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**Adverse Childhood Experiences and Their Relation to
Parenting Stress and Parenting Practices**

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Abstract

Introduction: Trauma represents a significant public health issue that has been associated with a number of adverse physical and mental health outcomes. Additionally, parenting practices have been found to be affected by trauma. Adverse childhood experiences (ACEs), one conceptualization of trauma, are also associated with adverse outcomes. However, limited research has been done on ACEs and their association to parenting stress and practices. As such, this study aims to understand this relationship. **Methods:** Surveys (n=1985) were administered to a population of low-income, parenting women to determine community needs and eligibility for a mental health intervention. At the baseline visit, measures to assess women's parenting stress and practices were completed, and included the Parenting Stress Index – Short Form (PSI-SF) and Positive Parenting Practices (PPP) scale. Linear regression procedures (n=81) were conducted to assess the relationship between ACEs and parenting stress and practices, including if there was a dose-response relationship. Given the significant homogeneity of the sample and results of Fisher's Exact tests, no demographic or clinical variables were controlled for in these analyses. **Results:** For the PSI-SF, significant, dose-response relationships were observed between ACEs and the PSI Total Stress score ($p<0.05$), the Difficult Child subscale ($p<0.05$), and the Parental Distress subscale ($p<0.10$). No significant relationships were found between ACEs and the Parent-Child Dysfunctional Interaction subscale of the PSI-SF or on the PPP scale. **Conclusion:** Given the association observed between ACEs and parenting stress, as measured by the PSI-SF, and the potential long-term effect ACEs could have on parenting-related variables, it is critical that future psychosocial interventions and policy initiatives preventing ACEs are developed. Additionally, future research is needed with larger, more representative samples to confirm the relationship between ACEs and parenting stress.

Key words: Trauma; adverse childhood experiences; parenting stress; parenting practices

Introduction

Trauma represents a significant public health issue given its current prevalence in the United States.¹ Typically, traumatic events are assessed through structured tools, including DSM interviews and the Traumatic Life Events Questionnaire.² Examples of traumatic events included on the DSM-5 interview for PTSD include disasters, accidents, war exposure, experiencing or witnessing assault, and the death of, or threat of injury to, a close individual due to disasters, accidents or violence.¹ While trauma has been assessed and defined in a number of ways, recent research using the DSM-5 found that 89.7% of individuals in the United States have experienced a traumatic event at some point in their lives.¹ These numbers are problematic given that trauma has been associated with poor long-term outcomes, such as PTSD,³ and has specifically been associated with poor outcomes for adult women.⁴

Adverse childhood experiences (ACEs) are one conceptualization of trauma that have gained increasing attention in recent years. While the conceptualizations of trauma, such as the conceptualization found in the DSM-5, are fairly broad and include a number of experiences, such as war and disasters,¹ ACEs do not encompass all of these experiences. Instead, ACEs include three categories - childhood abuse, neglect, and household dysfunction.⁵ Additionally, ACEs are specific to a certain timeframe, as they only include experiences from when an individual was 18 years of age or younger.⁵ This is a critical component of the conceptualization of ACEs, as this early exposure to trauma, and the subsequent stress related to this repeated exposure, has been found to be associated with the disruption of brain architecture, and ultimately issues with the stress-response system.⁶ For example, over time, this repeated exposure to stressful experiences (toxic stress), can result in individuals who are “both more reactive to even mildly adverse experiences and less capable of effectively coping with future

stress.”⁷

Similarly to the broad forms of trauma discussed above, ACEs can result in a number of adverse outcomes for individuals. For example, ACEs have been associated with behavioral difficulties,⁸ adolescent pregnancy,⁹ poorer educational outcomes and unemployment,^{8,10} substance use and abuse,¹¹⁻¹³ poorer physical health outcomes,^{11,14-16} and poorer mental health outcomes or symptoms,^{11,15,17-21} with a dose-response relationship being found between ACEs and a number of these outcomes. Further, research with low-income women has shown that specific ACEs, such as abuse and neglect, have been associated with reduced social support.²²

Given some of the negative outcomes that result from trauma, several research studies have sought to examine how traumatic experiences may affect parenting practices. One study with low-income, parenting women found that “physical abuse was associated with increased hostile-intrusive behavior toward the infant,” while “sexual abuse was associated with decreased involvement with the infant.”²³ Further, a number of studies have shown that outcomes associated with trauma, including mental illness, are associated with parenting behaviors, such as insecure parent-child attachment (bond) and decreased maternal sensitivity (responding to a child’s signals).^{24,25}

While specific types of trauma, such as physical or sexual abuse, have been studied in relation to future parenting practices,²³ there has been limited research specifically on the totality of ACEs in relation to parenting stress and practices, with only one study published in 2016 examining the relationship between parenting stress and ACEs.²⁶ The authors found a positive association between ACEs and the Parental Distress subscale of the PSI-SF.²⁶ As such, this research aimed to (1) understand the relationship between ACEs and parenting stress and practices, as measured by several parenting scales; and (2) to determine if a dose-response

relationship existed between ACEs and parenting stress and practices.

Methods

The MOMS Partnership

The New Haven Mental Health Outreach for MotherS (MOMS) Partnership is a collaboration between multiple community, state and academic agencies, that are dedicated to transforming “service delivery systems for mothers and children through community and neighborhood-based resources dedicated to wellness.”²⁷

Data Collection and Recruitment

Starting in 2012, the MOMS Partnership began administering needs assessments within the New Haven community. Women were recruited for needs assessments (described in the study measures section) by trained community mental health ambassadors (CMHAs).²⁸ CMHAs visited and worked in a number of locations within the community in an effort to recruit a representative group of parenting women.²⁹ For further information on the needs assessment methods and the training of CMHAs, please see Smith et al. 2013 and Smith et al. 2015.^{28,29}

Needs assessments were used not only to determine the needs of the community, but to determine if parenting women were eligible for services offered by the MOMS Partnership. One service offered by the MOMS Partnership is a Stress Management course. As part of this course, parenting women can participate in group cognitive behavioral therapy (CBT) over the course of 8 classes with other parenting women within the community. Inclusion criteria for the Stress Management course included that the woman: (1) served as a parent, primary caregiver or guardian; (2) scored a 16 or higher on the Center for Epidemiologic Studies Depression Scale (CES-D), which is a score indicative of depression (this score could be obtained either through

the needs assessment or through follow-up screening); (3) was a United States citizen living in New Haven county; (4) was affected by Hurricane Sandy; (5) had an income that was $\leq 325\%$ of the Federal Poverty Limit; (6) did not show signs of suicidality or psychosis; and (7) did not participate in the pilot for the Stress Management program.

Ethical approval for both the needs assessment and Stress Management course was obtained from the Yale University Institutional Review Board. Compensation for the needs assessment consisted of a gift card with a \$10 value (either to Walmart or Stop & Shop), while compensation for the Stress Management course consisted of \$370 for completing all assessments and classes.

Study Measures

Needs Assessment

The needs assessment tool is comprised of six sections that are designed to capture information about the mother and her family, motherhood, basic needs, housing, and the physical and emotional health of mothers. Questions for the needs assessments were developed through an iterative process with a number of community stakeholders. Within the section regarding the physical and emotional health of mothers, parenting women were asked 8 questions related to their own ACEs.

Parenting Stress Index – Short Form

The full Parenting Stress Index (PSI) consists of 101 questions that are “designed to measure the relative magnitude of stress in the parent-child system.”³⁰ For the purposes of this study, the Parenting Stress Index - Short Form was utilized, and was administered at the baseline visit of the Stress Management course. The PSI-SF consists of 36 questions, which capture three domains – Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child, with 12

questions asked for each of these domains.³⁰ The sum of all questions is used to capture the Total Stress score.³⁰ The PSI-SF has been validated and used in a number of contexts with parents.³⁰⁻³³

Positive Parenting Practices

Positive Parenting Practices (PPP), which was also administered at the baseline visit of the Stress Management course, is a 6-item measure from the Chicago Youth Development Study, which measures how often parents have engaged in rewarding behaviors with their child during the previous 12 months.³⁴ Examples of rewarding behaviors include smiles, hugs, and special privileges.³⁴ Each item can be answered on a 1-5 scale (with 5 indicating almost always engaging in the listed behavior).³⁴ The average score for the 6 items comprises the individual's score on the assessment.³⁴

The Analytic Sample

As shown in Figure 1, 81 parenting women were included in the analytic sample for this study. Needs assessments were initially completed by 1,985 women. Of these women, 333 were eligible for Stress Management classes based on their CES-D scores and housing status.

Ultimately, 153 parenting women enrolled in Stress Management courses. Of these, 68 were excluded for not having PSI-SF data or for having incomplete PSI-SF data, and 4 were excluded for not having ACEs data, for a total sample of 81.

Data Analysis

Univariate analyses were run to determine the demographic and clinical characteristics of parenting women, their experiences with ACEs, parenting stress, and parenting practices. For the demographic and clinical characteristics analysis, results were separated into those who had not experienced an ACE (0), and those who had (1-8), using a binary variable. Separate Fisher's Exact tests were then performed utilizing the binary variable for ACEs just described, and each

of the demographic and clinical characteristics. These tests were performed to determine if these characteristics differed by whether an individual had experienced an ACE.

To determine the relationship between ACEs and parenting practices, several variables were created. First, the raw scores for the PSI Total Stress score and for each of the PSI-SF subscales were converted to corresponding percentiles, with the 90th-99th percentiles representing significant stress, the 85th-89th percentiles representing high stress, the 16th-84th percentiles representing normal stress, and the 0-15th percentiles representing below normal stress. For full information on this conversion process, please see Abidin 2012.³⁰ Second, scores on the PPP were averaged. Finally, each participants' score on the ACEs portion of the needs assessment was summed, with possible results ranging from 0-8. Individual linear regression procedures were then conducted with each of the four PSI-SF scales and with the PPP scale to determine if a relationship, including a dose-relationship, existed between ACEs and these variables.

No demographic characteristics were controlled for in these models. We hypothesized that controlling for any demographic characteristics would result in over-controlling given the significant homogeneity of our study population. To test this, we used Fisher's Exact tests on ACEs and each of the demographic characteristics, as described above. These tests showed no significant associations between any demographic variables and ACEs, and thus, no demographic characteristics were controlled for in the model. Further, Fisher's Exact tests were conducted with clinical characteristics, as described above. Given that these tests again showed no significant associations, and given that all women in the sample had symptoms indicative of depression as measured by scores of ≥ 16 on the CES-D, no clinical characteristics were controlled for.

Results

Characteristics of Study Participants

Table 1 presents information on the demographic and clinical characteristics of parenting women broken down by ACE status (N=81). As Fisher's Exact tests did not show statistically significant differences in the demographic characteristics by ACEs, characteristics are presented within the results section for the entirety of the sample, regardless of ACE status. Overall, the majority of women in the study were between the ages of 25-44 (72.97%; n=54). Additionally, the majority of women reported being Black or African American (either Hispanic or non-Hispanic; 77.50%; n=62). In terms of educational and occupational functioning, the majority of women had completed between 9-12 years of schooling (53.73%; n=36) and reported being unemployed (63.64%; n=42).

Many parenting women described challenges with emotional health, with 25.64% (n=20) reporting that their mental health was poor or very poor. Additionally, 33.75% (n=27) reported ever receiving treatment for emotional health challenges, including stress, sadness, or anxiety. Of the mental health conditions assessed, the most commonly reported were a major depressive episode (72.84%; n=59) and generalized anxiety disorder (55.56%; n=45).

Experiences of ACEs and Parenting Practices

Details on ACEs among parenting women can be found in Table 2. Overall, 66.67% (n=54) of women reported experiencing at least one ACE. Among these experiences, sexual abuse (35.80%; n=29), emotional abuse (34.57%; n=28), the imprisonment of a family member (27.16%; n=22), and substance use of a family member (27.16%; n=22) were the most common experiences reported by women.

Details on the scores for the PSI-SF and PPP scale broken down by ACE status can be

found in Table 3. Again, though in the table these scales are presented by ACE status, results are presented here for all participants, regardless of ACE status. Overall, on the PSI-SF, 17.29% (n=14) had Total Stress scores indicative of high or significant stress. Of the three subscales, the highest percentage of those with high or significant stress was observed on the Parent Distress scale (34.57%; n=28) and the lowest percentage was observed on the Parent-Child Dysfunctional Interaction scale (9.87%; n=8). On the PPP, the majority of women scored an average of 5 (88.89%; n=72), which indicates almost always agreeing with all items on the scale.³⁴

Parenting Stress Index – Short Form

Information on the association between ACEs and parenting practices, as measured by the PSI-SF, can be found in Table 4. Graphs showing the linear relationship between each PSI-SF scale and ACEs can be found in Figure 2. Statistically significant relationships at the $p < 0.05$ level were found for both the Total Stress score and on the Difficult Child subscale. Each additional ACE was found to be associated with a 3.19 increase in percentile for the Total Stress score and a 3.69 increase in percentile on the Difficult Child subscale. Additionally, a statistically significant relationship at the $p < 0.10$ level was found for the Parental Distress subscale, with each additional ACE being associated with a 2.45 increase in percentile on the subscale. ACEs were not found to be significantly associated with an increase in percentiles on the Parent-Child Dysfunctional Interaction subscale.

Positive Parenting Practices

Information on the association between ACEs and parenting practices, as measured by the PPP can be found in table 4. No statistically significant relationships were found between ACEs and the average PPP score, with a non-significant correlation between these two variables of -0.01.

Discussion

Prior to this study, research had shown a relationship between specific traumatic events and parenting practices.²³ However, limited research had been conducted specifically on ACEs in relation to parenting stress and practices.²⁶ As such, this study aimed to understand this association using measures of parenting stress (PSI-SF) and positive parenting practices (PPP), in relation to ACEs, using linear regression procedures.

Significant, dose-response relationships were observed at the $p < 0.05$ level for the PSI Total Stress score and for the Difficult Child subscale, and at the $p < 0.10$ level for the Parental Distress subscale of the PSI-SF. However, no statistically significant relationship was observed on the Parent-Child Dysfunctional Interaction subscale of the PSI-SF. Further, no statistically significant relationship was observed for the PPP scale in relation to ACEs.

Previous research has shown that ACEs have been associated with a number of negative long-term outcomes.⁸⁻²¹ This study was able to add to the existing literature by showing that ACEs are positively associated with parenting stress. One potential mechanism for the increased parenting stress found in this study might be the dysregulation of the stress-response system caused by traumatic experiences as a child. Research has shown that early traumatic experiences can have an adverse effect on a number of important biological functions, and subsequent long-term outcomes, as they can cause “cumulative damage over time” and can embed “adversities during sensitive developmental periods.”³⁵

For example, over time, biological mechanisms related to stress, including processes related to the hypothalamic-pituitary-adrenocortical (HPA) axis, are dysregulated, which prevent the body from “returning to homeostatic balance.”⁷ Thus, individuals who have had these repeated exposures are likely to experience difficulty when faced with subsequent stressful

experiences, as their stress systems have already been unduly burdened, and will not be able to as effectively regulate bodily processes related to stress. This may explain why parenting women in this study who experienced ACEs, and in particular, multiple ACEs, were shown to have increased levels of parenting stress, as measured by the PSI-SF.

Due to the increased levels of stress that parenting women who have experienced ACEs may have, and due to the subsequent dysregulation of the stress system, it is possible that the parenting styles of these women could be affected. Baumrind posits that there are four distinct parenting styles - authoritarian, authoritative, neglectful, and permissive.³⁶ One recent study has shown that “mothers who experience high levels of trauma symptoms are more likely to parent using authoritarian or permissive behaviors,” as measured by the Parenting Practices Questionnaire (which does not include neglectful parenting styles).³⁷ Further, a study looking at poor parenting practices, which includes factors such as neglect and aggression toward the child, found that maltreatment as a child was associated with poor parenting practices for mothers, and that childhood sexual abuse specifically was associated with aggressive parenting behaviors.³⁸ These findings are of critical importance, given that certain parenting behaviors captured within these parenting styles, such as neglect, are considered to be ACEs.⁵ Thus, it is possible for an inter-generational transmission of trauma to occur.³⁸

As discussed, statistically significant associations on the Total Stress score, Parental Distress and Difficult Child subscale were found. The Parental Distress subscale is designed to assess factors that may affect an individual’s parenting practices, such as limited social support, depression, or parental conflict with a partner.³⁰ Research has shown that ACEs “can result in diminished capacity to respond to additional stressors in a healthy way,”³⁹ and as such, it is likely that increased ACE scores were associated with elevated percentiles on this scale, as parenting

women may have had difficulty responding to additional parental stressors, such as parental conflict. Additionally, previous research has shown that early traumatic experiences are associated with reduced social support in adulthood.²² Thus, parenting women may have seen elevated percentiles on the Parental Distress subscale due to more limited social networks, as more robust social networks, which could have helped buffer against stress, were not available. However, this study cannot confirm this association, as mediating factors were not measured.

The Difficult Child subscale is designed to capture parenting challenges related to a child's self-regulation or behavioral difficulties.³⁰ Recent research with parenting women has shown that mothers with mental health and substance use challenges were more likely to have children who experienced behavioral difficulties.⁴⁰ Given that studies have shown that ACEs are associated with a number of adverse mental health outcomes,^{11,15,17-21} it is possible that the increase in percentiles on the Difficult Child subscale, associated with the experience of each additional ACE, may be due to mental health outcomes related to the experience of trauma.

A significant association between ACEs and the Parent-Child Dysfunctional Interaction subscale was not found. This subscale is designed to measure the "perception that the child does not meet...expectations" and is seen as a "negative element" in the life of a parent.³⁰ This finding could be due to the homogeneity observed in the sample on this measure, as only 8 individuals had scores indicating high or significant stress, with the majority of the sample having scores indicative of normal or below normal stress in this domain. Additionally, this result may be due to small sample size.

Finally, no significant association was found between the PPP scale and ACEs. This result is likely due to the significant homogeneity in results on this scale, as 72 of the 81 participants had an average score of 5, which is the highest possible score on the scale, and

indicates that the mother almost always reports engaging in all behaviors.³⁴ It is possible that due to social desirability bias, women could have over-reported the rewarding behaviors described in the survey, perhaps believing that not endorsing some items, such as giving a “hug, pat on the back, or kiss,”³⁴ could be viewed unfavorably.

Given the relationship found between ACEs and parenting stress, it is critical to develop both psychosocial and policy interventions to address these issues. Psychosocial research examining potential parenting interventions for adults will be especially critical, because research has shown that the negative effects of trauma can be lessened with early intervention,⁴¹ and as such, many interventions have been developed for younger populations,⁴² while limited research has been completed related to adult populations.

Additionally, policies could be created, which either seek to screen children for trauma, and therefore intervene early before parenting practices have been affected, or to develop environments that are more sensitive and aware of the potential consequences of trauma. Policies creating more sensitive and aware school environments have been advocated for by the trauma-informed school movement,⁴³ while policies creating more sensitive and aware community environments and service systems have been advocated for by the trauma-informed systems movement.⁴⁴ Further, policies could be created to help aid adults who have experienced ACEs, such as policies that promote affordable access to appropriate mental health and parenting services.

Strengths and Limitations

This study was able to address a critical gap in the literature on whether ACEs have an effect on parenting stress and practices. This study benefited from the use of the PSI-SF, which is a validated measure that has been used in a number of studies with parents.³⁰⁻³³

While the study was able to address this critical gap, there are a number of limitations that must be considered. First, the sample size for this study was small. Given additional statistical power, it is possible that additional associations could have been identified. Second, this study focused on a homogenous population of low-income, parenting women living in public housing who scored highly on the CES-D. Thus, results may not be generalizable to other populations, including parenting men, those not living in public housing, those of other socio-economic statuses, and those not currently experiencing high depressive symptoms.

Third, there are potential limitations related to the measurement of ACEs that must be considered. For example, questions related to ACEs, such as sexual abuse, are sensitive topics. As such, it is possible that women under-reported their experiences. Additionally, ACEs were measured through 8 yes/no questions. However, the full ACEs battery consists of several additional questions that may have more accurately assessed ACEs.⁵

Future Research Studies

Further research is needed to explore the relationship between adverse childhood experiences and parenting stress and practices. Future research should (1) utilize larger sample sizes; (2) utilize more diverse samples of individuals, including fathers; (3) examine parenting practices through other potential measures, including the Parent-Child Attachment - Rochester Youth Development Study scale, the Parental Involvement - Chicago Youth Development Study scale, and the Parental Supervision - Rochester Youth Development Study scale;³⁴ and (4) examine potential mediators, such as social support. Additionally, future research should explore not only the relationship between ACEs and parenting stress and practices, but whether the parenting stress and practices resulting from these experiences affect child outcomes, including emotional, behavioral, and school-related outcomes.

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Figure 1: Consort Diagram for Stress Management Classes

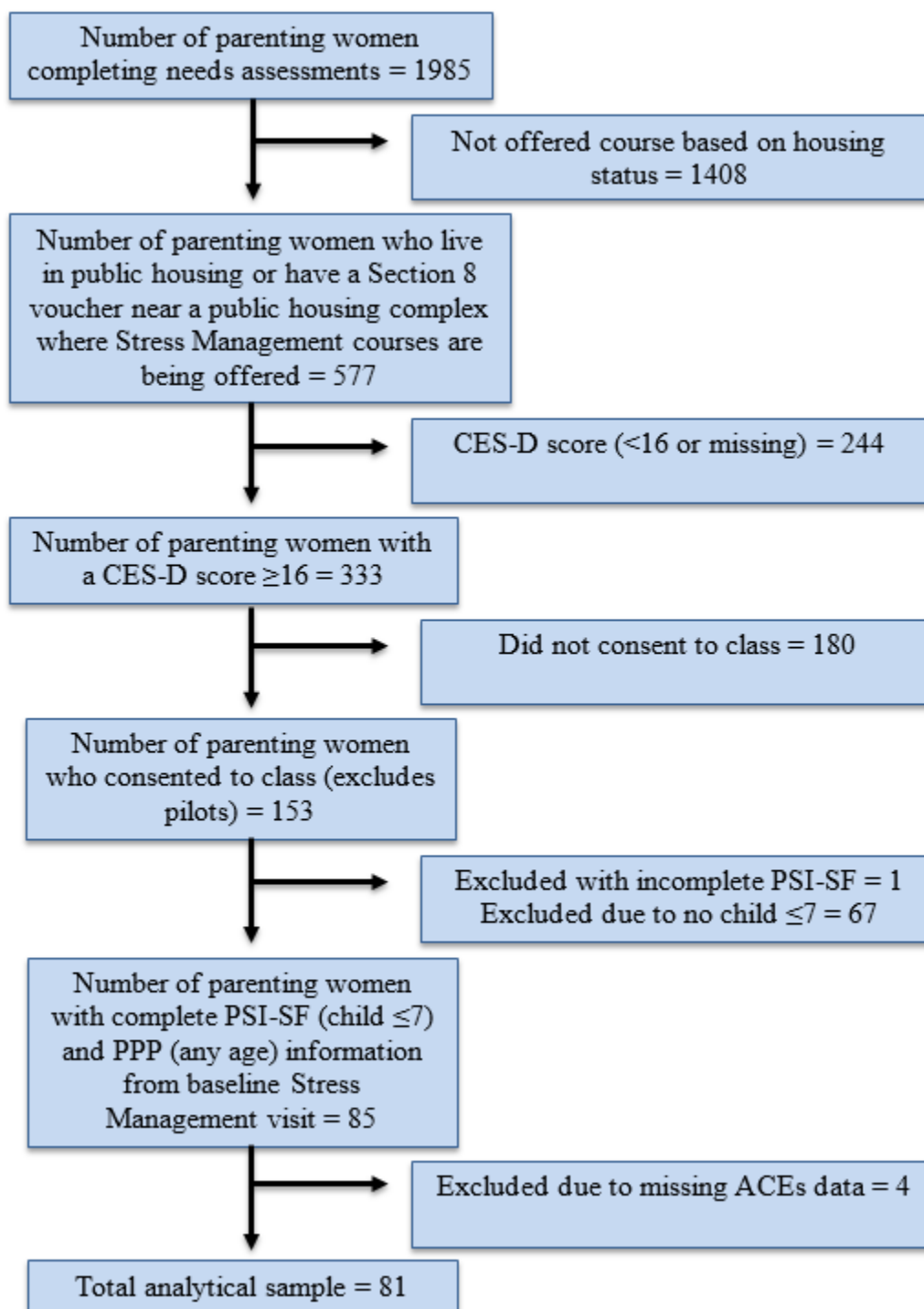


Table 1: Demographic and Clinical Characteristics of Parenting Women (N=81)

Characteristic	No ACEs		ACEs	
	n	%	n	%
Age Group (n=74)				
18-24	4	16.67	5	10.00
25-34	7	29.17	23	46.00
35-44	9	37.50	15	30.00
45-54	4	16.67	5	10.00
55+	0	0.00	2	4.00
Race/Ethnicity (n=80)				
White, non-Hispanic	2	7.69	4	7.41
Black or African American, non-Hispanic	20	76.92	37	68.52
White, Hispanic	3	11.54	6	11.11
Black or African American, Hispanic	1	3.85	4	7.41
Other	0	0.00	3	5.56
Highest Level of Education Achieved (n=67)				
Elementary School (1-8 years)	1	4.35	1	2.27
High School (9-12 years)	13	56.52	23	52.27
College/Vocational School or Professional/Graduate (13-20 years)	9	39.13	20	45.45
Are you currently employed? (n=66)				
Yes, full time	3	13.64	1	2.27
Yes, part time	7	31.82	13	29.55
No	12	54.55	30	68.18
How would you rate your emotional health? (n=78)				
Excellent	0	0.00	0	0.00
Good	7	26.92	8	15.38
Fair	15	57.69	28	53.85
Poor	2	7.69	12	23.08
Very poor	2	7.69	4	7.69
Have you received treatment for stress, sadness/depression or anxiety? (n=80)				
Yes	7	25.93	20	37.74
No	20	74.07	33	62.26
Major Depressive Episode (n=81)				
Yes	18	66.67	41	75.93
No	9	33.33	13	24.07
Post-Traumatic Stress Disorder (n=81)				
Yes	4	14.81	9	16.67
No	23	85.19	45	83.33

Panic Disorder (n=81)				
Yes	3	11.11	15	27.78
No	24	88.89	39	72.22
Generalized Anxiety Disorder (n=81)				
Yes	13	48.15	32	59.26
No	14	51.85	22	40.74

Table 2: Adverse Childhood Experiences (N=81)

Characteristic	n	%
Experienced any ACE (n=81)		
Yes	54	66.67
No	27	33.33
Number of ACEs (n=81)		
0	27	33.33
1	14	17.28
2	13	16.05
3	11	13.58
4	3	3.70
5	9	11.11
6	1	1.23
7	2	2.47
8	1	1.23
ACEs by Category (n=81)		
<i>Abuse</i>		
Emotional abuse		
Yes	28	34.57
No	53	65.43
Physical abuse		
Yes	12	14.81
No	69	85.19
Sexual abuse		
Yes	29	35.80
No	52	64.20
<i>Household dysfunction</i>		
Alcoholic or drug-user		
Yes	22	27.16
No	59	72.84
Imprisoned family member		
Yes	22	27.16
No	59	72.84
Mentally ill family member		
Yes	14	17.28
No	67	82.72
Mother treated violently		
Yes	19	23.46
No	62	76.54
Both parents not present		
Yes	12	14.81
No	69	85.19

Table 3: Parenting Stress and Parenting Practices (N=81)

Scale	No ACEs		ACEs	
	n	%	n	%
Parenting Stress Index – Short Form				
<i>Total Stress Score</i>				
Significant Stress (90 th -99 th percentile)	3	11.11	7	12.96
High Stress (85 th -89 th percentile)	1	3.70	3	5.56
Normal Stress (16 th -84 th percentile)	21	77.78	41	75.93
Below Normal Stress (0-15 th percentile)	2	7.41	3	5.56
<i>Parental Distress</i>				
Significant Stress (90 th -99 th percentile)	6	22.22	18	33.33
High Stress (85 th -89 th percentile)	0	0.00	4	7.41
Normal Stress (16 th -84 th percentile)	19	70.37	30	55.56
Below Normal Stress (0-15 th percentile)	2	7.41	2	3.70
<i>Parent-Child Dysfunctional Interaction</i>				
Significant Stress (90 th -99 th percentile)	2	7.41	3	5.56
High Stress (85 th -89 th percentile)	0	0.00	3	5.56
Normal Stress (16 th -84 th percentile)	19	70.37	38	70.37
Below Normal Stress (0-15 th percentile)	6	22.22	10	18.52
<i>Difficult Child</i>				
Significant Stress (90 th -99 th percentile)	2	7.41	12	22.22
High Stress (85 th -89 th percentile)	0	0.00	3	5.56
Normal Stress (16 th -84 th percentile)	19	70.37	32	59.26
Below Normal Stress (0-15 th percentile)	6	22.22	7	12.96
Positive Parenting Practices (Average Score)				
5	26	96.30	46	85.19
4.33	0	0.00	6	11.11
3.67	1	3.70	1	1.85
2.33	0	0.00	1	1.85

Table 4: Dose-Response Relationship Between ACEs and Parenting Stress and Parenting Practices (N=81)

Scale	Percentile or Average Score Increase Resulting from Each Additional ACE	P Value
Parenting Stress Index – Short Form		
<i>Total Stress Score</i>	3.19	0.02*
<i>Parental Distress</i>	2.45	0.05**
<i>Parent-Child Dysfunctional Interaction</i>	1.76	0.26
<i>Difficult Child</i>	3.69	0.03*
Positive Parenting Practices		
<i>Average Score</i>	-0.001	0.95

*Statistically significant at $p < 0.05$ **Statistically significant at $p < 0.10$

Figure 2: Dose-Response Relationship Between ACEs and PSI-SF Scales (N=81)