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Bateson, K, McManus, MA and Johnson, G

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Understanding the use, and misuse, of Adverse Childhood Experiences (ACE) in trauma informed policing.

Abstract

An increased awareness about how trauma impacts upon children and adults is vital for the identification of vulnerability, development of trauma informed policing and strengthening the case for the prevention. ACEs provide an easily understandable framework which could help to develop trauma informed practice and responses. However, there are potential misuses of ACEs in policing, for example using ACE scores or specific single ACEs as the basis for decisions or as intervention thresholds. In this article we review the current evidence with a focus on the strengths, current issues and risks in the use of ACEs across policing.

Keywords: Adverse Childhood Experiences (ACEs), vulnerability, trauma-informed practice, policing, evidence based.

Research into Adverse Childhood Experiences (ACEs, Table 1) is increasing the current understanding of the complex relationship between traumatic experiences in childhood and later poor outcomes. Greater awareness about how trauma impacts upon children and adults is required to aid the identification of vulnerability and develop a trauma informed workforce. However, there are some limitations to the current evidence base, which police and commissioners in UK Police Forces should be mindful of when putting this into practice. For example, there appear to be no published studies regarding the validity of ACEs questionnaires in British samples for any practice purpose.

The original ACEs studies were conducted by Felitti et al. (1998) in the USA and had its origins in understanding health outcomes in large populations. Over 17,000 adults were asked to say yes or no to whether they had experienced any of ten adverse childhood experiences. (see figure 1). The total number of 'yes' responses gives an 'ACE score'.

Table 1: Adverse Childhood Experiences (Felitti et al., 1998 Hughes et al. 2018, p2)

Abuse: physical, emotional, sexual

Neglect: physical, emotional

Household Dysfunction: parental substance abuse, mother subject to physical abuse, parental mental illness, parental incarceration, parental separation/divorce.

The two most important findings were that Adverse Childhood Experiences (ACEs) were vastly more common than previously acknowledged and that there was a powerful relationship with life-long health impacts (Table 2). This association was found to be strong and almost linear; more types of ACEs were linked to a greater risk of physical and mental health problems in adulthood including major causes of mortality such as heart disease, obesity, substance misuse, and suicide (Felitti et al., 1998). Furthermore, the categories of ACEs analysed were strongly related and additive, whereby if an individual suffered one type of adversity they were more likely to subsequently experience others.

Later research confirmed links to alcoholism, depression, domestic abuse in adulthood, drug use, heart disease, liver disease, miscarriage and stillbirth, sexual risk-taking and multiple partners, sexually transmitted diseases, smoking, suicide, and unintended pregnancy (Bellis et al., 2013; Christiaens, Hedadoren & Olson, 2015; Hillis et al., 2004). The higher an individual's ACEs score, the more likely they were to have started smoking, drinking and having sex sooner. High ACE scorers were also more likely to experience poor educational outcomes, poor employment outcomes, and poor life satisfaction (Bellis et al., 2014). The suggestion is that the manifestations of childhood

adversity can affect almost every realm of life including the emotional, physical, behavioural and social, although often they are not recognised as such.

Table 2. Estimated risks of cumulative ACEs compared to an ACE score of zero

Male ACE Score	
2+	57% increased risk of premature death (Kelly-Irving et al., 2013, p721)
6	4600% increased chance of later using injectable drugs (Felitti, 2002, p3)
Female ACE score	
1+	60% more likely to have died prematurely (Kelly-Irving et al., 2013, p721)
2+	80% more likely to have died prematurely increased risk of premature death (Kelly-Irving et al., 2013, p721)
Both men and women	
4+	Almost 3 times more likely to have smoked, to drink heavily, 8 times more likely to have been incarcerated, 3 times more likely to be morbidly obese (Bellis et al., 2014, p6, table 5)
	80% to have developed a major illness by age of 69, compared to 50% of people with zero ACEs (Allen & Donkin, 2015, p13 section 2c)
Children	
0	11% developed mental health problems
5+	44% developed mental health problems (Lucenko et al., 2012, p3 table 1)

Prevalence

Recent research has indicated that about 50% of the population have experienced at least one ACE (table 3), and about 10-20% have experienced four or more (Bellis et al., 2014).

Table 3. Prevalence of ACEs in England and Wales.

No of ACEs	Bellis et al. (2014, p4, table 3) England	Ashton et al. (2016, p5, figure 1) Wales
0	47% of the sample reported at least one ACE	53%
1		20%
2		13%
3		
4+		14%

Strengths of the ACEs concept

A clear advantage of the ACEs research is the apparent simplicity of its message. The findings, which are not surprising to most practitioners working with families at risk, bring a simple framework of vulnerability to a wider set of practitioners, local authorities and policy makers. Professionals from criminal justice, medicine and housing can now easily view the presentations of their service users through a trauma lens. There is potential to develop a common language and understanding about trauma informed practice across different workforces.

For professionals, it encourages a shift in thinking from “what’s wrong with you?” to “what’s happened to you?” and for service users a shift from “there’s something wrong about me” to “I’m not a bad person, I’m like this because bad things happened to me”. Anecdotally, the feedback from professionals and service users is positive. ACEs research has helped to drive the conversation about the importance of early experiences and how they affect people later in life, and can strengthen the case for prevention and trauma-informed practice.

Strengths of ACE Research from a Policing Perspective

The increased awareness surrounding ACEs and the importance of a trauma-informed response is helping police forces to better understand demand as a manifestation of vulnerability and to plan both response and prevention.

Previous research conducted by Public Health Wales reported that in 2015, 89% of policing demand for South Wales Police concerned public welfare, safety and vulnerability issues (McManus et al., 2018). These “demand drivers” can now be thought about in the context of ACEs. For example, individuals with four or more ACEs were 14 times more likely to have been a victim of violence, 15 times more likely to have committed violence against another person and 20 times more

likely to have been incarcerated throughout their lifecourse (Ashton et al., 2016).

Looking through an ACEs lens could help police forces better identify vulnerable individuals, leading to improved opportunities for earlier interventions. The hypothesis is that early identification could increase the numbers of children and young people receiving support to address ACEs, prevent poor future health and reduce the likelihood of later antisocial or criminal behaviour. In some forces, for example Humberside Police, the ACEs concept is being used to 'open the conversation' between Early Intervention Team officers and members of the public who may benefit from a supportive input (College of Policing, 2018).

Understanding the limitations within ACE research

The flip side of the simplicity of ACEs is that it has gathered pace in both practice and policy-making even though there are many things that we still do not know. The appeal of conceptual simplicity may be leading to oversimplified practice. There are risks of epidemiological health research being prematurely translated into frontline police practice through misinterpretation of statistical concepts.

For example, using Felitti et al's (1998) measurement of ACEs, each category of adversity is given a score of '1' if present, therefore, the magnitude, severity and duration of childhood adversity is not directly assessed. Consequently, an ACEs score is not an indication of how much adversity a person has experienced in total, but of how many different types of abuse, neglect or household dysfunction were experienced. A low ACE score can mask high levels of trauma. Schilling, Aseltine and Gore (2008) found that individuals with higher ACE scores did display disproportionately poorer health but that this was due to the severity of their specific experiences, not through exposure to multiple different types of adversity throughout childhood.

ACEs do not assess risk, or current needs

Assessing risk of maltreating a child or committing a criminal offence is a complex issue thwarted with methodological challenges (e.g White and Walsh 2006). Whilst the ACEs concept offers appealing simplicity, its predictive validity for child maltreatment, criminality or being taken into care has not been proven. For example, although four or more ACEs is associated with a 15 times greater likelihood of having committed violence against another person in the past 12 months (Bellis et al., 2015), this cannot be used to predict future behaviour of an individual. In the same vein, statistical analysis of traffic trends can tell us the most likely time of day that an accident might occur on a given road but cannot tell us exactly which cars will be involved.

Individuals with a high ACE score, as a group, are more likely to be amongst society's most high need populations so it would be easy to assume that an individual's high ACE score also means they have high current need. However,

an ACE score is retrospective and does not necessarily reflect a person's current situation, needs or risks. For this reason, ACE scores are not a replacement for careful assessment of current needs, nor are they suitable to indicate whether someone meets the threshold for a particular service.

Factors that may influence whether poor outcomes occur later in life

It is currently unclear whether the ACE relationship with poor outcomes is one of direct causation, or whether other factors have a key role. Previous research has reported that extra-familial factors (such as poverty, housing, social isolation, discrimination or harassment) which are not included in the ACEs list, are known to significantly influence adult outcomes (Finkelhor et al., 2015).

Research also suggests that regional variations may influence the outcome of experiencing childhood adversity: individuals who have four or more ACEs appear to have poorer outcomes in Wales than in England (Couper & Mackie, 2016). Notwithstanding methodological differences in the regional studies, this suggests the strength of the relationship between ACEs and later outcomes may change depending on a range of local factors such as levels of poverty, the amount of meaningful employment, accessibility of services, or structural differences in health and social care provision.

Differing Methodologies

In some of the UK studies only nine ACEs have been included, missing out neglect which is the most prevalent child protection issue in the UK (NSPCC, 2018). There are also different versions of the ACEs questionnaire used in different countries and research projects. Whilst these variations improve local relevance, they make comparison to other areas and studies more complicated. This is unlikely to affect how ACEs might be used in practice, but it is a notable caution in how the evidence base is interpreted.

The Role of Toxic Stress

Central to the thinking about the impact of ACEs is the notion of toxic stress. This is the idea that whilst some stress can be manageable and even forge resilience, some situations are so stressful that they become toxic, resulting in altered brain, hormonal and nervous system development (Bellis et al., 2015). It is suggested that trauma in early life disrupts executive functioning in the brain (Center on the Developing Child, 2016) causing difficulties in self-regulation and thereby increasing the likelihood of violent behaviour in later life.

For example, several studies conducted by Professor Penelope Trickett explored the impact of intra-familial sexual abuse upon female development and in particular the role of cortisol (Trickett, Noll & Putnam, 2011). Throughout the course of a 23-year longitudinal study, females aged 6 – 16 years who had

experienced substantiated sexual abuse were regularly assessed to explore biological and psychological development (Trickett & Putnam, 1993). Within this longitudinal research, several biological impacts were documented including an earlier onset of puberty, cognitive deficits and Hypothalamic-Pituitary-Adrenal (HPA) axis attenuation (Trickett et al., 2010). Similarly, psychological impacts were also noted such as increased rates of depression, suicidal ideation and suicide attempts (DeBellis et al., 1994).

However, the exact relationship between different kinds of trauma on different kinds of behaviour later in life remains unclear. Multiple studies (e.g. Scott, 2007) suggest different types of trauma have different psychological effects, but how this translates into different physical or behavioural outcomes needs further exploration in the context of ACEs. Additionally, if it is trauma's effects on the brain and body that causes these later changes in behaviour, then an unanswered question is how treatments such as trauma therapy can alter the risk relationship between ACEs and poor outcomes. This raises a question about whether an ACE score remains meaningful after trauma has been effectively treated.

Are all ACEs 'a bad thing'?

By their very nature, ACEs are "adverse", but notably parental divorce or parental incarceration might not be unanimously negative experiences (Ashton et al., 2016). A counter argument might be that according to the ACEs research, it is the accumulation of various types of adversity that is more significant. Through this lens, even an ultimately beneficial parental separation may add to the overall load of toxic stress.

Resilience

The relationship between ACEs and later outcomes is not straight forward: not all children who experience adversity will experience poor outcomes in adulthood. Fewer than half of adults with four or more ACEs have been incarcerated (39%), used heroin (20%) or committed a violent crime (33%, Bellis et al., 2015). This is potentially due to increased resilience in some individuals, their relationships and community factors (Hughes et al., 2018).

Individual children differ in how susceptible they are to ACEs. This might be by virtue of genetics or due to features of their childhood environment. Bakermans-Kranenburg and Van IJzendoorn (2011) have demonstrated a genetic underpinning to differences in how individual children respond to stress. This research was based on a theory proposed by Boyce and colleagues (1995; 2005) that some children have an increased biological sensitivity to context so might experience severely negative effects when in adverse environments and yet positive effects when in environments characterised by support and protection. Boyce illustrated this theory by using the 'Orchid child' analogy, i.e. some children are more like dandelions, they have a higher resilience and are less

likely to develop trauma symptoms, whilst others are more like orchids; they are temperamentally more sensitive.

The environment has a significant role to play in building resilience. The 'building blocks of resilience' are protective factors that may mitigate the impact of childhood adversity (Hughes et al., 2018). These include having at least one stable, caring adult-child relationship; the belief an individual can overcome their hardship; being grounded in cultural traditions and the belief that an individual can manage their own behaviour and emotions. However, there is currently a lack of knowledge regarding the mechanisms by which individual resilience might change the impact of ACEs. A recent Public Health Wales report (2018) is one of the few studies that has explored sources of resilience and their moderating relationship with ACEs. They found fewer resilience sources (individual, relationship, community based) in those with ACEs, and those with four or more ACEs had the lowest exposure. However, it was also concluded that both childhood and adult resilience factors have protective effects against mental illness in those with and without ACEs. Given that children recover better from trauma if they have the support of at least one warm and caring adult, research also needs to understand how aspects of a child's toxic environment might mitigate the ACE relationship with negative life outcomes later in life.

Potential misuse of ACEs

ACE factor weightings

Some ACEs might have a bigger impact than others which could mean that ACE scores would need to be interpreted differently depending on the age of the child or type of ACEs experienced. Couper and Mackie (2016) report that some ACEs have a more negative impact than others. There is also a suggestion, predominantly from neuroscience, that the developmental stage of the child could change the impact of ACEs (e.g. Center on the Developing Child at Harvard University, 2016).

More research is needed to determine whether certain ACEs map more strongly onto certain outcomes, and whether certain combinations of ACEs have a larger impact, or if there is a critical age or "dose" of ACEs. For example, it could be that experience of domestic abuse maps more accurately later violent behaviour than would physical neglect or parental divorce.

Screening for ACEs

It is not yet proven whether people want to be asked or benefit from being asked about ACEs, but front line practitioners tend to be poor at identifying ACEs in their adult service users. Tink et al (2017) found that despite 80% of a sample of doctors in Calgary saying they had a responsibility to enquire about ACEs, half were not confident to ask and most did not for a variety of reasons. Sixty-eight percent underestimated the prevalence of childhood trauma in

female patients and 93% underestimated the prevalence of childhood trauma in male patients. Read and Fraser (1998, quoted by Larkin 2016) found that 82% of psychiatric inpatients disclosed trauma when they were asked, compared to only 8% volunteering their disclosure without being asked.

Screening is a process of identifying apparently healthy people who may be at increased risk of a disease or condition (UK National Screening Committee, 2018). It is normally completed using a standardised tool on every member of a relevant population. Screening as a general concept is well established in health as a way to enhance early detection and thus provide an opportunity to effectively avert negative outcomes.

Anecdotally, screening for ACEs may confer a therapeutic benefit, especially when delivered by trained practitioners who are able to provide a supportive relationship. ACE screening has the potential to help individuals gain some level of understanding as to how experiences in their childhood may now be affecting their health, behaviour and lifestyle choices during adulthood.

However, there is very little published which evaluates ACEs questionnaires as valid and reliable screening tools and none that we are aware of that evaluates whether their use leads to unintended harm.

Ford et al's (2014) factor analysis of data from American adults recommends an 11-item ACE questionnaire be marked according to three subscales: Household Dysfunction, Emotional/Physical Abuse, and Sexual Abuse. Meinck et al's (2017) factor analysis found a two factor structure in a population of Romanian high school students.

The World Health Organisation (WHO) has developed 8-item and 43-item ACEs tools but information about their psychometric properties is very limited (Meink et al, 2017). WHO recommends that the Adverse Childhood Experiences International Questionnaire (ACE-IQ) only be used "in the middle of broader health surveys" and that it be administered by someone with sufficient rapport to ask sensitive questions, and only when "reputable, reliable and responsible local services" are available to offer follow up support. Kazeem (2015) found that the ACE-IQ had concurrent validity with the Childhood Trauma Questionnaire in a population of Nigerian male prisoners.

An ACE 10-item questionnaire was found to have adequate validity in a German sample of "psychosomatic inpatients" and a general population of students and non-clinical adults when compared to the Childhood Trauma Questionnaire (Wingenfield et al., 2011).

There appear to be no published studies regarding the validity of a "standard" ACEs questionnaires in British samples for any practice purpose. The Avon Longitudinal Study of Parents and Children have analysed their data about adverse experiences and created a "classic" 10 item ACEs scale with an "extended" 9 item supplementary scale (Houtepen et al., 2018). This leads to an adversity score reflecting 19 ACEs.

Screening as a general concept is not without risk. Feder et al. (2009) found that screening to identify intimate partner violence (IPV) in health care settings was not always well received by female patients. A meta-analysis conducted by O'Doherty et al. (2014) found that whilst screening did increase the identification of IPV, detected rates were still low in comparison to estimates of IPV within the area. Furthermore, screening for IPV did not result in improved outcomes for women, therefore it was concluded that there was insufficient evidence to screen for IPV within healthcare settings.

A further concern is that ACE scores are based on retrospective self-report and are subject to the subjective reinterpretation or recollection (or not) of past experiences. Anda and Felitti (2012) found that the more ACEs a person has experienced, the more impaired their recall of childhood. This suggests that the ACEs questionnaire may be less valid for people with high ACE scores.

Finkelhor (2017) argues that the widespread introduction of routine ACE screening is premature. He suggests that screening costs (including time, effort and costs of training workers, screening and creating care pathways) and the risk of negative screening effects may outweigh any potential benefits. These effects might include the intrusiveness of ACE screening, discomfort that could be caused for individuals discussing their previous adverse experiences, and the risk of "triggering" trauma memories and symptoms.

Additionally, the introduction of using ACEs as a 'checklist' during routine health checks may inadvertently cause professionals, or indeed members of the public themselves, to become more prone to stereotyping or labelling. There is a well-developed body of evidence to demonstrate that being in receipt of labels can have a range of negative effects on self-identity and behaviour, or become a self-fulfilling prophecy, in both mental health and criminal justice (see Link et al., 1999, Vito et al., 2006). Burke-Harris (2018) suggests that this risk can be off-set by screening everyone, but Finkelhor (2017) argues that there is no cost-benefit analysis to support this practice.

For individuals found to have high ACEs and in need of adult mental health treatment the average wait for a self-referral to Improving Access to Psychological Therapies (IAPT) is 23 days (Baker, 2018). Finkelhor argues that routine ACE screening introduces the risk of overtreatment, whereby professionals may refer individuals to receive further support in order to be cautious and prevent future ill-health, thus resulting in overcrowding the referral services that are currently available.

In practice, knowing the details of someone's childhood adversity may not be necessary to help them. Hence, the aim of ACE-informed practice is to improve general awareness and understanding of the impact of trauma. Jack Shonkoff, Professor of Child Health and Development at the Harvard and Director of the Center on the Developing Child at Harvard University concludes:

“ACE screeners, or ACE rating systems provide important information but they don’t tell you anything about individual children. They tell you about the risk factors in their lives, and they tell you about the relative risks for later health problems based on population-level probabilities. If someone has an ACE score of 4 or 5 or 7 or 10, that doesn’t tell you anything about how that individual child is responding to those adverse experiences, which is why we need these new measures” (Shonkoff, 2018).

Reliance on a ‘4+’ ACE Threshold

The majority of research exploring ACEs applies an ACE score, categorising the number of ACEs experienced into ‘0’, ‘1’, ‘2-3’ and ‘4+’ in order to explore the ‘dose-response’ relationship (e.g. Anda et al., 2006; Felitti et al., 1998). Predominantly this is for statistical purposes as logistic regression is the most commonly used method of analysis to assess the relationship between the number of childhood exposures and other variables. Despite the reported negative impact that exposure to just one ACE can have, some research specifically selects samples of individuals who have experienced four or more ACEs to explore the impact and possible prevention (see Hughes et al., 2017 for a systematic review). However, adopting a ‘number-focussed’ approach when identifying ACEs is not supported by any practice research. In addition, the possible interactions between chronicity, type, frequency, severity and resilience factors (to name some) are relatively unexplored in research, or even gathered in a measurable format. We do not yet understand what type, number, or experience of ACEs should be prioritised for intervention.

Some police forces consider ‘four or more ACEs’ as a threshold for intervention. For example, West Midlands Police (WMP) utilise the Tool for Intervention and Prevention Triggers (TIPT), whereby WMP databases are searched to find examples of ACEs linked to trauma experienced by young people (Hughes & Chandon, 2017). Identified children who have 4 recorded ACEs within the database are assigned to their local Neighbourhood Policing Teams (NPT). Using a partnership approach, NPTs then identify any existing support and make subsequent referrals to other services in an attempt to prevent the escalation of negative behaviours and reduce the demand on police resources that may be required to manage these individuals in the future.

TIPT is a proactive effort to systemise the WMP flagging process so vulnerable children and young people are easier to pinpoint earlier (West Midlands Police and Crime Commissioner, 2017). However, a process evaluation of TIPT (Hughes and Chandon, 2017) highlighted several concerns regarding the selection procedure of this tool. For example, feedback from NPTs within the region questioned whether police data alone was sufficient to identify vulnerable children at risk of further negative outcomes in the future; if ACEs were the most appropriate predictor of future adversity or criminality and if the current

targeting of 'any four ACEs' was appropriate. These concerns highlight the issues in translating ACE research into practice and the risks of using a statistical ACE threshold.

In response to these concerns, the TIPT evaluation acknowledged that advances in data analysis now allowed WMP to examine the predictive value of the 10 ACE questionnaire items and utilise the full range of police data collected to identify specific indicators of early childhood adversity that may present future risk factors for Criminal Justice outcomes (Hughes & Chandon, 2017). However, within policing, police intelligence and data analysis, taking a numbers/scoring based approach may only identify those ACEs that are more visually apparent, or exist as accessible intelligence (parental divorce/separation, parental incarceration) creating a risk of under-reporting or "false negatives". Sometimes, ACEs will require more investigation and support (e.g. emotional neglect) before they emerge.

For projects such as TIPT, predictive research would need to include analysis of the data sources and validity of these sources in relation to *actual* adverse childhood experiences before implementing this model in day to day practice.

Conclusions

Research regarding the link between adverse childhood experiences and later poor outcomes has been replicated internationally. Adverse childhood experiences are supported as an epidemiological concept that demonstrates the significance of childhood experiences of maltreatment. The research about translating this population level concept into individual practice is in its infancy and there remain many unanswered questions.

ACEs may provide an easily understandable framework to identify vulnerable adults and children, which could help to develop trauma informed practice and responses, ultimately safeguarding children from harm. In addition, it has the potential to enable a common language and understanding across different workforces nationally and internationally.

The advantages and enthusiasm around ACEs offer great opportunities to drive the prevention, early intervention and trauma-informed agendas. However, there are valid concerns about the limited research base being misunderstood and yet translated into practice. Whilst a questionnaire or screening tool might improve a police officer's confidence to raise the question "what's happened to you?", there is a dearth of reliable evidence about the validity of ACEs questionnaires, their benefits and most importantly their potential harms. Hence, use of ACEs questionnaires as a checklist, using ACE scores or thresholds in practice are not yet supported by evidence.

Whether there are any risks of ACE enquiry, and what these might be, requires further research. Additionally, more debate is warranted about ethical practice and the professional responses to ACE scores. Issues include consent, information

sharing and recording, appropriate training and supervision of practitioners. It is important that knowledge of ACEs does not fuel a fatalistic or deterministic view. Childhood adversity does not always result in negative outcomes.

We look forward to research that develops understanding of individual needs, and how services might best respond. Next steps will be to evaluate how this research could inform practice, service design and/or future commissioning.

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