

Impact of Traumatic Events on Brain, Behavior, and Memory among Young Adults

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Abstract: Trauma can have a significant influence on an individual's psychological functioning, behaviour, emotional control, and memory. It can occur due to many reasons such as accidents, abuse, violence, domestic disputes, natural calamities, bereavement, and other stressful instances. The current research project aims to investigate the effects of traumatic incidents on brain functions, behaviour, and memory in young adults from 18-30 years of age. 100 young adults participated in this study and data was collected using a Structured Questionnaire in the Google Forms. The Life Events Checklist for DSM-5 (LEC-5) was used to identify exposure to potentially traumatic incidents; and, the PTSD Checklist for DSM-5 (PCL-5), Difficulties in Emotion Regulation Scale (DERS), and Everyday Memory Questionnaire (EMQ) were used to assess trauma-related symptoms, emotional regulation problems, and daily memory issues. The demographic data revealed that 39% aged between 18-21 years, 45% 22-25 years, and 16% were between 26-30 years. Females accounted for 73%, males 25%, and 2% chose not to disclose their gender. Trauma symptoms were reported as mild by 30%, moderate by 45%, and severe by 25% of the sample. For the analysis of trauma-related symptoms, 80 qualified and consenting respondents were included, with 48.75% showing few symptoms, 40% moderate and 11.25% high. The results suggest that traumatic experiences could cause problems in emotional regulation, distraction, behaviour, and memory. However, the results are based on self-report data only and must not be construed as demonstrating brain changes nor making a diagnosis of PTSD.

Keywords: Traumatic Events, Brain, Behavior, Memory, PTSD, Emotional Regulation, Young Adults

1. Introduction

Traumatic Events A traumatic event is any event or experience which produces high levels of stress and that may overwhelm a person's ability to cope with normal life situations. Examples include accidents, neglect, violence, war, separation and divorce, sudden loss and other highly stressful situations. The symptoms of trauma can reach beyond the feelings and emotions caused by the incident, and can have an impact on thoughts, feelings, behaviors, concentration, memory and interpersonal relationships.

Trauma has been linked to alterations in the functioning of brain systems that control stress, emotions, and memory. The role of the hippocampus, amygdala, and prefrontal cortex in trauma has been addressed in the scientific literature. Individuals who have been through trauma may experience mental health problems, including anxiety, depression, post-traumatic stress symptoms, emotional challenges, and behavioral changes.

Memory is also an area that can be impacted by traumatic experiences. People with a history of traumatic experiences may find they have intrusive memories (i.e., accidentally remembering details of a situation while trying to focus on something else), trouble concentrating, trouble remembering daily routines or fleeting memories about stressful events.

Behavioral effects can refer to emotional impulsiveness, retreat, relationship problems, attention changes, daily dysfunction, and emotional control problems. No one responds to trauma in quite the same way. Age, previous experience, coping skills, social supports, and vulnerability may shape a trauma response.

Thus, this study aims to investigate how traumatic events influence brain functioning, behavior, and memory in young adults. The current study will specifically look into trauma exposure, trauma symptoms, emotional regulation and everyday memory using standard self-report measures.

2. Research Gap and Rationale

It is well-known that traumatic life experiences can lead to problems with emotion, behavior, cognition, and memory. It is also known that these effects can vary widely among individuals. There is still much to learn about the way in which the experience of trauma affects emotion, memory, attention, and general behavior in the everyday life of young adults.

Research has also explored trauma from different lenses-such as brain studies, PTSD behaviors, childhood trauma, emotional regulation, social behavior, and trauma-based memory. Analyzing these domains can give us a bigger picture of what trauma-experience struggles could look like in an individual's normal life.

This study makes a contribution to this field as it investigates young adults aged 18-30 years, and takes into consideration traumatic experiences in conjunction with trauma-related symptoms, emotion regulation and everyday memory. It employs standardised questionnaires in order to acquire self-report data in the aforementioned domains.

The reason for the study is also connected to how psychological support may be of practical value for an early diagnosis. Psychologists, counsellors, teachers and mental-health practitioners are not all aware of the trauma related issues and knowing something about this may be of help to

psychologists. There is also a discussion about of stigma and getting help.

3. Aim and Objectives

Aim

- The purpose of this research was to learn about how trauma can affect a person's brain, actions, and memory.

Objectives

- To evaluate the impact of traumatic events upon brain functioning, emotion, behavior and memory processing.
- Objective To assess mental health outcomes associated with traumatic life events among young adults.
- To assess PTSD-phenotype symptoms in respondents who have experienced trauma.
- A reason for you to learn more about problems with emotional regulation following a trauma.
- To investigate everyday memory problems of young adult trauma patients.
- To explore the long-term psychological and cognitive sequelae of traumatic events.

4. Review of Literature

Bremner researched traumatic stress and the brain, especially the hippocampus, amygdala, and prefrontal cortex. Literature in the dissertation covers the hippocampus' potential role in memory, the amygdala's potential role in emotion and fear responses, and the prefrontal cortex' potential role in emotional regulation and decision-making. Stress hormones and trauma-related symptoms have also been linked to trauma related stress [1].

Crespo and Fernandez-Lansac described aspects of the memory and narrative of a traumatic event. Their review of the memory of the trauma shows us how tragic memories can be different from normal memories in the way we store and recall them [2]

Cimea explored the impact of childhood trauma on brain development. Childhood abuse or neglect could be linked to problems with emotion, learning, memory and managing emotions. Early intervention was also underscored by the literature [3].

Burke described how exposure to childhood trauma affects long-term functioning with respect to cognition, emotion, behavior, relationships and health. The literature reports that repeated or severe trauma during childhood may have lasting psychological effects and that early intervention may be beneficial.[4]

What kind of impact can trauma have on a student? Frieze looked at the ways in which a student's learning and behavior may be impacted by trauma. Trauma-exposed students may have problems with concentration, memory, organization, as well as their emotions and behavior.[5]

Malizia talked about trauma in kids and teens and outlined how this can affect emotional functioning, concentration, friendships, and social and emotional development. The

literature highlighted the importance of warm relationships and psychological support.[6]

Perveen and Malik conducted research on trauma and social behavior of university students. 200 university students. They studied trauma symptoms and social behavior. The results reported negative correlation between trauma and social behavior and the study showed the importance of trauma-related problems in university students.[7]

Spates reported on the behavioral impacts of trauma on children and youth. Trauma is related to the spectrum of stress responses to trauma, which includes both symptoms of acute stress, such as fear, sleeping problems and problems concentrating, as well as extended psychological and behavioral problems.[8]

Van der Kolk on trauma, memory, and the psychobiology of PTSD. Speech notes to a speech by van der Kolk on trauma, memory, and the psychobiology of PTSD.[9]

Foa and colleagues advanced knowledge on PTSD and traumatic memory and the use of psychological methods to address trauma-related problems. A pioneer in this area, Herman studied trauma and recovery in relationship to emotional regulation, safety, and recovery.[10]

Study of biopsychosocial interactions Kessler studied trauma exposure and psychiatric disorders on long-term mental health outcomes. Pitman examined biological and cognitive aspects of PTSD and trauma. Teicher and Samson studied persistent neurobiological consequences of childhood abuse and neglect.[11]

All in all, the literature suggests that trauma can have an impact on emotion regulation, behavior, attention, memory and psychological functioning. The reviewed literature supports the value of viewing trauma as a multidimensional experience.[12]

5. Method

Research Design

The research design used in this study was a mixture of the descriptive and correlational designs. The descriptive aspect was for the purpose of describing the participants and the trauma experiences and trauma related symptoms they reported. The correlational design was for the purpose of looking at the link between trauma and behavior, emotion, and memory.

Participants and Sampling

100 young adults, ranging in age from 18-30 years old were studied. The population for this study was young people who has experienced potentially traumatic events. The participants filled out the study questionnaire in Google Forms.

Instruments:

Life Events Checklist for DSM-5:

The Life Events Checklist for DSM-5 (LEC-5) was used to identify exposure to potentially traumatic life events. Participants completed a screening measure in the form of the

LEC-5 to identify if they had experienced or witnessed potentially traumatic events.

PTSD Checklist for DSM-5:

The 20-item self-report PTSD symptom scale called the PTSD Checklist for DSM-5 (PCL-5) was used in this study to explore trauma-related symptoms that participants reported.

A The PCL-5 data were interpreted as reflecting trauma symptoms only and not a clinical diagnosis of PTSD.

Difficulties in Emotion Regulation Scale

Difficulties in Emotion Regulation Scale was administered to explore about difficulties faced in understanding, managing and responding to one's own emotions.

Everyday Memory Questionnaire

The Everyday Memory Questionnaire (EMQ) was utilized to analyze common everyday memory problems. The dimensions assessed by the tool included: remembering appointments, forgetting the locations of objects, forgetting to remember conversations and planned actions, loss of concentration, persistent repetition of information and in the day, month and year.

Procedure and Ethics

The secondary data was obtained from a questionnaire displayed on Google Forms. All respondents were provided with all the information about the study that it's academic purpose and gave their consent before starting it. Participant were not coerced in any manner. The researcher assured confidentiality and anonymity to be assured as the data was collected for academic use and that the responses would be used for the research.

Secondary data was collected from books, research papers, journals, thesis reports, psychological reports, and trustworthy sources related to trauma, PTSD, mind, brain, and memory.

Statistical Analysis:

The data was compiled and was subjected to descriptive analysis. Frequencies and percentages described the demographic data and extent of trauma-related symptoms. Results on PTSD-type symptoms, emotional regulation, and everyday memory were discussed in relation to the aims of the study and in reference to prior research.

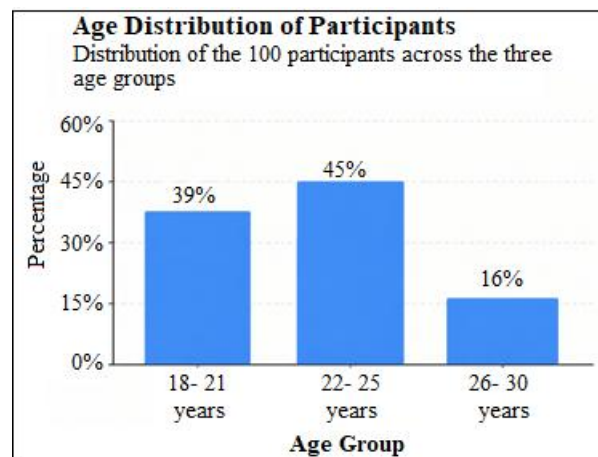
6. Results

Age Distribution:

There were 100 respondents in the survey (39%) belonged to the age category 18-21 years of age, 45% belonged to the age category 22-25 years of age and 16% belonged to the age category 26-30 years of age.

Table 1: Age Distribution of Participants

Age Group	Frequency	Percentage
18-21 years	39	39%
22-25 years	45	45%
26-30 years	16	16%
Total	100	100%

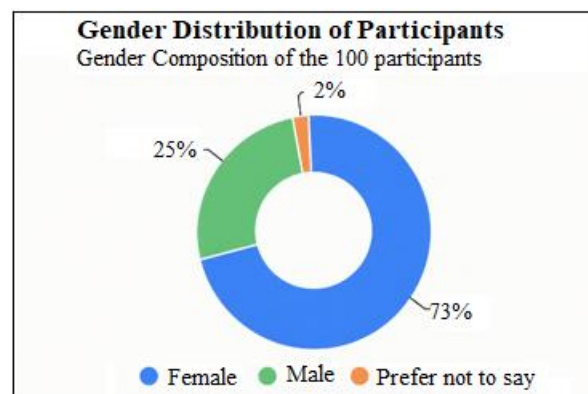


Gender Distribution:

Gender distribution indicated that: 73 (73%) female and 25 (25%) male; 2 (2%) did not wish to indicate gender.

Table 2: Gender Distribution of Participants

Gender	Frequency	Percentage
Female	73	73%
Male	25	25%
Prefer not to say	2	2%
Total	100	100%

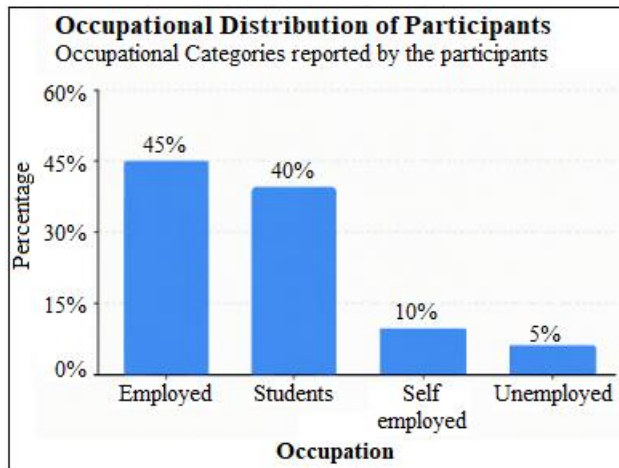


Occupational Distribution:

The occupational distribution indicated that 45% of the participants had a job, 40% of the participants were students, 10% of the participants were self-employed and 5% of the participants were unemployed.

Table 3: Occupational Distribution

Occupation	Percentage
Employed	45%
Student	40%
Self-employed	10%
Unemployed	5%



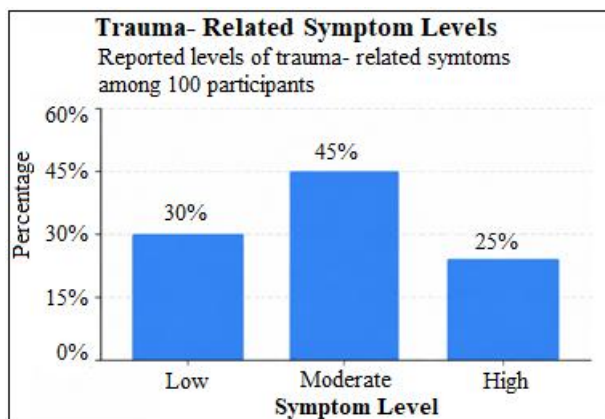
Trauma-Related Symptom Levels:

The results indicated that 30% of the participants reported low trauma-related symptoms, 45% of the participants reported moderate trauma-related symptoms and 25% of the participants reported high trauma-related symptoms.

Table 4: Trauma-Related Symptom Levels

Symptom Level	Frequency	Percentage
Low	30	30%
Moderate	45	45%
High	25	25%
Total	100	100%

The group with the most people was the moderate category. There were low, moderate, and high levels which mean that the participants were reporting various amounts of trauma symptoms.



PTSD-Type Symptoms:

For PTSD-type symptom analysis, 80 candidates and consenting respondents were included.

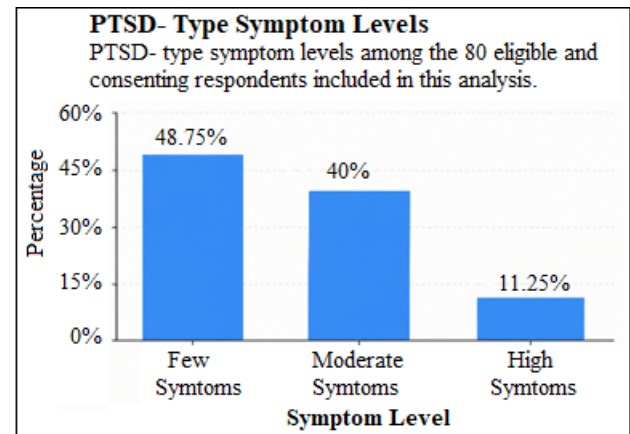
Among these participants:

48.75% reported few symptoms, 40% reported moderate symptoms, 11.25% reported high symptoms.

If expressed as a percentage per 100 people tested those values were roughly 49%, 40% and 11%.

The results indicate that there appears to be differences in trauma-related symptoms across participants. It is important to remember that these scores on the questionnaire should not be viewed as a clinical diagnosis of Post Traumatic Stress

Disorder (PTSD). They are the self-reported trauma-related symptoms from the questionnaire.



7. Discussion

The current study investigated traumatic events in young adults, and looked at their relation with trauma-related symptoms, emotional regulation, behavior, and everyday memory.

The demographic results revealed the participants were spread across the 18-30 year age range, with the largest proportion falling within the 22-25 years range. Females constituted the largest proportion of the sample. The occupational spread revealed that the sample included employed, student, self-employed and unemployed.

The results of trauma-related symptoms revealed low, moderate and high. The largest group was the medium level. The way the participants cope, pay attention to, and have emotional reactions to trauma, social support and how individual experience trauma will likely to be different. It is important to note that trauma affects one individual differently.

There was also differential severity in the PTSD-type symptom results. Out of 80 willing and eligible respondents with data analyzed, 48.75% had few symptoms, 40% had moderate symptoms, and 11.25% had high symptoms. While the results are indicative of differences in the level of trauma related symptoms in the study population, they are not indicative of a PTSD diagnosis because the current study used self-report measures.

Results from emotional regulation showed that participants had problems in feeling or expressing emotions, as well as stress-related difficulties. Themes identified were those of feeling/emotional responding, impulsivity, withdrawal, attention, communication, and everyday functioning. This finding is in line with the general literature review in the dissertation, which states that emotional regulation is one such area impacted by trauma.

Another significant subject investigated was everyday memory. Reported problems included appointments, places, conversations, word of mouth, concentrating, repeating oneself and recent or old information. These problems could

be due to problems with attention and concentration as well as memory.

Thus, the results favor a multidimensional model of trauma in which emotional reactions, attention, behavior, and memory potentially interact. However, in the present study, the observed changes in brain structures and functions cannot be attributed to prior trauma.

8. Psychological and Clinical Implications

The implications of the results are potentially both psychological and practical.

- Screening at the beginning of treatment might assist in detecting a person who experiences more symptoms of trauma.
- Psychotherapy and support There is some evidence that psychological counselling and support may be helpful in people who have problems after a traumatic event.
- Both emotional-regulation approaches can benefit people in the way they experience and handle challenging emotions.
- Strategies to help memory and concentration may benefit those who have challenges with memory in daily life.
- The effectiveness of psychoeducation could be: Increased awareness of what impact trauma may have for people.
- Provide sources of support from family, school and work which might motivate a person to access the help they need.

These considerations must be given within the scope of this study as the results were produced through the use of questionnaire-based self-reporting.

9. Limitations

The study has several limitations.

- The sample size of 100 prevents the results from being accurately generalised.
- The study used self-report questionnaires and this could be subject to recall bias, interpretation bias, social desirability bias or response bias.
- Can be used to establish correlation or association, not causation.
- Individuals with restricted access to technology/internet may not participate in data collection via Google Forms.
- The traumatic events were obtained from self-report and were not validated externally.
- No brain imaging or direct neurological examination was performed and brain functioning was not objectively measured.
- The presence of symptoms of the PTSD type is not indicative of a clinical diagnosis.

10. Recommendations and Future Research

Future studies should try to use bigger and more heterogeneous samples to increase the generalizability of results.

Trauma processes that change over time, or "meta-memory," could also be studied using longitudinal designs.

For future research, administer standardized clinical interviews and neuropsychological tests, in addition to self-report questionnaires.

Investigate the impact of social support, coping mechanisms, emotional control, and individual variation in response to traumatic experiences.

Additional studies might explore how trauma connects to particular elements of attention, memory, and emotional processing.

In the future, researchers can explore the impact of various forms of traumatic experiences and analyze how different trauma types, quantities and timing relates to various mental health outcomes.

11. Conclusion

This study investigated how experiencing traumatic events affects brain functioning, behavior, and memory in young adults (aged 18-30). Participants showed varying levels of trauma-related symptoms, with 30% reporting low levels, 45% moderate levels, and 25% high levels of symptoms.

PTSD a type- symptoms There were 80 eligible participants who consented for PTSD-type symptoms analysis. For this analysis, 39 had few PTSD-type symptoms (48.75%), 32 had moderate and 9 had many symptoms (40% and 11.25%, respectively). This shows that there is variation in trauma-related symptoms, but these should not be interpreted as being clinical PTSD.

Researchers also found some limitations in emotional regulation, attention, behavior, and everyday memory. According to the participants, challenges have been linked to emotional dysregulation, attention, everyday memory, and functioning.

These results suggest that traumatic events can affect a number of linked factors in psychological functioning and, at the same time, that different individuals may react in different ways, and that good environments and suitable psychological help may be necessary.

Despite its title, this study used self-report questionnaires and was therefore based on participants' reports of emotional functioning, thoughts, behavior, attention, and memory. Future research may benefit from a larger sample size, a longitudinal design, clinical interviews, and neuropsychological and neurological measures of brain functioning. In this way, further exploration of the link between traumatic experiences, brain functioning, and behaviour and memory will be possible.

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