IMPACT OF CHILDHOOD ADVERSITY (ACE)

CHAPTER 1
INTRODUCTION

Developmental psychologists have often emphasized upon the role one's childhood experiences play in the formulation of an individual's characteristics behavioural traits and cognitions, and by extension their personality. Pioneers of the field such as Erikson, Piaget and Bowlby have talked about how the environment and the general attitude of the primary caregiver towards a child in their formative years acts as a fulcrum which has the power to make or break a person.

John Bowlby, in fact, proposed one of the first social theory of development wherein he canvasses the impact of early childhood relationships with primary caregivers upon childhood development. It is here that he proposed the Attachment Theory which elucidates how these experiences continue to dictate and influence social relationships in later stages of life as well.

It suggests that children have an innate need to form attachments, with distinct behavioural and motivational patterns. Researchers have further explored various tangents with this theory as their foundation and discovered a plethora of relationships of varying nature between childhood experiences such as divorce of parents, being placed in foster homes and childhood trauma.

Anxiety

The American Psychologist Association defines anxiety as "an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure." Everyone, at some point, has experienced anxiety across varying multitudes and intensities. It can be circumstantial or have a deep underlying issue from which it is stemming. Colloquially, occasional anxiety is normal and sometimes even works in our favour. It can be observed when an individual is in a state of eustress and it drives them to make executive decisions with efficiency. An example of this phenomenon would be the presence of deadlines enabling a person to complete a task they otherwise might have put off for an indefinite amount of time otherwise.

Anxiety becomes detrimental to a person's health and well-being when it starts to interfere with day-to-day life functions, work and social life and an individual's relationship with others. This usually happens when the anxiety generated from a given circumstance is disproportional to the threat it poses. These unproportionate reactions stem from faulty cognitions that fail to accurately predict consequences of said circumstance.

Cognitive distortions are a result of socialization and the environment in which an individual has grown up in which leads them to have unhelpful thinking patterns which are often biased and favours a negative outlook of the world. Some of the schemas that contribute to these cognitive distortions are-

- Black and White thinking wherein a person perceives the world in binaries. Yes or no, right or wrong; which is rarely the case for anything or anyone around us as they contain multitudes. People with these distortions tend to judge everyone, including themselves, too harshly.
- Mental filtering and jumping to conclusions also contribute a lot to anxiety as it forces a person to focus on the negative point and completely disregard any and all positive traits.
- Personalization is when an individual attributes the happenings of an event to their own self and find themselves accountable for everything that went wrong even when they had nothing to do with it. This leads to people internalizing every negative comment and overthinking everything they do so as to not do anything wrong. Catastrophizing and magnification contributes to anxiety in a similar way.

Cognitive distortions are largely impacted by the environment a person is brought up in- whether or not a person had a reliable social support system, if adults around them took accountability for their action, if they were subjected to manipulation or gaslighting etc.

When the symptoms of anxiety are experienced for prolonged periods of time, a person might be suffering from an anxiety disorder. The DSM-V classifies the various anxiety disorders on the basis of longevity, intensity and severity of the symptoms as follows:

- Generalized Anxiety Disorder (GAD)
- Panic Disorder
- Social Anxiety Disorder (SAD)
- Specific Phobias
- Separation Anxiety
- Selective Mutism
- Medication-Induced Anxiety Disorder

Childhood trauma or more conventionally known as adverse childhood experiences (ACEs) is an umbrella term that encompasses a wide array of traumatic childhood experiences that have a detrimental effect on the mental health of an individual. These experiences, as categorized by CDC-Kaiser study, include isolated or recurrent instances of-

A. Abuse- Physical, Emotional, and Sexual
B. Neglect- Physical and Emotional
C. Household Dysfunction- Incarceration of family members, divorce of parents, substance abuse, maltreatment of mother.

However further in-depth study on ACEs in recent years have revealed other socio-environmental ACEs such as racism, bullying and community violence to be equally accountable for psychopathology that stems from childhood adversity.

A fairly recent perspective under developmental psychology known as the “Life Course Theory” identifies the impact of an event one goes through and the role one plays over time on the behaviour, cognition and personality of the individual. The models of accumulation of risk, sensitivity period and recency iterated in the theory act as a medium that facilitate the understanding of intricacies of childhood adversity.

- Accumulation of Risk- this model states that every additional year of exposure to trauma increases the severity of the risk possessed by the negative experiences.

- Sensitivity Period- the model states that the timing of the exposure plays a crucial part in determining the acuteness of psychopathology in an individual. The model plays a crucial part as it reinstates childhood as the developmental stage that demarks the time period of greatest plasticity of the mind, and maturation.

- Recency Model- the model suggests that psychopathology is more strongly associated with proximal events as compared to distant ones as the impact of a certain adversities can be time-limited.

Impact of Childhood Adversity

The uncertain and unpredictable nature of traumatic events in childhood; it often renders the kids in a perpetual state of anticipation and fear which leads to the generation of stress. Stress isn't inherently harmful to a person’s physical or psychological well-being as often works as a motivation to make executive decisions and overcome temporary hurdles in day to day life. However, the stress begins to have a detrimental effect on the health of an individual when the stress level fails to return to the baseline shortly after the stress response is triggered due to ineffective coping mechanisms or repetitive exposure to stressful situations. This stress is labelled as toxic stress.

If toxic stress is not addressed and dealt with using the appropriate mechanisms and tools it can lead to long term behavioral issues, psychosomatic health complications and severe disorders. Sustained toxic stress affects the vital parts and systems of the brain that by extension lead to psychological disorders:

- STRESS PATHWAY – Dysregulation of HPA axis and decrease in hippocampal volume that leads to anxiety and depressive disorders and impairment in learning and/or memory
- EMOTIONAL PROCESSING AND REGULATION – Decrease in gray matter and the increased amygdala volume leads to hypervigilance and reduced attentional control.
- EVALUATION OF REWARD – Decrease in the reward response in ventral striatum leads difficulty in experiencing joy (anhedonia)

CHAPTER 2
REVIEW OF LITERATURE

Lydia; Lenny; (2020) conducted a study to examine if ACE can be used to predict psychological distress in adulthood. A sample of 382 participants were assessed upon early adversity, self-concept clarity, intolerance of uncertainty, and depression, generalized anxiety, OCD, and social anxiety symptoms via an online survey. The data collected was analyzed from a multivariate perspective which revealed that ACEs lead to lower self-concept clarity which further facilitated the early (with severity) onset of symptoms of anxiety and depression. A direct association between intolerance of uncertainty and psychopathology was also established.

Brown; Harris; (2018) conducted a study to find the association between ACE and depressive and anxiety disorders. The research was conducted to find the level of association between various social factors and comorbidity of depressive and anxiety disorders. In order to do so, a sample of 404 women was taken the participants were interviewed upon childhood experience of abuse and neglect in the past and the presence of anxiety / depressive disorders was check for the analysis of data collected reveal that the most common social factor associated with anxiety and depressive disorders in later adulthood were those that fell under the category of ACE that is childhood adversity therefore implying that childhood hard verity was one of the factors that leads to depressive and anxiety disorders in later life.

Cocoran (2018) conducted research to how attachment style influences childhood adversity and psychological distress. The study was conducted on 190 university students wherein the data was collected using the Adverse Childhood Experiences scale, Experiences in Close Relationships − Relationship Structures scale, Depression Anxiety and Stress scales and measures of subjective well-being. Approximately seventy percent of the participants (128 students) claimed to have experienced at least one type of ACEs while growing up. After cross-sectional analysis of data collected via the various self-report measures, it was observed that childhood adversity played a very functional part upon the psychological well-being of an individual and often led to attachment anxiety in relationships during adulthood.

Julia; Keith; Pusch; (2017) studied the history of childhood adversity and anxiety. The study was conducted on a sample size of n = 4006 the participants were made to complete a self-report that collected data regarding childhood experiences dysregulation of emotion and symptoms of anxiety. The analysis of data collected revealed that the relationship between adverse childhood experiences and symptoms of anxiety was mediated by psychological resilience and emotional dysregulation where in the impact of emotional dysregulation was much higher in individuals with low levels of psychological resilience.

Thao; Levitan; Maunder; (2016) did a research to analyze the relationship between smokers and childhood adversity. The aim of the research is to establish the relationship between attachment anxiety and smoking and if childhood adversity acts as a functional variable in the relationship. The sample consisted of three hundred and forty-eight participants. The statistical analysis of data collected revealed that anxiety was associated with both- childhood adversity and smoking in women whereas no relationship could be established between the same variables amongst men. Smoking was deemed to be a mechanism to cope with early onset anxiety due to childhood adversity.

McFarland; Andreotti; Harris; (2016) conducted a research to study the association between ACE and anxiety and depression among women suffering with cancer. The sample for the research consisted of 125 patients with breast cancer. The assessment technique that included self-report measures and interviews was used to collect data on ACEs among the patients. The Hospital Anxiety and Depression Scale was also administered on them. Upon analysis, depression and emotional issues were associated with childhood adversities. A positive relationship was also found between emotional neglect and anxiety.

Hovens; Giltay, Hemert; Brenda; (2015) conducted a research on the impact of childhood trauma on the onset and recurrence of depressive and anxiety disorders. A sample of 1167 individuals in the age range 18-65 were assessed using the Composite International Diagnostic Interview which is based upon DSM-IV criteria to identify the first onset of anxiety or depressive disorders (recurrent over a span of 2 years). 172 among the 1167 reported experiencing a childhood life event and four hundred twelve reported to have experienced at least one of the ACEs. When the same individuals were interviewed two years later and 226 subjects developed a new disorder and 168 among the sample had a recurrent episode. The analysis of data collected revealed that there was no association between childhood life events and psychopathology. Childhood adversity and maltreatment was defined as the environmental risk factor, inducing vulnerability to develop new and recurrent depressive and comorbid anxiety and depressive episodes.

Afifi; Henriksen; Raposo; (2014) conducted research to explore the relationship between childhood adversity and depressive and anxiety disorders. The research had a sample of 34,653 Americans who had been diagnosed with mood/anxiety disorders and lifetime personality disorders. A self-report childhood adversity questionnaire was administered. The analysis of data collected revealed that a person with a history of childhood adversity had a higher probability of a person to be diagnosed with an anxiety or personality disorder in later life wherein therapy was deemed to be an effective method to tackle the said disorders.

Morton; Ferraro; Schafer; (2014) studied the impact of child maltreatment upon adult health in the future. The researchers collected data from the Midlife Development in the United States (MIDUS) study. The relationship with parents and childhood experiences of the subjects was then later assessed using self-report measures. The participants who reported to have experienced at least one recurrent adverse childhood experience and still had a positive recollection of their parental relationships had better mental health and overall psychological well-being as compared to those who perceived their parental relationship in a negative light.

Boman; Mather; (2011) studied childhood adversity and personality disorders. Data was collected for the sample size of 34,653 from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) in America. The analysis of data collected revealed that there was a strong association between ACEs and personality disorders such as narcissistic, antisocial and borderline PDs. However the strongest relationship was established between child abuse and neglect and anxiety/ substance use disorders.

Liebowitz; Blanco; Bruce; (2011) childhood maltreatment and social anxiety disorder. The Childhood Trauma Questionnaire was administered on 156 people who were diagnosed and being treated for social anxiety disorder to measure ACEs such as abuse and neglect with the severity of symptoms. The results indicated a strong positive relationship between emotional abuse and neglect and severity of disability; an indirect relationship between physical abuse and quality of life. The strongest association was established between emotional abuse and social anxiety wherein time seemed to have a detrimental effect upon the severity of anxiety. No relation could be established between sexual/physical abuse and the dependent variables.

Rhebergen; Batelaan; (2011) did a longitudinal study over the course of seven year to identify early predictors of depression and anxiety. The data was collected from the national anthropological records and 300 individuals diagnosed with depression and/or anxiety disorders were interviewed. The same individuals were interviewed after a time span of 7 years. As a positive relationship between childhood adversity and anxiety/depressive disorders was already established during the first interview, the latter one essentially acted as means to determine whether or not time played an essential part upon the weakening of symptoms of the aforementioned disorder, a hypothesis which was duly proven to be true.

Corina; Borges; Elena; (2010) studied chronic childhood adversity and onset of psychopathology. The aim of the study was to observe and record the effect of ACEs on a wide array of psychiatric disorders and study the effect of these situations on the different life stages. Random sampling technique was used and the data was collected using the Mexican National Comorbidity Survey and WHO World Mental Health Composite International Diagnostic Interview. The two scales were used to measure 12 different types of childhood adversity and 20 different psychiatric disorders respectively. The data collected was then clustered into

categories like family dysfunction, physical emotional, sexual abuse etcetera. The results indicated that there was a strong relationship between childhood family dysfunction, a type of childhood adversity, and the early onset of psychopathology specially but not limited to anxiety and depression disorders

Esther; Huizink; Tiemeier;(2010) analyzed the modification between cortisol secretion and anxiety disorder due to childhood adversity. The research was focused to explore the impact of childhood adversity upon the production of cortisol in the body. To study this relationship a sample of 429 adoptees with a history of neglect and abuse was taken into consideration. The data was collected via the collection of saliva samples. The analysis of the data collected revealed that the participants with severe maltreatment and anxiety disorder had low levels of cortisol secretion as compared to the control. The participants without any sort of anxiety disorders and history of adversity had normal cortisol production.

Hovens J and Wiersma E.(2010) studied the prevalence of childhood trauma in adult patients with depressive, anxiety disorders. The study aimed to explore the relationship (if any) between childhood events, childhood adversity and psychopathology. Data was collected from the Netherlands Study of Depression and Anxiety (NESDA) for 1931 adults. Instances such as divorces, or being moved to foster care were categorized as childhood events where as physical, psychological and sexual abuse and emotional neglect was categorized as childhood trauma. Analysis of data collected showed no association between childhood events and psychopathology whereas a positive direct relation was found between childhood trauma and psychopathology (control issues, anxiety, depression; increasing order of prevalence).

Spinhoven; Bernet; (2010) studied specific childhood adversities and negative life events across the life span to anxiety and depressive disorders. They collected data from NESDA to analyze the association of childhood adversity and depression/anxiety. The study was conducted on 2288 subjects. The results indicated that the impact of adversity in childhood was much more than the negative events spanning across the entire adulthood. Disorders like dysthymia, major depressive disorder and social phobia were unique to childhood adversities like emotional neglect. There was a higher chance of people with history of sexual abuse to develop lifetime affective disorders. Awareness about the causal issue did not play any part in reducing the intensity or severity of the disorder.

Waldinger; Dunn; Vaillant; (2010) studied the impact of social environment during childhood and emotional reactivity to stress, and mood and anxiety disorders. In a longitudinal format of study, data was collected for 268 men for about seven decades from the Study of Adult development. The environment in which the child was being brought up was analyzed and assessed. The cross sectional analysis of data obtained revealed that the people who had a better social and familial environment had a low chance of developing an anxiety disorder whereas

the people from a lower socio-economic and higher instances of conflict and adversity show higher stress reactivity. This further leads to the onset of anxiety and mood disorders in adulthood.

Fincham; Stein;(2009) did a study to analyze the association between trauma and PTSD, anxiety, and depression in adolescents. A standardized questionnaire that checked for the presence of childhood trauma, symptoms of anxiety and PTSD (in accordance with DSM-IV) was administered upon 922 school students. The researchers found a positive or direct relationship between childhood adversity and PTSD and depression whereas no distinct association could be established between childhood trauma and anxiety.

Scott (2008) conducted a study on childhood adversity, early-onset depressive/anxiety disorders, and adult-onset asthma. The research aimed to explore the relationship between early onset anxiety or depressive disorder and adult-onset asthma. A cross-sectional sample of 18,303 was interviewed using the International Diagnostic Interview (CIDI 3.0) and the severity of childhood adversity was also assessed. The findings established a strong relationship between childhood adversity and early onset anxiety which further acted as a predictor adult-onset asthma.

Elizabeth; Cutis; (2008) did a research on childhood adversity and vulnerability to mood and anxiety disorders. The researchers conducted a survey on 650 patients with anxiety and mood disorders and the data collected indicated that about 35% of the patients have a history of emotional, sexual and/or physical abuse and associated with early onset of symptoms. There was a high level of positive relationship between familial discords and childhood adversity. Childhood adversity was also shown to be more common in women than men.

Constance; Connolly; (2007) studied the sensitization towards stress during adolescence and its relationship with anxiety disorders. The research was conducted on 816 children and the data regarding childhood adversities during the first five years of their lives was collected from their mothers. The analysis of data collected revealed an early onset of symptoms for increasing severity anxiety and depressive disorders among children who faced adversity in the formative years due uncalibrated stress responses and such.

Lumley; Harkness; (2007) examined the specificity in the relations among childhood adversity, early maladaptive schemas, and symptom profiles in adolescent depression. A sample of seventy-six participants were interviewed and the Young Schema Questionnaire and Mood and Anxiety Symptom Questionnaire was administered upon them. The study explored the cross-sectional relationship between specific forms of childhood adversity (emotional vs. physical vs. sexual) and early onset maladaptive cognitions such as worthlessness and lastly symptom profiles (anhedonic vs. anxious). The participants were asked to self-report instances of

childhood adversity in an interview setting. Results indicated that worthlessness was associated with anhedonic symptoms and childhood adversity whereas schemes with danger were associated with anxious symptoms and childhood adversity. No significant relationship could be established between sexual abuse and any other factor.

Catherine; Bunn; (2006) examined the relationship between adult attachment style and childhood abuse. The study comprised of a sample size of 154 women who were studied in the early 90s and then 5 years later in the later nineties in attempt to explore the relationship between adult insecure attachment styles and childhood adversity and adult disorder they were interviewed using the childhood experience of care and abuse and the attachment style interview in the first interview and the structured clinical interview for DSM- IV was administered in both first and the follow-up interview. the results indicated that about 55% of the women who faced adversity in childhood at least 1 disorder the insecure attachment style which stamp from childhood adversity resulted in in depression and anxiety cases in the follow-up interviews some of the specific disorders noted over social phobia and angry dismisses style which were comorbid with general anxiety disorder.

Shear; Reynolds III; (2005) conducted a study to examine the personality styles, attachment styles and childhood adversity as predictors of anxiety among elderly caregivers. The aim of the research was to study how childhood adversity influenced attachment styles of elderly caregiver who had terminally ill spouses. The sample consisted of 50 participants aged 50 years or above who met the previously defined criteria. Their attachment and personality styles were measured using self-report questionnaires and the Structured Clinical Interview for the DSM was used for the diagnosis of anxiety disorders. The analysis of data collected revealed that self-defeating styles and childhood adversity increased the probability of caregivers of developing an anxiety disorder and negatively impacted their attachment styles. Personality disorders such as antisocial, borderline PD were also found to be widely comorbid with anxiety disorders.

Phillips; Hammen; Patricia; Najman; (2005) did research to analyze early adversity and the prospective prediction of depressive and anxiety disorders in adolescents. The study consisted of 816 participants (adolescents). The data was collected when the participants were 15 years old and later again after a time span of approximately 5 years. The sample was divided into four groups consisting of adolescents: with “pure” depressive disorders, “pure” anxiety disorders, comorbid anxiety and depressive disorders and never-ill controls. The analysis of data collected revealed that there was a higher probability of subjects with anxiety disorders to have been exposed to early childhood adversities as compared to those who were depressed.

Grover; Ginsberg; Ialongo; (2005) did a longitudinal study on the predictors of anxiety in childhood. The sample consisted of 149 African-American children. A self-report measure for

anxiety was administered to both the child and its parents twice with a six year gap in between. Data regarding the childhood risk factors (Death, Separation, Social Adversity, Negative Family Environment, Academic Difficulties, and Peer Rejection) was collected via various reliable sources. The analysis of data revealed that the children who faced the aforementioned childhood risk factors experienced higher levels of anxiety and therefore a positive direct relationship was established between the two variables.

Zonarich; Bierhals; (2004) examining the prevalence of predictors of anxiety in early childhood. The aim of the research was to study how childhood adversity influenced attachment styles of elderly caregivers who had terminally ill spouses. The sample consisted of 50 participants aged 50 years or above who met the previously defined criteria. Their attachment and personality styles were measured using self-report questionnaires and the Structured Clinical Interview for the DSM was used for the diagnosis of anxiety disorders. The analysis of data collected revealed that self-defeating styles and childhood adversity increased the probability of caregivers of developing an anxiety disorder and negatively impacted their attachment styles. Personality disorders such as antisocial, borderline PD were also found to be widely comorbid with anxiety disorders.

Gazelle; Ladd; (2003) did extensive research to study the impact of anxious solitude and peer exclusion. The aim of the study was to observe the impact of childhood adversity experienced in a school setting upon anxiety levels experienced by the children. A total of 388 students were a part of the study whose behavior and social standing was closely observed to collect data. Teacher reports were also used as a form of data collection. It was observed that the students with higher interpersonal adversity experienced significantly higher levels of anxiety in school and also portrayed elevated depressive symptom trajectory.

Sheldon; Levitan; Rector; (2003) conducted a study to determine the childhood adversities associated with MDD and ASD. The sample comprised 6,597 subjects aged 15 to 64 years and was divided into four groups- control, individuals with co-morbid depression and anxiety, people with just anxiety disorders and people with only depression. They were interviewed using the World Health Organization Composite International Diagnostic Interview (CIDI). The results indicated that there was a strong positive correlation between sexual abuse in early years and co-morbid anxiety disorder and depression but no distinct relationship could be established between the pure disorders and childhood adversity.

Harkness; Wildes; (2002) conducted a study to determine the comorbid disorders related to childhood adversity. The sample consisted of seventy-six women who were diagnosed with Major Depressive Disorder, among which 21 were comorbid with dysthymia and 26 with anxiety disorder. Abuse (physical, sexual, psychological), emotional neglect was assessed via interview and survey. The results indicated an association between sexual and psychological

abuse and anxiety whereas physical abuse was correlated with dysthymia. Analysis of multivariate defined a strong relationship between severe sexual abuse and anxiety.

CHAPTER 3
METHODOLOGY

OBJECTIVE

The objective of the research is to determine the relationship between childhood adversity and consequent psychopathology, anxiety specifically, in young adults (ages 18-30)

HYPOTHESIS

There will be a positive relationship between adverse childhood experiences (ACE) and anxiety.

VARIABLES

Dependent Variable- Anxiety
Independent Variable- Childhood Adversity

LOCALE OF THE STUDY

As the study collects data on childhood experiences and the current prevalence of the anxiety in young adults the locale of the study is developmental psychology.

SAMPLE AND SELECTION

The sample comprised of a total of 100 participants out of which 63 were women, 34 were men and 3 gender non-conforming (GNC). The age range of the participants was set 18-30.

The selection of the sample was randomized therefore “Representative Sampling” or “Simple Random Sampling” was used.

DESCRIPTION OF TOOL

Two tools were utilized for the individualized measurement of adverse childhood experiences (ACE) and anxiety.

ACE

The tool used was based upon the WHO ACE-IQ, a standardized test to measure the childhood adversity. Since the questionnaire used was an international one some items were reconstructed to make them culturally appropriate. The questionnaire comprised of 26 items. The maximum score that can be obtained was 64 whilst the minimum was zero.

The tool used covered the following dimensions-

1. **Relationship with family/parents/guardians while growing up**: to measure the type of care the participant received from their primary caregiver and their relationship with the same

2. **Family environment during the first 18 years of the participant's life**: to collect data regarding the family environment and prevalence and frequency of physical and/or verbal abuse in the house.
3. **Peer violence during the formative years:** record the experiences to bullying (physical/verbal/mental) inflicted upon the participant by peer groups in school and community.
4. **Witnessing of community violence while growing up:** aimed to collect data regarding the society the participant was brought up in to get a sense of their socialization process.

Anxiety Self-Assessment Test

The test consisted of 40 questions in total. The maximum score that can be obtained was 160, the minimum being zero. The participants had to answer the questions based on their experiences in the past two weeks. Each item had a maximum of score of 4. The score increased with the increase in the intensity of the symptom experienced. A "Not at all" was assigned a score of 0, "Rarely" had a score of 1, "Sometimes" was assigned a score of 2. "Often" had a score of 3 whereas "Most of the times" was scored the maximum (4).

The test measures anxiety by grading the anxiety experienced in the following dimensions-

1. **Anxious feelings**
2. **Anxious thoughts**
3. **Anxious behaviours**
4. **Physical Symptoms**

PROCEDURE

A master questionnaire was devised by fusing the two questionnaires together. The participants' voluntary response was solicited and they were asked to answer all the items as accurately and truthfully possible. The consent of the participant was taken and appropriate trigger warnings were given before the conduction was started. The participant was also made aware of their rights and were ensured that any and all results obtained by the means of the survey shall remain confidential. Any findings will remain unassociated with their name at all times. They were also informed that they can quit the questionnaire at any time they wished to. The participant was thanked after they completed the questionnaire and the responses were scored and recorded.

CHAPTER 4
ANALYSIS OF RESULT

Sr. No.	ACE Scale	Anxiety Scale
1	28	113
2	15	73
3	27	105
4	23	93
5	6	6
6	14	61
7	4	25
8	15	100
9	20	41
10	20	50
11	15	84
12	14	14
13	25	121
14	43	110
15	23	125
16	21	56
17	28	49
18	22	89
19	12	106
20	14	63
21	23	72
22	12	30
23	31	75
24	16	77
25	12	57
26	7	14
27	29	104
28	24	107
29	14	50
30	3	25
31	6	67
32	6	15
33	6	40
34	23	65
35	17	44
36	11	97
37	33	132
38	6	45

39	1	22
40	11	58
41	13	22
42	27	87
43	5	37
44	13	50
45	14	25
46	11	70
47	3	62
48	10	57
49	9	58
50	19	53
51	10	58
52	17	105
53	14	59
54	14	36
55	18	65
56	14	100
57	14	54
58	15	43
59	18	47
60	16	100
61	31	92
62	12	69
63	17	76
64	11	74
65	21	90
66	15	20
67	10	38
68	12	79
69	19	58
70	20	46
71	23	93
72	25	97
73	19	55
74	8	27
75	10	16
76	8	40
77	10	43
78	9	72
79	9	23
80	10	51
81	12	28

82	22	84
83	29	95
84	24	94
85	8	10
86	15	80
87	15	11
88	19	95
89	15	63
90	11	43
91	14	21
92	12	54
93	9	36
94	10	46
95	27	57
96	21	113
97	10	45
98	7	21
99	16	61
100	13	39

Table 1. Scores obtained by participants in respective scales.

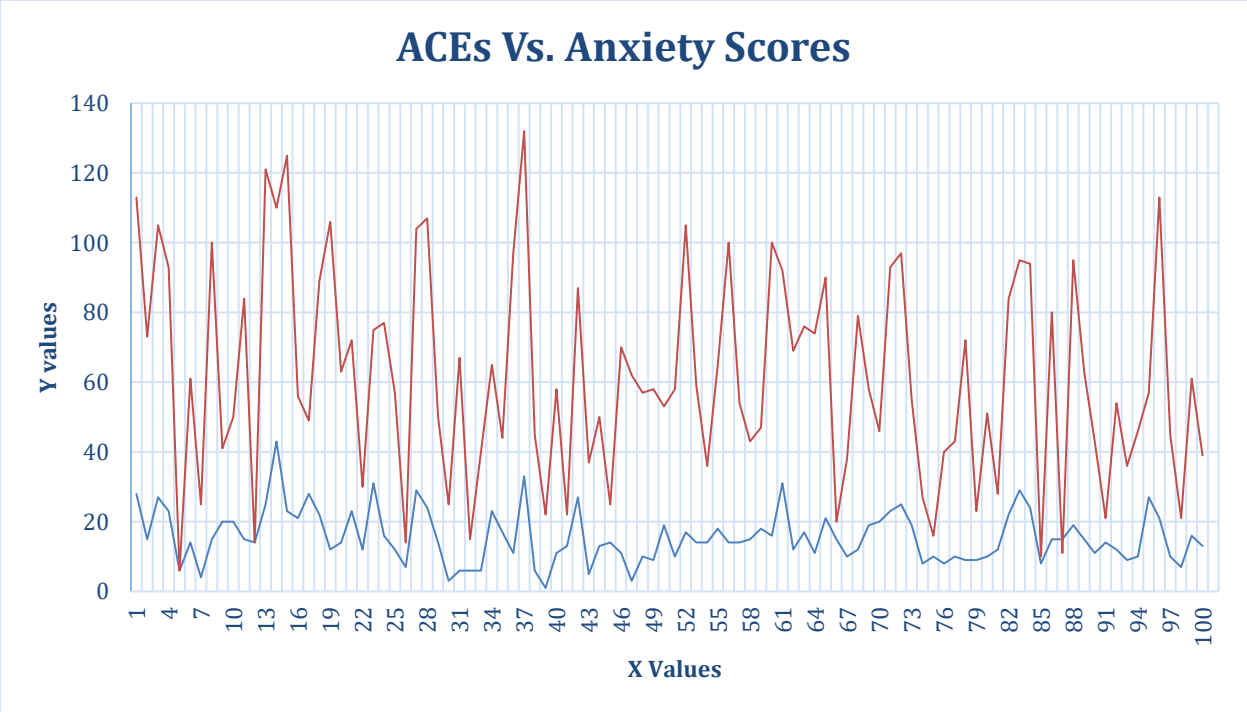

Figure 1. Graphical Representation of data presented in Table 1

STATISTICAL ANALYSIS

Pearson's Correlation was employed to determine the relationship (r) between childhood adversity and level of anxiety because the sample was randomly selected and both the variables have continuous data in the form of paired samples.

Table 2. Data derived for the calculation of Pearson's Correlation (r)

Sr. No.	X (ACE Test)	Y (Anxiety Scale)	$X - M_x$	$Y - M_y$	$(X - M_x)^2$	$(Y - M_y)^2$	$(X - M_x)(Y - M_y)$
1.	28	113	12.38	51.77	153.264	2680.133	640.913
2.	15	73	-0.62	11.77	0.384	138.533	-7.297
3.	27	105	11.38	43.77	129.504	1915.813	498.103
4.	23	93	7.38	31.77	54.464	1009.333	234.463
5.	6	6	-9.62	-55.23	92.544	3050.353	531.313
6.	14	61	-1.62	-0.23	2.624	0.053	0.373
7.	4	25	-11.62	-36.23	135.024	1312.613	420.993
8.	15	100	-0.62	38.77	0.384	1503.113	-24.037
9.	20	41	4.38	-20.23	19.184	409.253	-88.607
10.	20	50	4.38	-11.23	19.184	126.113	-49.187
11.	15	84	-0.62	22.77	0.384	518.473	-14.117
12.	14	14	-1.62	-47.23	2.624	2230.673	76.513
13.	25	121	9.38	59.77	87.984	3572.453	560.643
14.	43	110	27.38	48.77	749.664	2378.513	1335.323
15.	23	125	7.38	63.77	54.464	4066.613	470.623
16.	21	56	5.38	-5.23	28.944	27.353	-28.137
17.	28	49	12.38	-12.23	153.264	149.573	-151.407
18.	22	89	6.38	27.77	40.704	771.173	177.173
19.	12	106	-3.62	44.77	13.104	2004.353	-162.067
20.	14	63	-1.62	1.77	2.624	3.133	-2.867
21.	23	72	7.38	10.77	54.464	115.993	79.483
22.	12	30	-3.62	-31.23	13.104	975.313	113.053
23.	31	75	15.38	13.77	236.544	189.613	211.783
24.	16	77	0.38	15.77	0.144	248.693	5.993
25.	12	57	-3.62	-4.23	13.104	17.893	15.313
26.	7	14	-8.62	-47.23	74.304	2230.673	407.123
27.	29	104	13.38	42.77	179.024	1829.273	572.263
28.	24	107	8.38	45.77	70.224	2094.893	383.553
29.	14	50	-1.62	-11.23	2.624	126.113	18.193
30.	3	25	-12.62	-36.23	159.264	1312.613	457.223
31.	6	67	-9.62	5.77	92.544	33.293	-55.507
32.	6	15	-9.62	-46.23	92.544	2137.213	444.733

33.	6	40	-9.62	-21.23	92.544	450.713	204.233
34.	23	65	7.38	3.77	54.464	14.213	27.823
35.	17	44	1.38	-17.23	1.904	296.873	-23.777
36.	11	97	-4.62	35.77	21.344	1279.493	-165.257
37.	33	132	17.38	70.77	302.064	5008.393	1229.983
38.	6	45	-9.62	-16.23	92.544	263.413	156.133
39.	1	22	-14.62	-39.23	213.744	1538.993	573.543
40.	11	58	-4.62	-3.23	21.344	10.433	14.923
41.	13	22	-2.62	-39.23	6.864	1538.993	102.783
42.	27	87	11.38	25.77	129.504	664.093	293.263
43.	5	37	-10.62	-24.23	112.784	587.093	257.323
44.	13	50	-2.62	-11.23	6.864	126.113	29.423
45.	14	25	-1.62	-36.23	2.624	1312.613	58.693
46.	11	70	-4.62	8.77	21.344	76.913	-40.517
47.	3	62	-12.62	0.77	159.264	0.593	-9.717
48.	10	57	-5.62	-4.23	31.584	17.893	23.773
49.	9	58	-6.62	-3.23	43.824	10.433	21.383
50.	19	53	3.38	-8.23	11.424	67.733	-27.817
51.	10	58	-5.62	-3.23	31.584	10.433	18.153
52.	17	105	1.38	43.77	1.904	1915.813	60.403
53.	14	59	-1.62	-2.23	2.624	4.973	3.613
54.	14	36	-1.62	-25.23	2.624	636.553	40.873
55.	18	65	2.38	3.77	5.664	14.213	8.973
56.	14	100	-1.62	38.77	2.624	1503.113	-62.807
57.	14	54	-1.62	-7.23	2.624	52.273	11.713
58.	15	43	-0.62	-18.23	0.384	332.333	11.303
59.	18	47	2.38	-14.23	5.664	202.493	-33.867
60.	16	100	0.38	38.77	0.144	1503.113	14.733
61.	31	92	15.38	30.77	236.544	946.793	473.243
62.	12	69	-3.62	7.77	13.104	60.373	-28.127
63.	17	76	1.38	14.77	1.904	218.153	20.383
64.	11	74	-4.62	12.77	21.344	163.073	-58.997
65.	21	90	5.38	28.77	28.944	827.713	154.783
66.	15	20	-0.62	-41.23	0.384	1699.913	25.563
67.	10	38	-5.62	-23.23	31.584	539.633	130.553
68.	12	79	-3.62	17.77	13.104	315.773	-64.327
69.	19	58	3.38	-3.23	11.424	10.433	-10.917
70.	20	46	4.38	-15.23	19.184	231.953	-66.707
71.	23	93	7.38	31.77	54.464	1009.333	234.463
72.	25	97	9.38	35.77	87.984	1279.493	335.523
73.	19	55	3.38	-6.23	11.424	38.813	-21.057
74.	8	27	-7.62	-34.23	58.064	1171.693	260.833
75.	10	16	-5.62	-45.23	31.584	2045.753	254.193

76.	8	40	-7.62	-21.23	58.064	450.713	161.773
77.	10	43	-5.62	-18.23	31.584	332.333	102.453
78.	9	72	-6.62	10.77	43.824	115.993	-71.297
79.	9	23	-6.62	-38.23	43.824	1461.533	253.083
80.	10	51	-5.62	-10.23	31.584	104.653	57.493
81.	12	28	-3.62	-33.23	13.104	1104.233	120.293
82.	22	84	6.38	22.77	40.704	518.473	145.273
83.	29	95	13.38	33.77	179.024	1140.413	451.843
84.	24	94	8.38	32.77	70.224	1073.873	274.613
85.	8	10	-7.62	-51.23	58.064	2624.513	390.373
86.	15	80	-0.62	18.77	0.384	352.313	-11.637
87.	15	11	-0.62	-50.23	0.384	2523.053	31.143
88.	19	95	3.38	33.77	11.424	1140.413	114.143
89.	15	63	-0.62	1.77	0.384	3.133	-1.097
90.	11	43	-4.62	-18.23	21.344	332.333	84.223
91.	14	21	-1.62	-40.23	2.624	1618.453	65.173
92.	12	54	-3.62	-7.23	13.104	52.273	26.173
93.	9	36	-6.62	-25.23	43.824	636.553	167.023
94.	10	46	-5.62	-15.23	31.584	231.953	85.593
95.	27	57	11.38	-4.23	129.504	17.893	-48.137
96.	21	113	5.38	51.77	28.944	2680.133	278.523
97.	10	45	-5.62	-16.23	31.584	263.413	91.213
98.	7	21	-8.62	-40.23	74.304	1618.453	346.783
99.	16	61	0.38	-0.23	0.144	0.053	-0.087
100.	13	39	-2.62	-22.23	6.864	494.173	58.243
Sum:			15.62	61.23	5697.56	90069.71	14683.740

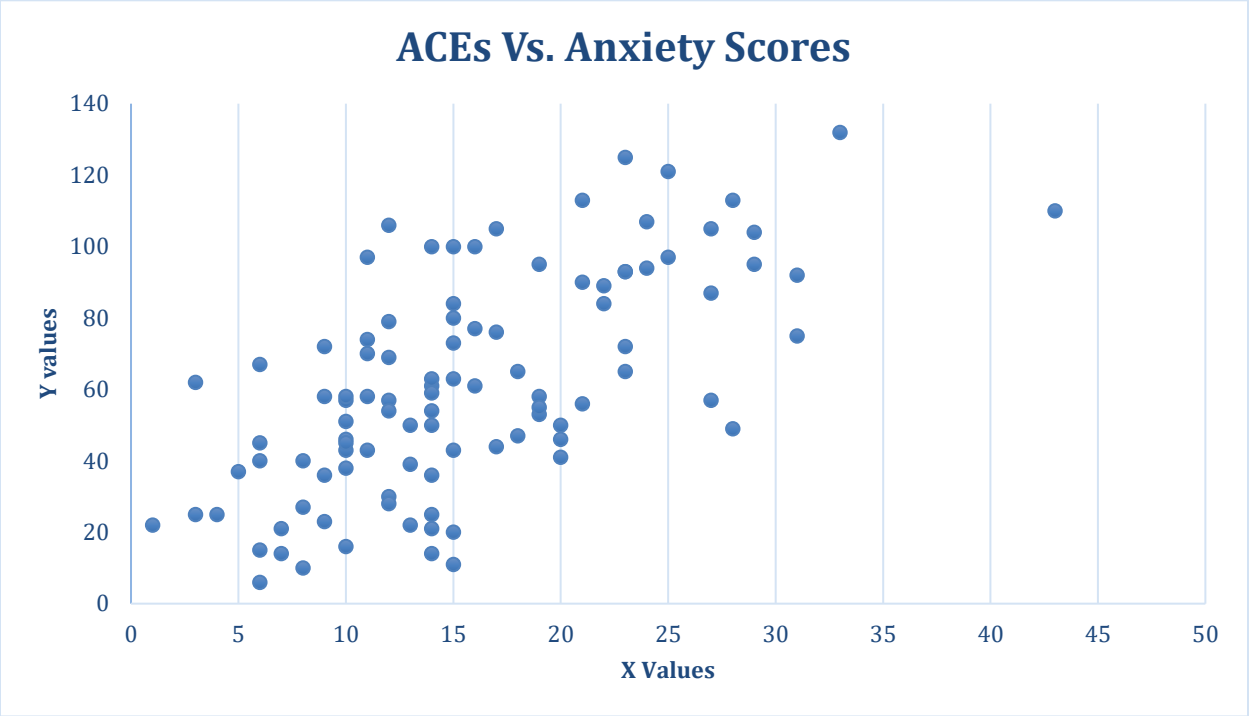

Figure 2. Scatter chart for X and Y values

Result Details & Calculation

X Values
$\sum = 1562$
Mean = 15.62
$\sum (X - M_x)^2 = SS_x = 5697.56$

Y Values
$\sum = 6123$
Mean = 61.23
$\sum (Y - M_y)^2 = SS_y = 90069.71$

X and Y Combined
$N = 100$
$\sum(X - M_x)(Y - M_y) = 14683.74$

R Calculation
$r = \sum((X - M_y)(Y - M_x)) / \sqrt{((SS_x)(SS_y))}$

$r = 14683.74 / \sqrt{((5697.56)(90069.71))} = 0.6482$

The value of R is 0.6482

This is a moderate positive correlation, which means there is a tendency for high X variable scores go with high Y variable scores (and vice versa).

Hundred randomly sampled young adults, comprising of women, men and GNC participants, were surveyed about their experiences of childhood adversity *(M=15.62, SD=7.55)* and level of anxiety *(M=61.23, SD=30.01)* A Pearson's correlation data analysis revealed a moderate positive correlation, which implies that participants who scored high on ACE had a tendency to have higher levels of anxiety (and vice versa).

CHAPTER 5
DISCUSSION

The aim of the research was to determine the relationship between adverse childhood experiences and level of anxiety experienced by young adults. It was hypothesized that there will be a positive correlation between the two variables wherein, if the intensity of adversity increased there would be an increase in the level of anxiety. The hypothesis was tested by conducting two separate tests on all the participant- one for measuring childhood adversity and another for measuring level of anxiety. The research had a total of 100 participants. The analysis of data demonstrated a moderate positive correlation (*r= 0.6482*) between the two variables which signifies that participants who scored high on ACE had a tendency to have higher levels of anxiety (and vice versa). The hypothesis was therefore proven to be true.

The graphical representation of the data collected depicted in Figure shows that almost all variables are normally distributed across the entire graph. It also representative of the linear association that exists between the two variables. The standard deviation for childhood adversity was 7.55 wherein the lowest score recorded was 1 and the highest score was 33 out of 64. The standard deviation for anxiety scale was 30.01. The lowest score recorded was 6 whereas the highest score was 132. The data collected has proved to be really promising for a sample size of 100 and the level of positive correlation is most likely to increase as the population size increases.

Although there were some outliers in the data collection wherein the high level of childhood adversity did not impact the anxiety level whatsoever. Forster et al. (2020) attributes this to the presence of a dependable social support system in other sectors of life: peers, school teachers, friends etc. It highlights the positive impacts and consequent outcome of a teacher and peer support system in the life of otherwise troubled students. The research also concluded that as the number of people in the social support group increase the positive outcomes increase with it.

John Bowlby proposed one of the first social theory of development wherein he canvasses the impact of early childhood relationships with primary caregivers upon childhood development. It is here that he proposed the Attachment Theory which elucidates how these experiences continue to dictate and influence social relationships in later stages of life as well.

It suggests that children have an innate need to form attachments, with distinct behavioural and motivational patterns. Researchers have further explored various tangents with this theory as their foundation and discovered a plethora of relationships of varying nature between childhood experiences such as divorce of parents, being placed in foster homes and childhood trauma.

A lot of these childhood experiences mold the schemas we develop over the course of our life. They're especially influential in the formative years as children are actively learning through observational learning and are more susceptible to the environment. It has also been established in

previous researched that the intensity of an experience is directly proportional to the influence it has on the cognitions of a person therefore by extension one can speculate the impact traumatic adverse experiences would have on the neurology of a child.

The generalizability of the data is limited due to the prevalence of socio-cultural and economic factors. Further research is required to study the specific construct by keeping family type in consideration as plays a very significant role in the said dynamic.

CHAPTER 6
CONCLUSION

The aim of the research was to determine the relationship between adverse childhood experiences and level of anxiety experienced by young adults. It was hypothesized that there will be a positive correlation between the two variables wherein, if the intensity of adversity increased there would be an increase in the level of anxiety. The hypothesis was proven to be true with a moderate positive correlation (*r= 0.6482*) between the two variables.

As stated by Cocoran (2018) adverse childhood experiences bring about several changes in awareness and expression of certain emotions. They also exhibit subsequent changes in ruminification i.e. usage of specific types of maladaptive strategies for emotional regulation which lead to the adaptation of dysfunctional attachment styles in the long run. In later life, these gradual but consistent changes in emotion processing led to psychopathology, especially mood, depressive and anxiety disorders, in an individual. Likewise, the onset of anxiety and depressive disorders is associated with childhood adversity due to the increased emotional reactivity towards stress (Zonarich; Bierhals; (2004)).

Lumley; Harkness; (2007) narrowed down the cognitive factors tying childhood adversity to early onset of internalized psychopathology in adulthood to-

- habitual use of maladaptive emotion regulation strategies
- heightened emotional reactivity
- poor emotional awareness

The data collected by Spinhoven and Bernet (2010) during their research on childhood adversity in Netherland indicates two broad classifications into which the various ACEs can be categorized:

a) experiences of threat and
b) experiences of deprivation

Connolly (2007) explains that the experiences of threat often lead to heightened sensitivity towards threat perception and which results in the increase of resources allocated for identifying anger in the environment which results in the generalization of threat responses to a vast array of stimuli which renders the differentiation between a legitimate threat and a safety cue unavailing. It also impacts the mechanisms responsible for modulating the responses which leads to the unproportionate magnification of reaction towards the negative cues in the environment.

Experiences of deprivation result in psychosocial and cognitive destitution from the environment that in turn restraints the neuro-developmental processes that depend on them. The lack of environmental input leads to magnified synaptic responses that negatively impact the performance on cognitive tasks.

Another important finding by Phillips et al. (2005) suggests not all children with ACEs necessarily develop mental health disorders. The presence of a disorder and severity of the impact of childhood adversity is greatly influenced by individual differences of personality such as culture, resilience, coping mechanisms and the presence of buffers in the environment. For example, children who experienced adversity at home but had a strong social support system of friends to fall back on reported lesser cases of psychopathology in the future.

The prevention of psychopathology begins at the root cause of the problem, that is, childhood adversity. As already discussed, constant exposure to traumatic events lead to the generation of toxic stress- the genesis of psychopathology in adulthood. Toxic stress can be prevented by firstly reducing the exposure and childhood adversity and secondly, training and equipping the child with proper coping mechanisms to deal with adversity.

Scott (2008) delineates the following intervention techniques that have proven to be effective in preventing the onset of psychopathology among kids with adverse childhood-

- Intervention techniques wherein the children who are exposed to violence are trained in
- Emotional processing targeting reactivity and regulation of emotions
- Skill training in reward processing

Early intervention techniques such as identification of markers of childhood trauma and placing the child into an environment that enriches their neurocognitive development also mitigates the negative consequences of deprivation and significantly improves physical and psychological well-being of the individual.

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