (2-tailed)	.000	.005	.012	.000	.000	.547	.386	.000	.000	.
		df	44	44	44	44	44	44	44	44	44	0

4. Discussion

The present study investigated the relationship between symptom severity of depression, PTSD, schizophrenia, and empathic experience. This included the two dimensions of empathy used in the EES, vicarious experience and intuitive understanding. Results showed that one of the two factors was significantly correlated with other assessment scores. Vicarious experience resulted in significant positive correlations with PTSD and depression. The intuitive understanding dimension of empathy showed no significant correlations to any other assessments.

4.1 Empathic Ability in PTSD symptoms

Using the Posttraumatic Stress Disorder Checklist-Civilian Version (PCL-5) for examining individual PTSD symptoms provided results on the relationship with empathy. Overall, participants showed symptom severity for PTSD that was below the clinical threshold for the overall score and all subscales except hyperarousal. Scores for hyperarousal were only slightly higher than the clinical cutoff score. During the time this study was conducted, individuals may have been displaying increased hyperarousal due to current external events taking place in the country. Hyperarousal ($r(44)=0.01$, $p=0.84$) and negative alterations ($r(44)=0.384$, $p=0.08$) demonstrated significant positive correlations with the vicarious experience dimension of empathy. These findings are contrary to our original hypothesis, where disengagement causes lack of empathy in those with PTSD. In previous studies, traumatic events in childhood are shown to be related to increased feelings of empathy in the future.[34] Past traumatic events are associated with higher levels of attention to negative environmental stimuli, causing hyperarousal. As found in a previous study, Parlar, et al. found increased awareness of negative emotions being displayed in others, causing higher levels of hyperarousal and vicarious experience. Results in this study aligned with previous the finding of an increase in hyperarousal and vicarious experience during displays of empathy from individuals with higher symptoms of PTSD, by Parlar, et al. "This increase in awareness could improve the ability to recognize, understand, and react appropriately to these states in others, in comparison to individuals who have not had a traumatic experience".[35] People with past traumatic experiences tend to find negative situations related to their trauma more emotionally arousing. They may feel more empathic and impacted by individuals who go through similar traumatic conditions. Understanding the extent of others emotional pain, may cause increased feelings of sensibility.

4.2 Empathy in Depression

Severity of depression has been negatively correlated with empathic concern among individuals. Total scores found using the Patient Health Questionnaire (PHQ) had a mean of 15.11, noted in clinical settings as moderately severe depression. Contrary to previous studies, this study shows that empathy was increased in only one dimension (vicarious experience) with the severity of disorder symptoms. Increased vicarious experience was positively correlated with increasing total scores in the Patient Health Questionnaire (PHQ) ($r(44)=0.01$, $p=0.353$). Contrary to our hypothesis, vicariously experiencing another individual's feelings was increased with the increase of depression symptom severity. One previous study suggests that this may be due to a type of interpersonal guilt, where those who are experiencing more severe symptoms of depression may feel guilty for the emotional experience of another person.[36] This guilty feeling is usually surrounded with negative implications the individual may have about themselves, and how they may be causing issues in the lives of others. Those with mood disorders, like depression, show functional and structural changes in neural circuits associated with empathic response[37], however they are more likely to worry about how their actions are making others feel.

Conflicting with our original hypothesis, the correlation between overall PHQ score total and the intuitive understanding dimension of empathy was not significant. The intuitive understanding dimension of empathy requires individuals to pay attention to the feelings of others and understand those feelings without their evident display. According to previous studies examining the relationship between depression and intuitive understanding, individuals experiencing symptoms of depression may be exhibiting 'emotional context insensitivity' (ECI). This theory suggests that those with increased symptoms of depression may become increasingly disengaged with their environment and tend to exhibit decreased reactivity to emotional stimuli.[38] Our study showed a very weak positive correlation, displaying that severity of depression does not significantly influence intuitive understanding in individuals. However, vicarious experience was significantly and positively correlated with higher scores on the PHQ. This finding suggests that increased severity of depression symptoms enhances the vicarious experience of another's emotions.

4.3 Empathy in Psychosis

Patients with symptoms of psychosis or a diagnosis of schizophrenia have deficits in all components of empathy. "Notably, schizophrenia (SZP) shows a particular deficit in emotional perspective taking and affective responsiveness when compared to both other clinical samples".[39] Emotional perspective taking is defined in this previous study as the ability to quickly infer the emotional state of another person without being provided with any prior social context.[40] Effective responsiveness is understood as the ability to put oneself into another person's extrinsic emotional state. Emotional perspective taking and effective responsiveness can be used interchangeably with intuitive understanding

and vicarious experience, respectively. In this study, results showed no significant correlation between either dimension of empathy and negative and positive symptoms of psychosis. The total mean score (M=7.00) provided by participants in positive symptoms was the lowest possible total, meaning that the majority of participants showed little to no positive symptoms of psychosis. Since the population in this study were not being treated for active symptoms of schizophrenia, positive symptoms in psychosis were expected to be quite low. As shown in Table 3, positive and negative symptoms were found in this questionnaire to be minimal, with mean scores of 14.45 and 6.79 respectively. Since schizophrenia symptoms were so low, and there was relatively little variation in scores, we expected there to be minimal interaction between empathy and schizophrenia symptom variables. Further studies should look into populations of patients being treated for schizophrenia, to understand more on their levels of empathic concern.

4.4 Social Desirability influence on Empathy Results

The Marlowe Crowne Social Desirability- Short Form (MC-SF) was used to determine whether empathic ability scores were being influenced by participants wanting to appear socially desirable. Controlling for social desirability did not impact the significance of any correlations. The resulting partial correlations showed the same pattern of correlations and significance across all variables.

5. Limitations

There are a number of limitations in this study that may have impacted both findings and generalizability. The entirety of the assessments used in this study were based on self-report, potentially causing exaggerated answers from respondents. Sample size may influence overall scores, and future studies should attempt to examine more participants to improve generalizability. Findings suggest that empathic experience, specifically in the intuitive understanding dimension, did not correlate with other assessments. This could be due to the population being studied, where not all participants are diagnosed with a mental health disorder. The varying factor structure of the EES may have influenced the results, as it contains a two-dimensional model of empathy rather than the traditional three-factor model. Future studies should further explore individuals with clinically significant levels of mental health symptom severity, and thus clinical diagnoses.

The population of individuals participating in this study was majority female. Women have been shown in several previous studies to be higher in levels of empathy, the majority of participants in this study identified as female. There were few males or individuals who identified as nonbinary, which discouraged further conclusions on the difference between sex in aspects of empathy. Further studies should inquire about the differences between sex and empathic concern in relation to mental health struggles.

During the completion of this study, the world was experiencing the painful impact of an international pandemic. The United States was undergoing a transition in governmental offices, a specifically crucial election, which evoked an exceptional amount of stress on American citizens. The assessments inquired about mental health disorder symptoms, which may be affected by the current climate of the world. Hyperarousal was a criteria of PTSD that had scores that were slightly higher than the clinically significant cutoff. Participants in this study may be currently experiencing this symptom due to current world issues. PHQ scores had a mean score (M=15.11) that represents moderately severe levels of depression. Higher levels of depression may have been influenced by the current climate of the world as well.

6. Conclusion

Contrary to popular findings that suggest empathy is reduced when an individual is experiencing symptoms of a mental health disorder, our study found increased vicarious experience in higher levels of depression and PTSD subscales (hyperarousal and negative alterations) and overall scores. Individuals struggling with a mental health disorder may experience empathy differently, but evidence is showing that these individuals may exhibit increases in the ability to vicariously experience the emotions of others as the severity of their symptoms increases. This change in empathy may be attributed to feelings of interpersonal guilt in those with depression, while perceptions of themselves create belief that they are causing negative emotions in others. Individuals with symptoms of PTSD showed similar results, where empathy increased with the increase of symptoms. Recent findings suggest the cause of this increase may be due to better understanding of what others are going through. Psychosis symptoms were found to have no significant

correlation to empathic experience; however, there was a negative correlation between intuitive understanding and negative symptoms of psychosis. Our findings suggest a change in the way individuals experience and display empathy in interactions with others. This empathic change is previously recognized as one caused by increased understanding of the negative feelings someone may be experiencing. Observing another human being in emotional pain can cause an individual who has been through that pain before, to feel exceedingly empathic towards that human.[41] The results showed that individuals with mental health disorders fact show increasing empathic feelings towards other people. However, the way in which they experience this empathy may be altered due to past experiences leading to their current mental health disorder. Empathy may also be altered in the way it is shown to others, where in some cases those with a mental health disorder may understand and relate to what another person is feeling, but may not express it out of fear of social interaction.

The experience of empathy forms the basis of social learning and relationships. It is a socially organizing neural system that allows individuals to share feelings with others.[42] Through the use of empathy, individuals connect with one another and create strong relationships that are foundational to the experience of positive emotions. Understanding the way in which those with mental health disorders display empathy can tell us more about social interaction among individuals with disorders. Providing this understanding may lead to further treatment plans and assist with psychotherapy in interpersonal relationships. Maintaining close and positive relationships is important for the development of good mental and physical health. Creation of these relationships for those with severe symptoms of mental illness may lead to improvements in their current mental state. In general, understanding empathy and the way it is affected by specific mental health disorders, can help with furthering research on treatment in interpersonal relationships.

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