

Acute Stress Disorder and Over General Autobiographical Memory: An Experimental Approach

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Abstract

The present study analyzes the causal association between Acute Stress Disorder and Overgeneral Autobiographical Memories. Moreover, the study analyzed the impact of emotionally valence words memory retrieval processes among participants with acute stress disorders. The study used a between subjects randomized experimental design. The participants were randomly assigned to the experimental and control group. The experimental sample for Study 1 included 25 ASD (15 male and 10 female) and 25 healthy controls (20 male and 5 female). Block randomization was used to assign the participants to different treatment blocks. Data collection was done using acute stress disorder scale and assessment of over general autobiographical memories was done using the Autobiographical Memory Test (AMT) The word cues used had an emotional valence and were selected through the AMT instrument. The results showed that scores of participants on acute stress disorder and word cues significantly predicted over general autobiographical memories ($B=.10, p <.01$). It was also found that there were significant differences among the scores of participants with regard to acute stress disorder and exposure emotionally charged word cues. Significant mean differences in the scores were also noted between experimental and control group participants with regard to over general autobiographical memories, specific autobiographical memories and reaction time scores.

Keywords: ASD, over general autobiographical memories (OGMs), words cues,

Introduction

Autobiographical memory is primarily concerned with personal events and episodes from one's life. There are a number of different terms that have been used in an interchangeable manner for the purpose of describing autobiographical memories (Ros et al., 2018). The phenomenon of over-

generality can be viewed as the inability to retrieve specific information from autobiographical memory. The memories recalled are primarily of a general nature and do not contain any specific details about the event being recalled (Harvey et al., 1998). The memories recalled in this condition are of a broad nature and do not target specific details. Studies have shown that when asked to recall specific memories of life, individuals with different forms of psychopathology recall general autobiographical memories (Ehlers, 2010). For example, if an individual is asked to recall a happy event from his or her life, then it is likely he or she will say “when I was on vacation”. This is a typical example of overgenerality in AM retrieval. There is a strong body of research that suggests that there is a close association between mental illness and OGM. However, there are limited studies that have established causal relations between the different forms of mental illness such as acute stress and OGM (Bunnell & Greenhoot, 2017; Gutenbrunner et al., 2017).

There are a number of studies that have explored the relationship between OGM and mental health. It has been established that AMs are effected during the time an individual undergoes a mental health condition (Speer & Delgado, 2017). Moreover, different researches investigating memory problems in individuals with acute stress disorder have conceded mixed results such as overgenerality in memories and poor verbal memory (Feurer et al., 2018). There are some studies that have assessed the relationship between ASD and OGM (Gutenrunner et al., 2017). It has been reported that the reduced ability of recalling specific life events which is defined as overgenerality is a form of protective mechanism which helps individuals with ASD and other psychological disorders from re-experiencing painful life events and emotions (Warne et al., 2018). Systematic reviewing and meta-analytical studies have found no conclusive evidence about the association between ASD and OGM (Ros et al., 2014). Results have shown that ASD might not account for the emergence of OGM in clinical samples. It is critical to understand that ASD alone might not account for the occurrence of overgenerality as suggested by past studies and investigations. For this reason, there is a need for conducting causal investigations for assessing whether ASD leads to the development of OGM (Barry et al., 2018; Lowe, 2009).

The procedure of investigation of traumatic memories in ASD have mainly been retrospective questionnaires and interview assessment, which restricts the ecological validity of the findings (Schomfeld & Ehlers, 2017). However, the studies have not established a causal connection between ASD and OGM (Ros et al., 2018). It is critical to note that the purpose of the study is to assess this gap in literature and to use an experimental approach for establishing a causal connection between ASD and OGM. Thus, the aim of the study is to investigate the causal relationship between Acute Stress Disorder (ASD) and over general autobiographical memories (OGMs) and to identify the impact of emotionally charged word cues on memory retrieval in such participants.

Hypotheses

- ASD is likely to predict the retrieval of OGMs (Overgeneral Autobiographical Memories)

- There would be significant mean differences between experimental and control group participants with regard to retrieval of OGMs
- ASD scores and word cues would significantly predicted OGMs

Methodology

The present study was conducted to find the causal connection between ASD and OGMs. Completely randomized experimental research design was used for assessing OGMs in ASD and non-ASD participants. The sample of 50 participants with the age range of 15-35 years was included in the study. The data of ASD participants (N=25) were collected from Fountain House, Lahore. The Healthy controls (N=25) were university students. Block randomization was used to assign the participants to different treatment blocks.

Inclusion Criteria

Participants who had been diagnosed with ASD had been recruited from an outpatient facility in Lahore. They were contacted at the facility and their consent was taken at the time of recruitment. Also, the criteria was based on selecting those depressive patients who were 20 years or older. Both male and females diagnosed with major depressive disorder were recruited into the study

Assessment Instruments;

- **Acute Stress Disorder Scale** (Bryant, 2018)
A) ASDS is a self-report inventory used for diagnosing acute stress disorder. It is a 19 item measure and is able to target all symptoms in acute stress disorder. The test has been reported to have a good sensitivity (95 %) and specificity (83%) in terms of the identification of ASD. The test-retest reliability of ASDS from 2 to 7 days is strong ($r=.94$) (Bryant, 2018). The score range is from 19 to 95. The cut off score for the diagnosis of this disorder is 56.

B) Autobiographical Memory Test (AMT) (Williams and Broadbent,1986)

The autobiographical memory test has been used to check the OGM. This test has been divided into three conditions; word cues, image cues and olfactory cues.

In word cues, total of 3 positive cue words and 3 negative cue words were used. Positive word cues included: happy, successful and surprised. The negative word cues were angry, lonely and sorry. The words had been selected from the AMT test.

Procedure

Ethical approval had been sought from the Ethical Board of Government College University, Lahore. After approval of university board permission processes were completed from all the authors before using the assessment measures for this study. At the third level, permission was obtained from Fountain House, Lahore. The Post traumatic stress disorder checklist was used to

identify ASD and non-ASD participants. Informed consent was taken by the participants who completed the criteria of the study and explain the purpose of the study. The participants in the experimental and control group were provided with standardized instructions. The experiment was initiated with the researcher informing participants that the experiment was a memory experiment. The word cues were presented using a computerized display through a projector.

Results

Table 1 Diagnostic Status of the Sample

Variable	Frequency	Percentage
Diagnostic Status		
Participants with ASD	25	50 %
Healthy Controls	25	50 %
Gender		
Male	35	70 %
Female	15	30 %

Note: f= frequency, % = percentage

The table shows that half of the participants had ASD (N=25) disorder, while the normal participants were also in the same range. In relevance to gender distribution 70 percent of the participants were male and 30 % were females.

Table 2 Inter-Correlation among ASD scores, Cue Types, Overgeneral Autobiographical Memories, and Specific Autobiographical Memories

Variable	1	2	3	4	5
1.ASD Scores	—	-.10	.63**	-.58**	.53**
2. Word Cues		—	.14	.04	.09
3.Overgeneral AMs			—	-.43**	.17
4.Specific AMs				—	-.51**

Note. **p < .01, *p < .05, AMs=Autobiographical Memories

Pearson Product Moment Correlation was conducted to explore the relationship among ASD scores, cue types, overgeneral autobiographical memories and specific autobiographical memories. The results indicated that there was a high significant relationship between ASD scores and number of overgeneral autobiographical memories ($r = .63$, $p < .01$). The results also showed a significant negative relationship between ASD scores and specific AMs ($r = -.58$, $p < .01$). Also, there was no significant relationship between cue types with specific memories and overgeneral autobiographical memories. However, here was also a significant relationship between specific AMs and overgeneral autobiographical memories ($r = .43$ **, $p < .01$).

Table 3 ASD Scores and Cue Types as a Predictor of Overgeneral Autobiographical Memories

Predictor	B	95 % CI	
		LL	UL
Constant	.09	-2.09	2.28
ASD Scores	.10**	.06	.14
Word Cues	.05**	-.62	1.23
R	.63		
R ²	.40		
F	15.77*		

Note. **p <.01. B=coefficient of regression, LL=Lower Limit, UL=Upper limit, Overgeneral Autobiographical Memories were taken in numbers

Multiple regression analysis was carried out to find the significant predictors of overgeneral autobiographical memories. It was found that ASD scores (B=.10, p <.01) and word cues (B=.05, p <.01) significantly predicted the number of overgeneral autobiographical memories. R² for the overgeneral autobiographical memories model was 40 %. This means that ASD scores explained 40 % variance in the number of overgeneral autobiographical memories. The positive B value indicated that an increase in predictor results one standard deviation change in overgeneral autobiographical memories.

Table 4 Mean Differences on Overgeneral Autobiographical Memories, Specific Autobiographical Memories, Pre-Test ASD Scores and Post Test-ASD scores

Variable	ASD (n=25)		Non-ASD (n=25)		t(48)	p	95 % CI		Cohen's d
	M	SD	M	SD			LL	UL	
Pre-Test Scores on ASD	56.36	16.55	15.44	7.29	11.22	.000	33.58	48.25	3.23
Overgeneral Autobiographical Memories	5.76	3.53	1.72	1.51	5.25	.000	2.49	5.58	1.51
Specific Autobiographical Memories	1.40	1.15	4.96	2.68	-6.09	.000	-2.35	-1.16	-1.75
Post-Test Scores on ASD	38.00	13.87	20.20	6.15	5.86	.000	11.69	13.76	1.69

Note. CI=confidence interval, LL=lower limit, UL=upper limit

Table 4 shows mean differences between ASD and Non-ASD individuals on their scores on ASD, post-test scores on ASD, number of autobiographical memories, number of specific autobiographical memories and reaction time. The results indicated that there was significant mean

difference between ASD and non-ASD participants with respect to pre-test scores on the construct ($t = 11.22$, $p < .01$), post-test scores on ASD ($t = 5.86$, $p < .01$), overgeneral autobiographical memories ($t = 5.24$, $p < .01$) and specific autobiographical memories ($t = -6.01$, $p < .01$). Furthermore, it was found that ASD participants ($M = 56.36$, $SD = 16.71$) scored high on Pre-Test assessment on ASD Scale as compared to non-ASD ($M = 15.44$, $SD = 7.29$). It was also found that ASD participants ($M = 38.00$, $SD = 13.87$) scored high on post-test assessment as compared to healthy controls ($M = 20.20$, $SD = 6.15$). Also, it was determined that ASD participants retrieved more number of overgeneral autobiographical memories ($M = 5.76$, $SD = 3.53$) in comparison to health controls ($M = 1.72$, $SD = 1.51$). In addition, non-ASD (healthy control) participants retrieved more specific autobiographical memories ($M = 4.96$, $SD = 2.68$) in comparison to ASD patients ($M = 1.40$, $SD = 1.15$).

Discussion

The objective of the study was to explore the causal relationship between Acute Stress Disorder (ASD) and over general autobiographical memories (OGM) and to identify the impact of words on the memory retrieval of the participants. The results of the study have also shown that there is a relationship between among ASD scores, word cues, overgeneral OGMs and specific AMs. The results had also shown that ASD and word cues significantly predicted the emergence of OGMS. The experimental manipulations have provided support for the existence of cause and effect relations among these constructs. These findings are consistent with the past literature on this area. Researchers have assessed the relationship between ASD and OGM (Talarowska, Berk, Maes & Galecki, 2016).

It has been reported that the reduced ability of recalling specific life events which is defined as overgenerality is a form of protective mechanism used by individuals with ASD in terms of re-experiencing painful life events (Zheng & Grey, 2018). There is also evidence to show that functional avoidance is a reactive and protective mechanism that is visible in participants experiencing varying forms of psychopathology (Liu et al., 2017).

The results of present study have shown that the phenomenon of overgenerality is dominant in terms of memory retrieval in individuals suffering from acute stress disorder. However, the psychopathology alone does not account for OGMs (Feurer et al., 2018). Their level of emotional regulation and potential influences of cue types cannot be undermined. The impairment in memory retrieval of such participants and the impact of ASD on OGMs can also be understood with the longer reaction time of individuals with ASD as seen in the present study.

The experiment performed in this regard and on the basis of the experimental manipulation and comparison with the control group, it is evident that ASD is the factor that determines overgenerality in individuals suffering from this disorder (Gutenbrunner et al., 2017; Warne et al., 2018). Another major finding was that word cues resulted in the retrieval of a large number of overgeneral autobiographical memories. The results are largely supported in the previous literature on this area (Liu et al., 2017; Zheng & Grey, 2018).

Conclusion

Overgenerality in autobiographical memory is a complex phenomenon. The present research has been effective in establishing that acute stress is a possible cause behind the existence of this phenomenon. The “cause and effect” relations have been established through proper control, randomization and standardization. The study also showed that ASD significantly impairs retrieval of specific autobiographical memories. On the basis of the findings, it can be said that psychopathology is a major cause behind the impairment in the autobiographical memories of participants. The effects span across a number of areas including neurological functioning and attention to cues. As most participants with different psychological disorders took longer to respond, this is another indication that the selective and divided attention in these individuals is impaired. It can also be concluded that the impairment in brain functions is primarily due to the neurochemical effects of disorders on the human brain.

Limitations and Suggestions

- The sample for the study was selected from an outpatient facility. A more diverse sample from different outpatient settings might have led to different results
- The experimental settings in which the participants had been experimented are not natural conditions. fMRI scans would have provided more support for the finding of the study i.e. olfactory cues can trigger long term memory centers in comparison to visual and word cues. Randomization did allow for balancing the differences among participants. However, there would be still some significant differences that could not have been assessed.

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