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Trauma by Numbers: Warnings Against the Use of ACE Scores in Trauma-Informed Schools

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Trauma by Numbers: Warnings Against the Use of ACE Scores in Trauma-Informed Schools

Alex Winninghoff

Over the last ten years, the original Adverse Childhood Experiences (ACE) study (Felitti et al., 1998) has informed education policy and has influenced and justified the need for “trauma-informed” (TI) frameworks in schools across the nation. The ACE study and related research on “toxic stress” from the Harvard Center on the Developing Child (Shonkoff & Garner, 2012) has justified and underpinned the demand for trauma-informed professional education and frameworks and has enabled new ways for school professionals to conceptualize students’ lives and behaviors. Over the decade or more since TI schools were first advocated for and developed (Oehlberg, 2008; Ko et al., 2008), they have frequently been described as a “paradigm shift” in school approaches and cultures.

ACE and TI frameworks often seem to validate the struggles that many teachers witness in the lives of their students. There are elements that can hardly be argued with: TI frameworks recognize that students face significant hardships during childhood. They institutionally validate kindness, compassion, and flexible responses to student behaviors. They also establish a unifying message of hope and offer strategies to building student “resilience.” These elements appear positive and aligned with social justice goals and ideologies, but there are also elements of TI frameworks that warrant critical consideration. There are, for instance, ethical concerns relating to requests for ACE disclosures from students, developing school ACE screening practices, or attaching individual ACE scores that have been reported to schools from an outside agency or clinic.

TI frameworks are relatively new, and professionals in many TI schools are just beginning to consider the ethical implications of using ACE frameworks. The application of ACE concepts, ACE scores, and the identification of students who face the impacts of “toxic stress” is a topic that has become more relevant for educators. There have been calls to universally screen students nationwide for ACEs in schools (Pataky, Báez, & Renshaw, 2019, p. 657; American Heart Association, 2019).

It has also become especially relevant to educators in California, where a state budget has been allocated to begin universal ACE screenings for those on MediCal (California Budget & Policy Center, 2019). As of January 1, 2020, California has begun paying pediatricians for screening Medi-Cal enrolled children for ACEs, and California Surgeon General Nadine Burke is advocating for schools to have access to ACE information that would identify those who are suffering from “toxic stress.” She argues that making this information available to schools will improve support through wrap-around services (Gaines, 2019).

California is the first state to make such moves, but it establishes a precedence that could be adopted by other states. For these reasons, it is essential that educators critically analyze the ways ACE frameworks are entering schools, and specifically consider the risks of requesting students’ disclosures of ACEs and the ethics of screening for ACEs or using individual ACE scores in schools.

ACEs from Theory to Practice

ACE scores are a foundational concept of the original ACE study (Felitti et al., 1998, p. 250). They describe a 1 to 10 integer count that represents the number of reported ACE categories, which relate broadly to forms of abuse and household dysfunction, and which are outlined below. ACE scores were developed in order to recognize and evaluate the “co-occurrence [of] adversities,” which had “repeatedly shown a positive graded

relationship to a wide variety of health and social problems” (Anda, Butchart, Felitti, & Brown, 2009, p. 93). In short, the study demonstrated that the higher a person’s 1 to 10 ACE score, the greater their likelihood of having negative outcomes across physical, psychological, social, and cognitive domains.

ACEs also correlate or have a significant “bidirectional” relationship with impoverishment (Anda et al., 2009, p. 95). Given the ways structural, social, cultural, and institutional inequities promote adversity, this would seem to make sense and even appear to be scientific validation of these forms of oppression. However, this validation problematically reframes impoverished communities as biologically, psychologically, socially, and cognitively deficient, and in need of intervention to respond to these conditions with more “resilience.”

The leading international researchers who are critiquing substantive and methodological elements of the original and subsequent ACE studies—Sue White, University of Sheffield; Rosalind Edwards, University of Southampton; Val Gillies, University of Westminster; and David Wastell, University of Nottingham—recognize the strategic detachment of poverty from the ACE framework:

The absence of poverty in the ACE framework does not stem from a neutral scientific calculation, nor accidental omission. Rather it is decentred by design. Poverty is separated out from other childhood adversities and reframed as a symptom of a damaged brain and body... From this perspective, poverty is viewed merely as a symptom of dysfunctional development. Thus, the solution is perceived to lie not in raising household incomes but in breaking intergenerational “cycles of deprivation.” According to the ACE model, problems reside in the quality of the individual rather than the lack of resources available to them. Regardless of all the authoritative-sounding references to neuro-biological pathways this remains a value-laden position (White et al., 2019, pp. 462-463).

The ACE framework applies the very broad and subjective concept of adversity and uses it as an umbrella term for a vast range of hardships and potentially traumatizing events. ACE research cannot easily disentangle the correlative negative outcomes from social factors such as increasing wealth gaps, inadequate access to health care and mental health services, lack of access to nutritious food, inequities in education, or the injustices woven into the U.S. mass incarceration system. The ACE framework, according to White and colleagues, ultimately centers the solution in building resilience to inequities rather than advocating for increased social supports that insulate families from significant adversities (2019, p. 458).

There has been increasing advocacy for schools to implement regular and targeted trauma screenings (Eklund & Rossen, 2018) and universal ACE screenings in schools (American Heart Association, 2018; Pataky, Báez, & Renshaw, 2019). ACE and “toxic stress” curriculums have entered classrooms (Redford, Pritzker, Norwood, & Boekelheide, 2015), and have been cited as trauma-informed school interventions (Sporleder & Forbes, 2016).

The Seminal ACE study

The original ACE study was developed by co-principal investigators Robert Anda of the Centers for Disease Control and Prevention (CDC) and Victor Felitti of Kaiser Permanente Health Appraisal Center (KP) in 1994. Data collection for the ACE study was taken between January 1995 and March 1996 from KP patients who had received care in San Diego, California (Felitti et al., 1998). Eligible participants for the study first underwent a KP health appraisal, which included a physical examination, lab result analysis, and collection of personal and medical information by a medical care provider. Included in the visit was a questionnaire, which spanned questions relating to family histories, previous diagnoses, demographic information, and

what were broadly considered “biopsychosocial” factors (Felitti et al., 1998, p. 245). Health-related inquiries were wide-ranging, and included questions about medication use, heart health, skin problems, broken bones, liver disorders, and seizure histories. Questions also included:

[Are you] troubled as a result of being more sensitive than most people?

[Have you] had reason to fear your anger getting out of control?

[Do you] have trouble refusing requests or saying “No”?

How far have you gone in school?

Have you been raped or sexually molested as a child?

[Are you] satisfied with your sex life?

Are you now having serious or disturbing problems with your: marriage? family? drug usage? job? financial matters? (Health Appraisal Questionnaire Male Version, 1998; Health Appraisal Questionnaire Female Version, 1998)

After completion of the appraisal, participants were eligible for participation in the ACE study (Felitti et al. 1998, p. 246).

The ACE concept has proven flexible over the past two decades, but in general there are ten that are consistently recognized in the U.S.: 1) physical abuse, 2) sexual abuse, 3) emotional abuse, 4) physical neglect, 5) emotional neglect, 6) witnessing domestic violence, 7) living with a family member who had a mental health problem, 8) living with a family member who was an alcoholic, 9) parental divorce or separation, and 10) having a household member who is incarcerated. The number of categories reported by participants constitutes their “ACE score” (Felitti et al., 1998, p. 250).

What is Measured?

Measuring for ACEs gets quick results, but it does not give us data on the impacts. Rather it offers data on the occurrence of events that may result in traumatizing impacts (Eklund & Rossen, 2018, p. 7). It also doesn’t distinguish between adversities that occurred in the past and those that are ongoing, which would necessitate different responses and interventions. The fact that ongoing ACEs are not recognized within ACE frameworks (Purewal et al., 2016, p. 12) has been identified as an intentional feature so as not to require disclosures that require mandatory reporting by practitioners in trauma-informed systems (Finkelhor, 2018, p. 175). This raises questions about the goal of the ACE project. If a lack of specificity is a feature of ACE screenings, and if they measure events rather than responses, impacts, and lived experiences that result from these events, then how can they inform appropriate and individual responses?

Legislative Action Supporting the ACE Movement

Since the first ACE study publication in 1998, ACEs and childhood trauma have been recognized as an essential area of focus in public health. Advocacy and lobbying efforts for ACE training and universal screening, particularly in compulsory settings that work predominantly in impoverished communities, have gained significant social and legislative support. This includes federal and state-level bipartisan support to implement ACE frameworks across social and health services and a range of bureaucratic and institutional settings.

States have enacted policies and allocated funds for screening and services to work with minoritized and impoverished populations. For instance, Utah H.C.R. 10 Concurrent Resolution requires those working with vulnerable populations to “become informed regarding the effects of trauma on the human brain and available screening and assessment tools and treatment interventions” (2017). And it is claimed in California Assembly Concurrent Resolution No. 155 that ACEs “literally shape the physical architecture of a child’s developing brain and establish either a sturdy or a fragile foundation for all the learning, health, and behavior that follow” (2013-2014).

The ACE Movement in Education

The ACE campaign significantly underpins the school trauma-informed movement. ACE research has justified the necessity of TI frameworks in schools, especially research relating to learning, cognition, and behavior. High numbers on ACE scores have been correlated with lower cognitive function in the domains of special working memory, “attentional performance,” and sustained attention (Park et al., 2014, p. 250); abstract reasoning (Barrera, Calderón, & Bell, 2013, p. 630), “reduced ability to inhibit automatic responses” and “reduction in cognitive inhibition” (Barrera et al., 2013, p. 625); reduced language acquisition (Graham-Bermann, Howell, Miller, Kwek, & Lilly, 2010, p. 387; Saltzman, Weems, & Carrion, 2006, p. 271); and intelligence by the problematic measure of IQ (Bücker et al., 2012).

The relationship between ACEs and negative social and behavioral outcomes has been a focus for researchers across fields of education, neurobiology, economics, social work, and criminology. The ACE claims most relevant to schools state that high ACE scores correlate with “learning problems, lower grades, need for special education, less attendance, increases in problem behavior, increased suspensions/expulsions (Perfect, Turley, Carlson, Yohannan, & Gilles, 2016, p. 9), and aggression and violent behavior (Levenson, 2014).

Concerns about correlations between ACEs and crime is part of the media messaging that supports arguments for ACE interventions. This is exemplified by an opening scene of the popular film *Paper Tiger* (Redford et al., 2015), in text that reads “a person with 4 or more Adverse Childhood Experiences is seven times more likely to end up in prison, has double the risk of cancer and stroke, and is twelve times more likely to commit suicide” (Redford, Pritzker, Norwood, & Boekelheide, 2015, 7:12-7:20). The relationship between crime and ACEs has become a recent focus of research. DeLisi and colleagues note that “[criminologists] have recently utilized adverse childhood experiences as an organizing research framework and shown that adverse childhood experiences are associated with delinquency, violence, and more chronic/severe criminal careers” (2017, p. 1); others argue that ACEs significantly increase individuals’ likelihood of being incarcerated (Baglivio, Wolff, Epps, & Nelson, 2017; Freeze, 2019).

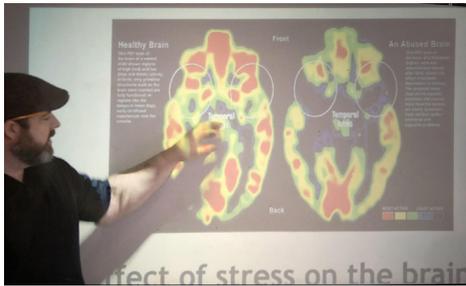
There are many reasons why educators who are concerned about justice, equity, and profiling should be aware of how the ACE framework is being applied in the field of criminology. Findings relating to tendencies toward violence and crime may influence teachers and school professionals and support dangerous biases.

An Example of Teaching ACEs

The feature film *Paper Tigers* documented Lincoln High School in Walla Walla, Washington, during the first year of development of their trauma-informed model. It introduces ACE research, overviews significant claims and statistics, and shows a high school classroom of students who take the ACE score screening as a part of their lesson. A five-minute clip is [available here](#).

The scene opens with a teacher giving a lesson on the ACE study and the effects of “toxic stress” to a group

of seventeen high school students. He places two images of Positron Emission Tomography (PET) brain scans side by side on a slide titled, "Effects of stress on the brain." One is listed as a "healthy brain," the other is an "abused brain." Here is the text from the slideshow:



Healthy brain: The PET scan of the brain of a normal child shows regions of high (red) and low (blue and black) activity. At birth, only primitive structures such as the brain stem (center) are fully functional; in regions like the temporal lobes (top), early childhood experience wire the circuits.

Abused brain: The PET scan of the brain of a Romanian orphan, who was institutionalized shortly after birth, shows the effects of extreme deprivation in infancy. The temporal lobes (top) which regulate emotions and receive input from the senses are nearly [word obscured]... such children suffer emotional and cognitive problems (7:12-7:20).

During the lesson, the teacher places the ten ACE questions on his presentation and gives students interactive clickers to record their responses. He tells the students that their responses are anonymous. As they record their answers, they learn their ACE score, and once they are finished, classroom data from their collective ACE scores appear on the presentation. The teacher goes through their data and points out that more than half of them recorded five or more ACEs, and that four of the students have eight. He asks, "What does that mean, you guys? What does that mean? That tells me that there are a lot of brains in here that are wired for survival... and that might be emotionally on edge."

He then moves to the next slide, which reads, "How are you going to be different?" Before turning to address the class for responses, a student says, "I'm not going to be different; I like the person that I am." The teacher begins to respond and explains, "That's not what I was going to ask." This makes the viewer wonder why that question is posed on the slide. Before he continues, a student sitting next to her interrupts, "You know, you don't want to be like how your family is, you know? Like that kind of—like that kind of different." The first student responds, "Well, I'm already different." The teacher jumps in to bring the whole class back and explains that he wants to tell them why this is important. "This is heavy," he says, and continues:

I don't always want to say this. You ready for this? Because this is the part that is super heavy, sometimes I don't even want to say it cause I think it's that heavy. Are you ready for heavy? Twenty years ago, those adults would have been sitting here in this room saying I'm so different. There's no way I'm going to create a life of stress for my kids. The cycle's going to stop with me. So how do you sit here now and say the same thing they said and have it actually turn out differently (5:13-9:42)?

The bell rings, and class is dismissed.

What Was Learned From This Example?

What occurred in this lesson and what did students learn about themselves and each other? First, the teacher insinuated by showing the brain images that students who reported ACEs could have similar damage, and he demonstrated assumptions that their families were the primary source of that dysfunction. Rather than recognizing their parents as potential sources of support, belonging, or strength, he presents them as cautionary tales and sources of adversity that students need to recover from. The teacher does not address social realities and factors such as multigenerational impoverishment, and instead places ownership on the

students to somehow “break the cycle,” never mentioning that it is entrenched in complex social realities that are largely beyond students’ and families control. Students in the class learned that something was wrong with them because something had happened to them, and unless they were resilient enough to reverse the impacts of these adversities, they and their future children were likely to face dismal trajectories.

The brain scan images that were used in this lesson come from Bruce Perry, who is a globally prolific researcher on neurobiology, stress, and the birth-to-three neuro interventions. He has responded to controversy over these images, and when asked about their oversimplification of complex science and the reductive nature of their claims, Perry said that he had “concern about how politicians were oversimplifying and distorting neglect or family breakdown [or claims that it] could lead to changes in brain size and development” (Macvarish, 2016, p. 21). Here we can see Perry’s concerns played out in the context of a classroom lesson to influence students’ self-perceptions. The image of the brain scan from the child who was orphaned and institutionalized shortly after birth is potent. Students are left to make the association that ACEs can lead to substantial brain damage. They are given no solutions, and the struggles they and their families face are framed only through deficiency and dysfunction. The teacher in the film does not consider that they may be important sources of strength to students in the midst of social and systemic factors that are beyond their control.

The Lincoln High School example demonstrates how the broader pedagogies of the ACE campaign form perspectives about students. It also demonstrates how the ACE framework can lead a teacher toward negative assumptions and presuppositions, and how students can be led to accept messages of their likely deficiencies and negative life outcomes. There were no solutions for students, and there was no message of hope.

Risks of ACE Disclosures in Schools

With advocacy from authoritative sources to accept the ACE framework and data from ACE scores, it would be reasonable for an untrained provider to conclude that engaging students in disclosure through formal or informal use of the ACE questionnaires would at least be benign, and that within a trauma-informed system that aims to increase the sense of social support of the students it serves, it would contribute to rather than threaten their safety. This would be a rational conclusion, specifically given the support of organizations such as the National Child Traumatic Stress Network’s (NCTSN) advocacy for universal screening by a broad range of professions. The network claims that “with proper training, professionals or paraprofessionals from various child-serving systems—healthcare, schools, home visiting programs, and domestic violence shelters—can administer the screening” (The National Child Traumatic Stress Network, 2019).

This runs counter to an abundance of clinical literature that trauma screening outside of a therapeutic context can significantly harm individuals who are experiencing trauma (Cole, Eisner, Gregory, & Ristuccia, 2013, p. 54). But in the context of ongoing warnings against and advocacy for institutional screening for ACEs, there is no current best standard of practice. In the formation of such a practice, it is strongly recommended that rigorous consideration be given to how requesting disclosure may endanger individuals and that schools and teachers defer to clinical recommendations of best practices for trauma screening and disclosure. Cole and colleagues argue that screenings reinforce the common notion that trauma interventions need to center on individuals, rather than the policies, school practices, and system-wide changes that reduce adversity (2013, p. 54).

Assumptions and Bias of the ACE Framework

The ten ACE categories are both limited and equally weighted. This means that there is no distinction

between an ACE score of one that is the result of an amicable divorce between two stable parents and an ACE score of one that is the result of years of ongoing childhood physical abuse. Finkelhor and colleagues underscore the problem by pointing to the weak association between poor outcomes in a contemporary youth population and separation or divorce of parents (Finkelhor et al., 2018, p. 175).

Wade, Shea, Rubin, and Wood recognize there are higher instances of ACEs among minoritized communities (2014). But it is also important to recognize that the selected categories ensure an overrepresentation of ACEs among minoritized communities. One could respond to this overrepresentation by pointing out that those who are impoverished and who experience oppressions from multiple intersections are simply more likely to face adversity. White, Edwards, Gillies, and Wastell recognize that under the ACE framework, “poverty is separated out from other childhood adversities and reframed as a symptom of a damaged brain and body. From this perspective, poverty is viewed merely as a symptom of dysfunctional development” (2019, pp. 461-462).

The ACE project does not recognize all adversities. Important factors such as cultural, structural, and systemic forms of oppression are not explicitly recognized as ACEs. The ten ACE categories that were selected were chosen by lead study investigators prior to data collection, and they primarily reflect interfamilial problems. They do not reflect categories that participants themselves identified as adversities (Felitti et al., 1998, p. 248). Given that an overarching claim is that high ACEs correlate with low cognition and biopsychosocial deficiency, the potential biases exemplified by predetermined categories deserves critical consideration. Is this a validation of systemic oppressions or an act of systemic oppression? If a social movement begins with the development of a new hierarchy which deems some less fit, then it does not align with social justice ideologies.

Negative Trajectories Without Viable Solutions

Though painting a dismal future for our students runs counter to the desires and values of educators, policymakers, and researchers, foundational elements of the trauma-informed movement and ACE implementation explicitly and implicitly teach students that if they have experienced significant adversity, then they can anticipate a continuation of their hardship. It scientifically validates deficiency with no regard for the complex factors that contribute to how young people experience, respond to, navigate, or work through significant hardship.

The Center on the Developing Child at Harvard University, whose research is foundational to trauma-informed and ACE frameworks, establishes this biologically deterministic statement about young people in poverty:

[I]n some cases, the cumulative burden of multiple risk factors early in life may limit the effectiveness of later interventions, thereby making it impossible to completely reverse the neurobiological and health consequences of growing up poor (Shonkoff & Garner, 2012, p. 2255).

These claims are authoritative, but as Kasia Tolwinski from McGill University explains, they are also controversial within and beyond the field of neurobiology. She says that in the face of criticism that the Center on the Developing Child’s work is deterministic, their researchers use what she calls “‘plasticity talk’ as a corrective measure, hoping to rescue their reputations and research programs,” and “to challenge the notion that biology is innate and unchanging.” They argue that “the brain and body are highly malleable, so no experience determines development and ensures a particular life course” (2019, p. 144).

The ACE movement is not firmly deterministic, though key neurobiological research can be communicated

in a manner that does establish narratives that are deterministic, as is reflected in the statement from Shonkoff and colleagues, who claim that there could be irreversible “consequences of growing up poor” (2009, p. 2255). Neurobiological findings are often presented as unbiased, but they can be contradictory, and they support a manner of thought that presumes pathology of the poor. White and colleagues explain that we cannot foresee the “impact it will have for adults to identify themselves by their ACE score or for children to be categorised in this way. There is little reason to think that seeing oneself as determined by past experiences is at all helpful in finding a way out of current difficulties” (2019, p. 464).

When these messages are communicated by those who have institutional authority, they stand to reify the very adversities that the trauma-informed movement aims to negate. Reinforcing stereotypes and low expectations that may be held by those who serve individuals from minoritized communities has material and psychological consequences, and through direct and insidious means, the framework of ACEs, which is neither class nor race neutral, enables disturbing narratives and ways of thinking.

It is often claimed that the trauma-informed movement should move school discipline away from a message to students that “there is something wrong with them” to a message that “something happened to them.” But the underlying logic and practices of ACE frameworks and scores contribute to a continuation of social narratives that tell students there is something wrong with them because something happened to them. With critical analysis of the trauma-informed movement and the enthusiasm it has generated, we can continue to highlight the need for flexibility, kindness, and understanding. We can also critically examine the narratives ACE frameworks produce and reach toward more humanistic messages. We can insist that there is nothing wrong with our students. And with the knowledge that the majority of them likely face realities and adversities that may make elements of life at school difficult, we can agree that it is the job of schools to build effective environments and services. We don’t need the contingency of ACE research to know that students face tremendous adversity and trauma, and we don’t need data in order for us to operate with warmth, compassion, and a drive toward structural change and advocacy.

The Adverse Childhood Experiences campaign has moved in a capillary-like form into social and health settings. No single field of research, area of policy, or application in practice tells the larger story about its reach and rationale across agencies and settings, or the ways it is being used to reshape institutional cultures by shifting narratives away from broken social systems and toward normalizing ideas of “brokenness” belonging to the individual. And that is most frequently the individual who is impoverished and who is positioned at multiple points of cultural, social, systemic, and institutional forms of socioeconomic oppression, racism, and xenophobia. When we scale out beyond individual trauma and the school or social system our students are a part of, we see ACEs as a network of bureaucratic systems operating through research, legislation, practice, and as a movement. We can see that though its manifestations often appear benevolent, the ACE campaign reinforces familiar deficit beliefs about those who have been historically marginalized in the United States.

Trauma-informed frameworks often appear progressive, and elements of their practices align with social justice goals and ideologies. If we look more closely at the claims of the original ACE study and some of the expectations and predictions they establish, we can also see how they enable ways of thinking that begin from a position of assumed pathology and deficiency. The ACE framework reasserts hierarchies that maintain minoritized communities and pathologize the poor.

Critical Analysis and Engagement

This overview of the ACE campaign aims to support critical analysis of the role of ACE applications in

schools, and specifically warns against ACE screening and using ACE scores in education settings. It asks teachers to consider the ways ACE claims can negatively shape students' perceptions of their families, peers, and themselves. The ways we perceive our students and anticipate their futures informs their motivation and potential trajectories. As educators, it is our goal to open up possibilities for our students, not foreclose on them. We should be critical of a framework that reasserts oppressive hierarchies and narratives of those who cannot "pull themselves up by the bootstraps" and overcome a vast range of continuous social and systemic forms of disadvantage by simply becoming more "resilient." Students and families need compassion and kindness, but they also need material and lasting resources. TI advocacy work should first focus on system rather than individual deficiencies.

The ACE framework does not offer students a message of hope. It sends them a message that there is something wrong with them because something happened to them, and if they fail to change they will likely face a dismal future. As educators, when we project a future for our students, we are also contributing to limiting and shaping it. It is this level of influence that puts us as educators in a powerful position to change deficiency-based narratives, and to critically analyze the growing ACE movement within and beyond school settings.

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About the Author



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