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Cover Page Footnote

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IDENTIFYING ASSOCIATIONS BETWEEN THE FAMILY ENVIRONMENT AND ANXIETY AND DEPRESSION AMONG CHILDREN AGES 0-17 IN THE UNITED STATES

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ABSTRACT: This study analyzes whether physical, emotional & neurological, family environment, or community-related factors display the strongest association with anxiety and depression among children ages 0-17 in the United States.

Using IBM SPSS v. 27, we conducted a univariate and multivariate logistic regression analysis on data from the 2017 National Survey of Children's Health (NSCH) with a sample size of 21,599. Our independent variables included 30 questions from the NSCH which were compared to a mental health index score.

Our study shows that about 10.6% of children suffer from either anxiety, depression, or both, and the univariate model found that 19 out of the 30 variables tested displayed a strong association with anxiety and depression (OR > 1.00). In the multivariate model, the factors that displayed the strongest association with anxiety and depression were ACE 3 - parental divorce (OR 1.316 [1.125, 1.539]) and ACE 8 - living in the same household with someone who is mentally ill (OR 2.213 [1.820, 2.691]), which were both assigned to the family environment category.

These results indicates that the family environment is a major contributor towards childhood development, which emphasizes the need for healthcare providers to have access to the necessary diagnostic tools to identify underlying mental health issues in pediatric patients. These findings are significant in that pediatric healthcare providers could implement screening techniques and treatment options that address a patient's family environment.

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I. INTRODUCTION:

Anxiety and depression among children are significant public health concerns in the United States as recent data has reported that 7.1% of children ages 3-17 are diagnosed with anxiety and 3.2% are diagnosed with depression annually.[1] According to the Centers for Disease Control and Prevention (CDC), pediatric anxiety is characterized by constant fear, worry, or repeated panic episodes, while children with depression may exhibit feelings of sadness or hopelessness, changes in eating or sleeping patterns, or suicidal thoughts.[2]

Over the previous two decades, studies have identified factors related to pediatric anxiety and depression, most notably adverse childhood experiences (ACEs), which are defined by the CDC as potentially traumatic events that occur during childhood. One study that addressed the connection between ACEs and mental health was the 1998 CDC-Kaiser Permanente Adverse Childhood Experiences Study, led by Dr. Vincent J. Felitti et. al.[3] By determining that the risk of developing health complications in adulthood increases with the number of ACEs, Felitti et. al established the foundation for future studies on ACEs. Following the CDC-Kaiser study, recent literature has recorded a significant association between parental divorce and depression (OR = 1.29 [1.23-1.35]) and anxiety (OR = 1.12 [1.04-1.12]),[4] and a 2021 meta-analysis by Elmore & Crouch found a

[1] Ghandour RM, Sherman LJ, Vladutiu CJ, Ali MM, Lynch SE, Bitsko RH, Blumberg SJ. Prevalence and treatment of depression, anxiety, and conduct problems in U.S. children. *The Journal of Pediatrics*, 2018.

[2] Anxiety and depression in children: get the facts. *Centers for Disease Control and Prevention*, , https://www.cdc.gov/childrensmentalhealth/features/anxiety-depression-children.html; 2021 Accessed 9 July 2021

[3] Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med*. 1998;14(4):245-258.

[4] Auersperg F, Vlasak T, Ponocny I, Barth A. Long-term effects of parental divorce on mental health - A meta-analysis. *J Psychiatr Res*. 2019;119:107-115.

differential association between having experienced multiple ACEs and being diagnosed with anxiety and/or depression.[5]

In recent years, factors outside of ACEs have been identified in relation to pediatric anxiety and depression. For example, Del Giacco et. al recorded an association between anxiety and asthma (OR= 3.003; p = 0.03)[6] while Whitworth et. al found that lifetime anxiety and depression worsen glycemic control for type II diabetics.[7] Additionally, a 2007 nationally representative survey by Schilling et. al concluded that young adults who have had a substance abuse disorder are more likely to have experienced more ACEs,[8] and a review by Chung et. al concluded that pre-term infants face a higher risk of developing anxiety and depression, along with developmental delays or disorders related to the autism spectrum.[9] Concerning factors beyond the household and child's health, schools are impactful in childhood development as learned behaviors can originate from classroom interactions. For example, a 2020 meta-analysis in Australia found a causal association with 7.8% of

[5] Elmore, A. L., & Crouch, E. The Association of Adverse Childhood Experiences with Anxiety and Depression for Children and Youth, 8 to 17 Years of Age. *Academic pediatrics*, 2020; *20*(5), 600–608.

[6] Del Giacco, Stefano R., Cappai, Alessandra, Gambula, Luisanna, Cabras, Stefano, Perra, Silvia, Manconi, Paolo Emilio, Carpiniello, Bernardo, & Pinna, Federica. The asthma-anxiety connection. *Respiratory Medicine*, 2016; 120, 44-53.

[7] Whitworth SR, Bruce DG, Starkstein SE, Davis WA, Davis TM, Bucks RS. Lifetime depression and anxiety increase prevalent psychological symptoms and worsen glycemic control in type 2 diabetes: The Fremantle Diabetes Study Phase II. *Diabetes Res Clin Pract*. 2016;122:190-197.

[8] Schilling, E. A., Aseltine, R.H. Jr, & Gore, S. Adverse childhood experiences and mental health in young adults: a longitudinal survey. BMC Public Health. 2007; 7:30.

[9] Hee Chung, E., Chou, J., & Brown, K. A. Neurodevelopmental outcomes of preterm infants: a recent literature review. *Translational pediatrics*. 2020; S3–S8.

anxiety disorders and 10.8% of depressive disorders originating from bullying victimization.[10] In addition, neighborhoods also influence childhood development as Li et. al (2020) discovered a significant association between negatively perceived neighborhood conditions and childhood mental disorders.[11]

Although prior studies have determined individual factors that affect pediatric mental health outcomes, it is unknown whether a particular category (i.e., one of four categories: physical health, emotional and neurological health, family life, and community wellness) of factors is most related to a child's probability of developing such conditions. Therefore, our study contributes to current literature by addressing whether a certain category of factors is most closely related to anxiety and depression among children ages 0-17 years old. Due to the known association with anxiety and depression, we hypothesize that family-related variables hold a more significant association with anxiety and depression among children in the US in comparison to physical, emotional & neurological, and community-related factors.

II. METHODS:

The data source was drawn from the 2017 National Survey of Children's Health (NSCH), a nationally representative survey of children ages 0-17 years. Sponsored by the Data Resource Center for Child & Adolescent Health, this survey assesses various aspects of children's health including physical, emotional & neurological, family, and community wellness. For the 2017 NSCH, households were randomly contacted by mail to complete either a written or online survey. For the

[10] Jadambaa A, Thomas HJ, Scott JG, Graves N, Brain D, Pacella R. The contribution of bullying victimisation to the burden of anxiety and depressive disorders in Australia. *Epidemiol Psychiatric Sci*. 2019.

[11] Li, X., Fu, Q., Leigh, I., & Humphrey, D. A Latent Class Analysis of Perceived Neighborhood Conditions Associated with Mental Disorders Among Children in the United States. *Child psychiatry and human development*, 2020.

selection criteria, participants must be 0-17 years of age and use either English or Spanish as their primary language. If more than one child lived in the same household, one was selected randomly. Additionally, data was weighted to represent the population of non-institutionalized children ages 0-17. A total of 21,599 responses were recorded for the 2017 NSCH with a response rate of 37.4%. For further reference, the Data Resource Center contains additional information on sampling techniques. https://www.childhealthdata.org/learn-about-the-nsch/NSCH

A mental health index score was used as the dependent variable to determine an association between negative childhood experiences and the likelihood of developing anxiety or depression. From the NSCH, the following questions "Has your child ever been diagnosed with anxiety?" and "Has your child ever been diagnosed with depression?" were used to create a binary outcome. Each response was denoted with a score of 0 or 1, where 0 indicates no diagnosis of anxiety or depression, and 1 indicates a diagnosis of anxiety, depression, or both.

Table 1: Mental Health Index Score

	Responses	**Frequency (%)** (n= 21,5999)
Mental Health Index	No diagnosis of anxiety or depression	2284 (10.6)
	Diagnosis of anxiety, depression, or both	19207 (89.4)

1: The Mental Health Index Score is a composite of two variables of whether the study child had ever received a depression or anxiety diagnosis.

The independent variables were items selected from the NSCH that were assigned to one of four categories: physical health, emotional and neurological health, family life, and community wellness. These four categories are basad on integral aspects of childhood development and their strong correlation with pediatric mental health outcomes. In addition to these four categories, demographics (age, race, and gender) were also included.

For all analysis, IBM SPSS v. 27 was used.[12] Descriptive statistics were first gathered to assess the frequencies of each response. Next, we devised a univariate logistic regression model. Each variable was set as categorical and tested under a confidence interval (CI) for an odds ratio (OR) of 99% due to the larger sample size (n = 21,599). The answer with the most frequent responses was labeled as the reference group for each variable. Any variable with a p-value less than 0.001 was included in the multivariate logistic regression model, which was based on a backwards conditional model where each variable underwent an elimination process with a classification cut off p-value of 0.01. Out of the variables evaluated in the univariate model, 19 were selected for the multivariate model.

III. RESULTS:

Table 2: Physical Conditions Associated with Anxiety or Depression in Children Ages 0-17

	Descriptive Statistics		**Univariate Model**	
IV	Response	Frequencies (n=21,599)	OR (99% CI)	p-value
Diabetes	Yes	99 (0.5)	3.398 (1.874, 5.950) ***	<0.001
	No[R]	21423 (99.5)		
Asthma	Yes	2569 (12.0)	2.236 (1.672, 2.991) ***	<0.001
	No[R]	18803 (88.0)		
Heart Condition	Yes	501 (2.3)	1.683 (1.379, 2.055) ***	<0.001
	No[R]	21039 (97.4)		

[12] IBM Corp. Released 2020. IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp

Born 3 or More Weeks Before Due Date	Yes	2357 (11.1)	1.133 (0.896, 1.433)	0.172
	No[R]	18958 (88.9)		

* p<0.05, **p<0.01, ***p<0.001. R denotes reference groups.

Table 3: Mental Health / Neurological Disorders Associated with Anxiety or Depression in Children Ages 0-17

	Descriptive Statistics		**Univariate Model**	
IV	Response	Frequencies (n=21,599)	OR (99% CI)	p-value
Substance Abuse Disorder	Yes	56 (0.4)	10.438 (3.847, 28.318) ***	<0.001
	No[R]	15247 (99.6)		
Developmental Delay	Yes	1497 (6.9)	2.109 (0.971, 4.580)*	0.013
	No[R]	20012 (92.7)		
Intellectual Disability	Yes	258 (1.2)	0.813 (0.452, 1.463)	0.365
	No[R]	21274 (98.8)		
Autism ASD	Yes	606 (2.8)	6.345 (4.558, 8.832) ***	<0.001
	No[R]	20907 (96.8)		

* p<0.05, **p<0.01, ***p<0.001. R denotes reference groups.

Table 4: Family-Related Factors Associated with Anxiety or Depression in Children Ages 0-17

	Descriptive Statistics		**Univariate Model**	
IV	Response	Frequencies (n= 21,5999)	OR (99% CI)	p-value

ACE 1 – Hard to Cover Food or Housing for the Past 12 Months	Yes	9667 (56.6)	0.859 (0.732, 1.008)	0.014
	No[R]	7411 (43.4)		
ACE 3 – Parent or Guardian Divorced	Yes	4657 (22.2)	1.278 (1.055, 1.549) ***	< 0.001
	No[R]	16359 (77.8)		
ACE 4 – Parent or Guardian Died	Yes	659 (3.1)	0.985 (0.651, 1.490)	0.923
	No[R]	20324 (96.9)		
ACE 5 – Parent or Guardian Time in Prison	Yes	1299 (6.2)	0.922 (0.640, 1.329)	0.568
	No[R]	19682 (93.8)		
ACE 6 - Adults Slap, Hit, Kick, Punch Others	Yes	1029 (4.9)	0.985 (0.669, 1.451)	0.922
	No[R]	19905 (95.1)		
ACE 7 – Child was Victim of Violence	Yes	783 (3.7)	1.323 (0.886, 1.976)	0.072
	No[R]	20162 (96.3)		
ACE 8 – Lived with mentally ill family member	Yes	1733 (8.3)	2.694 (2.098, 3.460) ***	< 0.001
	No[R]	19183 (91.7)		
ACE 9 – Lived with person with alcohol or drug problem	Yes	1896 (9.1)	1.278 (0.961, 1.700) *	0.027
	No[R]	19029 (90.9)		
Anyone in Household Uses Cigarettes	Yes	2988 (14.0)	1.622 (1.401, 1.877) ***	< 0.001
	No[R]	18313 (86.0)		

* p<0.05, **p<0.01, ***p<0.001, R denotes reference groups.

Table 5: Community and Neighborhood – Related Factors Associated with Anxiety or Depression in Children Ages 0-17				
	Descriptive Statistics		**Univariate Model**	
IV	Response	Frequencies (n=21599)	OR (CI 99%)	p-value
Cash Assistance	Yes	20604 (95.4)	0.504 (0.372, 0.685) ***	< 0.001
	No[R]	489 (2.3)		
Food Stamps	Yes	18869 (89.4)	0.613 (0.520, 0.722) ***	< 0.001
	No[R]	2236 (10.6)		
Child is Safe at School	Definitely Agree[R]	11611 (77.3)		
	Somewhat Agree	3146 (21.0)	0.155 (0.081, 0.299) *** 0.253 (0.131, 0.490) *** 0.763 (0.359, 1.621)	< 0.001 < 0.001 0.355
	Somewhat Disagree	189 (1.3)		
	Disagree	66 (0.4)		
Child is Safe in Neighborhood	Definitely Agree[R]	14766 (69.9)		
	Somewhat Agree	5680 (26.9)	0.351 (0.219, 0.583) *** 0.448 (0.278, 0.722) *** 0.653 (0.374, 1.140) *	< 0.001 < 0.001 0.049
	Somewhat Disagree	512 (2.4)		
	Disagree	173 (0.8)		

Child Has Difficulty Making or Keeping Friends	No difficulty[R]	14316 (77.9)	0.060 (0.049, 0.073) *** 0.302 (0.246, 0.371) ***	< 0.001 < 0.001
	A little difficulty	3217 (17.5)		
	A lot of difficulty	844 (4.6)		
Child Has Been Bullied, Picked On, or Excluded by Others	Definitely True	679 (4.5)	8.812 (7.111, 10.920) *** 3.452 (3.011, 3.958) ***	< 0.001 < 0.001
	Somewhat True	2871 (18.8)		
	Not True[R]	11684 (76.7)		
ACE 10 - Child Has Been Treated Unfairly Due to Race	Yes	621 (3.0)	2.362 (1.820, 3.065) ***	< 0.001
	No[R]	20362 (97.0)		
Child Bullies Others	Definitely True	110 (0.7)	1.751 (0.953, 3.216) * 3.465 (2.790, 4.304) ***	0.018 < 0.001
	Somewhat True	687 (3.2)		
	Not True[R]	14461 (94.8)		

People in Neighborhood Help Each Other Out	Definitely Agree[R]	8740 (41.4)	0.434 (0.334, 0.565) *** 0.554 (0.428, 0.716) *** 0.799 (0.592, 1.079)	<0.001 <0.001 0.054
	Somewhat Agree	9912 (46.9)		
	Somewhat Disagree	751 (3.6)		
	Definitely Disagree	1725 (8.2)		
People in Neighborhood – Parks or Playgrounds	Yes	15721 (74.3)	0.909 (0.798, 1.034)	0.057
	No[R]	5436 (25.7)		

* p<0.05, **p<0.01, ***p<0.001. R denotes reference groups.

Table 6: Multivariate Logistic Regression Model of Factors Associated with Anxiety or Depression in Children ages 0-17

I.V.	p-value	CI (99%)
Heart Condition Yes No[R]	0.054	1.336 (0.908, 1.966)
Asthma Yes No[R]	<0.001	1.666 (1.394, 1.991) ***
Born 3 weeks or more before due date Yes No[R]	0.016	1.214 (0.988, 1.491)
Substance Abuse Yes No[R]	<0.001	5.429 (2.185, 13.489) ***
ACE 3 (Parent or Guardian Divorced) Yes No[R]	<0.001	1.316 (1.125, 1.539) ***
ACE 8 (Lived with Mentally Ill) Yes No[R]	<0.001	2.213 (1.820, 2.691) ***

Child is Safe at School		
Definitely Agree[R]		
Somewhat Agree	0.181	0.915 (0.771, 1.085)
Somewhat Disagree	0.013	1.602 (0.984, 2.606) *
Definitely Disagree	0.002	2.861 (1.186, 6.902) **
Child Has Difficulty Making Friends		
No difficulty[R]		
A little difficulty	<0.001	0.123 (0.094, 0.161) ***
A lot of difficulty	<0.001	0.412 (0.318, 0.535) ***
Child Has Been Bullied		
Definitely true	<0.001	2.649 (1.978, 3.547) ***
Somewhat true	<0.001	1.751 (1.468, 2.087) ***
Not true[R]		
Bullies Others		
Definitely True	0.098	0.584 (0.253, 1.349) *
Somewhat True	<0.001	1.433 (1.090, 1.883) ***
Not True[R]		

* p<0.05, **p<0.01, ***p<0.001. R denotes reference groups.

IV. DESCRIPTIVE STATISTICS:

Descriptive statistics for tables 1, 2, 3, 4, and 5 showed equal proportions of gender with 51.2% male children (n = 11067) and 48.8% female children (n = 10532). The most frequently reported race was non-Hispanic white at 76.3% (n = 16482), followed by two or more races at 8.1% (n = 1755), non-Hispanic black at 6.7% (n = 1447), Asian at 5.2% (n = 1125), some other race at 2.7% (n = 573), American Indian or Alaskan Native at 0.7% (n = 155), and Hawaiian / Pacific Islander at 0.3% (n = 62). Ages The mean age of participants was 9.43 years with a standard deviation of 5.260 years.

For the mental health index score, our results indicate that 10.6% (n = 2284) of caregivers reported that the child has anxiety, depression, or both conditions, while 89.4% (n=19207) of caregivers responded that the child does not have anxiety or depression.

Concerning conditions related to physical health, asthma was the most frequently reported response with 12.0% (n = 2,569), followed by being born 3 or more weeks before due date at 11.1% (n=2357), heart conditions at 10.9% (n=501), and diabetes at 0.5% (n=99).

For conditions related to pediatric mental and neurological health, developmental delay was the most frequently reported response at 6.9% (n=1497), followed by autism at 1.2% (n= 258), intellectual disability at 1.2% (n= 258) and substance abuse disorder at 0.4%. (n = 56) (Table 4).

Of all children in the study, those who responded "yes" to having experienced ACE 1 (hard to cover food or housing for the past 12 months) appeared as the most frequent positive response at 56.6% (n=9667), followed by those who have experienced ACE 3 (parent or guardian divorced) at 22.2% (n=4657) (Table 5).

For neighborhood and school – related factors, 69.9% of children feel safe in their neighborhood (n = 14766) rather than unsafe (n = 5680) (Table 6). Similarly, 74.3% of respondents stated that their child has access to parks and playgrounds (n = 15721) and 88.3% either agree or somewhat agree that people in the neighborhood help each other out (n = 18652).

V. UNIVARIATE MODEL:

The final univariate logistic regression model indicated a variety of factors across four categories that displayed an initial association with pediatric anxiety and/or depression. Looking at the physical conditions related to childhood anxiety and depression, children who were born 3 weeks or more before their due date displayed a weaker association with a diagnosis of anxiety or depression (OR=1.133 [0.896, 1.433], p = 0.172) (Table 3). In addition, children with diabetes are more likely to have a diagnosis of anxiety or depression (OR=3.398 [1.874, 5.950] p <0.001) than children with a heart condition (OR 2.236 [1.672, 2.991] p <0.001) or asthma (OR 1.683 [1.379, 2.055] p <0.001) (Table 3).

In addition, children who have had a substance abuse disorder are at a more significant risk for a diagnosis of anxiety or depression compared to children with a developmental delay (OR 10.348 [3.847, 28.318] and OR 2.109 [0.971, 4.580] respectively) (Table 3).

Furthermore, the univariate model indicates that the highest associations with anxiety and depression are present among children who live with mentally ill persons (ACE 8) (OR 2.694 [2.098,

3.460]), children whose parents have divorced (ACE 3) (OR 1.278 [1.055, 1.549]), and children who live with anyone who uses cigarettes (OR 1.622 [0.961, 1.700]) (Table 4).

Finally, when examining neighborhood and community-related factors, children who have experienced being bullied, picked on, or excluded by others (n= 679) are about 8.8 times more likely to be diagnosed with anxiety or depression (OR 8.812 [7.111, 10.920]). In contrast, children who bully others are about 1.8 times more likely to be diagnosed with anxiety or depression (OR 1.751 [0.953, 3.216]) (Table 5). Additionally, the univariate model indicates that an inverse association exists between people in the neighborhood helping each other out and having depression or anxiety (OR 0.434 [0.334, 0.565]) (Table 5).

VI. MULTIVARIATE MODEL:

The final multivariate logistic regression model considering individual, emotional & neurological, family, and community factors showed a significant association with anxiety and depression (Table 6). Notably, children who have had a history of substance abuse (OR 5.429 [2.185, 13.489]) face the highest risk of developing depression or anxiety (Table 6). In addition, a high prevalence of anxiety and depression exists among children whose parents or guardians have divorced (OR 1.316 [1.125, 1.539]) and children who live with a mentally ill individual (OR 2.213 [1.820, 2.691]) (Table 7). Most notably, children who have experienced bullying are about 2.6 times more likely to experience anxiety or depression (OR 2.649 [1.978, 3.547]). However, children who have bullied others in the past display a minimal association with experiencing anxiety or depression (OR 0.584 [0.253, 1.349]).

In contrast, children who feel safe at school are less likely to experience anxiety or depression (OR 0.350 [0.145, 0.843]) (Table 6). However, children who disagree that they feel safe at school face a higher risk of being diagnosed with anxiety or depression (OR 2.861 [1.090, 1.833]) (Table 6). In addition, children who have bullied others in the past display a minimal association with experiencing anxiety or depression (OR 0.584 [0.253, 1.349]) (Table 6). In this way, when testing these variables

that were significant in the univariate model with other factors, they displayed an overall weaker association with anxiety and depression.

VII. DISCUSSION:

The objective of this study is to determine whether physical, emotional & neurological, family-related, or community-related variables display the strongest association with anxiety or depression among children in the United States. Based on our findings, variables related to family life and the school environment display the most significant association with anxiety and depression among U.S. children ages 0-17 years old.

Concerning physical conditions, children diagnosed with asthma demonstrated a stronger association with anxiety and depression, which coincides with Del Giacco et. al's findings of an association between anxiety disorders and asthma. However, we were limited by our ability to isolate anxiety and depression when testing for an association between asthma and anxiety or depression. Therefore, we could not determine for certain whether depression or anxiety had a greater impact on children with asthma. In addition, our findings demonstrate that diabetic children display a weaker association with anxiety or depression, which contradicts previous literature that found an association between diabetes and anxiety or depression. According to a 2019 meta-analysis that surveyed 10,349 Iranian patients, anxiety and depression are more prevalent among diabetic patients.[13] Therefore, although our findings did not display a significant association between diabetes and anxiety or depression, other data and evidence confirms this relationship, and further research should be conducted to find a possible causal relationship between these two factors.

Moreover, children who were born 3 or more weeks earlier than their due date display a less significant association with anxiety or depression, which contradicts Chung et. al's finding that premature infants face a higher risk of developing anxiety, depression, and other cognitive

[13] Khalighi Z, Badfar G, Mahmoudi L, Soleymani A, Azami M, Shohani M. The prevalence of depression and anxiety in Iranian patients with diabetes mellitus: A systematic review and meta-analysis. *Diabetes Metab Syndr*. 2019; 13(4): 2785-2794.

impairments. However, it was noted that advancements in neonatal intensive care units have improved outcomes for premature infants, which might explain this weaker association we found. Therefore, only children who have asthma might be at a greater risk of having anxiety or depression, which supports the original hypothesis in that physical conditions would display an overall weaker association with anxiety and depression.

For the emotional and neurological variables examined, children who have a substance abuse disorder display the highest association with anxiety and depression. Although recent literature has indicated a strong association between substance abuse and ACEs, our data found that a small number of children have experienced a substance abuse disorder (n = 56). In this way, although substance abuse is a strong indicator of other issues occurring in a child's life, our results support the original hypothesis because emotional and neurological variables hold a smaller association with anxiety and depression.

Concerning family-related variables, children whose parents or guardians have divorced (ACE 3) or who live with a mentally ill family member (ACE 8) face a higher risk of being diagnosed with anxiety or depression. These results are consistent with Auersperg et. al's findings of an association between parental divorce and developing mental health disorders. Due to the lack of security that many children who have experienced ACEs feel, it is not uncommon for higher instances of anxiety and/or depression to be observed among these groups. Therefore, ACEs have a profound effect on childhood development, and our findings reinforce that a need exists for therapy and support programs for children who are prone to experiencing ACEs. Therefore, these findings concerning family life are consistent with the original hypothesis as family-related variables and adverse childhood experiences hold a significant association with anxiety and depression among children in the US in comparison to physical health, emotional and neurological well-being, and community safety.

Concerning school and neighborhood factors, our findings indicate that children who do not feel safe at school face a higher risk of developing anxiety or depression. In addition, children who have been bullied are more likely to develop anxiety and/or depression. Peer interactions are an

integral aspect of childhood development, and if a child experiences bullying on a regular basis, the child faces a higher risk of developing anxiety and/or depression. In this way, our findings concerning school safety and bullying agree with the original hypothesis in that school safety is a significant contributor to childhood development.

To improve mental health outcomes for pediatric patients, it is critical that health care providers and families take an active role in fostering a nurturing environment for children. In accordance with the American Academy of Pediatrics, children must have access to high-quality and affordable healthcare, as regular check-ups and screenings can prevent the development of physical and mental illnesses. In addition, intervention methods to prevent adverse mental health outcomes have shown promise in recent years, as Rith-Najarian et. al identified that the FIRST intervention strategy (feeling calm, increasing motivation, repairing thoughts, solving problems, trying the opposite) addresses a variety of mental health disorders while adjusting to the specific needs of the child and family.[14]

VIII. STRENGTHS AND WEAKNESSES:

One of our strengths of this study was that our NSCH dataset was a comprehensive study that surveyed over 21,000 U.S. individuals. Due to this high number, this dataset is a comprehensive representation of children and families across the US. In addition, the univariate and multivariate logistic regression could be completed under a 99% CI with this high n-value, which is able to produce more accurate OR and CI results.

However, one limitation was that the NSCH is completed by parents, not children, so a possibility exists that a parent proxy may not capture some data such as substance abuse, anxiety, or depression due to the sensitivity of these questions. For example, only 56 out of 21,599 respondents said “yes” to having ever experienced a substance abuse disorder. This statistic is most likely

[14] Rith-Najarian LR, Triplett NS, Weisz JR, McLaughlin KA. Identifying intervention strategies for preventing the mental health consequences of childhood adversity: A modified Delphi study. *Dev Psychopathol*. 2021; 33(2): 748-765.

underreported or underdiagnosed, which leaves the opportunity for diagnostic tools and screenings to improve for pediatric patients.

IX. CONCLUSION:

Considering the mental health of children ages 0-17 in the United States, our data indicates that pediatric mental health and wellness largely depends on the family environment. Within family-related variables, children whose parents have divorced (ACE 3) and children who live with a mentally ill family member (ACE 8) displayed associations with anxiety and depression among children ages 0-17. Furthermore, as the prevalence of pediatric anxiety and depression increases, so does the need for access to quality healthcare services and studies to further identify the causations of these mental health disorders. The effects of mental health struggles during childhood have been known to last well into adulthood, so identifying these associations early can improve treatment options for patients, enhance school safety, and address bullying.