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## CHAPTER 6.25 ■ CHILD ABUSE AND NEGLECT

JOAN KAUFMAN AND JENNIFER M. SERICO

### INTRODUCTION

If you work in mental health, you work with maltreated children. The best available data suggests that approximately 30% of child and adolescent outpatients,<sup>1</sup> and as many as 55% of child and adolescent psychiatric inpatients, have a lifetime history of abuse or neglect.<sup>2</sup> While not all abused children go on to develop psychiatric problems, a history of abuse is a highly significant risk factor for the development of a number of different psychiatric disorders,<sup>3,4</sup> as well as a notable risk factor for a host of medical health problems later in life.<sup>5</sup>

This chapter reviews definitions and prevalence of child abuse and neglect. It also discusses developmental, clinical, and neurobiologic sequelae of child maltreatment, and findings from the fields of genetics, epigenetics, and neuroscience

relevant for understanding risk, resilience, and recovery. Several treatment interventions are also reviewed.

### DEFINITIONS OF CHILD ABUSE AND NEGLECT

Each state has its own definitions of child abuse and neglect that are based on minimal standards set by federal law. Federal legislation defines child abuse and neglect as<sup>6</sup>:

*Any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act, which presents an imminent risk of serious harm.*

Most states have laws pertaining to the four major types of maltreatment: physical abuse, sexual abuse, psychological maltreatment, and neglect. While physical abuse, the nonaccidental injury of children, is unlawful nationwide, corporal punishment—physical discipline not causing harm or injury—is allowed in the home of birth families in every state. It is also allowed in public schools in 23 states,<sup>7</sup> but prohibited in most out-of-home placement settings. As of 2023, 39 states prohibited the use of corporal punishment in foster homes or group care settings.<sup>8</sup>

Despite research evidence documenting that criminalization of pregnant women who use drugs endangers maternal, fetal and child health, and deters pregnant women from seeking prenatal health care,<sup>9,10</sup> as of June 2024, 24 states included substance use during pregnancy—in and of itself—in the state’s definition of child abuse. An additional 14 states consider substance use during pregnancy as child abuse if there is evidence of harm to the child,<sup>11</sup> two states adopted policies explicitly authorizing criminal prosecution of substance-using pregnant women, and five states allow pregnancy-specific and drug use-related involuntary civil commitment of women.<sup>9</sup>

Given the state-by-state variation in legal standards, clinicians should familiarize themselves with the maltreatment criteria, corporal punishment, and prenatal substance use laws specific to the state where they practice.

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## PREVALENCE OF CHILD ABUSE AND NEGLECT

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The federal government has been analyzing annual data on child abuse and neglect since 1990.<sup>9</sup> In 2023, the most recent recorded year,<sup>12</sup> there were 546,159 cases of child abuse and neglect substantiated from 4,399,000 referrals of families for suspected maltreatment involving approximately 7,782,000 children. A total of 2,000 children were recorded to have died from abuse and neglect at a rate of 2.73 per 100,000 children in the population. Young children are at highest risk of fatality by child maltreatment. Nearly one-quarter of the child fatalities were infants less than a year old, and approximately 40% were children 3 or younger.

While the true rate of abuse and neglect will likely never be known,<sup>13</sup> a synthesis of self-report studies suggests official documented rates of abuse and neglect grossly underestimate the true prevalence of these experiences.<sup>14</sup> There are many reported cases of actual abuse that are not verified,<sup>15</sup> and countless other cases which never come to the attention of authorities.<sup>16</sup>

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## ASSESSING CHILD ABUSE, NEGLECT, AND OTHER TRAUMA EXPERIENCES

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### Mental Health Evaluations

Given the high prevalence of maltreatment experiences in child psychiatric populations,<sup>1,2</sup> psychiatric assessment of children should routinely include screening for abuse, neglect, and other traumatic experiences.<sup>17</sup> It is best to assess children’s trauma experiences utilizing information from multiple informants (eg, parent, children, child protective service [CPS] workers).<sup>18–20</sup> Rating scales to facilitate assessment of child abuse, neglect, and other traumatic experiences are reviewed in the PTSD chapter of this text.

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## NEW DISCLOSURES OF CHILD MALTREATMENT

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Mental health providers are mandated reporters. They are required by law to report suspected abuse and neglect.

Unfortunately, there is no systematic research on optimal procedures for handling mandated reporting requirements. In our clinical experience, it is usually best to inform the parent or caretaker of one’s intention to file a report, and to suggest that the parent or caretaker call in the information and report the concerns as well. The parent’s response to this fact will provide valuable information in evaluating the parent’s capacity to support and protect the child and determine the safety of the child staying in the immediate custody of the parents. It also gives the parent a sense of control at a very stressful time, and protective service workers generally look favorably upon a parent who calls to report the problem independently. Regardless of whether the parent agrees to call in the alleged maltreatment or not, the mental health professional is obligated to make the report.

As the process of case investigation can be idiosyncratic,<sup>21</sup> it is recommended that detailed information about the alleged abuse and known risk (eg, prior reports of maltreatment, parental substance abuse, domestic violence, number of birth to 3-year-old children living in the home) and protective (eg, parent engaged in treatment, extended positive family supports) factors be included in suspected child maltreatment reports. There is often the need to follow-up as initial reports may not be accepted for investigation. CPS agencies are understaffed and experience high rates of staff turnover.<sup>22</sup> While charged with dealing with some of the most complex clinical cases, most CPS workers only have a bachelor’s degree. Collaborate with them to help optimize outcomes for the children in your clinical care.

If new allegations of abuse are revealed in the process of your work, clinicians should not attempt to conduct forensic evaluations unless specialty trained, as specific guidelines must be followed for forensic evaluations.<sup>17,21</sup>

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## RISK FACTORS FOR CHILD MALTREATMENT

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Child abuse most often occurs in the context of other risk factors. Child abuse can and does occur across all socioeconomic classes, but poverty is a significant risk factor for child abuse and neglect, with more than half of the families participating in a large-scale representative sample of protective services cases falling below the federal poverty line.<sup>23,24</sup> Children of color, particularly Black and American Indian/Alaska Native children, have higher rates of CPS reports and are disproportionately represented in the child welfare system, which is believed to be due to structural and systemic racism, discrimination, and implicit and explicit bias.<sup>25</sup>

Substance abuse and domestic violence are two other problems that frequently co-occur in association with child maltreatment. It is estimated that 60% of cases involved with protective services have histories of severe domestic violence,<sup>24</sup> and 60% to 70% of parents with substantiated child welfare cases, and more than 80% of parents who lose custody of their children have a substance use disorder.<sup>26</sup> These co-occurring problems significantly complicate the management of child maltreatment cases.

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## SEQUELAE

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### Indices of Adaptive Functioning

A history of maltreatment is associated with deficits on numerous indices of adaptation across the lifecycle. When compared to community controls, maltreated children have significantly more disturbances in attachment relations in infancy, delays in

TABLE 6.25.1

## DISTINCTIVENESS OF SEXUALIZED BEHAVIORS IN INDICATING ABUSE HISTORY

Moderately Prevalent in Sexually Abused Children, Exceedingly Rare in Psychiatric and Normal Controls	Moderately Prevalent in Sexually Abused Children and Psychiatric Controls, Uncommon in Normal Controls	Moderately Prevalent in Sexually Abused Children, Psychiatric Controls, and Normal Controls
Puts mouth on sex parts Asks to engage in sexual acts Masturbates with an object Inserts objects in vagina or anus	Stands too close to others Hugs adults they do not know well Talks about sexual acts Wants to watch movies that show nudity Knows more about sex than other children their age	Talks flirtatiously Masturbates with hand Touches sex parts at home Tries to look at nude pictures/undressing people

autonomous functioning and deficits in frustration tolerance in toddlerhood, and problems with self-esteem and peer relations in later childhood.<sup>27</sup> Problems in language development and school performance have also been reported, including below-average standardized achievement test scores, frequent repeated grades, low cumulative grade point averages, and significant social and behavior problems in the school setting.<sup>28</sup> In studies examining resiliency in maltreated children with active child welfare system involvement,<sup>29,30</sup> a quarter or fewer children could be classified as resilient when multiple domains of functioning were considered.

### Sexual Behavior Problems

Sexual behavior problems are frequently utilized as suggestive of a possible sexual abuse history, but they are not definitive indicators. While inappropriate sexual behaviors are strongly related to experiences of sexual abuse, they are also associated with histories of physical abuse, witnessing domestic violence, inappropriate exposure to family sexuality, and child psychiatric illness.<sup>31</sup> Table 6.25.1 delineates behaviors that are highly suggestive of a possible sexual abuse history, behaviors that are relatively prevalent in abuse victims and psychiatric controls with no history of abuse, and behaviors that are frequently observed in these high-risk groups and normal controls.<sup>31,32</sup>

### Intergenerational Transmission of Abuse

Victims of child maltreatment are more likely than controls to be involved in intimate partner violence in adolescence<sup>33</sup> and adulthood.<sup>34</sup> They are also more likely to experience teen parenthood,<sup>35</sup> and have difficulties parenting their own children. While approximately 80% to 90% of abusive parents have a history of child maltreatment, and being abused puts one at risk of experiencing parenting problems, retrospective<sup>35</sup> and prospective longitudinal<sup>36</sup> studies estimate that only one in three individuals who were abused as children repeat the cycle in the next generation. Most break the cycle—or there would be exponential increases in rates of abuse with each generation.

### Psychiatric Diagnoses and Symptomatology

Child maltreatment is a nonspecific risk factor for multiple forms of psychopathology.<sup>4,37,38</sup> Compared to community controls, maltreated children have elevated externalizing and internalizing behavior problems according to parent and teacher reports.<sup>39</sup> They also have increased rates of posttraumatic stress disorder (PTSD)<sup>40</sup>; depression diagnoses<sup>41,42</sup>; psychotic disorders<sup>43</sup>; reactive attachment disorder and

disinhibited social engagement disorder<sup>44</sup>; dissociative symptoms<sup>45</sup>; suicidality, self-destructive behavior, and borderline traits<sup>46,47</sup>; suicide completion<sup>48</sup>; drug and alcohol problems<sup>49</sup>; eating disorders<sup>50,51</sup>; oppositional defiant disorder<sup>52</sup>; and conduct disorder, callous-unemotional traits, and sociopathy later in life.<sup>52,53</sup> There is also an emerging literature on the link between child welfare involvement and child sex trafficking,<sup>54</sup> with the majority of sex trafficking victims having a prior history of physical abuse, sexual abuse, and child welfare placements.<sup>55,56</sup>

### GENETIC PREDICTORS OF PSYCHIATRIC PROBLEMS IN MALTREATED CHILDREN

Genetic factors, in part, appear to explain why some maltreated children go on to develop certain psychiatric problems, and others do not. Caspi and colleagues were the first to show that risk for antisocial behavior in individuals maltreated as children was moderated by genotype—in particular, variation in the neurotransmitter-metabolizing enzyme monoamine oxidase A (MAOA) gene.<sup>57</sup> Since this seminal study, there have been over a hundred studies published that examined gene by environment (GxE) interactions and the moderating effects of various candidate genes on a range of mental health outcomes among individuals with a history of abuse.<sup>38</sup> Consistent with other data in the field showing that genetic markers do not map on to distinct DSM diagnoses, but rather individual genetic markers are associated with a range of psychiatric disorders,<sup>58</sup> results of the GxE candidate gene studies with maltreated cohorts demonstrate pleiotropy with each candidate gene examined associated with a variety of psychiatric disorders.

As reviewed elsewhere,<sup>38</sup> the greatest number of studies in the field have examined genetic variation in the serotonin transporter (5-HTTLPR) gene, and replicated reports have found that variation in 5-HTTLPR predicts a range of outcomes. Specifically, among individuals with a history of child abuse and neglect, genetic variation in 5-HTTLPR has been found to predict risk for depression, PTSD, other anxiety disorders, substance use problems, antisocial behavior in children and adolescents, and aggressive behavior in adults. While not as many studies have been conducted examining the moderating effect of other candidate genes, there is also evidence for pleiotropy in studies examining genetic variation in MAOA, the catechol-O-methyltransferase (COMT) gene, brain-derived neurotrophic factor (BDNF) gene, corticotropin releasing hormone receptor (CRHR1) gene, and the FK506 binding protein 5 (FKBP5) gene.<sup>38</sup>

A recent genome-wide interaction association analysis used data from the U.K. Biobank ( $N = 157,363$ ) as the discovery sample and detected a SNP in the *IDO2* gene interacting with childhood maltreatment to predict depression in the cohort.<sup>59</sup>

The GxE association was replicated in the child Adolescent Brain and Cognitive Development (ABCD) cohort ( $N = 5,335$ ), with interactions between child maltreatment and variation in this SNP found to significantly predict new-onset depression at a 2-year follow-up assessment, and account for variation in key brain regions implicated in depression.<sup>59</sup> The *IDO2* gene is involved in tryptophan catabolism and immune regulation and has likewise been associated with bipolar and psychotic disorders.<sup>60,61</sup>

Pleiotropy may be due to overlapping symptoms across diagnoses,<sup>62</sup> or the high rates of comorbidity among disorders,<sup>63,64</sup> which is true even among disorders that share no common symptoms.<sup>64</sup> Alternatively, a central tenet of the National Institute of Mental Health Research Domain Criteria (RDoC) initiative is that pleiotropy and comorbidity occur because the various DSM diagnoses are associated with abnormalities in interlocking brain circuits.<sup>65</sup> Using an RDoC framework that incorporates dimensional assessments of behaviors that map onto discrete brain circuits, and evolving statistical pleiotropy-robust approaches, would likely help to advance research on the genetics of stress-related psychopathologies.<sup>66</sup>

Advancing the genetics of stress-related psychiatric outcomes will also likely require incorporating emerging understandings of the various mechanisms of gene regulation that affect disease risk. As reviewed elsewhere,<sup>38</sup> three of six published PTSD genome-wide association studies (GWAS) identified unique markers in intergenic non-protein-coding regions of the DNA that predicted risk for PTSD in individuals with a history of abuse or other lifetime traumatic experiences. Many intergenic regions are enriched for factor binding sites and are involved in the three-dimensional organization of the genome and gene regulation.<sup>67</sup> Transcription factor binding sites and chromatin insulators within intergenic regions are believed to mediate intra- and interchromosomal interactions, affecting gene expression at both proximal and distal locations.<sup>67</sup> Epigenetic modifications in intergenic regions have also been implicated in other neuropsychiatric diseases as well.<sup>68</sup> As less than 2% of the over three billion DNA base pairs in the human genome code for proteins, it is not surprising that a role in gene regulation and disease risk is emerging for intergenic regions of DNA.

### CHILD ABUSE AND EPIGENETIC MECHANISMS OF DISEASE RISK

There is an emerging appreciation of the role of epigenetic mechanisms in understanding how experiences of abuse can confer risk for deleterious outcomes later in life.<sup>69,70</sup> Epigenetic processes do not result in genetic mutations, but rather chemical modifications to the DNA that alter gene expression. While some epigenetic modifications are hardwired and responsible for producing cell-specific phenotypic differences, emerging research suggests that the genome is highly sensitive to environmental influences that can promote epigenetic changes. DNA methylation, histone modifications, and posttranslational regulation of gene expression via non-coding RNA are three different epigenetic mechanisms by which adverse experiences, such as childhood trauma, can alter gene expression, with the most available data examining the role of early adversity on epigenetic changes via DNA methylation.<sup>69,71,72</sup>

Research by Meaney and colleagues provided the first evidence that variations in early maternal care could produce stable alterations of DNA methylation, providing a mechanism for the long-term effects of early adversity.<sup>73</sup> Utilizing a rat model of neglect, operationalized as decreased maternal pup licking and grooming and arched-back nursing, Meaney and colleagues found offspring of “neglectful” mothers had increased DNA methylation of the glucocorticoid receptor gene in the

hippocampus when compared to offspring of “non-neglectful” mothers. The glucocorticoid receptor in the hippocampus is key for putting the brakes on the stress response, and DNA methylation of this gene leads to fewer available glucocorticoid receptors, which is associated with greater stress reactivity and anxiety- and depressive-like behaviors in the rat pups. These behavioral differences emerge early in life and persist into adulthood, and through a series of elegant experiments, epigenetic changes programmed by early experience were shown to be causally related to the negative outcomes.<sup>73</sup> This was the first series of studies to show that deviations in early experience could alter gene expression that mediated long-term negative physiologic and behavioral outcomes.

In the decade that followed this initial research, there were at least 40 preclinical and human studies published examining the impact of early adversity on methylation in the glucocorticoid receptor gene,<sup>74</sup> and numerous other studies examining the impact of early adversity on expression of a wide variety of genes across multiple brain regions and in the periphery (eg, blood and saliva DNA).<sup>38,75</sup> It is now well established that experience can alter gene expression. Results of these preclinical and clinical studies suggest adverse experiences early in life are associated with changes in gene expression of multiple known candidate genes, genes involved in DNA transcription and translation, and genes necessary for brain circuitry development, with changes in gene expression reported in key brain structures implicated in the pathophysiology of psychiatric and substance use disorders.<sup>38,75</sup> There is also emerging work on transgenerational inheritance and the epigenetic mechanisms by which adversity can be embedded to affect the health and well-being of subsequent generations.<sup>76-78</sup>

### NEUROIMAGING STUDIES IN ABUSED AND NEGLECTED CHILDREN

While there are inconsistencies in the literature, as reviewed by Bick and Nelson<sup>79</sup> and Teicher and Samson,<sup>80</sup> experiences of child abuse and neglect are associated with structural and functional brain changes across multiple brain regions and circuits that mediate a wide variety of social, emotional, and cognitive processes. Hippocampal volume deficits are one of the best-replicated findings in adults with maltreatment-related PTSD; although these deficits have been less consistently observed in pediatric cohorts.<sup>79,80</sup> One of the best replicated findings in pediatric cohorts is atrophy of the medial and/or posterior portions of the corpus callosum, with reduced integrity of white matter tracts in this region also reported.<sup>80</sup> Relatively consistent findings are also emerging which suggest maltreatment-related changes in corticolimbic circuitry involving enhanced amygdala activation in response to threat stimuli,<sup>80</sup> with changes in threat processing circuitry in maltreated cohorts observed in association with depressive, anxiety, and PTSD symptoms, and independent of psychopathology. Several studies have also reported that maltreated individuals have a blunted response in the striatal regions in response to anticipated reward in the monetary incentive delay task,<sup>81</sup> with reduced activity in the striatal region during this reward task associated with the later development of alcohol problems.<sup>81</sup> Alterations in resting-state default mode networks have also been reported.<sup>82</sup> Preliminary data suggests structural and functional brain changes associated with child maltreatment may vary as a function of diagnostic status (eg, PTSD vs trauma control) and severity of clinical symptoms,<sup>83-87</sup> severity of abuse history,<sup>86,88</sup> family loading for psychopathology,<sup>89</sup> genetic variation,<sup>90,91</sup> the age when the abuse experiences occurred,<sup>88,92</sup> and the presence or absence of positive social supports.<sup>93</sup>

## REVERSIBILITY OF BRAIN CHANGES ASSOCIATED WITH CHILD MALTREATMENT

While brain changes associated with early adversity can be long lasting, there is emerging data that they can be reversed.<sup>94</sup> The notion that early deviant experience can lead to permanent changes in brain development and behavior stems partly from the groundbreaking experiments on monocular deprivation in cats by Wiesel and Hubel.<sup>95</sup> The development of central visual pathways in several mammalian species, like many other brain systems, is known to be experience-dependent. Wiesel and Hubel deprived kittens of vision in one eye for different lengths of time and at different ages. They found that after suturing one lid during the first 3 months of life, there was no vision in that eye later in development after the sutures were removed, and the visual cortex did not develop normally. The effects of visual deprivation on subsequent brain development and visual processing were evident only in kittens, not in adult cats, which led to the conclusion that vision development in kittens has a “critical period,” and if the eyes are not exposed to the required stimuli during that period, vision would be lost and associated brain structures altered permanently.

Emerging findings, however, are challenging previous understandings of the impact of early experience on brain function and development.<sup>94</sup> Further studies revisiting the initial experiments of Wiesel and Hubel have shown that the brain alterations associated with monocular deprivation are due to epigenetic changes, and the effects can be reversed with pharmacologic interventions and environmental enrichment.<sup>94</sup> What was previously deemed to be permanent brain damage secondary to adverse early experiences during formative periods of development has now been shown to be amenable to treatment, allowing complete function to be restored.

There is emerging data that some of the brain changes associated with a history of child maltreatment can also be remediated with therapeutic foster care interventions,<sup>96–98</sup> and preliminary data that the availability of positive social supports can diminish risk for alterations in key brain circuits affected by experiences of child maltreatment.<sup>93</sup> Small-scale studies of children receiving trauma-focused cognitive-behavioral therapy (TF-CBT) for PTSD found that successful treatment was associated with changes in amygdala functional connectivity,<sup>99</sup> default mode network connectivity,<sup>100</sup> and changes in grey matter volume.<sup>101,102</sup> A systematic review of 15 studies conducted in adults with PTSD also found that successful psychotherapy was consistently associated with significant changes in activation in key structures involved in emotion regulation (eg, amygdala, insula, dorsal anterior cingulate cortex).<sup>103</sup>

## PROMOTING RESILIENCE AND RECOVERY IN MALTREATED CHILDREN

Promoting resilience and recovery in maltreated children is facilitated by: (1) Promoting the development and maintenance of positive attachment relationships; (2) Providing enrichment opportunities; and (3) Child and birth parent-focused clinical interventions. Data related to each of these are discussed briefly in the following sections.

### Attachment

In our work and the work of others, the availability of positive stable social supports has emerged as one of the most important factors in promoting resilience and recovery in maltreated children. In our studies with maltreated cohorts,

the availability of a positive stable attachment figure has been found to decrease risk for the development of depressive disorders,<sup>41</sup> minimize hypothalamic–pituitary–adrenal (HPA) stress axis abnormalities,<sup>41</sup> ameliorate the negative effect of genes associated with risk for psychopathology,<sup>104</sup> and reduce the negative impact of abuse and neglect on brain structure and function.<sup>93,105</sup> Consistent with these data, results of a recent meta-analysis support the role of secure attachment in promoting resilience in maltreated children.<sup>106</sup>

Dozier and colleagues have developed an attachment-based intervention to facilitate the establishment of secure attachments for infants and toddlers who enter the child welfare system.<sup>107</sup> As maltreated infants who enter the system frequently have a history of insecure attachments and multiple disruptions in parenting, these infants may not elicit caregiver support and may initially avoid or reject their foster parents’ attempt to provide comfort. The treatment model, called the Attachment Biobehavioral Catch-up (ABC) intervention, is designed to help caregivers provide nurturance even when children do not elicit it, and even when it does not come naturally to them. The ABC intervention is associated with longterm improvements in attachment relations,<sup>108</sup> measures of affect regulation,<sup>109</sup> cognitive flexibility,<sup>110</sup> and HPA-stress axis indices.<sup>111</sup>

Attachment and the availability of stable, caring adult caregivers, however, are important across the lifecycle.<sup>112</sup> Despite federal legislation passed in 1997 to promote adoptions and permanency for children involved with the child welfare system,<sup>113</sup> approximately 20,000 children “age-out” of the foster care system each year without consistent or stable adults in their lives, with approximately 25% of these youth age 12 or younger when they entered care, and more than 30% of them with histories of having experienced eight or more placements before aging out of the system.<sup>114</sup> Outcomes for children who age-out of the system are abysmal; it is estimated that approximately 80% of the young men will become incarcerated, 70% of the young women will get pregnant before their 21st birthday, 40% will become homeless within 18 months, and more than 90% of these young adults will experience chronic poverty.<sup>115</sup> As clinicians working with children in the foster care system, helping youth to identify and maintain positive, stable supports and permanent placements is an important component of the treatment planning process.

### Enrichment

Environmental enrichment in early adolescence has been found to ameliorate the negative effects associated with maternal separation and low licking and grooming “neglectful” rearing in rodents studies.<sup>116</sup> In a study of matched samples of foster care alumni,<sup>117</sup> alumni from an enhanced foster care program had significantly fewer psychiatric problems as young adults than alumni from the public sector foster care programs. The enhanced foster care program provided a greater number of enrichment opportunities for youth, like participation in summer day camp programs, music lessons, and involvement in sports. While the two foster care programs differed in numerous other significant ways, involvement in enriching extracurricular activities provides youth an opportunity to develop positive self-esteem and establish supportive relationships with coaches and other adults who can become meaningful resources for the youth. In addition, there is emerging data that exercise<sup>118</sup> and music training<sup>119</sup> can promote positive brain changes via neuroplasticity. While more data are needed to demonstrate that enrichment experiences can positively impact the outcome of maltreated children, in our clinical experience, these types of experiences appear invaluable in tipping the scale in favor of positive outcomes. It has been established that greater availability of community-

based health, social, and educational services are protective against child maltreatment, and access to these resources promotes resilience.<sup>25</sup>

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## CHILD AND BIRTH PARENT CLINICAL INTERVENTIONS

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### Trauma-Informed Systems of Care

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While it has been acknowledged for decades that parents involved with the child welfare system have high rates of childhood trauma, it is only within the past decade that this knowledge has started to shape practice.<sup>120</sup> Emerging data now suggests when mental health and child welfare systems do not appropriately assess, identify, and address underlying trauma issues, services are often more expensive and less effective.<sup>120</sup>

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### Posttraumatic Stress Disorder Treatments

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PTSD treatment interventions are discussed in greater detail in the PTSD chapter of this text. Briefly, TF-CBT is the intervention with the strongest evidence base for the treatment of PTSD and other trauma-related psychopathology in children.<sup>121</sup> In one study that provided TF-CBT to children in foster care,<sup>122</sup> compared to children who received treatment as usual, children who received TF-CBT had significantly greater reduction in PTSD and other emotional and behavioral symptomatology, and were half as likely to disrupt from their current foster care placement. Providing trauma-informed care and involving foster parents in children's clinical interventions appears to be essential in promoting placement stability and facilitating recovery.

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### Interventions That Target Physically Abusive Parenting Behaviors

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Parent-child interaction therapy (PCIT) is the therapeutic intervention with the strongest results in reducing physically abusive parenting behaviors,<sup>123,124</sup> with its effectiveness as an intervention for families with a history of maltreatment demonstrated in a recent meta-analysis.<sup>125</sup> PCIT is a model of intervention which was originally developed for young children with externalizing behavior problems that combines concrete teaching and "bug-in-the-ear" coaching to help caregivers interact more effectively with their 2- to 7-year-old children.<sup>126</sup> PCIT has shown strong evidence of effectiveness in terms of improving child behavior, and reducing self-reported parental stress, harsh parenting behaviors, child welfare referrals, and recurrence of physical abuse.<sup>121,122</sup> Perhaps the main drawback of PCIT is the high drop-out rate, especially in families with the most severe child behavior problems, maltreatment, and court-mandated participation.<sup>123</sup> Home-based PCIT<sup>127</sup> or utilizing initial motivational sessions prior to implementing PCIT<sup>128</sup> have been shown to enhance treatment completion.

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### Psychopharmacology

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A number of papers have been published raising concerns about the rate of psychotropic drug use among children in the foster care system.<sup>129-132</sup> In a large sample of over 15,000 birth to 19-year-old children with Medicaid insurance, 30% of the children and adolescents in the sample who were living in foster care were reported to be prescribed psychotropic

medications, a rate nearly double the rate of psychotropic drug use among youth receiving supplemental security income (SSI) for diagnosed disabilities, and 15 times the rate of youngsters living with birth families who were receiving aid to families with dependent children.<sup>129</sup> Another study reported that 41% of the foster care children on psychotropic drugs were prescribed three or more different types of medications (eg, stimulant, antidepressant, antipsychotic), with atypical antipsychotic drugs used at very high rates.<sup>133</sup> In another report, comparably high rates of psychotropic drug use and polypharmacy were documented among youth aging out of the system; however, 41% of the adolescents diagnosed with ADHD and 19% of the youth with a history of mania were not on any medications.<sup>134</sup> This raised doubts about the overall appropriateness of medication use in children within the child welfare system, with concerns about both overuse and underuse when clinically indicated.

This growing body of research was the impetus for federal legislation requiring states to track and monitor psychotropic drug use among children in the child welfare system.<sup>135,136</sup> States were required to develop protocols, not just for monitoring the use of psychotropic medications, but for determining their appropriate uses as well. As recently as 2007, only three states maintained databases to monitor the use of psychotropic medications of children in state custody<sup>137</sup>; finding out what drugs children were prescribed required workers in most states to hunt and peck through random case notes.

Despite federal mandates to develop protocols to monitor psychotropic medication use among foster care children, as of 2025, 10 states had no such policies.<sup>138</sup> Of the states with policies,<sup>139</sup> most adopted the use of "red flag" markers signaling a need for medication prescription review. The most commonly used red flags were use of psychotropic medications in young children (defined variously as 3 to 6 years old), endorsed by nearly one half of the states; use of multiple concurrent psychotropic medications (defined variously as 3 to 5 medications), endorsed by two fifths of the states; and use of multiple medications within the same class for longer than 30 days, endorsed by two fifths of the states. Dosage exceeding maximum recommendations (eg, manufacturer, professional) was also endorsed as red flags by more than one-fourth of the states. Research published on the monitoring of prescription practices for foster care children in one state found 30% of youth had one or more "red-flagged" prescriptions.<sup>140</sup>

Unfortunately, as children in foster care are typically excluded from clinical trials, there is an inadequate research database in maltreated cohorts to guide clinical practice. Generalizing treatment recommendations from extant data may not be appropriate as a meta-analysis of adolescent and adult depression treatment studies reported individuals with a history of child abuse who meet criteria for depression were less likely to remit following standard evidence-based pharmacologic (eg, selective serotonin reuptake inhibitor medications) treatment than individuals who meet criteria for the diagnosis of major depression without a history of child abuse.<sup>42</sup> Case-control studies of patients who met criteria for multiple other diagnoses have also reported that individuals with a history of child maltreatment have a poorer treatment response to evidence-based pharmacologic treatments.<sup>43,141</sup>

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### Parent-Focused Interventions

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As noted earlier in this chapter, it is estimated that 60% of cases involving protective services have histories of severe domestic violence,<sup>24</sup> and 60% to 70% of parents with substantiated child welfare cases, and more than 80% of parents who lose custody of their children have a substance use disorder.<sup>26</sup> Among child welfare cases, parental substance abuse is associated with

## REVERSIBILITY OF BRAIN CHANGES ASSOCIATED WITH CHILD MALTREATMENT

While brain changes associated with early adversity can be long lasting, there is emerging data that they can be reversed.<sup>94</sup> The notion that early deviant experience can lead to permanent changes in brain development and behavior stems partly from the groundbreaking experiments on monocular deprivation in cats by Wiesel and Hubel.<sup>95</sup> The development of central visual pathways in several mammalian species, like many other brain systems, is known to be experience-dependent. Wiesel and Hubel deprived kittens of vision in one eye for different lengths of time and at different ages. They found that after suturing one lid during the first 3 months of life, there was no vision in that eye later in development after the sutures were removed, and the visual cortex did not develop normally. The effects of visual deprivation on subsequent brain development and visual processing were evident only in kittens, not in adult cats, which led to the conclusion that vision development in kittens has a “critical period,” and if the eyes are not exposed to the required stimuli during that period, vision would be lost and associated brain structures altered permanently.

Emerging findings, however, are challenging previous understandings of the impact of early experience on brain function and development.<sup>94</sup> Further studies revisiting the initial experiments of Wiesel and Hubel have shown that the brain alterations associated with monocular deprivation are due to epigenetic changes, and the effects can be reversed with pharmacologic interventions and environmental enrichment.<sup>94</sup> What was previously deemed to be permanent brain damage secondary to adverse early experiences during formative periods of development has now been shown to be amenable to treatment, allowing complete function to be restored.

There is emerging data that some of the brain changes associated with a history of child maltreatment can also be remediated with therapeutic foster care interventions,<sup>96–98</sup> and preliminary data that the availability of positive social supports can diminish risk for alterations in key brain circuits affected by experiences of child maltreatment.<sup>93</sup> Small-scale studies of children receiving trauma-focused cognitive-behavioral therapy (TF-CBT) for PTSD found that successful treatment was associated with changes in amygdala functional connectivity,<sup>99</sup> default mode network connectivity,<sup>100</sup> and changes in grey matter volume.<sup>101,102</sup> A systematic review of 15 studies conducted in adults with PTSD also found that successful psychotherapy was consistently associated with significant changes in activation in key structures involved in emotion regulation (eg, amygdala, insula, dorsal anterior cingulate cortex).<sup>103</sup>

## PROMOTING RESILIENCE AND RECOVERY IN MALTREATED CHILDREN

Promoting resilience and recovery in maltreated children is facilitated by: (1) Promoting the development and maintenance of positive attachment relationships; (2) Providing enrichment opportunities; and (3) Child and birth parent-focused clinical interventions. Data related to each of these are discussed briefly in the following sections.

### Attachment

In our work and the work of others, the availability of positive stable social supports has emerged as one of the most important factors in promoting resilience and recovery in maltreated children. In our studies with maltreated cohorts,

the availability of a positive stable attachment figure has been found to decrease risk for the development of depressive disorders,<sup>41</sup> minimize hypothalamic–pituitary–adrenal (HPA) stress axis abnormalities,<sup>41</sup> ameliorate the negative effect of genes associated with risk for psychopathology,<sup>104</sup> and reduce the negative impact of abuse and neglect on brain structure and function.<sup>93,105</sup> Consistent with these data, results of a recent meta-analysis support the role of secure attachment in promoting resilience in maltreated children.<sup>106</sup>

Dozier and colleagues have developed an attachment-based intervention to facilitate the establishment of secure attachments for infants and toddlers who enter the child welfare system.<sup>107</sup> As maltreated infants who enter the system frequently have a history of insecure attachments and multiple disruptions in parenting, these infants may not elicit caregiver support and may initially avoid or reject their foster parents’ attempt to provide comfort. The treatment model, called the Attachment Biobehavioral Catch-up (ABC) intervention, is designed to help caregivers provide nurturance even when children do not elicit it, and even when it does not come naturally to them. The ABC intervention is associated with longterm improvements in attachment relations,<sup>108</sup> measures of affect regulation,<sup>109</sup> cognitive flexibility,<sup>110</sup> and HPA-stress axis indices.<sup>111</sup>

Attachment and the availability of stable, caring adult caregivers, however, are important across the lifecycle.<sup>112</sup> Despite federal legislation passed in 1997 to promote adoptions and permanency for children involved with the child welfare system,<sup>113</sup> approximately 20,000 children “age-out” of the foster care system each year without consistent or stable adults in their lives, with approximately 25% of these youth age 12 or younger when they entered care, and more than 30% of them with histories of having experienced eight or more placements before aging out of the system.<sup>114</sup> Outcomes for children who age-out of the system are abysmal; it is estimated that approximately 80% of the young men will become incarcerated, 70% of the young women will get pregnant before their 21st birthday, 40% will become homeless within 18 months, and more than 90% of these young adults will experience chronic poverty.<sup>115</sup> As clinicians working with children in the foster care system, helping youth to identify and maintain positive, stable supports and permanent placements is an important component of the treatment planning process.

### Enrichment

Environmental enrichment in early adolescence has been found to ameliorate the negative effects associated with maternal separation and low licking and grooming “neglectful” rearing in rodents studies.<sup>116</sup> In a study of matched samples of foster care alumni,<sup>117</sup> alumni from an enhanced foster care program had significantly fewer psychiatric problems as young adults than alumni from the public sector foster care programs. The enhanced foster care program provided a greater number of enrichment opportunities for youth, like participation in summer day camp programs, music lessons, and involvement in sports. While the two foster care programs differed in numerous other significant ways, involvement in enriching extracurricular activities provides youth an opportunity to develop positive self-esteem and establish supportive relationships with coaches and other adults who can become meaningful resources for the youth. In addition, there is emerging data that exercise<sup>118</sup> and music training<sup>119</sup> can promote positive brain changes via neuroplasticity. While more data are needed to demonstrate that enrichment experiences can positively impact the outcome of maltreated children, in our clinical experience, these types of experiences appear invaluable in tipping the scale in favor of positive outcomes. It has been established that greater availability of community-

higher rates of child revictimization, greater likelihood of out-of-home placement, longer stays in care, and higher rates of termination of parental rights and child adoption.<sup>26</sup> As reviewed elsewhere,<sup>26</sup> over the past decade, there has been a burgeoning of research aimed at improving the effectiveness of substance abuse interventions for parents involved in the child welfare system, and addressing parental substance abuse is key to promoting positive outcomes in youth. A noteworthy novel intervention with growing empirical support called Fathers for Change integrates substance abuse and domestic violence treatment. The program was implemented with families receiving CPS, and in a propensity-matched study design, was associated with positive outcomes in terms of substance use, interpersonal violence, and rates of re-referral to protective services.<sup>142-144</sup>

## CONCLUDING REMARKS

A history of maltreatment puts children at risk for a host of negative outcomes. Over the past decade, there has been remarkable advances in the field in terms of dissemination of evidence-based practices to treat trauma-related psychopathology, and insights regarding the mechanisms by which experiences of abuse confer risk for a broad range of psychiatric and medical health problems. Data to guide best practices in terms of pharmacologic treatments is sorely lacking, and an absence of services to address parents' treatment needs leaves far too many youth lost in the foster care system.<sup>145</sup>

Child maltreatment cases are frequently quite challenging, presenting with high rates of diagnostic comorbidity and co-occurring family and social problems. As discussed previously, recent data suggests that as many as 20,000 children "age-out" of the foster care system each year without consistent or stable adults in their lives, with approximately 25% of these youth age 12 or younger when they entered care, and more than 30% of them with histories of eight or more placements. Through multidisciplinary research efforts with foci that span from neurobiology to social policy, we can and must do better.

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