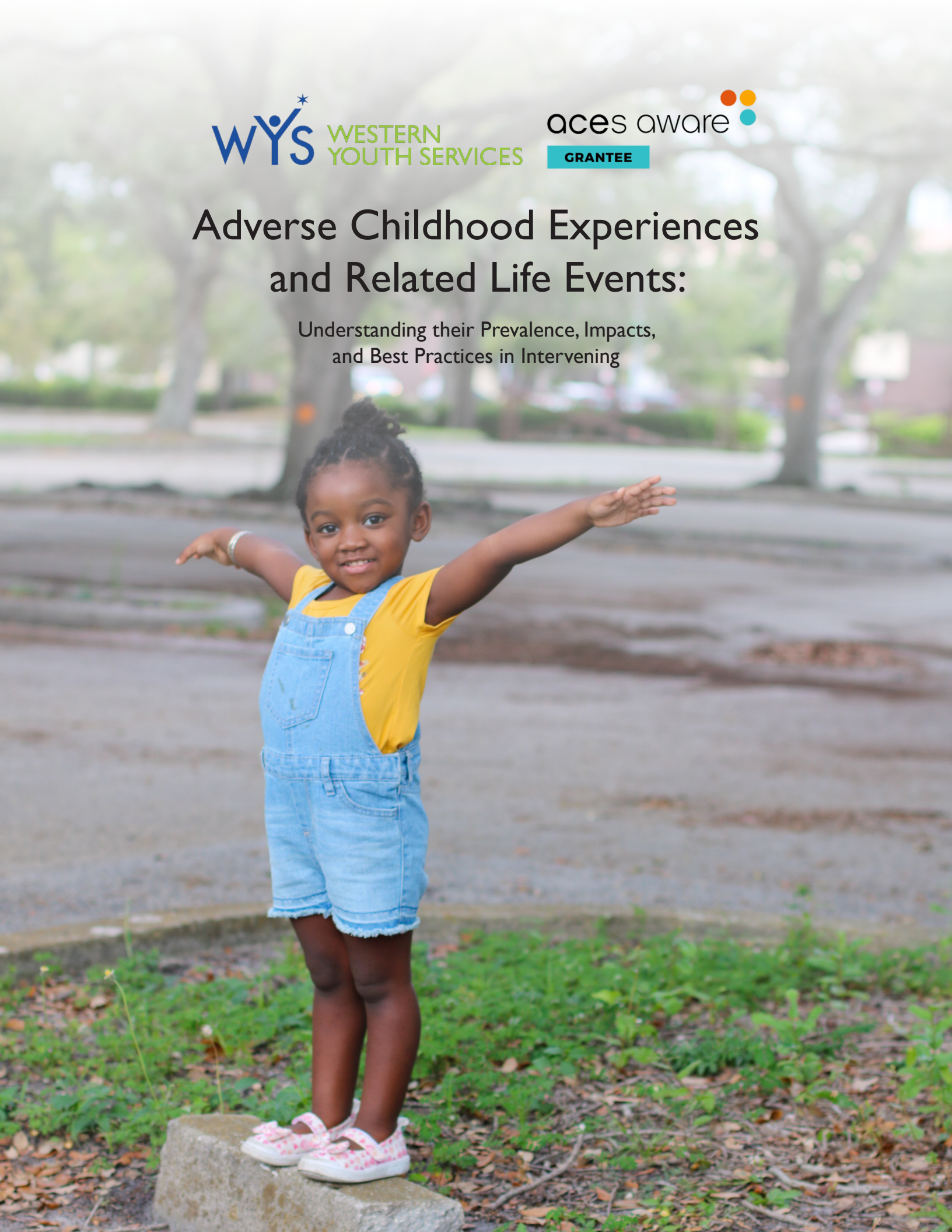
WESTERN YOUTH SERVICES

aces aware GRANTEE

Adverse Childhood Experiences and Related Life Events:

Understanding their Prevalence, Impacts, and Best Practices in Intervening



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Executive Summary

Adverse Childhood Experiences (ACEs) are stressful events occurring in an individual's first 18 years of life that can result in chronic toxic stress without mitigating or buffering support (Bhushan et al., 2020) ACEs are specifically defined as 10 types of adversities, categorized into three domains (abuse, neglect, and household challenges). Beyond ACEs, there are other adversities, defined as Related Life Events (RLEs), that an individual can experience that are also risk factors for chronic toxic stress, such as poverty and exposure to discrimination (ACEs and RLEs collectively are hereafter referred to Adversities). Decades of work demonstrate that cumulative exposure to adversity, especially during childhood, relates to negative health, economic, and social outcomes for individuals and communities. As the COVID-19 pandemic brought about increased stress, uncertainty, and disruption to daily routines, children's exposure to Adversities is heightened, increasing the need for coordinated screening, prevention, and intervention of Adversities across sectors (education, healthcare, social services). Fortunately, experiencing Adversities in childhood does not dictate a child's future. Adults, children, and families are resilient, and effective interventions help in their recovery from Adversity.

To inform and increase awareness among Medi-Cal providers about the importance of screening for Adversities and intervening with trauma-informed care, the Office of the California Surgeon General (CA-OSG) and California Department of Health Care Services (DHCS) awarded Western Youth Services (WYS) in partnership with Measurement Resources Company an ACEs Aware grant to develop this Practice Paper as part of the ACEs Aware initiative. After providing an overview of Adversities, their prevalence, and impact on individuals and communities, this Practice Paper incorporates a case study exploring the increasing prevalence of ACEs after the onset of the pandemic, the relationship between Adversities and mental health diagnoses and functioning, and evidence-based practices linked to improvements in mental health functioning among children who have experienced many Adversities. The paper concludes with a discussion of common challenges and best practices for providers in screening, preventing, and intervening for Adversities based on information gathered from providers through ongoing provider engagement sessions.

KEY FINDINGS AND RECOMMENDATIONS

Prevalence and Impact of Adversities on Individuals and Communities

1. **Adverse Childhood Experiences are highly prevalent among Californians.** In the general population of Californians, 4 in 10 children and 6 in 10 adults (by the age of 18) are estimated to have experienced at least one ACE, according to the 2016-2019 National Survey of Children's Health Survey data and the 2011-2017 Behavioral Risk Factor Surveillance System (BRFSS) data, respectively.
2. **ACEs are strongly associated with social inequities.** While present in all populations, females, LGBTQ+, Hispanic, Black or African American, those enrolled in Medi-Cal, and low-income individuals are at a greater risk of experiencing multiple ACEs (Slopen et al 2016).
3. **ACEs are strongly associated with some of the most common, serious, and costly health conditions facing our society today, including the majority of the leading causes of death in the United States and early mortality in general** (Bryan, 2019). Adults with one or more ACEs are more likely to report cardiovascular, obesity, pulmonary, immune, metabolic, mental health issues, depression, substance use conditions, and premature death (Waehrer et al. 2020, Merrick et al. 2019, Merrick et al. 2017, Brown et al. 2009).
4. **ACEs constitute an economic crisis, greatly costing families and communities both in the short and long term**. For example, in 2013, ACEs reported by California residents

were estimated to cost each adult reporting ACEs an average of $589 in personal healthcare expenses for the year, totaling $10.5 billion across the state overall (Miller et al., 2020).

5. **While ACEs and Related Life Events increase risks for poorer health and other types of outcomes, individuals still have the ability and capacity to thrive**. Protective factors (i.e., resiliency-building, having an adult who makes a child feel safe, etc.), trauma-informed service providers, socially connected communities, and family-centered interventions are successful in both limiting long-term risks associated with ACEs and preventing ACEs (Crouch et al. 2019, Terrasi and de Galarce 2017).

Findings from a Case Study Based on a Sample of Children Receiving Mental Health Treatment from Western Youth Services During COVID-19

1. **Children's exposure to Adversities increased during the COVID-19 pandemic.** ACEs became more prevalent after the rapid onset of COVID-19. Compared to a sample of children screened for ACEs two or more times from 2017 to 2020, children screened prior to and after the pandemic were more likely to report exposure to four or more ACEs (25% increase pre-post pandemic relative to 16% increase in comparison timeframe).
2. **ACEs are cumulatively predictive of children being diagnosed with Post-Traumatic Stress Disorder (PTSD), depression, and adjustment disorders**; for each additional ACE reported, the odds of being diagnosed with PTSD, depression, and adjustment disorders increase by 1.3, 1.1, and 1.1, respectively.
3. **Related Life Events are predictive of children being diagnosed with depression above and beyond ACEs**. After accounting for ACEs, RLEs are predictive of depression disorders; for every additional RLE reported, the odds of being diagnosed with depression increases by 1.2.
4. **Adversities are significantly and positively related to mental health impairment overall**, as well as somatic, behavioral dysfunction, interpersonal difficulty, intrapersonal distress, and social impairments.
5. **Children exposed to many Adversities are experiencing significant improvements in their mental health during their treatment at WYS**. Mental health treatment is significantly linked to improvements in mental health functioning for children with all prevalence of Adversities.
6. **Eye Movement Desensitization and Reprocessing (EMDR) and individual therapy are linked to the strongest improvements in mental health functioning**. Specific evidence-based practices (EBPs) linked to the greatest improvements in mental health functioning among children with Adversities include EMDR and individual therapy.

Common Challenges and Best Practices for Providers in Screening, Preventing, and Intervening for Adversities

Throughout 2020 and 2021, WYS convened providers and practitioners from a variety of occupations and sectors in Network of Care and Peer-to-Peer Learning sessions aimed at increasing awareness of Adversities, best practices related to screening and intervention, and lessons learned throughout their experiences. The most common challenges/barriers individuals shared regarding implementing changes to their work based on Adversities included hesitation in conducting screenings due to the emotional response it can elicit in the child/adult being screened, time constraints, system constraints, and patient

adherence/compliance. Based on lessons learned and common challenges/barriers experienced, the following key best practices and lessons learned are provided.

1. *Lesson Learned: A screening of ACEs is done to assess risk for toxic stress which can lead to health conditions and should incorporate screening for the triad of adversity, including ACEs score, clinical manifestations of toxic stress, and protective factors.*
2. *Lesson Learned: Screening for ACEs can be retraumatizing for the individual being screened and can elicit an emotional response.* To support providers and foster an appropriate setting for screening, the following best practices are provided:
    a. Ensure provider comfortability in providing screenings;
    b. Conduct the screening in a private setting;
    c. Frame the screening as a conversation of healing and resilience, rather than emphasizing trauma;
    d. Empower the individual to share what they want to share;
    e. Consider using the de-identified PEARLS.
3. *Lesson Learned: Referring and linking to needed services can be challenging for both the provider and patient due a fragmented network of care and limited availability of services*. To help overcome this barrier, the following best practices are provided:
    a. Maintain an updated list of community resources available to families. The key to maintaining an updated list is identifying dedicated community navigators to update this list in real-time rather than on an annual basis.
    b. Providers can lay the groundwork for the patient to support an effective linkage by calling the referring agency on their behalf to gather information on what the process to receive services is.
    c. Follow up with the agency and/or patient to ensure a linkage to service occurred.

CONCLUSION

Adversities experienced throughout childhood have the potential to cause great harm to individuals and communities when experienced without key supports and needed interventions. As these Adversities are becoming increasingly prevalent, there is a need for greater system-wide coordination of efforts in screening, prevention, and intervention. There is a call to action for schools, community organizations, and health care providers to become key partners in these efforts. As documented throughout this paper, supports and interventions exist to prevent and reduce the negative impacts of Adversities. Specifically, screening for Adversities, fostering resilience and protective factors, and linking children to evidence-based mental health treatment are key mechanisms by which health care providers, community-based organizations, government, and social service agencies can support California's ambitious goal to reduce ACEs and toxic stress by half in one generation.

The ACEs Aware Trauma-Informed Network of Care Roadmap provides guidance on key elements and milestones for providers and organizations for establishing an effective system for responding to Adversity screenings and mitigating the toxic stress response among those they serve (ACEs Aware, 2020). This tool serves as a critical resource for providers to assess where their practice/organization stands in its ability to screen, treat, and heal toxic stress. Though systemic barriers exist in creating a whole-community response to Adversities, best practices and lessons learned provide actionable steps that professionals in these fields can take to support system-wide efforts to prevent, screen, and intervene so that experiencing Adversity does not dictate a child's future.

The Network of Care Milestones for Providers and Clinics

What are Adverse Childhood Experiences (ACEs) and Related Life Events and Why Do They Matter?

Research related to the importance of understanding and addressing Adverse Childhood Experiences (ACEs) has been growing since 1998 when the Centers for Disease Control and Prevention (CDC) and Kaiser Permanente published the ACE Study (Felitti et al., 1998). Today, the evolving research is used to improve policies and intervention in a variety of fields, including behavioral health, medical health, education, child welfare, and city management.

ACEs are stressful events that can result in chronic toxic stress without mitigating or buffering support (Bhushan et al., 2020). As displayed in Table 1, ACEs are specifically defined as 10 types of adversities, categorized into three domains (abuse, neglect, and household challenges). However, since the ACE Study, other adversities have been found to be both associated with ACEs and with risk of declined health and well-being. These other adversities are known as Related Life Events (RLEs). In order to better understand how to prevent and/or interrupt the negative impacts of ACEs and RLEs, researchers sought the development of a screening tool. In 2018, the Pediatric ACEs and Related Life Event Screener (PEARLS) was introduced. PEARLS is a survey tool to screen for children's exposure to ACEs and RLEs during childhood (Table 1)(Thakur et al. 2020, Koita et al 2018).In 2019, the California Department of Health Care Services (DHCS) approved the use of the PEARLS as a screening tool for all children and adolescent Medi-Cal patients, highlighting the benefits of screening both for ACEs and other environmental factors that can cause stress (Fernandes, 2019).

Table 1: List of Adverse Childhood Experiences and Related Life Events

Pediatric ACEs and Related Life Events Screener (PEARLS)			
	Adverse Childhood Experiences (ACEs)	**Abuse-related Adversities**	1. Physical Abuse 2. Emotional Abuse 3. Sexual Abuse
		Neglect-related Adversities	4. Physical Neglect 5. Emotional Neglect
		Household Challenges	Growing up in a household with … 6. a member that has experienced incarceration 7. mental illness 8. substance dependence 9. intimate partner violence 10. parental absence due to parental separation or divorce
	Related Life Events		1. Neighborhood violence 2. Food insecurity 3. Discrimination 4. Housing instability 5. Physical illness of caregiver 6. Forced separation from parents or caregiver 7. Caregiver death

Prevalence of ACEs Among California Residents

PREVALENCE OF ACES AMONG CALIFORNIA CHILDREN

ACEs are fairly prevalent among California children ages 0 to 17 years of age. The U.S. Department of Health and Human Services, National Survey of Children's Health (NSCH, parent-reported data) from 2016-2019 estimates that 36% of children in California have experienced at least one ACE, with 3.5% of children being exposed to four or more ACEs (Figure 1).[i] Similar to national trends, minority populations of children in California are more likely to be exposed to ACEs, with 20% and 17% of Black or African American and Hispanic children, respectively, having two or more ACEs compared to 12% of White children.[ii] The disparities in prevalence of ACEs by demographics is, in part, explained by "macro-level adversities" and include systematically-rooted inequities such as racism, discrimination, and unequal distribution of services and opportunities in lower-income neighborhoods. According to the Maternal and Infant Health Assessment (MIHA), nearly half (48.2%) of California children born in 2013 or 2014 experienced at least one of the following hardships: basic needs not met, parental drinking or drug problem, parental legal trouble or incarceration, parental divorce or separation, family hunger, relocation due to problems paying rent or mortgage, or foster care placement. [iii]

PREVALENCE OF ACES AMONG CALIFORNIA ADULTS

ACEs are prevalent among California adults, with some adversities being significantly more prevalent than others. According to Centers for Disease Control (CDC) Behavioral Risk Factor Surveillance System (BRFSS) data from 2011–2017, the majority (62%) of adults in California experienced at least one ACE and 16% of adults reported four or more ACEs before the age of 18 (Figure 1). The most commonly reported ACEs in California are emotional abuse (30%), substance abuse (28%), and marital problems in their childhood homes (28%), followed by physical abuse (22%), domestic violence (20%), and living with a parent/caregiver with a mental health issue (16%)(California Department of Public Health et al., 2020). Importantly, when comparing the estimates of ACEs among children relative to adults in Figure 1, the child data reflects caregiver reports of ACEs, which research has found to often be an underestimation of adversities a child has experienced (Oh et al., 2018). Thus, the differences in prevalence among adults and children do not suggest that most adversities are experienced at age 17, for example; rather that caregivers tend to underreport adversities.

While ACEs permeate all types of social and economic communities, some groups are disproportionately at risk of experiencing ACEs, in particular the cumulative effect of ACEs. According to the California Department of Public Health and the California Department of Social Services, individuals who were exposed to four or more ACEs are more commonly Black or African American, are Hispanic, have low-income (under $25,000/year), enrolled in Medi-Cal, or have no health insurance (California Department of Health et al., 2020).

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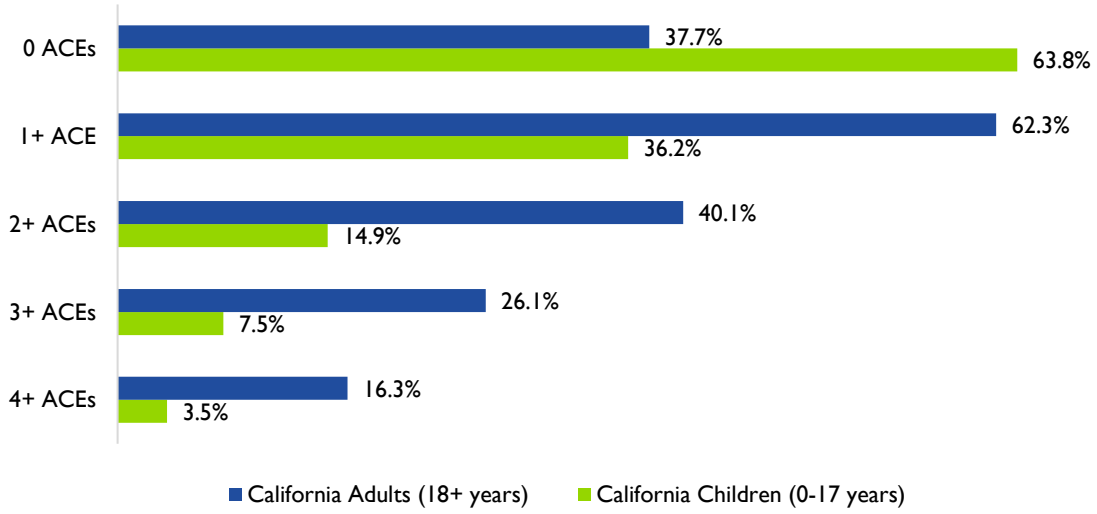
[i] Prevalence of ACEs among children based on 2016–2019 data of U.S. Dept. of Health and Human Services, National Survey of Children's Health, Data sourced from U.S. Dept. of Health and Human Services, National Survey of Children's Health (Oct. 2020) and analyzed by KidsData, a program of Lucile Packard Foundation for Children's Health (https://www.kidsdata.org/topic/95/childhood-adversity-and-resilience/summary); Prevalence of ACEs among adults based on 2011-2017 Behavioral Risk Factor Surveillance System (BRFSS) data that was weighted to be representative of adult populations in California

[ii] Data sourced from U.S. Dept. of Health and Human Services, National Survey of Children's Health and analyzed by KidsData, a program of Lucile Packard Foundation for Children's Health (https://www.kidsdata.org/topic/95/childhood-adversity-and-resilience/summary)

[iii] Data sourced from the Maternal and Infant Health Assessment (MIHA) (2013-2014) and analyzed by KidsData, a program of Lucile Packard Foundation for Children's Health (https://www.kidsdata.org/topic/95/childhood-adversity-and-resilience/summary)

Figure 1. Prevelance of ACEs among California Residents



What is the Impact of ACEs at a Population Level?

ACEs have been repeatedly found to be associated with negative health, economic, and social outcomes at both individual and population levels. Despite the variation in where and how ACEs have been studied in the United States, researchers' conclusions are consistent in that at a population level:

1. ACEs are common and increasingly so, affecting all socioeconomic, educational, and cultural communities. At least 6 in 10 adults in America report at least one ACE (Merrick et al., 2019).
2. ACEs constitute a public health crisis, being strongly associated with the most common causes of death in the United States and early mortality (Shonkoff, 2016).
3. ACEs constitute an economic crisis, greatly costing families and communities both in the short- and long-term. For example, in 2013, ACEs reported by California residents were estimated to cost each adult reporting ACEs an average of $589 in personal healthcare expenses for the year, totaling $10.5 billion across the state overall (Miller et al., 2020).
4. ACEs are strongly associated with social inequities. While present in all populations, individuals who are female, LGBTQ+, Hispanic, Black or African American, low-income, or have a history in the foster care system are at a greater risk of experiencing multiple ACEs.[1] For example, compared to the general population of teenagers, a greater percentage of LGBTQ+ teenagers report four or more ACEs. Overall, LGBTQ+ youth have reported higher prevalence compared to national averages of their peers in 9 out of the 10 ACEs.[8] Also, individuals who age out or emancipate from foster care are at a greater risk for cumulative ACEs (Rebbe et al., 2017).
5. While ACEs and Related Life Events increase risks for poorer health and other types of outcomes, individuals still have the ability and capacity to thrive. Protective factors (i.e., resiliency-building, having an adult who makes a child feel safe, etc.), trauma-informed service providers, socially connected communities, and family-centered interventions are successful in both limiting long-term risks associated with ACEs and preventing ACEs (Crouch et al. 2019, Terrasi and de Galarce 2017).

ACEs and Related Life Events Impact Health and Behavior Throughout the Lifespan

Poorer health outcomes and declined well-being are strongly associated with ACEs and Related Life Events (RLEs) in children, as well as later in life as adults. When individuals face ACEs and RLEs (ACEs and RLEs, collectively, are hereafter referred to as Adversities) without support to positively cope with Adversities, those Adversities prove to be the basis for toxic stress response, increasingly severe physiological illnesses, and behavioral barriers to overall health.

WHAT IS TOXIC STRESS RESPONSE AND HOW DOES IT EXPLAIN THE NEGATIVE IMPACTS OF ACES AND RELATED LIFE EVENTS ON HEALTH THROUGHOUT LIFE?

ACEs are cumulative, with a positive association between the number of ACEs experienced by an individual and their likeliness to experience negative learning, health, and well-being outcomes. In fact, the ACE Study (1998) highlighted that having four or more ACEs doubled adults' risk for serious illnesses, including respiratory, heart, and cancer diseases (Felitti et al., 1998).

Toxic Stress Response has been identified as a key mechanism by which experiential adversities translate into poorer physical health and well-being in the short- and long-term. A consensus of scientific evidence demonstrates that high doses of cumulative adversity experienced during critical and sensitive periods of early life development, without the buffering protections of safe, stable and nurturing relationships and environments, can lead to long-term disruptions of brain development, immune and hormonal systems and genetic regulatory mechanisms—a condition now known as the "toxic stress response" (Garner and Shonkoff 2012:129, Shonkoff et. al. 2012:129, Johnson et. al. 2013:131, Bucci et. al. 2016:63). The health of nervous, endocrine, immune, metabolic, and hormonal systems are building blocks of emotional and cognitive abilities that in turn promote overall health, positive behavior, and well-being (Shonkoff et al., 2012).

ACEs and RLEs are specific adversities associated with prolonged stress responses, leading to Toxic Stress Response. In addition, critical developmental phases of physiological systems (i.e., nervous, endocrine, immune, metabolic, etc.) occur during the first 18 years of life. Therefore, when a child is exposed to Adversities and is left with insufficient social support to cope with the resulting stress, those Adversities can become physically embedded into the biology of a child (via the physiological changes triggered by Toxic Stress). Some examples of how prolonged biological stress responses during critical child development stages have been found to alter individuals' biology include:

- Epigenetic changes (Herzog and Schmahl 2018, Turecki et. al 2014)
- Telomere length shortening (associated with aging, disease, and early death) (Rideout 2018);
- Neurodevelopmental disruption and declined brain connectivity; and
- Long-term reprogramming of stress regulatory and immune systems, negatively impacting how individuals' stress response and immune systems react throughout one's life (Sciaraffa et al., 2018).

Such physiological changes can lead to declined behavioral and physical health for the remainder of that child's life (Herzog and Schmahl, 2018). Often, the consequences of Toxic Stress Response are intergenerationally transmitted when adults with Adversities have their own children. This has significant implications for the planning of Adversity interventions, in particular the urgency by which communities

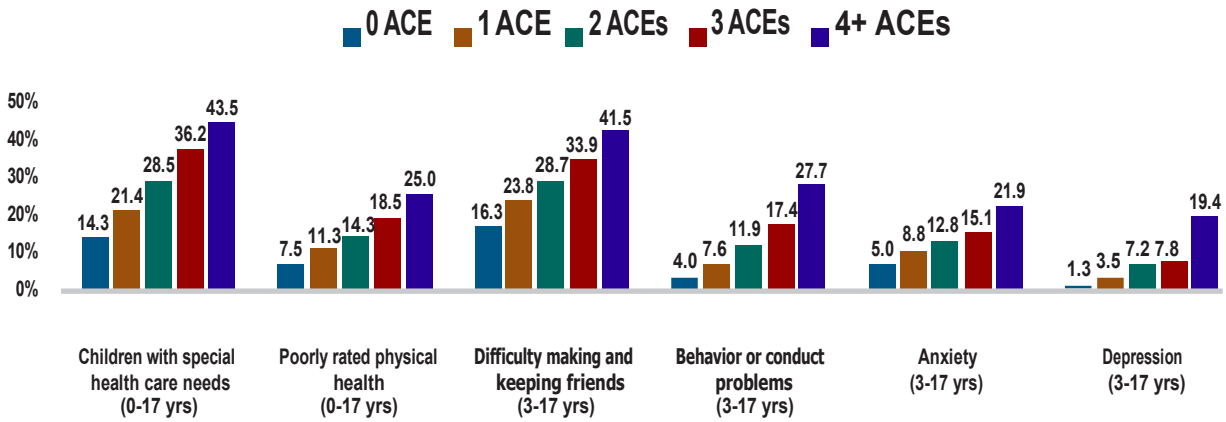
need to work to prevent Adversities. Some studies estimate that the negative, biological consequences of Toxic Stress Response may take up to three generations worth of interventions to reset. For example, a mother with a high number of ACEs may be provided support over her lifetime to overcome many social or health barriers she had experienced. However, interventions would also need to be provided to her children (having inherited some consequences of Toxic Stress Response from their mother). If a high number of ACEs are prevented for her children, then it can be expected her grandchildren will inherit only a fraction of the consequences of Toxic Stress Response, and so forth.

ASSOCIATION OF ADVERSITIES AND POORER HEALTH AND BEHAVIOR IN CHILDREN

Adversities significantly increase the odds that a child will exhibit health and behavioral health concerns and will experience declined learning outcomes (Thakur et al., 2020). For example, Attention Deficit Hyperactivity Disorder (ADHD), learning disability, depression, and frequent headaches in children are all associated with Adversities (Brown et al. 2017, HRSA Maternal and Child Health 2020). Children are two to five-times as likely to suffer from asthma depending on the number of ACEs they have experienced (Thakur, 2020). Children exposed to four or more ACEs have been found to be 3 times as likely to have special healthcare needs or poorly rated physical health; 4.3 times as likely to have anxiety; and 14.9 times as likely to experience depression compared to children with no ACEs (Figure 2). [iv] Furthermore, compared to children who have not experienced abuse, physical abuse and sexual abuse have been found to increase the likelihood a child will conduct non-suicidal self-injury by 49% and 60%, respectively (Baidena et al., 2017).

Exposure to multiple ACEs is often a primary predictor of school absenteeism, poor academic outcomes, and behavioral challenges in school (Blodgett and Lanigan 2018, Stempel et al. 2017). Children exposed to four or more ACEs are 2.5 times as likely to have difficulty making and keeping friends and 6.9 times as likely to have behavioral or conduct problems when compared to children with zero ACEs (Figure 2). [v]

Figure 2. Percentage of Children Residents in the United States Experiencing Poorer Health or Well-being by Number of ACEs (N = 52,129)



[iv] Figure 3 created by HRSA Maternal and Child Health, published in the Adverse Childhood Experiences NSCH Data Brief, June 2020 (reporting on 2017-2018 NSCH data) accessed at https://mchb.hrsa.gov/

[v] Figure 3 created by HRSA Maternal and Child Health, published in the Adverse Childhood Experiences NSCH Data Brief, June 2020 (reporting on 2017-2018 NSCH data) accessed at https://mchb.hrsa.gov/

Adversities are prevalent in all child and adolescent populations. However, some populations are disproportionately at risk for experiencing a greater number of Adversities, also increasing their likelihood to experience long-lasting negative outcomes due to Adversities. Higher risk populations include Black or African American girls, urban youth, and LGBTQ+ youth to name a few (Burke et al. 2011, Hunt et al. 2017, Jimenez et al. 2017). In a study of children of low-income families in Early Head Start programs, children with ACEs were more likely to have individualized educational programs (IEP), have to repeat a grade before or during middle school, demonstrate disruptive behavior, and/or have attention-related challenges (McKelvey et al., 2018). Also, children in the foster care system with six or more ACEs are 28% to 42% less likely to reunify with family than children with less ACEs (Liming et al., 2021).

The disproportionality of ACEs experienced by different populations is in part explained by "macro-level adversities." Macro-level adversities are systemically rooted, such as racism, regional instability due to war or environmental crises, a regional lack of safety, or a pandemic such as COVID-19. Understanding how the shared experience of a macro-level adversity is important to both predicting where and which preventions will be needed in light of a regional crisis, as well as to understanding the inequity by which macro-level and other Adversities will impact populations differently. Data from the Great Recession, 9/11, and Hurricane Katrina show that high school and young adults are more vulnerable to poorer life opportunities as the result of macro-level adversities. Specifically, young adults that face a macro-level adversity were found to face negative economic and employment outcomes throughout their adult lives (Benner and Mistry, 2020). Macro-level adversities are also found to increase risky behaviors, just like ACEs. For example, after 9/11 and Hurricane Katrina, drug use and depression increased among youth and young adults in the geographical areas of the events for three years before starting to decline (Suleman et al., 2020). Increased risky behavior can decline overall health, as well as the ability to capitalize on employment, economic, educational, or other life opportunities.

ASSOCIATION OF ADVERSITIES AND POORER HEALTH AND RISKY BEHAVIOR IN ADULTS

ACEs are strongly associated with some of the most common, serious, and costly health conditions facing our society today, including the majority of the leading causes of death in the United States and early mortality in general (Bryan, 2019). Adults with one or more ACEs are more likely to report cardiovascular, obesity, pulmonary, immune, metabolic, mental health issues, depression, substance use conditions, and premature death (Merrick et al. 2019, Merrick et al. 2017, Waehrer et al. 2020) Health conditions such as these have been identified as ACE-Associated Health Conditions (AAHCs), which "are health conditions for which there is empirical evidence showing a strong association, in a dose response fashion, between ACE exposure and health outcomes, as well as plausible biological mechanism underlying such associations" (ACEs Aware 2021: 36). [vi] As the number of Adversities a child is exposed to increases, so does the likelihood that, when adults, that individual will practice riskier behaviors, such as alcohol and drug abuse, high-risk sex behaviors, inactivity, and suicidality (Brown et al. 2009, Hughes et al. 2017). An exposure to six or more ACEs increases adults' risk of dying 20 years younger when compared to peers with zero ACEs (Bryan, 2019). Also, compared to adults with no ACEs and controlling for socioeconomic factors, adults with four or more ACEs have been found to be:

- 1.4 times as likely to have diabetes (Hughes et al. 2017);
- 2–2.3 times as likely to have a stroke, cancer, or heart disease (Craig et al., 2020);
- 3.1 times as likely to have chronic lower respiratory disease (Craig et al., 2020);
- 3.51 times as likely to have an acquired brain injury (ABI) (Guinn et al., 2019);

[vi] For a list of AAHCs in youth and in adults, see https://www.acesaware.org/wp-content/uploads/2019/12/ACE-Clinical-Workflows-Algorithms-and-ACE-Associated-Health-Conditions.pdf

- 3.39 times more likely to report a traumatic brain injury (TBI) (Navalta et al., 2018);
- 11.2 times as likely to have Alzheimer's or dementia[vii]; and
- 37.5 times as likely to attempt suicide (Hughes et al., 2017).

Some ACEs are known to carry greater risks for poorer health and wellness outcomes than others. Emotional abuse has been found to bring greater risk for depression than physical abuse and physical abuse can carry greater risk for substance use disorders, compared to other ACE-related abuses (Norman et al., 2012). In another example, sexual abuse experienced before the age of 12 carries a greater risk for depression, while being exposed to sexual abuse after the age of 12 is more likely to lead to PTSD than depression (Schoedl et al., 2010). Another study showed household abuse in a child's home to significantly increase the likelihood that an individual will binge drink in adulthood (Loudermilk et al., 2018).

The risks of poorer health and risky behavior among adults with ACEs is also linked to poorer life potentials. Adults with multiple ACEs were more likely to report high school non-completion, unemployment, and living in a household below the federal poverty level than compared to their counterparts with no ACEs (Metzler et al., 2016).

Without support, ACEs also impact women's and men's experiences of parenthood. First, women with ACEs are more likely to have negative experiences and risks during pregnancy, childbirth, and postpartum stages. Second, the physical, cognitive, and emotional challenges resulting from Toxic Stress Response can negatively impact parenting behaviors and parent-child relationships (Shonkoff et al. 2012, Morelen et al. 2018).In fact, compared to children of parents with no ACEs, children of parents with four or more ACEs have been found to (Schickedanz et al., 2018):

- Report 2.3-point higher scores on the Brief Pain Index (BPI), on average;
- More than twice as likely to demonstrate or be diagnosed with hyperactivity; and
- More than four times as likely to receive an emotional disturbance diagnosis.

Exposure to Multiple ACEs Increases Risk for:

Health
- Toxic Stress Response
- Cancer, diabetes, and other serious diseases
- Alzheimer's, dementia, or other acquired brain injuries
- Depression and other serious mental health illnesses
- Premature death

Risky Behavior
- Suicidality
- Substance abuse, including heavy or binge drinking
- Non-suicidal self-injury

Learning Outcomes in Youth
- Chronic school absenteeism
- ADHD and other challenges with externalizing or internalizing emotions
- Having an IEP
- Poorer academic performance and repeating school years

[vii] Centers for Disease Control and Prevention. Leading causes of death by age group 2017. https://www.cdc.gov/injury/images/lc-charts/leading_causes_of_death_by_age_group_2017_1100w850h.jpg (accessed May 8, 2019).

Protective Factors and Interventions to Prevent and/or Interrupt the Negative Impacts of ACEs and Related Life Events

Despite the many negative individual- and community-level outcomes associated with Adversities, there is strong evidence supporting opportunities to prevent Adversities and reduce their impact with specific strategies and interventions. There is consensus among researchers and practitioners that protective factors counterbalance the impact of Adversities on health and well-being and, when experienced together, adversity and protective factors can foster resilience. There is also growing evidence on effective clinical treatments for intervening with children and adults who have experienced Adversities.

Key protective factors can prevent Adversities or, at least, mitigate the severity by which a child is impacted by Adversities. Protective factors include a range of key relationships, accomplishments, and skills at individual, family, and community levels (Table 2 and 3).

Adversities experienced in tandem with protective factors can increase resiliency (Center for Disease Control and Prevention, n.d.). "Resiliency" is a common term used to reference one's ability to mitigate the negative short- and long-term impacts of Adversities when exposed. In *Roadmap for Resilience,* the California Surgeon General defined resiliency as "the ability to withstand or recover from stressors, and results from a combination of intrinsic factors and extrinsic factors (like safe, stable, and nurturing relationships with family members and others) as well as pre-disposing biological susceptibility. Of note, with scientific advances in the understanding of the impact of stress on neuro-endocrine-immune and genetic regulatory health, we must advance our understanding of resilience as also having neuro-endocrine-immune and genetic regulatory domains" (Bhushan et. al. 2020, xxiv).

Table 2. Individual and Family Protective Factors

Individual and Family Protective Factors
Families who create safe, stable, and nurturing relationships, meaning, children have a consistent family life where they are safe, taken care of, and supported
Children who have positive friendships and peer networks
Children who are engaged in learning at school
Children who have caring adults outside the family who serve as mentors/role models
Families where caregivers can meet basic needs of food, shelter, and health services for children
Families where caregivers have college degrees or higher
Families where caregivers have steady employment
Families with strong social support networks and positive relationships with the people around them
Families where caregivers engage in parental monitoring, supervision, and consistent enforcement of rules
Families where caregivers/adults work through conflicts peacefully
Families where caregivers help children work through problems
Families that engage in fun, positive activities together
Families that encourage the importance of school for children

Table 3. Community Protective Factors

Community Protective Factors
Communities where families have access to economic and financial help
Communities where families have access to medical care and mental health services
Communities with access to safe, stable housing
Communities where families have access to nurturing and safe childcare
Communities where families have access to high-quality preschool
Communities where families have access to safe, engaging after-school programs and activities
Communities where adults have work opportunities with family-friendly policies
Communities with strong partnerships between the community and business, healthcare, government, and other sectors
Communities where residents feel connected to each other and are involved in the community
Communities where violence is not tolerated or accepted

INTERVENTIONS KNOWN TO INTERRUPT THE NEGATIVE IMPACT OF ADVERSITIES

Longitudinal studies demonstrate that family-centered and parenting supports provided to parents with ACEs significantly decreased the likelihood of negative health and well-being outcomes in their children. For example, a study found that children with parent(s) with ACEs were 3.5 times less likely to develop prediabetes by age 25 if their parents received even just time-limited parenting coaching and support (e.g., attachment-based, parenting and self-care support groups, etc.)(Lawler et al., 2018).

Additionally, clinical interventions have been proven to prevent and/or lessen the impact of Adversities. The Centers for Disease Control (CDC) identifies a number of clinical interventions that have strong, empirical evidence in regard to combating ACEs (Center for Disease Control and Prevention, 2019) including:

- Enhanced primary care and screening for Adversities;
- Victim-informed social and therapeutic services;
- Trauma-focused Cognitive Behavioral Therapy services;
- Therapeutic treatments, such as Multisystemic Therapy, to prevent high-risk behavior and conditions that increase likelihood of involvement in violence; and
- In-home and family-centered therapeutic treatments for Adversities.

The compounding association between individuals' ACEs and individuals' environmental adversities have prompted a need for advancements in how Adversities are measured, defined, and approached in terms of prevention efforts. These include the validation of a more cross-cultural ACEs screening tool; the development of a multi-dimensional adversities model; advocating for protected child rights in order to support resiliency in youth; greater coordination and system-wide effort towards understanding and building resiliency; and increased effort towards family-centric supports (see Appendix A for details of each).

Utilizing ACEs Screening to Determine Risk for Toxic Stress and to Inform Clinical Responses to Patients with ACEs

ACEs Aware (a collaborative initiative of California's Surgeon General's Network of Care Subcommittee, California's Surgeon General's Clinical Implementation Subcommittee, and other collaborators with the Offices of the California Surgeon General and the Department of Health Care Services) has introduced a method for clinicians to assess a patient's risk for Toxic Stress and to utilize the level of risk to inform next clinical interventions. The method utilizes a ten-question ACEs screening tool that asks whether or not an ACE had been experienced or is currently being experienced by an individual. For youth, this screening tool is *Part I of PEARLS*, and for adults, the screening tool is the *ACE Questionnaire for Adults*. For youth and adults, one's ACE score equals the number of "yes" responses to the ten ACEs questions. Figures 3 and 4 (figures published by ACEs Aware in *Network of Care* Roadmap 2021: 34-35) illustrate how an ACEs score, in conjunction with one's history of ACE-Associated Health Conditions (AAHCs), can be utilized to identify one's risk of Toxic Stress as low, intermediate or high (ACEs Aware, 2021, Purewal et. al., 2016).

Figure 3. ACEs Aware's ACEs and Toxic Stress Risk Assessment Algorithm for Pediatric Healthcare Providers

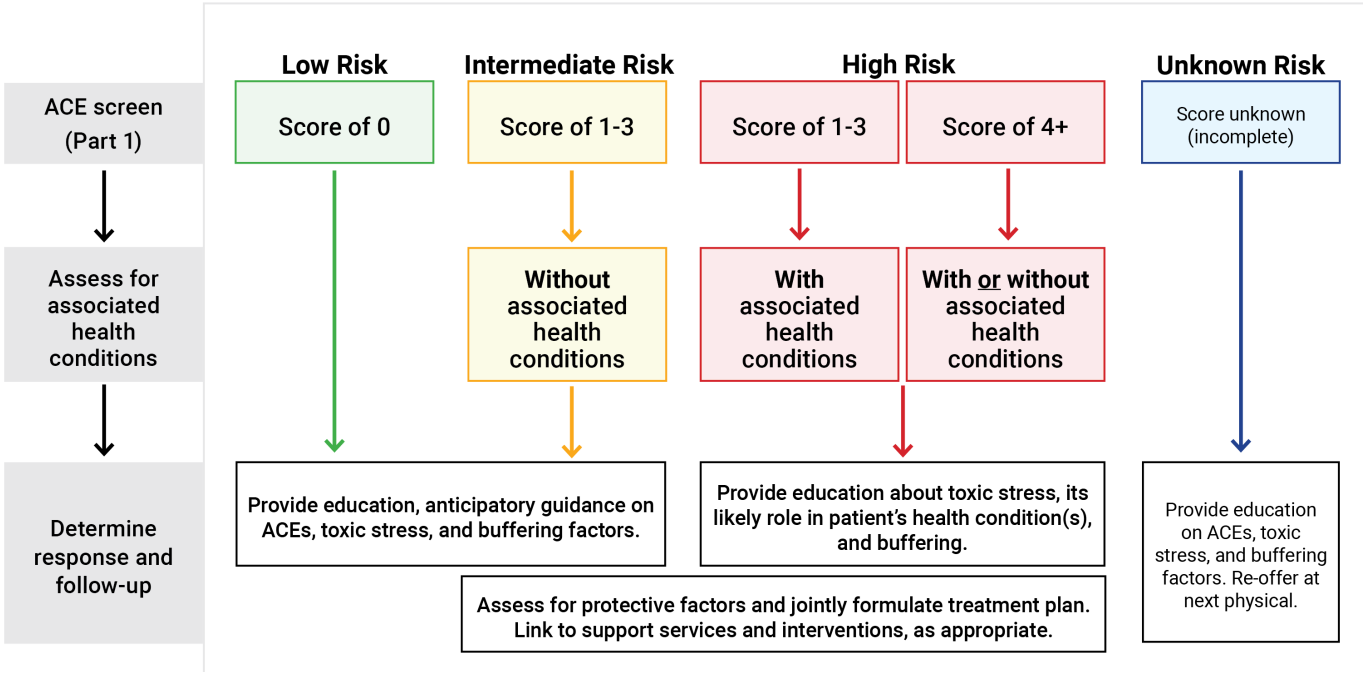
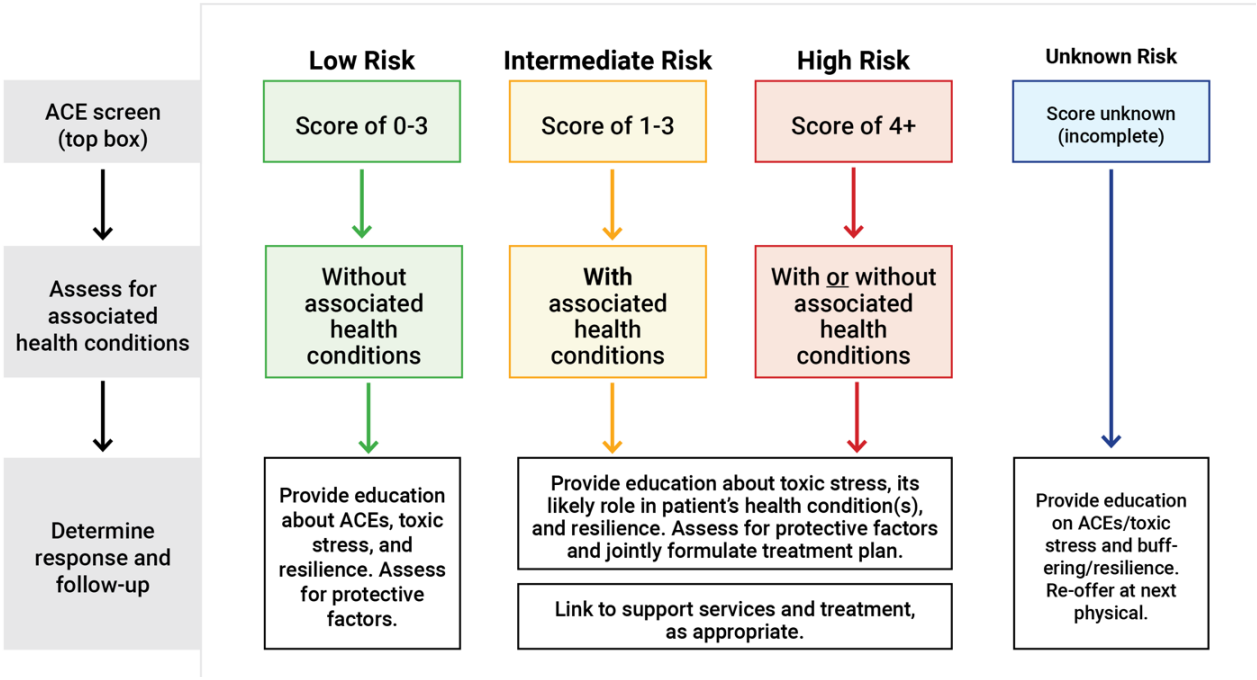


Figure 4. ACEs Aware's ACEs and Toxic Stress Risk Assessment Algorithm for Adult Healthcare Providers



ACEs Aware adds to the screening of ACEs and AAHCs, an assessment of an individual's protective factors. Together, these three points of information are recommended to be utilized in a clinical setting to better understand one's clinical risk for Toxic Stress, and in turn, to inform appropriate, trauma-informed treatment and follow-up plans for individuals (ACEs Aware 2021:26).

Evidence-Based Strategies to Mitigate Toxic Stress Response

Seven evidence-based strategies for regulating one's stress response, thus mitigating Toxic Stress Response, have been identified as "buffering supports" (Figure 5). Strategies range from building supportive relationships within and outside family units, to adopting anti-inflammatory diets, to practicing meditation, to receiving mild-to-moderate psychotherapy (ACEs Aware, 2021: 16, 39). Based on one's ACEs score, history of AAHCs, and protective factors, a variety of these strategies can be included one's treatment and follow-up plan. It is also important to note that from the time of screening and throughout treatment and follow-up, key principles of trauma-informed care should also be practiced, notably the building of trust, a sense of safety, and collaborative decisions-making relationships between individuals and their healthcare providers (ACEs Aware, 2021).

Figure 5. Seven Evidence-Based Strategies to Mitigate Toxic Stress Response

Woven throughout each of the below: Applying principles of trauma-informed care to screening, treatment and follow-up plans

Enhancing Supportive Relationships	Regular Moderate Physical Activity	Nutritional Strategies	Promotion of Sleep Hygiene and Treatment of Sleep Disorders	Practicing Mindfulness	Mental Health Care	Access to Nature

A Case Study of Adversities in the Context of COVID-19 (WYS Clients)

Adversities experienced throughout childhood have the potential to cause great harm to individuals and communities when experienced without key supports and needed interventions. As the COVID-19 pandemic brought about increased stress, uncertainty, and disruption to daily routines, children's experiences of toxic stress, fear, and anxiety are heightened. Given what is known about Adversities and their impact on individuals and communities, understanding how experiences of Adversities are changing and effective methods for intervening in the context of the pandemic are needed to inform a system-wide response to prevention and intervention. To this end, this case study explores how the prevalence of ACEs has changed since the rapid onset of the pandemic, as well as the efficacy of mental health treatment in ameliorating the impact of Adversities on mental well-being. This case study also explores how both ACEs and Related Life Events (RLEs) are related to mental health functioning; given the PEARLS tool is relatively new (developed in 2018), there is limited research on the prevalence and impact of RLEs relative to ACEs.

Western Youth Services (WYS) is a children's mental health provider in Orange County, California, providing integrated services from prevention to services to clients with intensive mental health needs. WYS approaches mental health and wellness in the context of Adversities, offering solutions that not only treat the predictable negative impact of Adversities but also strive to prevent them from happening in the first place. For several years, WYS has integrated ACEs screenings into their mental health treatment and transitioned to screening using the PEARLS in 2020 to screen for RLEs as well. As part of the ACE screening and comprehensive assessment process, WYS regularly provides referrals and linkages to medical providers to ensure clients are connected to a primary care physician in order to coordinate care and assist with the management of any physical manifestations of toxic stress.

To better understand the impact of Adversities on children's well-being, WYS conducted a case study to provide insights and data-driven recommendations to mental and physical health providers. The following sections discuss the findings of this case study. Key to interpreting these results is an understanding that the insights and recommendations provided here are based on a sample of children receiving mental health treatment. Thus, these findings and recommendations pertain to children with demonstrated mental health issues and are not intended to generalize to children overall. The methodology for the case study can be found in Appendix B.

PREVALENCE OF ACES AND RELATED LIFE EVENTS AMONG CHILDREN AND TEENS RECEIVING MENTAL HEALTH TREATMENT

The majority of WYS clients served between October 2020 and March 2021, reported experiencing at least one or more ACE (83%) and one or more RLE (66%; Tables 4 and 5). Nearly four in 10 youth are considered "High Risk,"[viii] having four or more ACEs. Among clients, prevalence of ACEs and RLEs vary by the demographics of age, race/ethnicity, gender identity, and sexual orientation. Pacific Islanders, Black/African Americans, and White/Caucasians have the highest prevalence of ACEs, with over half of all clients in these race/ethnicity categories reporting four or more ACEs. Further, 76% of transgender youth report four or more ACEs, compared to 41% of females and 34% of males. LGBTQ+ youth also report higher ACEs (53% reporting 4+ ACEs) relative to straight youth (36% reporting 4+ ACEs).

[viii] Based on the ACE and Toxic Stress Risk Assessment Algorithm

Overall, clients report experiencing fewer RLEs than ACEs. Again, Pacific Islanders, Black/African Americans, and White/Caucasians have the highest prevalence of RLEs, with 30%, 21%, and 12% reporting four or more, respectively. Notably, the proportion of Pacific Islander and Black/African American youth reporting four or more RLEs is 1.8 to 2.5 times larger compared to White/Caucasian youth. Among transgender youth, 83% have experienced two or more RLEs compared to 38% of females and 33% of males. Finally, 49% of LGBTQ+ youth have experienced two or more RLEs relative to 35% of straight/heterosexual youth.

Taken together, WYS clients are more likely to report four or more ACEs (38%) relative to the general population of children in California (estimated 3.5%) which is to be expected given clients are receiving mental health treatment. The prevalence of ACEs and RLEs are highest for ethnic/racial minority youth, specifically Pacific Islanders and Black/African American as well as transgender and LGBTQ+ youth. Overall, the disparities in the prevalence of Adversities based on ethnicity/race, gender identity, and sexual orientation are consistent with previous research (California Department of Public Health et al. 2020, Schnarrs et al. 2019) and further highlight that racial/ethnic minority, transgender, and LGBTQ+ youth experience significantly more adverse events and social risk factors which are predictive of negative well-being outcomes throughout their lifespan.

Table 4. Prevalence of ACEs among Demographic Characteristics

Demographic	No ACEs	1 ACE	2 or 3 ACEs	4+ ACEs
Overall (n = 1,714)	17%	16%	28%	38%
Race/Ethnicity				
Pacific Islander (n = 20)	5%	10%	20%	65%
Black/African American (n = 39)	8%	5%	23%	64%
White/Caucasian (n = 248)	8%	9%	27%	56%
Native American (n = 9)	0%	22%	33%	44%
Hispanic/Latinx (n = 1,109)	19%	18%	29%	34%
Middle Eastern (n = 18)	28%	11%	28%	33%
Gender Identity				
Female (n = 985)	16%	15%	29%	41%
Male (n = 710)	20%	19%	28%	34%
Transgender (n = 17)	6%	6%	12%	76%
Sexual Orientation				
Heterosexual/Straight (n = 519)	18%	17%	30%	36%
LGBTQ+ (n = 176)	12%	12%	23%	53%

Note. Total sample size by demographics do not add up to the overall total due to missing data for demographics.

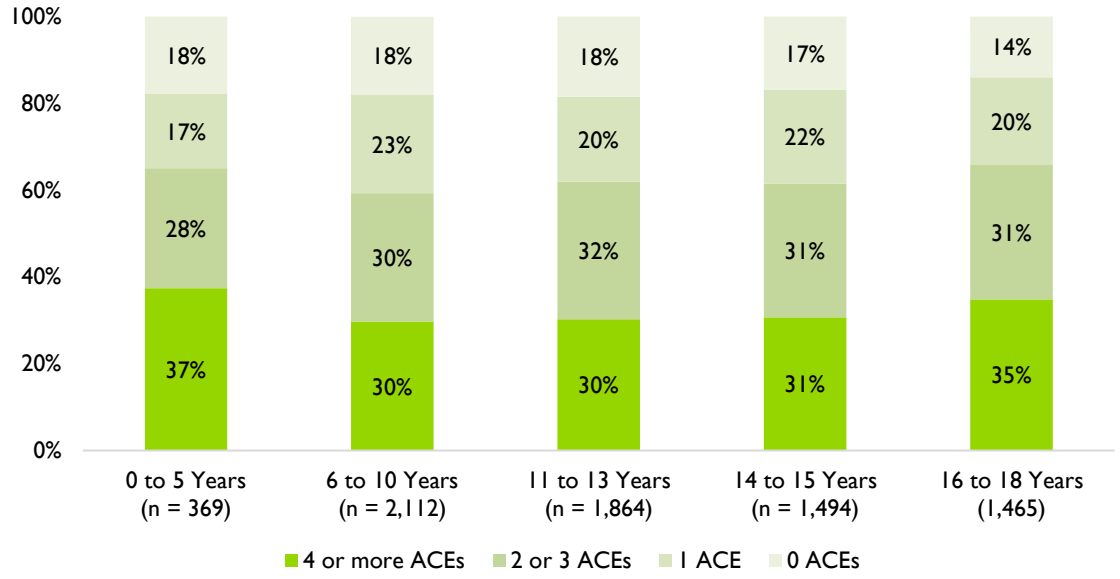
Table 5. Prevalence of Related Life Events among Demographic Characteristics

Demographic	No Related Events	1 Related Event	2 or 3 Related Events	4+ Related Events
Overall (n = 1,714)	34%	30%	28%	8%
Race/Ethnicity				
Pacific Islander (n = 20)	25%	20%	25%	30%
Black/African American (n = 39)	10%	23%	46%	21%
White/Caucasian (n = 248)	27%	28%	33%	12%
Native American (n = 9)	11%	11%	67%	11%
Hispanic/Latinx (n = 1,109)	37%	30%	26%	7%
Middle Eastern (n = 18)	34%	32%	28%	5%
Gender Identity				
Female (n = 985)	32%	30%	29%	9%
Male (n = 710)	37%	30%	27%	6%
Transgender (n = 17)	18%	0%	71%	12%
Sexual Orientation				
Heterosexual/Straight (n = 519)	37%	28%	28%	7%
LGBTQ+ (n = 176)	25%	26%	41%	8%

Note. Total sample size by demographics do not add up to the overall total due to missing data for demographics.

When assessing prevalence of ACEs among all children, research has demonstrated that prevalence of ACEs increases with age (Thakur et al. 2020, Sacks et al. 2014). This is not surprising as older children have had more time to experience more adverse events. However, given this case study sample is based on children who are presenting with mental health issues and, thus, receiving services from WYS, the relationship between age and ACEs is not as linear as would be expected in the general population of children. As shown in Figure 6, among clients served at WYS from 2017 through 2021, prevalence of ACEs is relatively consistent between ages 6 to 15 years with more ACEs among children ages 0 to 5 years and teens ages 16 to 18 years. Among all children ages 0 to 5 years, 65% have experienced two or more ACEs by the time they were connected to treatment at WYS. This suggests that among the youngest children needing mental health treatment, ACEs is a large factor driving the need for early childhood mental health intervention.

Figure 6. Prevalence of ACEs by Age

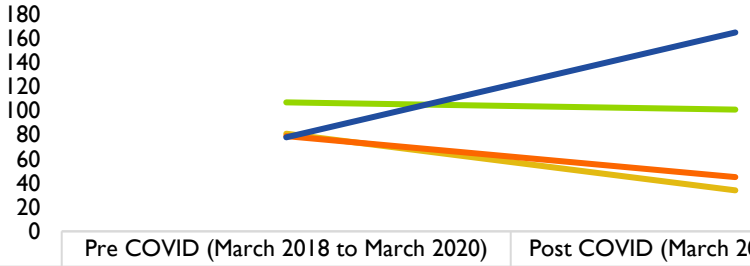


PREVALENCE OF ACES PRIOR TO AND AFTER THE RAPID ONSET OF COVID-19

As a result of social isolation, increased uncertainty, and disruption to daily routines caused by the Novel Coronavirus (COVID-19), children's experiences of toxic stress, fear, and anxiety are heightened. Similar to previous research discussed above about the negative impacts of macro-level events on children, the prevalence of ACEs among children receiving care at WYS has increased since the rapid onset of COVID-19. As shown in Figure 7, prior to COVID-19 (defined as March 2018 to March 2020), 23% (78 out of 345) of WYS clients reported four or more ACEs. Among these same clients, 48% (165 out of 345; Figure) reported four or more ACEs after the onset of COVID-19 (defined as March 2020 to March 2021). Since there is a general understanding that children's ACEs can only increase over time, the prevalence of ACEs among a comparison sample was also assessed (n = 92) to determine if instances increased at a different rate. As shown in Figure 8, in a comparable timeframe (from 2017 to 2020 versus 2018 to 2021), children's ACEs also increased though less than the increase experienced after COVID-19 (15, or 16%, more clients at ACEs screening follow-up had four or more ACEs in the comparison timeframe, versus 25% more clients in the pre-post COVID-19 timeframe).

> In comparing the number of ACEs reported among clients prior to COVID-19, 25% more of these same clients reported four or more ACEs after the onset of COVID-19.

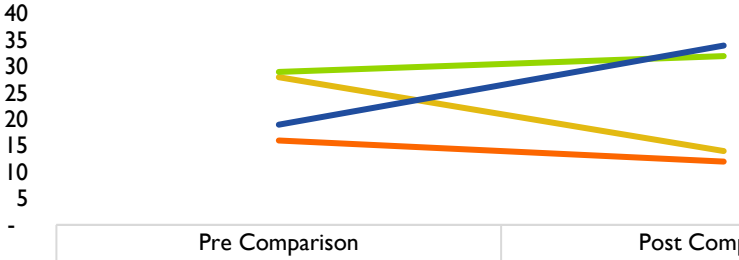
Figure 7. Changes in Prevalence of ACEs Post Onset of COVID-19



	Pre COVID (March 2018 to March 2020)	Post COVID (March 2020 to March 2021)
0 ACEs	81	34
1 ACE	79	45
2 or 3 ACEs	107	101
4 or more ACEs	78	165

0 ACEs 1 ACE 2 or 3 ACEs 4 or more ACEs

Figure 8. Changes in Prevalence of ACEs Prior to COVID-19 (Comparison Sample of Clients)



	Pre Comparison (January 2017 to March 2018)	Post Comparison (March 2018 to March 2020)
0 ACEs	28	14
1 ACE	16	12
2 or 3 ACEs	29	32
4 or more ACEs	19	34

0 ACEs 1 ACE 2 or 3 ACEs 4 or more ACEs

THE RELATIONSHIP BETWEEN ADVERSITIES AND DIAGNOSABLE MENTAL HEALTH CONDITIONS AND MENTAL HEALTH FUNCTIONING

The impact of Adversities on well-being can vary from child to child as a result of many factors including individual, family, environmental, and protective factors (Bartlett and Sacks, 2019). Despite the many factors that can impact how an individual experiences Adversities and the subsequent behavioral, mental, and physical symptomology, it is critical for researchers and practitioners to understand trends between Adversities and mental health conditions and functioning to guide trauma-informed interventions and better understand the potential cause of mental health conditions. In assessing relationships between WYS' clients' mental health conditions among clients served from October 2020 through March 2021,

the Youth Outcome Questionnaire (a measure of a client's mental health functioning),[ix] and ACEs and RLEs, a few key themes emerged. First, ACEs positively and significantly predict whether a client will be diagnosed with post-traumatic stress disorder (PTSD), depression, and adjustment disorders. Specifically, for each additional ACE reported, the odds of being diagnosed with PTSD, depression, and adjustment disorders increases by 1.3,[x] 1.1,[xi] and 1.1,[xii] respectively. Therefore, the odds of being diagnosed with PTSD, depression, and adjustment disorders is 3.3 to 3.9 times greater for a child with four ACEs relative to a child with one ACE (Figures 9 and 10). Additionally, after accounting for ACEs, RLEs are a significant, positive predictor of being diagnosed with depressive disorder but do not significantly predict being diagnosed with PTSD above and beyond ACEs. Specifically, for every additional RLE reported, the odds of being diagnosed with depression increases by 1.2.[xiii] Taken together, in this sample of children, related life events are a stronger predictor of a depressive disorder diagnosis while ACEs are a stronger predictor of a PTSD diagnosis. This finding may allude to the fact that children who experience ACEs are more likely to meet the Diagnostic and Statistical Manual (DSM) criteria for PTSD whereas experiencing RLEs is less likely to meet the diagnostical criteria for PTSD (i.e., ACEs are more likely to be deemed as "traumatic events" under DSM criteria to *have exposure to actual or threatened death, serious injury, or sexual violence* as opposed to RLEs).

For a child with four ACEs relative to a child with one ACE, the odds of being diagnosed with PTSD, depression, and adjustment disorders is 3.3 to 3.9 times greater.

For a child with four Related Life Events relative to a child with one, the odds of being diagnosed with depression is 3.6 times greater even after accounting for ACEs.

Finally, as expected, ACEs and RLEs upon initial assessment of impairment at WYS (among clients served from October 2020 to March 2021) significantly and positively predict mental health impairment overall, as well as somatic, behavioral dysfunction, interpersonal difficulty, intrapersonal distress, and social problem impairments.[xiv] As shown in Figure 11, after accounting for ACEs, RLE score is a stronger predictor of overall impairment, behavioral dysfunction, somatic concerns, social problems, and interpersonal difficulty. These results highlight how both ACEs and RLEs are strong drivers of mental impairment in children and youth and the importance of screening for both. As growing evidence suggests that social risk factors have similar biological effects as ACEs (Berens et al., 2017), it is critical that screening for ACEs incorporates other related events as these are predictive of similar negative outcomes for children (Thakur et al., 2020).

[ix] https://www.oqmeasures.com/y-oq-sr-2-0/
[x] Logistic regression of ACEs predicting PTSD diagnosis: b = 0.28, p < .001, exp(b) = 1.3
[xi] Logistic regression of ACEs predicting depressive disorder diagnosis: b = 0.05, p < .05, exp(b) = 1.1
[xii] Logistic regression of ACEs predicting adjustment disorder diagnosis: b = 0.08, p < .01, exp(b) = 1.1
[xiii] Logistic regression of related life events predicting depressive disorder diagnosis, while accounting for ACEs: b = 0.15, p < .001, exp(b) = 1.2
[xiv] In multilevel models (YOQ scores nested within clients) accounting for YOQ form type (self or parent report), with ACEs and Related Life Events as simultaneous predictors. All p-values < .05; total observations = 2,158

Figure 9. Prevalence of ACEs among Diagnosable Mental Health Conditions (DSM-5)

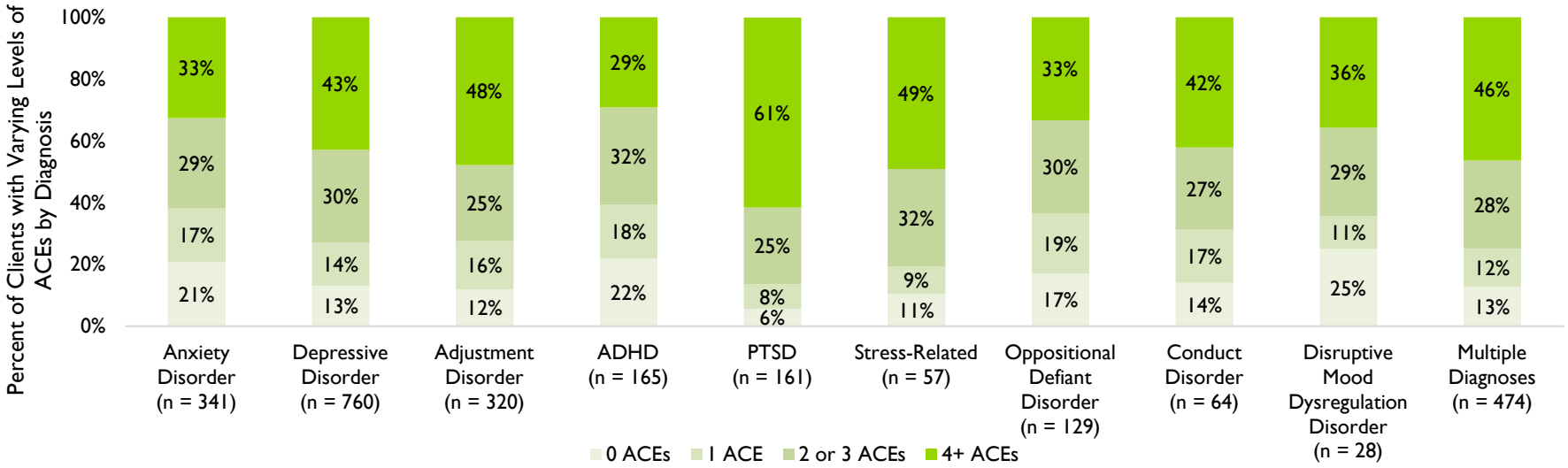


Figure 10. Average ACEs and Related Life Events by Diagnosable Mental Health Conditions (DSM-5)

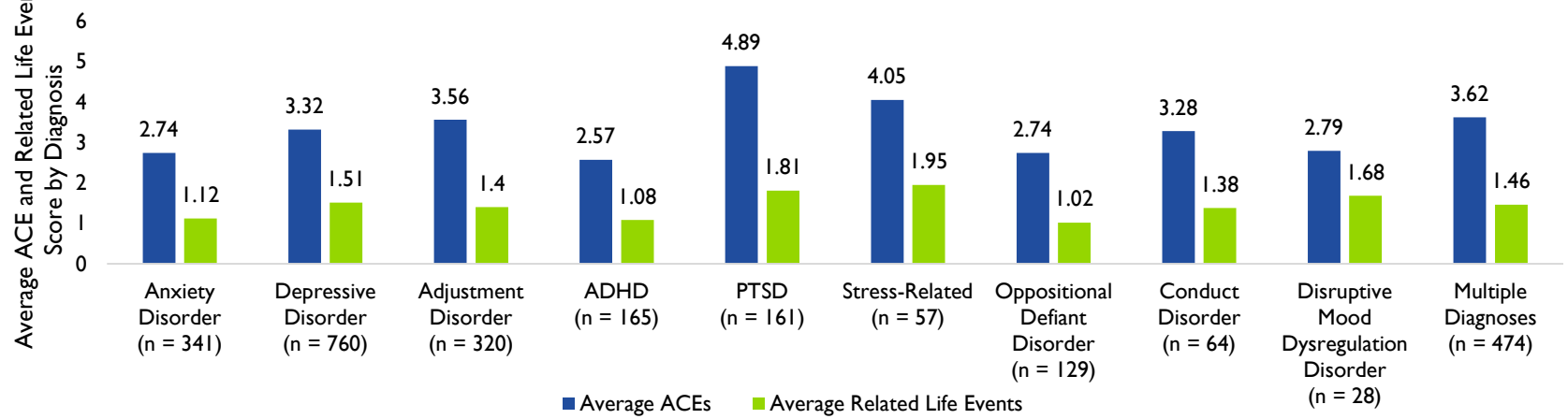
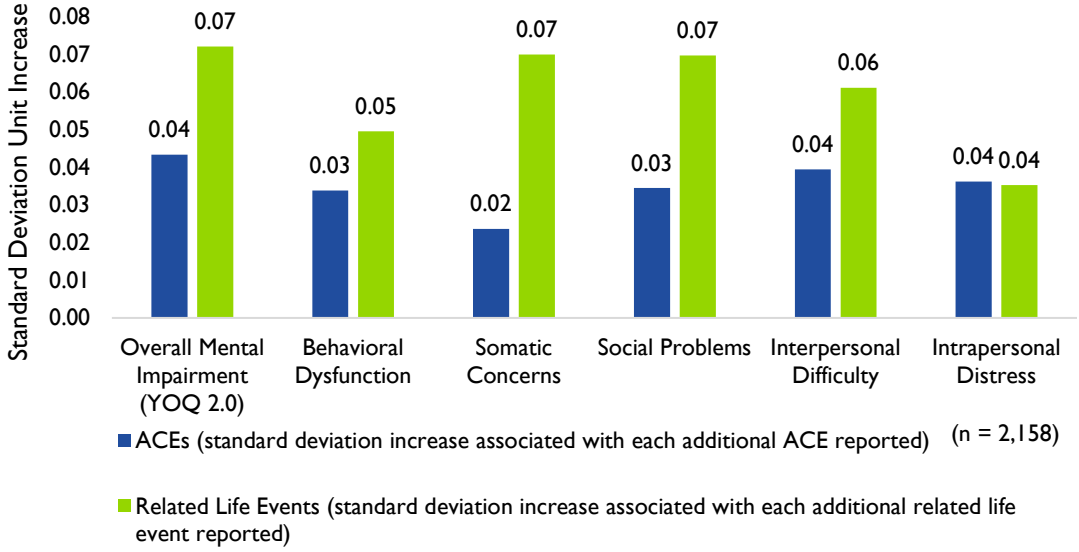


Figure 11. Relationships between ACEs, Related Life Events, and Mental Impairment

Standard deviation unit increases for each additional ACE and Related Life Event Reported



EXPLORING THE IMPACT OF TREATMENT ON CLIENT FUNCTIONING, WHILE ACCOUNTING FOR ACES AND RELATED LIFE EVENTS

WYS clients with varying prevalence of Adversities are experiencing improvements in overall mental health functioning and reduced suicidality during their treatment at WYS, providing further evidence that mental health treatment/interventions are effective at interrupting the Toxic Stress Response to adverse experiences in childhood. From initial mental impairment assessment (YOQ 2.0) to the last assessment clients received during their treatment at WYS, there were significant improvements in overall impairment, behavioral dysfunction, somatic concerns, social problems, interpersonal difficulty, and intrapersonal distress among both parent- and self-reports of clients with differing prevalence of ACEs.[xv] Overall, the mean differences from initial to last assessment demonstrated "small" effects as shown in Table 6 (mean differences and statistical significance are found in Appendix C). The largest effects found were improvements in overall impairment and intrapersonal distress. Further, as shown in Figure 12, thoughts of suicide are decreasing over time. For clients with all prevalence of ACEs, there were reductions in the percent indicating that they *sometimes* to *always* are thinking about suicide.

> Clients with all levels of Adversities are experiencing improvements in overall mental health impairment, behavioral dysfunction, somatic concerns, social problems, interpersonal difficulty, intrapersonal distress, and suicidality during their treatment at WYS.

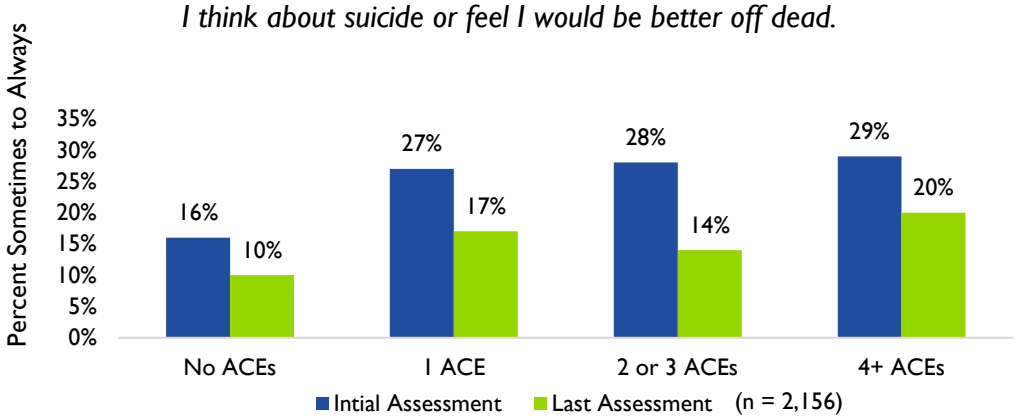
[xv] Paired samples t-tests were conducted assessing mean differences in initial and last assessment by parent/self-reports and ACEs prevalence category (no ACES, 1 ACE, 2 or 3 ACEs, 4 or more ACEs).

Table 6. Standardized Mean Difference (Effect Size) Between First and Last Mental Impairment Assessment (YOQ 2.0)[XVI]

		Overall Impairment	Behavioral Dysfunction	Somatic Concerns	Interpersonal Difficulty	Intrapersonal Distress	Social Problems
Parent-Report (n = 1,216)	No ACEs	0.3	0.1	0.0	0.2	0.3	0.2
	1 ACE	0.2	0.1	0.1	0.2	0.2	0.2
	2 or 3 ACEs	0.3	0.1	0.2	0.2	0.3	0.1
	4+ ACEs	0.2	0.1	0.1	0.2	0.2	0.1
Self-Report (n = 942)	No ACEs	0.2	0.1	0.2	0.1	0.2	0.1
	1 ACE	0.2	0.1	0.2	0.1	0.2	0.2
	2 or 3 ACEs	0.3	0.1	0.2	0.2	0.3	0.1
	4+ ACEs	0.2	0.1	0.0	0.2	0.1	0.1

Figure 12. Suicidal Ideation upon Initial and Last Assessment

I think about suicide or feel I would be better off dead.



THE IMPACT OF DIFFERENT TREATMENT MODALITIES ON CLIENT FUNCTIONING WHILE ACCOUNTING FOR ADVERSITIES

In assessing the impact of different evidence-based practices (EBP) on client mental health functioning among clients served from October 2020 to March 2021,[XVII] individual therapy and Eye Movement Desensitization and Reprocessing (EMDR) are associated with significant improvements.[XVIII] As shown in Figures 13 and 14, the effect of EMDR on mental health improvement is large relative to the effect of individual therapy

Individual therapy and Eye Movement Desensitization and Reprocessing (EMDR) are related to significant improvements in mental health functioning, with EMDR demonstrating a stronger effect on improvement compared to individual therapy in general, among the case study sample.

[XVI] A standardized mean difference is the average difference between first and last mental impairment assessment in standard deviation units.

[XVII] The sample represents clients served in this timeframe and incorporates all interventions a client received between the first and last YOQ administration, with interventions dating from July 2017 to March 2021

[XVIII] In multilevel models (YOQ parent- and self-report change scores nested within clients) predicting YOQ change from initial to last assessment, accounting for first YOQ score, ACEs, related life events, days in treatment between first and last assessment, total services received, and form type (parent or self); for individual therapy,

in general.[XIX] For every additional EMDR session a client receives, mental health functioning improves, on average, by 1.4 units on a 240-point scale; for every nine EMDR sessions (the average sessions clients' at WYS have received), improvement increases by 12.7 points. For individual therapy, though the effect is statistically significant, the effect size is small. As shown, for every additional five individual therapy sessions a client receives, mental health functioning improves, on average, by 0.6 units. Taken together, based on this sample of children, EMDR has a much stronger positive impact on mental health improvements, relative to individual therapy in general. Other EBP that were assessed but not significantly predictive of mental functioning improvements in this sample of children include cognitive behavioral therapy (CBT), dialectical behavioral therapy (DBT), trauma-focused CBT, Functional Family, collateral, group, and family therapies. This is not to say that these EBPs are ineffective, in fact previous research has demonstrated otherwise. This finding may be due to data limitations in this sample such that fewer clients in the dataset had specific EBPs recorded in the electronic health records system which limited the sample size (n = 269) for specific EBP analyses. Considering these limitations, further research is needed to draw stronger conclusions regarding the efficacy of different EBP.

Figure 13. Predicted Mental Functioning Improvement by Number of EMDR Sessions

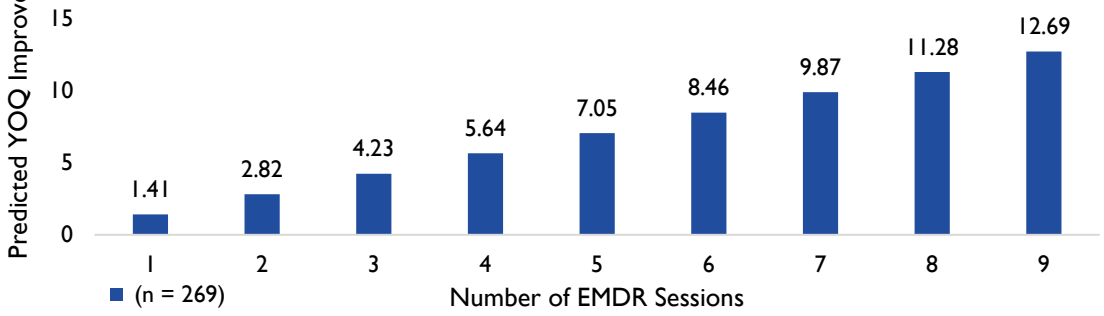
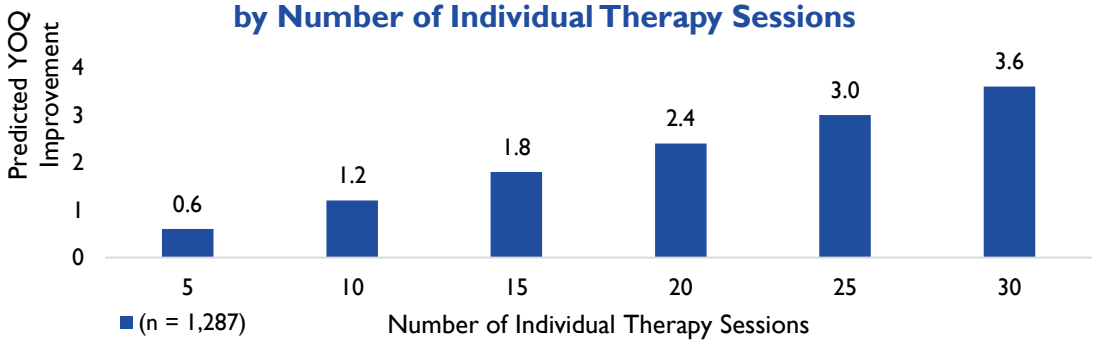


Figure 14. Predicted Mental Functioning Improvement by Number of Individual Therapy Sessions

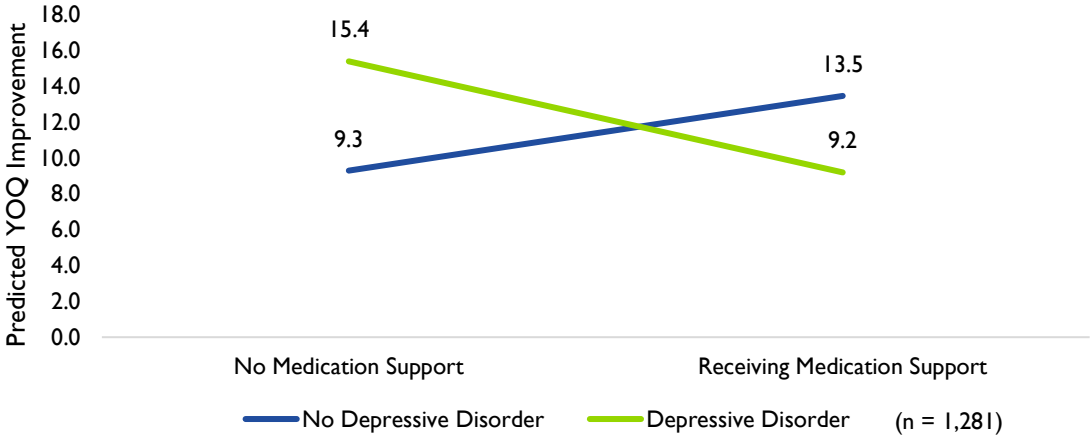


Among the sample of children served at WYS from October 2020 to March 2021, medication support services alone are not predictive of improvements in functioning, though interesting relationships with depressive disorders emerged. In assessing the relationship between whether clients are receiving medication support and mental health improvements, the relationship is significantly moderated by

[XIX] b = .012, 95% confidence interval .02 to .23, $p < .05$; for EMDR, b = 1.41, 95% confidence interval 0.29 to 2.52, $p < .05$.

whether the client has a depressive disorder diagnosis.[xx] As shown in Figure 15, among clients without a depressive disorder diagnosis, receiving medication support is associated with greater improvements in mental health functioning; the opposite relationship is found for individuals with a depressive disorder diagnosis in that receiving medication support is associated with less improvement in mental health functioning. This finding is in line with previous research suggesting the efficacy of medications in treating depression in children is limited and often short-term, (Cipriani et al. 2016, Weisz et al. 2006) though, given study limitations cited above, further research is needed to draw stronger conclusions on the impact of medication supports for children with depression.

Figure 15. Relationship between Medication Support and Mental Health Improvement Moderated by Depressive Disorder



In summary, this case study provides further evidence to support the effectiveness of mental health interventions in helping children overcome the negative effects of Adversities. As children's exposure to Adversities is becoming more common, especially in the context of the pandemic, there is a great need to improve community-wide responses to screening for Adversities and linking children and families to the appropriate services and supports. This case study also provides evidence on the importance of screening for both ACEs and RLEs as experiencing both types of adversities are related to negative mental well-being among the sample of children included in this study.

[xx] In a multilevel model (YOQ parent- and self-report change scores nested within clients) predicting YOQ change from initial to last assessment, accounting for first YOQ score, ACEs, related life events, days in treatment between first and last assessment, total services received, form type (parent or self), whether a client has a depressive disorder diagnoses, whether the client has a severe depressive disorder, and an indicator of whether the client receives/does not receive medication support; interaction effect, b = -10.42, 95% confidence interval -17.6 to -3.25, $p < .01$

Best Practices Related to Screening, Referrals, and Targeted Intervention Services for Children with Adversities

Best practices for both mitigating negative outcomes of Adversities and preventing them requires a whole-community approach focusing on building resiliency in children, adults, and families. With high prevalence of Adversities in adult populations, supporting parents is critical to prevention of Adversities in children. Educators and primary health care providers have been identified as key partners in identifying needs of children and families, as well as in determining best practices for implementing programming. Unfortunately, COVID-19 has increased urgency for interventions, now and for the long-term. Researchers and practitioners are calling for a ramping up of support for preparing school staff and school-based services for the return of students to school (see Phelps et. al. 2020, for example). Another focus of this study was to examine the integration of screening and targeted intervention best practices.

From September 2020 through March 2021, WYS led 27 provider engagement sessions with over 250 professionals from a wide variety of occupations and specialties (e.g., social workers, clinical therapists, medical students, physicians, government staff, and non-profit advocacy staff) to share lessons learned and best practices around screening, prevention, and intervention surrounding Adversities. These sessions incorporated post-event surveys to understand the impact of the sessions on professionals' intended changes to their work around Adversities and perceived barriers they would experience in implementing such changes. These data, coupled with the discussions held during the sessions, provide critical insights into the effectiveness of provider engagement activities at cultivating change in professionals' behavior to prevent, screen, and intervene with children and adults who have experienced Adversities, as well as key barriers that need to be addressed system-wide. Across 135 unique providers,[XXI] 133 (99%) reported at least one behavioral change they plan to make in their work related to Adversities; the two providers who did not indicate any changes they would make indicated that they needed more information on the topic before they made any changes.[XXII] The most common change providers indicated they would make was to use the information to reinforce their current practice (77%; Figure 16), suggesting that many providers are already integrating screening, prevention, and/or intervention into their practice to some extent. The other most common changes providers indicated they would make included implementing routine screenings for children (29%) and adults (23%), as well as changes in how they communicate or collaborate with external partners for referrals (27%).[XXIII] Taken together, these data highlight the

> Provider engagement sessions are an effective method to increase providers' willingness to implement changes to their work around Adversities. 99 percent of providers indicated they would implement changes to their practice as a result of sessions.

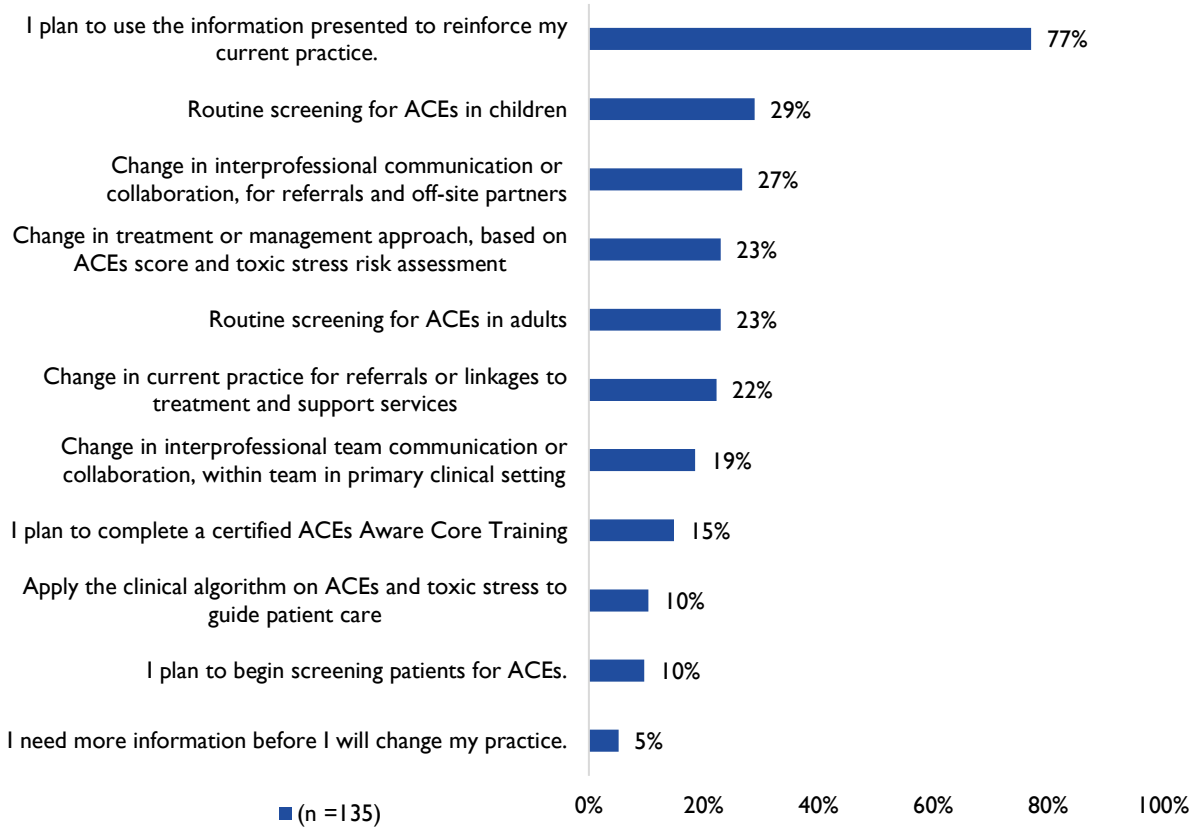
[XXI] Though over 250 individuals were reached through the provider engagement activities, some did not complete the post-event survey.

[XXII] Participants could select more than one option; though seven participants (5%) selected "I need more information before I will change my practice," at a later session, five of these participants provided an actual change they would make.

[XXIII] Though these percentages are seemingly low, the majority of respondents did indicate that they will use the information learned to reinforce their current practice, suggesting that many providers may already be implementing these aspects (i.e., screenings and collaboration for referrals) into their work. Further, only 15 percent of participants indicated that they plan to complete a certified ACEs Aware Core Training. While these numbers are lower than expected, it is unknown how many participants had already completed these trainings, which may explain the low rate.

importance of provider engagement sessions in increasing the awareness and understanding of Adversities among providers that impact providers' decisions to make changes to their work in how they screen, prevent, and intervene.

Figure 16. Providers' Planned Changes to Practice as a Result of Provider Engagement Sessions

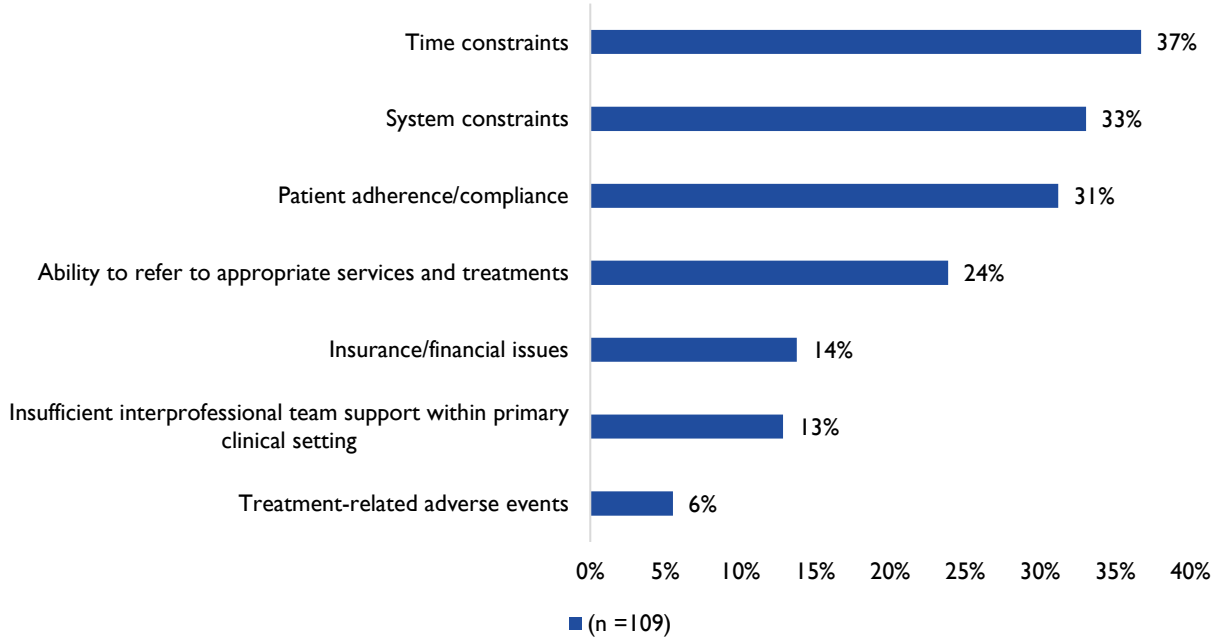


Providers indicated key barriers that exist that might limit the success of implementing screening and assessment best practices they learned in the engagement sessions. The three most common barriers reported include time constraints (37%), system constraints (33%), and patient adherence/compliance (31%; Figure 17). A lack of time and system constraints speak to large-scale barriers that providers have long experienced: limited resources to meet the needs of the community, increasing administrative requirements for service delivery, and fragmented networks of care to support referrals and linkages to needed services (Dugdale et al., 1999). Patient adherence to care/compliance is impacted by many factors, some of which are outside of the control of the provider; however, there are best practices and lessons learned that providers can use to overcome factors that limit patient compliance.

Leading barriers providers are experiencing in implementing changes to the practice surrounding Adversities include:

- Time constraints
- System constraints
- Patient adherence/compliance

Figure 17. Providers' Perceived Barriers to Implementing Changes Related to Adversity Screenings and Practice Changes



Taken together, professionals from various sectors, occupations, and specialties are eager to make changes to their work to increase the screening, prevention, and intervention of Adversities but recognize barriers may impede on their success in doing so. Fragmented networks of care and limited resources are real barriers that can be difficult to overcome. Despite these barriers, there are actionable steps providers can take to avoid retraumatizing patients through screening and ensure they are linked to the appropriate services and supports. These lessons learned, best practices and actionable steps are summarized below and in Table 7.

DETERMINING WHICH SCREENING TOOLS TO USE.

Lesson Learned: A screening of ACEs should incorporate screening for the triad of adversity, including ACEs score, clinical manifestations of toxic stress, and protective factors. As documented throughout this paper, related life events may be associated with the same negative outcomes as ACEs, however, research is still being conducted in this area. As stronger evidence becomes available on the relationship between related life events and toxic stress, screening for related life events in addition to ACEs (i.e., PEARLS) may provide greater insights into a patient's risk for toxic stress. Additionally, research has documented that the impact of adverse events can be counterbalanced by protective factors. Thus, screening for protective factors and an individuals' clinical manifestations of toxic stress in addition to PEARLS can provide a more comprehensive picture of the risk of the individual and the most appropriate referrals and linkages to other services they may need.

DETERMINING THE SETTING AND APPROACH TO SCREENING

As the need for screening for ACEs is becoming increasingly important, guidance surrounding who should complete the screening and in which setting is needed. The following are lessons learned and best practices gathered from research and providers' experiences.

Lesson Learned: screening for ACEs can be retraumatizing for the individual being screened and can elicit an emotional response. Throughout the provider engagement sessions, providers expressed their hesitation to conduct screenings due to the emotional response the screening can elicit from an individual and not feeling prepared to effectively handle such a response. Providers with experience conducting screenings also shared that, despite this hesitation initially, their patients often discussed feeling empowered after the screening process, helping them to makes sense of behavior and understanding that trauma is not something that is wrong with them, rather something that happened to them. Based on the experiences of providers who have integrated routine screenings into their practice, the following best practices and recommendations can help foster a more supportive environment when conducting screenings:

1. Ensure providers are comfortable providing screenings. A provider's level of comfortability in conducting screenings can determine how comfortable/uncomfortable a patient is during a screening (Rariden et al., 2021). Provider trainings on trauma-sensitive care and screening implementation can support providers who have limited experience or otherwise feel uncomfortable discussing adversity with patients.
2. Conduct the screening in an appropriate setting. Because screening for adversities can be retraumatizing and elicit an emotional response, a screening should be conducted in a private setting (e.g., in a private office with a provider rather than in a waiting room).
3. Frame the screening as a conversation of healing and resilience, rather than emphasizing trauma. This includes explaining why understanding adversity is important to the healing process and a discussion and/or additional screening of protective factors and resilience of the patient/client.
4. Empower the individual to share what they want to share. Providers expressed often being hesitant to screen out of fear of having to breach patient-client confidentiality if reports of endangerment/abuse are made throughout the screening. It is important to remind the individual about the limits of confidentiality between patient-provider and empower them to share what they wish to. As patient-provider trust grows, individuals may disclose information that they had not previously. It is important that this information be gathered when the individual is ready to disclose it. Providers can also consider administering the de-identified PEARLS so that the specific Adversities reported are unknown but an overall score can be provided and can inform treatment plans.

THE PROCESS OF REFERRALS AND LINKAGES TO OTHER SERVICES.

A comprehensive screening process can highlight additional services and supports an individual may need to support their well-being. The following lessons learned and best practices can support an effective referral-linkage process.

Lesson Learned: Referring and linking to needed services can be challenging for both the provider and patient due a fragmented network of care and limited availability of services. The ACEs Aware Trauma-Informed Network of Care Roadmap provides guidance on key elements and milestones for providers and organizations for establishing an effective system for responding to Adversity screenings and mitigating the toxic stress response among those they serve. Overcoming these barriers can be challenging, but through providers' experiences, the following best practices have proved effective:

1. Maintain an updated list of community resources available to families. As documented by the American Academy of Pediatrics (2014), many communities already have these lists in place and can be found via local departments of health, local United Way organizations, and 211/311

programs, among others. The key to maintaining an updated list is identifying dedicated community navigators to update this list in real-time rather than on an annual basis.

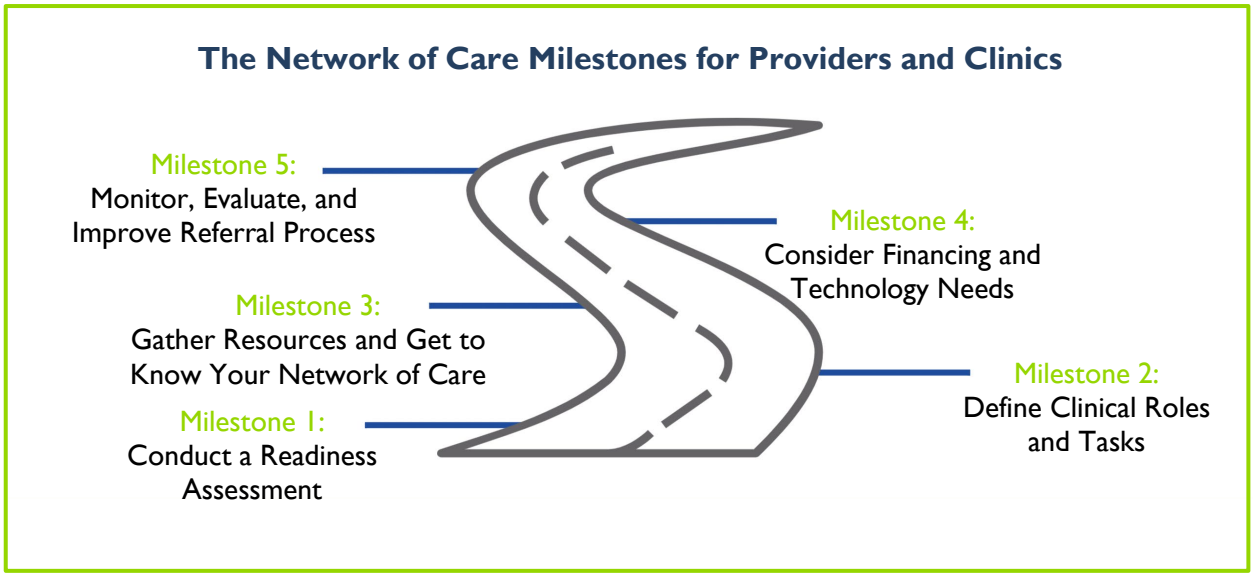
2. When a referring agency is identified, providers can lay the groundwork for the patient to support an effective linkage by calling the referral agency on their behalf to gather information on the process to receive services. This will help the provider prepare the patient by helping them better understand the process, required information, and when they can expect to start receiving services/supports. If the referring agency allows, the referring provider or support staff can even make the appointment on the patient's behalf.
3. Follow up with the agency and/or patient to ensure a linkage to service occurred; if a linkage did not occur, work with the patient to understand potential barriers they may be experiencing and discuss solutions to overcome them.

Table 7. Summary of Lessons Learned and Best Practices

Practice/Process	Lesson Learned	Best Practices
Determining which screening tools to use, including whether to use the identified or de-identified tool.	A screening of ACEs should incorporate screening of related life events (i.e., the PEARLS) as well as protective factors	1. Screen for ACEs and RLEs (i.e., PEARLS) in combination with protective factors
Determining the setting and approach to screening	Screening for ACEs can be retraumatizing for the individual being screened and can elicit an emotional response	1. Ensure provider comfortability in providing screenings 2. Conduct the screening in a private setting 3. Frame the screening as a conversation of healing and resilience, rather than emphasizing trauma 4. Empower the individual to share what they want to share 5. Consider using the de-identified PEARLS
The process of referrals and linkages to other services	Referring and linking to needed services can be challenging for both the provider and patient due to a fragmented network of care and limited availability of services	1. Maintain an updated list of community resources available to families. 2. Providers can lay the groundwork for the patient to support an effective linkage by calling the referral agency on their behalf to gather information on what the process to receive services is. 3. Follow up with the agency and/or patient to ensure a linkage to service occurred.

Conclusion

Adversities experienced throughout childhood have the potential to cause great harm to individuals and communities when experienced without key supports and needed interventions. As these Adversities are becoming increasingly prevalent, there is a need for greater system-wide coordination of efforts in screening, prevention, and intervention. There is a call to action for schools, community organizations, and health care providers to become key partners in these efforts. As documented throughout this paper, supports and interventions exist to prevent and reduce the negative impacts of Adversities. Specifically, screening of Adversities, fostering resilience and protective factors, and linking children to evidence-based mental health treatment are key mechanisms by which health care providers, community-based organizations, government, and social service agencies can support California's ambitious goal to reduce ACEs and toxic stress by half in one generation. The ACEs Aware Trauma-Informed Network of Care Roadmap provides guidance on key elements and milestones for providers and organizations for establishing an effective system for responding to Adversity screenings and mitigating the toxic stress response among those they serve (ACEs Aware, 2020) This tool serves as a critical resource for providers to assess where their practice/organization stands in its ability to screen, treat, and heal toxic stress. Though systemic barriers exist in creating a whole-community response to Adversities, best practices and lessons learned provide actionable steps that professionals in these fields can take to support system-wide efforts to prevent, screen, and intervene so that experiencing Adversity does not dictate a child's future.



Appendix A. Next Steps in the Study and Prevention of ACEs and Related Life Events

The compounding association between individuals' ACEs and individuals' environmental adversities have prompted a need for advancements in how Adversities are measured, defined, and approached in terms of prevention efforts. The below list represents some of the advancements repeatedly found in the literature:

The validation of an ACE screening survey aligned to diversity, equity, and inclusion best practices, and an application of a cross-cultural framework to the analysis of ACEs. Recommendations include screening for ACEs, along with related life events (e.g., PEARLS) and social supports/protective factors. For example, a study found that adults with ACEs who always or sometimes had support were 87% and 69% less likely to report depression, respectively (Brinker and Cheruvu, 2017). Recommendations also include validating screening tools for youth audiences and increasing the screening of youth directly, rather than just relying on parent reporting (Craig et al., 2020).

The development of a multi-dimensional adversities model. Given the physiological and social impacts of ACEs, a multi-dimensional model that considers individuals' historical, cultural, social, psychological, biological contexts, as well as the type of ACE(s) experienced and the age range at which an ACE is experienced is needed (Herzog and Schmahl 2018, Navalta et al. 2018). The PEARLS is a step towards such a model. In addition, recent studies show evidence for supporting the grouping of adversities based on the strength of their associations with negative outcomes in order to model not only the cumulative consequences of ACEs, but also the compositional consequences of ACEs and Related Life Events (Shonkoff, 2016).

Advocating for protected child rights in order to support resiliency in youth. For example, United Nations Convention on the Rights of the Child calls for being proactive around ACEs and the long-term impacts of toxic stress, calling for a rights-centered approach to child and youth interventions. This includes adopting a social history screening and improved rights of children and youth on which to base youth-centered social services and healthcare models (Suleman et al., 2020).

A more coordinated, systems-wide effort towards understanding and building resiliency of children and adults, including coordination of care across education, medical, mental, behavioral, social service, and community-based institutions (ACES Aware, 2020). Overall, there is a need to increase the contact points in which children and adults receive trauma-informed support and care.

An increased effort towards family-centric supports and to understand the impact of parents' mental or other illnesses on children, so as to better identify effective interventions and to improve training provided to the range of health and social service providers with which parents and children interact. There is a gap in effective interventions for women during prenatal and the first 3 years after birth to prevent ACEs (California Department of Public Health et al., 2020). In addition, social service providers to adults have identified a gap in knowledge or ability of how to coordinate their services with child-based services, and in confidence in providing services to fathers (Condon et al., 2020).

Appendix B. Case Study Methodology

To better understand the impact of ACEs and related life events on children's well-being, WYS conducted a case study to provide insights and data-driven recommendations to mental and physical health providers. The case study was designed to assess how the prevalence of ACEs among children has changed in the context of the COVID-19 pandemic; the relationship between Adversities and diagnosable mental health conditions and functioning; and the impact of mental health treatment on interrupting the toxic stress response to Adversities. To answer these questions, data was gathered from WYS clients served between October 2020 and March 2021 (and from January 2017 to March 2020, for the ACEs prevalence comparison sample) from the data sources listed in Table B1. Table B2 lists each of the research questions of interest, the statistical analysis method employed, and total observations for each.

Table B1. Case Study Data Sources, Variables, and Timeframe

Data Source	Measure/Variable	Timeframe
Electronic Health Record System (EXYM)	Diagnostic and Statistical Manual of Mental Disorders (DSM-5) Diagnosis	October 2020–March 2021
OQ®-ANALYST	Youth Outcome Questionnaire 2.0 (Parent- and Self-Reports)	June 2019–March 2021
Electronic Health Record System (EXYM)	Pediatric ACEs and Related Life Event Screener (PEARLS), de-identified	October 2020–March 2021
Electronic Health Record System (EXYM)	ACE Questionnaire, de-identified	January 2017–February 2021
Electronic Health Record System (EXYM)	Mental health treatment services and EBP received	June 2019–March 2021
Electronic Health Record System (EXYM)	Client demographics of gender, sexual orientation, race/ethnicity, and age	October 2020–March 2021

Table B2. Case Study Research Questions, Analysis, and Total Observations

Research Question	Analysis	Variables	Observations (n)
Prevalence of Adversities among clients receiving treatment	Frequency of Adversities overall and by client demographics	Client age, race/ethnicity, gender identity, sexual orientation, and PEARLS	1,714
Prevalence of ACEs prior to and after the rapid onset of COVID-19	Frequency of ACEs among clients with two or more screenings conducted between January 2017 to March 2020 and between clients between March 2018 and March 2020; comparison of change in frequencies from "pre" to "post" between the two timeframe samples of clients	PEARLS (subset of only the 10 ACEs questions) and ACEs Questionnaire	Pre-Post COVID-19 sample (n = 345); comparison timeframe sample (n = 92)
The relationship between Adversities and diagnosable mental health conditions	Average Adversities by DSM-5 diagnosis; logistic regression of Adversities predicting DSM-5 diagnoses	DSM-5 Diagnoses and PEARLS	1,615
The relationship between Adversities and mental health functioning	Multilevel models predicting initial overall YOQ score and subscales (YOQ scores nested within clients) accounting for YOQ form type (self- or parent-report), with ACEs and Related Life Events as simultaneous predictors	PEARLS and YOQ 2.0	2,158
The impact of treatment on client functioning, while accounting for ACEs and Related Life Events	Paired samples t-test comparing initial and last YOQ score and subscales separately for parent- and self-reports by prevalence of ACEs (0 ACEs, 1 ACE, 2-3 ACEs, 4+ ACEs)	PEARLS and YOQ 2.0	Observations ranged from 189 to 496 for each of the t-test analyses
The impact of different treatment modalities on client functioning while accounting for Adversities	Multilevel models (YOQ parent- and self-report change scores nested within clients) predicting YOQ change from initial to last assessment with number of different treatment modalities received between the first and last YOQ administration, accounting for first YOQ score, ACEs, related life events, days in treatment between first and last assessment, total services received, and form type (parent or self); separate models run for each treatment modality	PEARLS, YOQ 2.0, EHR data on treatments received between first and last YOQ 2.0 assessment, DSM-5 for interaction between medication supports and depression diagnosis	1,289 for treatment modalities (e.g., individual, group, family, medication supports); 269 for specific EBP (e.g., EMDR, CBT, DBT)

Appendix C. Mean Differences and Statistical Significance for Analyses of Initial to Last Mental Impairment Assessment

Table C1. Mean Differences between first and last mental impairment assessment (YOQ 2.0)

		Overall Impairment	Behavioral Dysfunction	Somatic Concerns	Interpersonal Difficulty	Intrapersonal Distress	Social Problems
Parent-Report	No ACEs	7.7**	1.3**	0.1 ns	1.5**	3.0**	0.9**
	1 ACE	6.7**	1.4**	0.4*	1.2**	2.3**	0.7**
	2 or 3 ACEs	8.7**	1.1**	1.0**	1.3**	3.4**	0.6**
	4+ ACEs	7.3**	1.1**	0.7**	1.2**	2.6**	0.6**
Self-Report	No ACEs	6.8**	0.8*	0.8**	0.6 ns	3.1**	0.4 ns
	1 ACE	6.5**	0.8 ns	0.9**	0.6 ns	2.7**	0.8**
	2 or 3 ACEs	8.0**	0.6 ns	0.9**	1.1**	3.4**	0.5**
	4+ ACEs	5.1**	0.6 ns	0.2 ns	0.9**	1.9**	0.5**

** = $p < .05$; ** = $p < .01$; ns = nonsignificant, $p > .05$*

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