

Research

Adverse Childhood Experiences and Psychosocial Well-Being of Women Who Were in Foster Care as Children

Delilah Bruskas, PhD, RN; Dale H Tessin, MS

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Abstract

Background and Objective: Research has shown that many children in foster care later have psychosocial problems as adults; this is often attributed to cumulative adversities and a lack of supportive caregivers. The risk factors associated with foster care, such as maternal separation and multiple placements, often counteract many protective factors that can ameliorate the effects of childhood adversities. This study assessed the relationship between adverse childhood experiences (ACEs) and psychosocial well-being in women who were in foster care as children.

Methods: A total of 101 women aged 18-71 years (mean, 36.83 [12.95] years) completed an anonymous online survey based on the 10-item ACE Questionnaire, the Sense of Coherence questionnaire, and the General Health Questionnaire.

Results: More than 56% of respondents were identified as experiencing current psychological distress. Sense of coherence scores (mean, 54.26 [15.35]) showed a significant inverse association with both General Health Questionnaire (mean, 14.83 [5.88]) and ACE (mean, 5.68 [2.90]) scores ($r = -0.64$ and -0.31 , respectively) and 97% reported at least 1 ACE, 70% reported ≥ 5 and 33% reported ≥ 8 . Linear regressions indicated that ACEs reported to occur before foster care were associated with lower levels of sense of coherence (8%) and higher levels of psychological distress (6%). Physical neglect and living in a dysfunctional household (parental loss, maternal abuse, or household member associated with substance abuse or prison) significantly decreased during foster care by 16 and 19 percentage points, respectively. Rates of emotional and physical abuse did not change.

Conclusion: The number of ACEs was associated with the level of psychological distress. Our findings suggest that children entering the foster care system are already vulnerable and at risk of experiencing ACEs during foster care and psychological distress during adulthood. Measures implemented to protect children must not cause more harm than good. Social services that preserve and strengthen the family unit and reduce the number of ACEs both before and during foster care are recommended. Social workers and clinicians who are trained to address and manage the unique developmental needs of children in foster care may help reduce the effects of ACEs and optimize developmental health.

Introduction

One of the principal social determinants of health is the ability to form an attachment to a primary caregiver and maintain relationships with others.^{1,2} Consequently, one of the most traumatic experiences that can occur, especially for children, is the loss of a parent.^{3,5} Attachment disorders and other mental health problems are associated with childhood adversities such as maltreatment, early parental loss,

family disruptions, foster care placement, maltreatment while in foster care, and cumulative childhood adversities that are not ameliorated.^{2,6-8} The largest group of children entering the foster care system and the most developmentally vulnerable are infants and young children.^{9,10} The risk of psychopathology for many children entering foster care is often compounded with a subsequent cascade of adversities associated with this social setting.¹¹⁻¹⁴

Unlike children of divorced parents, who may lose one parent (the absent parent), children in foster care experience family separations that often entail the loss of their entire immediate and extended family, home, friends, and community. Away from everything familiar, they will most often be placed with people they have never met, a foster care family. In foster care, familial ties are jeopardized and weakened by long durations of family separation.^{3,11,15,16} Furthermore, multiple foster care placements may exacerbate previous trauma related to foster care experiences and decrease opportunities for children to establish an attachment to a primary caregiver or develop long-term relationships with others, resulting in cumulative traumatic childhood experiences and interpersonal losses.¹⁷⁻¹⁹ The internalized emotional experiences or unresolved experiences of adversity associated with the social setting of foster care often further compound the myriad of obstacles and challenges all humans experience as independent adults.

Research studies examining the relationship between childhood adversities and adult health outcomes continue to enhance our understanding of the enduring aftermath of early adversity, particularly for vulnerable populations, such as adults who were in foster care as children.²⁰⁻²³ Researchers describe a gradient effect of the number of adverse childhood experiences (ACEs) reported on the severity of health outcomes. This finding suggests that time does not erase the effects of childhood adversities, but may only conceal its impact, even up to 50 to 60 years later. Researchers posit that what happens during childhood may literally become a part of one's physiological being, contrary to the adage that time heals old wounds.^{22,24}

The aim of the current study was to contribute to the scarce research examining the association between the number of ACEs and adult well-being of vulnerable populations, such as people who were in foster care as children. We also examined the relationship between adult well-being and the number of ACEs reported to occur before and during foster care. Though several studies have examined health outcomes of youths and young adults who recently transitioned out of the foster care system, studies examining health outcomes of older adults (mid-30s and older) who were in foster care as children are few or nonexistent.

Foster Care

Protecting children from abuse and neglect is an important, universally accepted social concern, yet many countries struggle to effectively address the increase in child abuse reports and foster care placements through government-operated child welfare programs.²⁵ Societal problems and child welfare policy and practice may contribute to the increase in child abuse reports. For example, many countries are experiencing an increased rate of poverty and social problems such as homelessness, domestic violence, and substance abuse. These social problems are often associated with subsequent use of child protection services.²⁶⁻³⁰ Government and state funding constraints may limit social services that directly address such problems, which result in the use of social services such as foster care to protect children who are at risk.³¹

Finally, the problem of broad or inclusive definitions of child maltreatment (violent and nonviolent)—such as abuse, neglect, and exploitation—and public pressure for child welfare programs to correctly identify and prevent serious cases of child abuse may be additional factors contributing to increased reports of child abuse.³²⁻³⁶ Although the rate of physical and sexual abuse in the US has decreased over the years, the rate of substantiated cases of maltreatment associated with neglect (nonviolent victimization) has increased (from 72% in 2008 to > 78% in 2009). As a result, the rate of foster care placements has not changed much.⁹

On any given day in the US, there are more than 400,000 children entrusted to

the child welfare system.³⁷ The majority of children (78%) entering foster care were often from families dealing with many social problems associated with poverty, such as substandard housing, domestic violence, and parental substance abuse.^{35,38} For many children, the process of entering foster care is traumatic and abrupt, creating unresolved adversity resulting in childhood experiences associated with chronic anxiety, confusion, and fear of the unknown.³⁹⁻⁴¹ Researchers have found that, along with traumatic foster care experiences, many children were concurrently dealing with the emotional consequences of the maltreatment that had necessitated foster care placement.^{12,42} Furthermore, researchers reported that infants and children may experience anywhere from 1 to 15 foster care placements within the first year of entering foster care, creating cumulative and distal life challenges resulting in additional psychological burdens.⁴³⁻⁴⁵

Family preservation is an official priority of child protection services in the US and many other countries, yet foster care is a predominant social service used to protect children at risk, and it supersedes alternative social services to preserve and strengthen the family unit.^{29,43,46-55} Although some children may benefit from foster care services, research reveals that young adults with a history of foster care placement experienced disproportionate rates of psychiatric problems associated with cumulative adversities such as maltreatment, numerous foster care placements, and interpersonal losses.⁵⁶ Researchers noted that the rate of post-traumatic stress disorder was higher in this population compared with the general population and close to twice the rate of US war veterans.^{57,58}

Outcomes of youths who were in foster care are reported in several studies, such as *Midwest Evaluation of the Adult Functioning of Former Foster Youth: Outcomes at Ages 23 and 24* (Midwest Study).⁵⁹ The Midwest Study is one of the largest ongoing longitudinal studies on this topic and is a joint project undertaken by child welfare organizations from Illinois, Iowa, and Wisconsin that receive government funds associated with the John Chafee Foster Care Independence Act.⁶⁰ This collaboration was initiated to provide

research outcomes describing how youths are faring after aging out of the foster care system (emancipation). The Midwest Study began in 2001 with 732 youths age 17 to 18 years who agreed to be interviewed and were subsequently interviewed at age 19, 21, 23, or 24 years, and at age 26 years.²⁰ Results indicate that *young adults* from foster care are not faring well compared with their counterparts, a national population-based sample of young adults.

The educational achievements of participants from the Midwest Study at age 23 and 24 years differed from those of their counterparts at a statistically significant level. Close to 25% of former foster youths had not obtained a high school diploma or a general equivalency diploma, in comparison with 7% of young adults from the general population. About half of the Midwest Study youths (49%) had attended a 2-year college, compared with 28% of their counterparts. Fewer Midwest Study participants had attended a university (25%) compared with young adults not from foster care (42%).⁵⁹ Although more Midwest Study participants had a high school diploma or general equivalency diploma by age 26 years compared to age 23 and 24 years, few had a degree from a 2-year college (4.4%) or 4-year college (2.5%) or had completed a year or more of graduate school (1.3%) compared with their counterparts (9.8%, 23.5%, and 12.8%, respectively).²⁰

At ages 23 and 24 years, nearly one quarter reported experiences of homelessness subsequent to leaving the foster care system. Both women and men Midwest Study participants had higher conviction rates (28.2% and 58.8%, respectively) than the overall population-based sample (10.3%).⁵⁹ Incarceration rates for both women (42%) and men (74.2%) participants at age 26 years not only continued to be higher than those of their counterparts (5.7% and 23.1%), but also had increased.²⁰ Young adults from the Midwest Study worked and earned less per week. At ages 23 and 24 years, participants earned approximately \$10,000 dollars less than their counterparts from the general population. At age 26 years, the economic gap had widened to more than \$18,000.²⁰ Study results clearly illustrate that over time, young adults formerly in foster care continue to lag

behind educationally, economically, and socially, making it difficult for many to live independently.²⁰

Methods

Participants, Recruitment, and Procedure

Study participants included 101 women who were formerly in the foster care system; they represented 36 states and were age 18 to 71 years, with an average age of 36.83 (12.95) years. The majority of respondents (73%) identified themselves as Caucasian; 16% as African American, 8% as Hispanic, and 7% as Native American. Data were collected from October 1, 2011, to February 10, 2012, using a survey posted on the Web site of the nonprofit organization Pacific Northwest Alumni of Foster Care.⁶¹ Interested participants (men and women) self-identified as age 18 years or older and former foster care children. They voluntarily completed an anonymous online survey based on several self-administered questionnaires about childhood maltreatment and psychosocial well-being. Very few men ($n = 10$) completed the survey, and they were subsequently excluded from this study. Informed consent was obtained with an online document that described the purpose and content of the study. This study was approved by the institutional review board of the University of Washington.

Measures

Characteristics of Foster Care Experiences

Five indicators of foster care background were assessed: age at foster care entry, number of years in foster care, number of foster care placements, number of school transfers, and type of foster care placement. Additional data included demographic information and socioeconomic covariates, such as level of education, employment status, contact with biologic family, and social support.

Adverse Childhood Experiences Questionnaire

Childhood adversity in this study was defined as any exposure to traumatic situations, chronic stressors, or specific traumatic events before age 18 years. Childhood adversity was measured using an ACE questionnaire. According to Anda, coprincipal investigator of the original

and largest ongoing ACE study—a collaboration between Kaiser Permanente's Health Appraisal Clinic in San Diego and the Centers for Disease Control and Prevention (CDC)—the ACE Questionnaire is intended to measure the association between multiple types of abuse and diverse types of health outcomes.⁶²⁻⁶⁵ This questionnaire assesses 10 types of childhood adversity among 3 domains of childhood abuse: emotional and physical abuse, physical neglect, and abuse associated with living in a dysfunctional household (witnessing maternal abuse; living with a substance abuser; living with a mentally ill household member; parental loss, such as through divorce; and incarceration of a household member). The ACE questionnaire used in this study included the original 10 questions and 2 secondary questions for each, related specifically to when an ACE occurred: "before" or "while in" foster care.

ACE score ranged from 0-10 and was the total number of childhood adversities (only 1 count per type of abuse) experienced before age 18 years. A report of no abuse was counted as 0, and each account of abuse was counted as 1. At 0.81, Cronbach's α indicated reliable and valid internal consistency of the ACE questionnaire used in this study ($n = 101$).

Sense of Coherence Questionnaire

The abbreviated 13-item version of the Sense of Coherence (SOC) questionnaire used in this study included several questions related to 3 subconstructs: comprehensibility, manageability, and meaningfulness. On the basis of a review of the literature, the degree to which a person views the world as comprehensible, manageable, and meaningful (SOC), determines whether they will be on a life course of ease or disease. SOC is hypothesized to be a major determinant of health.^{66,67} The level of a person's SOC (weak or strong) is also considered to be an important subjective measure of overall health, especially mental well-being.^{68,69} For example, research indicates that a person with a strong SOC experiences not only a better quality of life, but also favorable health outcomes.^{68,70}

The response to each question was a rating between 1 and 7, resulting in SOC scores ranging from 13 to 91. High scores reflect a greater sense of coherence or per-

sonal control over one's life. Low scores reflect a lesser sense of cohesion and less perceived control and manageability.⁶⁶ At 0.88, Cronbach's α indicated reliable and valid internal consistency of the SOC questionnaire used in this study ($n = 101$).

General Health Questionnaire

The abbreviated 12-item version of the General Health Questionnaire (GHQ) used in this study included 12 mental health-related questions pertaining to recent, specific experiences such as degree of concentration, sleep patterns, and degree of happiness. The intent of this questionnaire was to highlight breaks in normal function within the last 2 weeks, such as not being able to function during daily activities, as opposed to lifelong traits.⁷¹ The GHQ was used in this study to distinguish respondents who were experiencing psychological problems from those who were not.

Each question was rated on a 4-point Likert scale comprising the responses "not at all," "no more than usual," "rather more than usual," and "much more than usual" (response options differed slightly, being worded positively or negatively depending on the question). Total scores were calculated according to the GHQ Likert rating method (0, 1, 2, 3) and ranged from 0-36. Previous research studies using the GHQ-12 and the GHQ scoring method (0, 0, 1, 1), with a score range of 0-12, often used the recommended threshold of 3 or a cutoff of 2/3 to identify psychological distress (scores above 2).⁷¹ In regards to the GHQ Likert scoring method with a range of 0-36, a threshold of 3 is equivalent to a cutoff of about 12/13, where scores of 12 and less are classified as noncases and scores of 13 and greater are identified as cases. The benefit of the Likert scoring method (0, 1, 2, 3) is that it can be converted to the GHQ scoring method (0, 0, 1, 1) for the purpose of comparing GHQ-12 scores between other research studies.⁷²⁻⁷⁴

Low scores were equated with favorable psychological well-being, whereas high scores were equated with poor psychological well-being. We used a threshold (cutoff) of 12/13: participants with GHQ scores of 12 and less were identified as nondistressed, and participants with scores of 13 and greater were identified as experiencing psychological distress. At 0.83, Cronbach's α indicated

reliable and valid internal consistency of the GHQ-12 used in this study (n = 101).

Analysis Plan

Simple bivariate correlation of continuous variables was used to evaluate the strength of relationships between ACEs and psychosocial well-being. Next, linear regression models were used to investigate the temporal relationships between ACEs and dependent variables, the level of SOC and the level of psychological distress (GHQ score). The independent variables were the number of ACEs before and during foster care and the number of foster care placements. Additionally, descriptive analyses were used to help explain and summarize age at foster care entry, number of years in foster care, number of foster care placements, number of school transfers, and type of foster care placement. Statistical significance was

estimated using R version 2.14.1 (2011) originally created by Ross Ihaka and Robert Gentleman from the University of Auckland, New Zealand, and currently developed by the R Development Core Team; this statistical software is well suited for multivariate analyses.

Results

Foster Care Experience

The average age at foster care entry was 8 years; 33% of respondents reported entering the foster care system at age 0-5 years. On average, respondents reported being in the foster care system for 7 years and experienced an average of 6 foster care placements (Table 1). The average number of school transfers during foster care was 4; this variable was associated with the number of foster care placements. The type of foster care placement was significantly associated with age at

foster care entry, number of years in foster care, number of foster care placements, and number of school transfers while in foster care (Table 1). The most prevalent type of foster care placement reported was foster care home (58%). Of those who lived in a foster care home, 77% reported living with an unknown (not kin) foster care family. Nearly 37% reported living in both a foster care home and a group home while in foster care; only 5% reported living exclusively in a group home.

Six percent of respondents reported not obtaining a high school diploma or general equivalency diploma. More respondents reported obtaining a 2-year college degree (14%) compared with a 4-year college degree (12%), and 8% reported obtaining a graduate degree. Thirty-four percent reported that they were currently in school. Most (70%) reported being in contact with their biologic families. Fewer respondents reported being in contact with their foster care families (46.4%) or social worker (9.8%).

Forty-three percent of the participants in the current study reported visiting an Emergency Department in the last year, and 24% reported being hospitalized. The most common reasons for recent hospitalization were illness and pregnancy. These findings are consistent with previous studies such as the Midwest Study²⁰ (Table 2). Participants reported higher hospitalization rates for emotional or mental health problems. In the Midwest Study, younger male participants had higher rates of injuries and accidents. Depression was the most frequent diagnosis reported (43%) in the current study, followed by posttraumatic stress disorder at 29%. Although women were more likely than men to report receiving counseling and medication for psychological or emotional problems in the Midwest Study,²⁰ an even greater proportion of respondents in the current study reported prescriptions and counseling for psychological or emotional problems within the last year (Table 3).

Psychological Distress

More than 56% of respondents were identified as experiencing psychological distress based on GHQ score (14.75 [5.94]) and SOC score (54.26 [15.35]). SOC-13 scores were dramatically lower and GHQ-12 scores were dramatically higher

Table 1. Correlations and description among foster care experiences, N = 101

Indicators of FC experiences	Mean	SD	Age at FC entry	Years in FC	FC placements	School transfers
Age at FC entry	8.35	5.34	--			
Years in FC	6.47	5.07	0.00 ^a	--		
FC placements	6.20	8.49	0.15	0.00 ^a	--	
School changes	3.81	4.67	0.10	0.33	0.00 ^a	--

^a p < 0.001.
FC = foster care; SD = standard deviation.

Table 2. Reasons for hospitalization of study participants, age 18-71 years, and Midwest Study participants, age 25-26 years

Participants	Foster Care Adversity Study ^a (86 women), n (%)	Midwest Study ^b (122 men and women), n (%)
Illness	25 (29.1)	40 (32.8)
Injury or accident	7 (8.1)	17 (32.8)
Alcohol or other drug problem	3 (3.5)	1 (0.8)
Emotional or mental health problems	12 (14.0)	12 (9.8)
Pregnancy related	25 (29.1)	36 (29.5)
Other	14 (16.3)	16 (13.1)

^a Adverse Childhood Experiences and Psychosocial Well-being of Women Who Were in Foster Care as Children.
^b Midwest Evaluation of the Adult Functioning of Former Foster Youth: Outcomes at Age 26.²⁰

Table 3. Health care services utilization in the preceding year by study participants, age 18-71 years, and Midwest Study participants, age 25-26 years

Health care service	Participants (101 women), n (%)	Midwest Study ^a (332 women), n (%)
Psychological or emotional counseling	39 (38.6)	48 (14.5)
Prescribed medications for psychological or emotional problems	35 (34.7)	62 (18.7)
Treatment for substance use	4 (4.0)	10 (3.0)

^a Midwest Evaluation of the Adult Functioning of Former Foster Youth: Outcomes at Age 26.²⁰

than those reported in previous studies. For instance, the mean SOC score of our cohort falls in the lowest SOC category of several previous research studies. Although Antonovsky⁶⁶ did not recommend specific cutoffs for classifying SOC scores, several previous studies have categorized SOC scores into high and low ranges based on quartiles.

For example, van der Hal-van Raalte, et al⁶⁹ used percentiles to group study participants according to low or high SOC. These researchers were interested in the moderating effects of SOC between early experiences of childhood adversity and posttraumatic stress symptoms later in life among 203 adult survivors of the Holocaust. Mean SOC score for Holocaust survivors (mean age 64.6 [2.77] years) with traumatic childhood experiences was 62.39 (11.08). Researchers found that higher SOC score were associated with fewer reports of posttraumatic stress symptoms, whereas higher rates of parental loss and “transitions” during the Holocaust were associated with a higher rate of posttraumatic stress problems. Researchers also noted that the age at which subjects experienced ACEs was not statistically associated with poor adult psychosocial well-being.

Eriksson, et al⁷⁵ used quartiles to categorize SOC level as low (13-63), moderate (64-79), or high (80-91). Using the 13-item SOC questionnaire to assess SOC and depression among 1500 randomly selected residents of Finland age 40 to 70 years, they found a mean SOC score of 70.7 (11.7). They attributed high SOC scores to a lower rate of (self-reported) depression and better (self-reported, self-rated) health.

Similarly, when comparing GHQ scores from this study, using either the Likert method with scores ranging from 0-36 (mean 14.75 [5.94]) or the GHQ method with scores ranging from 0-12 (mean 3.68 [3.14]), with those of previous studies, we found that a large proportion of our respondents were experiencing higher rates (worse GHQ scores) of psychological distress. In a study investigating the relationship between ACEs and adult drug abuse in the southern region of Iran, researchers reported that a GHQ score of 12 (using the 0-36 range) was a risk factor for drug abuse, with higher

scores being associated with psychological disorders.⁷⁶ In a Swedish population study using a randomized sample of more than 43,500 respondents age 18 to 85 years with a mean age of 52.8 (18.3) years, researchers examined the relationship between psychosocial well-being and age and gender.⁷⁴ After they converted GHQ scores from the 0-36 scale to the 0-12 scale, the mean GHQ score for the complete sample was 1.22. In short, regardless of the scoring range or cutoffs used, respondents in the current study had higher rates of psychological distress than those of previous research studies.

Preliminary Analysis

Similar to investigators of previous ACE studies, we recoded the 10 numerical variables from the ACE Questionnaire to 4 factor variables defining 3 domains of childhood abuse: emotional and physical abuse, physical neglect, and dysfunctional household.^{21,77} The first 4 ACEs (ACE 1-4) were categorized as indicators of emotional and physical abuse; physical neglect (ACE 5) was another factor variable; and the remaining 5 ACEs (ACE 6-10) were categorized as indicators of a dysfunctional household. Finally, reported absence of ACEs was a fourth factor variable. The overall frequency of these ACE factor variables and their frequency before and during foster care were used for descriptive purposes.

Correlation Analysis

Correlation analysis revealed a significant negative correlation between SOC score and current mental health as indicated by GHQ score ($r = -0.64$, $p < 0.001$). Correlation analysis also showed a significant relationship between ACE score and both SOC and GHQ scores. ACE score was negatively associated with SOC score ($r = -0.31$, $p < 0.01$), whereas ACE scores were positively associated with current mental health outcomes as indicated by GHQ score ($r = 0.20$, $p = 0.05$). The number of foster care placements and the number of ACEs were significantly and positively associated ($r = 0.33$, $p < 0.001$), indicating that as the number of foster care placements increased, the number of ACEs also increased.

Current age of study participants was not associated with level of psychological

distress, but it was minimally associated with increases in SOC, ($b = 0.284$, standard error [SE] = 0.12; $t(1, 99) = 2.46$, $p < 0.05$). The number of foster care placements was associated with a unique positive effect on the number of ACEs ($b = 0.453$, SE = 0.10, $t(1, 89) = 4.602$, $p < 0.001$). Specifically, entering foster care was associated with experiencing 4 ACEs, and each additional foster care placement was associated with an increase in ACEs by 0.45 points. Number of years in foster care, level of education, employment status, contact with biologic family, and level of social support were not associated with SOC level or level of psychological distress, at the 0.05 level. Therefore, these variables were not included in the regression models presented below.

Frequency and Type of Adverse Childhood Experiences

Study participants reported experiencing an average of 5.68 [2.90] ACEs. Most respondents (97%) reported experiencing at least 1 ACE; nearly 70% reported ≥ 5 , 33% reported ≥ 8 , and 23% reported ≥ 9 . The number of ACEs reported was substantially higher for this sample compared with samples of previous ACE studies. In one of the largest ongoing retrospective ACE studies, with data collected in 1995 and 1996 from a sample of 17,337 men and women (with an average age of 56 years), 64% of respondents reported experiencing at least 1 ACE, and 11% reported 5 or more ACEs.^{63,64} In *Morbidity and Mortality Weekly Report*, the CDC published their findings as to whether or not ACEs commonly occur in the general population. The CDC analyzed data from the Behavioral Risk Factor Surveillance System, which is used by all 50 states, the District of Columbia, Puerto Rico, the US Virgin Islands, and Guam. Nearly 41% of a probability sample of adults ($N = 26,229$) from 5 states (Arkansas, Louisiana, New Mexico, Tennessee, and Washington) reported experiencing no ACEs, and 22% reported at least 1 ACE; 10.3% of female participants reported ≥ 5 ACEs.⁷⁸

In a Canadian study of a population-based sample ($N = 9953$) from the Ontario Health Survey, researchers reported that 72% of study participants experienced 1 ACE and 16% of participants reported experiencing 3 or more types of abuse.⁷⁹

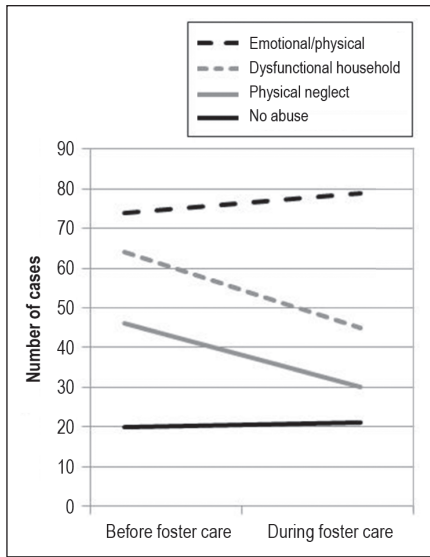


Figure 1. Adverse childhood experiences and foster care placement.

Comparison of three domains of childhood abuse occurring before and during foster care placement.

Although the higher rates noted in our study differ from those of previous ACE studies, the population characteristics also differ. Our study participants represent a vulnerable population; all had been at risk for maltreatment as children in foster care. In contrast, previous ACE studies included participants who were either from a fairly well-educated, middle-class American population with quality medical insurance⁶⁴ or from the general population in Canada, for example.⁷⁹

The 4 most reported types of abuse experienced during childhood were psychological neglect (79%), intimidat-

tion (70%), physical abuse (61%), and physical neglect (59%). When examining the frequency of ACEs before and during foster care placement, we found notable differences. First, a greater proportion of respondents reported higher rates of ACEs occurring before foster care (mean, 4.18 [3.19]) compared with during foster care (mean, 3.09 [2.58]; $p < 0.01$). Second, abuse associated with physical neglect (ACE 5) and abuse associated with living in a dysfunctional household (ACEs 6-10) were more frequent before foster care, whereas the rate of emotional and physical abuse (ACEs 1-4) was not different before and during foster care (Table 4). The frequency of each type of abuse in this category increased during foster care.

An independent-samples z test was conducted to compare the frequency of each category of ACEs before and during foster care. The rate of physical neglect significantly decreased (by 16 percentage points) during foster care ($z = -3.20, p = 0.001$), as did abuse associated with living in a dysfunctional family (by 19 percentage points; $z = -3.92, p < 0.001$; Figure 1). Specifically, our results indicate that placement in foster care was associated with a lower rate of abuse associated with physical neglect, 30% compared with 46%, and a lower rate of abuse associated with living in a dysfunctional household, 45% compared with 64%. However, the most frequent types of abuse, those associated with emotional and physical abuse, were as common during foster care (79%) as they were before foster care (74%, Figure 1).

Adverse Childhood Experiences, Foster Care Experiences, and Adult Psychosocial Well-being

A stepwise multiple linear regression analysis was conducted to predict psychosocial well-being (level of sense of coherence and psychological distress) using the number of ACEs before foster care as the independent variable in the first step. Independent variables added in the second step included the number of ACEs during foster care and the number of foster care placements (Table 5). Potential explanatory variables, including age at foster care entry, number of years in foster care, number of school transfers, and type of foster care placement, were not included in the final models because of weak bivariate correlation and nonsignificant preliminary analyses.

Forward and backward stepwise regression techniques converged on the same models. All interaction terms were nonsignificant and removed from the model. Multicollinearity was investigated and disregarded, with variance inflation factors (all < 1.26). The number of ACEs before foster care was strongly correlated with cumulative ACEs ($r = 0.79, p < 0.001$) and was entered in the first step, because the effect of a high number of ACEs on psychosocial well-being in this population could be independent of the number of ACEs experienced during foster care.

In step 1 of the regression model, the number of ACEs before foster care was significantly associated with SOC level, accounting for 8% of the variance. Specifically, as the number of ACEs before foster care increased, the SOC level decreased

Table 4. Frequencies of adverse childhood experiences before and during foster care (n = 101)

Adverse childhood experience	Frequency, %	
	Before	During
1. Intimidation: swearing, insults, put-downs, or humiliation	48	51
2. Physical abuse: pushed, grabbed, slapped, or something thrown at a person	39	43
3. Sexual abuse: touched or fondled or made to touch abuser's body sexually	34	55
4. Psychological abuse: did not feel loved, important, special, or looked after	55	64
5. Physical neglect: not enough to eat, had to wear dirty clothes, or no one to protect or care for you	46	30
6. Parental loss: parents/foster parents separated, divorced, or lost to you	43	22
7. Maternal abuse: mother/foster mother pushed, grabbed, slapped, or ever had something thrown at her	41	16
8. Substance abuser: lived with a problem drinker or alcoholic or drug abuser	45	16
9. Mental illness: household member depressed, mentally ill, or attempted suicide	47	23
10. Prison: household member in prison	24	12

($b = -1.41$, $SE = 0.46$). Lower SOC scores reflect a weaker sense of cohesion and control of one's life. When we added number of ACEs during foster care and number of foster care placements in the second step of the regression model (full model), only number of ACEs before foster care continued to be associated with SOC level (Table 5). The number of ACEs before foster care was the only predictor associated with level of psychological distress, accounting for 6% of the variance (Table 5). Specifically, as the number of ACEs before foster care increased, the level of psychosocial distress increased ($b = 0.47$, $SE = 0.18$). Higher GHQ scores are equated with less favorable psychological well-being.

In the full models, the number of ACEs before foster care accounted for more variation in level of SOC and psychological distress, but each model provided only 1% more explanatory power compared with the regression models used in step 1.

Discussion

The results of this study show an association between the number of ACEs and the level of psychological distress of women who were in foster care as children.

Specifically, a greater number of ACEs was associated with a weaker level of SOC and increased rates of psychological distress. More than half of the respondents in this study (56%) were identified as presently experiencing psychological distress. Depression (43%) and posttraumatic stress disorder (29%) were the most common diagnoses reported. Although our sample had a much larger age range than those of previous studies and included no male participants, our findings are consistent with studies of mental health outcomes of youths and young adults who were in foster care as children.^{20,57} The current study suggests that the prescription rates, rates of counseling for emotional problems, level of educational attainment, and unemployment rates previously reported among these young adults may not improve with time.

Results from the current study are also consistent with previous studies showing an association between cumulative childhood adversities and severity of mental health problems. The high numbers of ACEs reported by this sample is significant. The average number of ACEs reported was 6, but one-third reported ≥ 8 ACEs, and nearly a quarter reported

≥ 9 ACEs. Previous ACE studies found that individuals (from the general population) who reported an ACEs Questionnaire score of ≥ 4 were 2.2 times more likely to experience elevated perceptions of stress; 4 times more likely to be unable to control their anger; 4.6 times more likely to experience mental problems (depression), with a higher rate (by a factor of 12.2) of attempted suicide; and 5.5 times more likely to be involved with domestic violence. Individuals reporting ≥ 5 ACEs also had an increased rate, by a factor of 1.7, of reporting multiple health issues.^{64,79,80}

Our results indicate that foster care was associated with a significant reduction in the rate of abuse associated with neglect, by 16 percentage points, and the rate of abuse associated with living in a dysfunctional household, by 19 percentage points. The data also indicate that the most frequent types of abuse before foster care continued to be as common during foster care. Each type of abuse associated with emotional and physical (particularly sexual) domains increased, suggesting that foster care may not be protecting children from the most common type of abuses reported to occur both before

Table 5. Regression analysis predicting sense of coherence and psychological distress from ACEs before foster care, ACEs during foster care, and number of foster care placements, N = 101

	Sequential regression								
	R ² _{change}	F _{change}	R ² _{total}	R ² _{adj}	F _{total}	b	SE	t	p
Sense of coherence									
Step 1	0.08	9.28	0.09	0.08	9.28 (1,99) ^a				
Intercept						60.15	2.43	24.76	
ACEs before FC						-1.41	0.46	-3.05	< 0.01
Step 2	0.01	-4.98	0.12	0.09	4.30 (3,97) ^a				
Intercept						62.44	2.72	22.99	
ACEs before FC						-1.10	0.50	-2.18	< 0.05
ACEs during FC						-1.00	0.62	-1.62	0.11
No. of FC placements						-0.08	0.18	-0.44	0.66
Psychological distress									
Step 1	0.06	6.85	0.06	0.06	6.85 (1,99) ^a				
Intercept						12.77	.095	13.43	
ACEs before FC						0.47	0.18	2.62	0.01
Step 2	0.01	-3.53	0.09	0.07	33.33 (3,97) ^a				
Intercept						12.25	1.07	11.50	
ACEs before FC						0.49	0.20	2.49	< 0.05
ACEs during FC						0.35	0.24	1.45	0.15
No. of FC placements						-0.10	0.08	-1.34	0.18

^a Degrees of Freedom.
ACE = adverse childhood experiences; FC = foster care; SE = standard error.

and during foster care. Research suggests that although psychological abuse may be one of the most common types of abuse, it is also overlooked more often and is less likely to be reported. Psychological abuse could be independently associated with deleterious neurobiologic development, resulting in internal and external developmental problems.^{7,81,82}

Policy Implications

Several child welfare policy and practice recommendations are proposed to address cumulative childhood adversities. First, comprehensive social health policies and services that ameliorate the social problems afflicting many families are recommended.⁸³ Population-level interventions that target social determinants of health are potentially the most effective means of improving overall social health and may help reduce the number of ACEs and family separations.⁸⁴ In most cases, child protection involves removing children from their family and placing them in foster care. This process separates families and disrupts crucial attachments to a primary caregiver.⁸⁵ The developmental needs of children must not be overshadowed in the process of child protection.

Although risk factors for abuse must not be ignored, protective factors that promote developmental well-being must also be taken into consideration. Though family problems such as those associated with poverty or dysfunctional households may be viewed as socially unacceptable and considered risk factors, protective factors such as familial relationships (ie, those with primary caregivers, siblings, and extended family), familiar environments, predictability, and stability can ameliorate the effects of adverse life events. The negative developmental (biologic) consequence of separating children from their families is not a newly discovered phenomenon. Previous research studies examining the effects of early adversity (maternal deprivation) and the subsequent overproduction of stress hormones have articulately explained the negative neurological, developmental, and behavioral aftermath of stress.^{86,87}

Seminal research studies of the early 1940s and 1950s by both Harry Harlow and John Bowlby clearly delineated the

negative developmental effects of early maternal separation.⁸⁸ As early as 1942, efforts of researchers concerned with an increased mortality rate among pediatric patients led to the discovery of the "hospitalization effect."⁸⁸ Believing that high mortality rates were associated with parental deprivation, lack of maternal affection from the staff, as well as the sterility of a hospital environment, researchers influenced positive changes in hospital policy and practice. In particular, parents were no longer prevented from caring for their hospitalized children. Mortality rates of up to 35% were dramatically reduced to below 10%.

Second, policy and practice recommendations include reducing the number of foster care placements and protecting children who must enter foster care from subsequent abuse while in foster care. Respondents in our study who reported more foster care placements also reported more ACEs. Current institutional policies and practices of the child welfare system often prevent many children from experiencing continuity of care while in foster care.⁸⁹ In a US study, Rubin, et al⁹⁰ noted that 70% of multiple placements while in foster care were because of child welfare administration demands and issues related to new staff. The current study found that adults who were in foster care as children reported high rates of maltreatment during foster care. US statutory guidelines and national standards require that 99.68% of children in foster care be protected from further abuse while in government care.⁹ This means that 99.68% of children in government care during a 12-month period must not experience indicated or substantiated maltreatment.

Finally, child welfare policies and practices that directly address the developmental needs of all children in foster care are recommended. Entering the foster care system is a traumatic shock for many children. Protecting the well-being of children necessitates more than merely removing children from adverse environments and placing them in foster care. Currently, child welfare improvement plans that directly address the emotional burdens of children in foster care are lacking or nonexistent.⁹¹⁻⁹³ Antonovsky⁶⁴ stresses the importance of not only protecting children, but also helping children interpret life events to

ensure that adversity and trauma do not distort or impair mental health. A study by Mosek⁵¹ found that many children in foster care had a difficult time conceptualizing where they came from and where they were currently living and struggled with their sense of belonging. Too many children developed negative and erroneous perceptions of the role of the child welfare system in their lives, and many believed they were the cause of their family's separations.^{41,42,94,95}

Supportive caregivers who help children understand life events and who also provide stability and predictability help protect and develop children's sense of coherence. Children with a strong sense of coherence will be able to more effectively manage the emotional aftermath of a traumatic event, while children with a weak sense of coherence may struggle to make sense of such an event, resulting in unresolved, chronic emotional stress. Researchers posit that the quality of a child's social context has a great influence on psychological well-being. The risk factors associated with foster care, such as family separations and multiple placements, often reduce the availability of many factors that can ameliorate the effects of childhood adversities. Many children in foster care later experience psychosocial problems as adults. Research points out that this is often attributed to cumulative adversities and a lack of supportive caregivers rather than the adversity itself.^{13,14}

Strengths and Limitations

One of the strengths of this study is associated with the anonymity of the participants, which reduces the likelihood of obtaining certain responses simply because they are socially desirable. For many, it also lessens the shame or embarrassment associated with reporting accounts of maltreatment to an unknown person (researcher). Furthermore, because the study participants were adults, they did not face the same threats of reprisal or fear of even worse conditions (eg, subsequent placement with an unknown family) that might be confronted by children who are asked to report abuse or neglect while still in foster care.^{96,97}

Several limitations of the current research study need to be addressed.

First, because of the correlational cross-sectional research design, this study cannot provide conclusive evidence of causal relationships. Second, it is possible that some respondents had a difficult time recalling past events, which would contribute to bias. Finally, participants were not randomly selected; they anonymously volunteered to participate in the study. Consequently, the sample may not adequately represent the population of adults who were in foster care as children. Additional rigorous research studies with larger representative samples are recommended to confirm our results.

Conclusion

The current study suggests that women who were in foster care as children are vulnerable to psychological distress. The remarkable plasticity of the brain during early development makes it possible for children to overcome adverse life events, but this is highly dependent on enriching environments that provide social experiences that can ameliorate the effects of early adversities. Many children who enter foster care experience tremendous loss at the expense of safety (child protection). The key to optimal developmental health is having as many protective factors as possible, such as an attachment to a primary caregiver and long-term relationships with others. These protective factors can be utilized as available resources for children to ameliorate the effects of early childhood adversities. In the social setting of foster care, opportunities to maintain existing attachments to caregivers are threatened by prolonged family separations, and the prospect of forming attachments to others becomes bleak in environments of instability.^{25,98}

Removing a child from a primary caregiver for even short periods of time can have detrimental developmental consequences that may persist well into adolescence and adulthood. Social interventions such as foster care that focus solely on family problems to protect vulnerable children risk failure to truly improve the well-being of both families and children.^{92,99} Best practices for protecting vulnerable children must ensure that placing children in foster care does not cause more harm than good. Social workers and clinicians trained to address

and manage the unique developmental needs of children in foster care may help reduce the effects of ACEs and optimize developmental health. ♦

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