Identification and Assessment of Adverse Childhood Experiences Environmental Scan

Literature Review and Key Informant Interviews

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Key Messages

- The objective of this report is to outline current evidence and knowledge on effective practices to identify adverse childhood experiences (ACEs). This report is focused on synthesis of evidence and knowledge related to the identification and assessment of ACEs. Evidence and knowledge related to broader response, prevention, and awareness will be explored and reflected in the next stages of the project.

- ACEs is a term coined by Felitti et al. (1998) through the original ACEs study which looked at the dose-response relationship of a set of adverse childhood experiences to current poor health outcomes of a cohort of adults. The study found that ACEs are common and associated with a variety of poor physical, psychological, and behavioural outcomes related to early death.

- Language to describe approaches that identify exposure to ACEs is inconsistent and reflective of the various ways that multiple sectors and jurisdictions are applying ACEs in practice. Examples of language used to describe ACEs identification practice include screening, assessment, case-finding, and routine inquiry or inquiry.

- It is important that ACEs identification is implemented as part of broader collaborative action on adversity, trauma, and resilience that includes prevention, response, and ACE-informed and/or trauma-informed practice. To facilitate broader collaboration and alignment, a shared understanding of the scope and meaning of 'ACEs approaches' is needed.

- The way that ACEs identification practice is conducted has a significant impact on effectiveness and capacity to guide response. Holistic assessment approaches that capture the scope, impact, and context of adversity and resilience are supported by emerging evidence as potentially effective to guide response. The exclusive use of ACEs questionnaires and scores to identify experiences of adversity and guide response is not supported by evidence at the time.

- ACEs identification practice, when implemented within appropriate settings and by qualified and skilled practitioners, can support self-compassion and sense-making in service users and empathy and stronger relationships with service providers. Implementation considerations include the importance of settings and practitioners that allow for trusting relationships, skillful and sensitive inquiry, and adequate support and follow-up. This includes environments that are responsive to diverse contexts and populations and take power differentials and vulnerability into account.

- ACEs is an emerging field of research and practice and there are many key questions and assumptions that have not been addressed. Research and evaluation regarding the effectiveness and outcomes of ACEs identification practice needs to be strengthened to support a stronger evidence- and knowledge-base for ACEs policy and practice.

- The findings of this report have implications for the development of an ACEs evaluation framework for Alberta, including the exploration of the scope and definition of ACEs approaches within the

broader context of adversity, trauma, and resilience. Engagement with key partners and stakeholders in Alberta will validate and contextualize these findings with a focus on developing a shared understanding of adversity, trauma, and resilience approaches in Alberta, identifying promising practices in Alberta, and developing practice, implementation, and evaluation guidance.

Executive Summary

There is considerable momentum in research and practice focused on preventing and addressing adverse childhood experiences (ACEs). This momentum emerged from early research which defined ACEs as a set of adverse experiences within the household setting and found that ACEs are common and associated with a variety of poor physical, psychological, and behavioural outcomes related to early death (Felitti et al., 1998). There has been limited research on ACEs in Alberta. The Alberta ACEs study (McDonald & Tough, 2013) identified that ACEs were common among the people who responded to the survey and "that there were strong associations between childhood trauma and increased risk for poor health outcomes in adulthood" (p. 4).

Alberta's Mental Health Review Committee (2015) and the Children's Mental Health Science Policy Practice Network (McDonald et al., 2018) have identified the need to support individuals who have experienced adversity and trauma and develop an increased understanding of the effectiveness and outcomes of ACEs approaches, including screening and assessment.

Project Overview

On behalf of Alberta Health, PolicyWise for Children & Families is developing an evaluation framework that will guide evidence-informed ACEs policy, practice, and evaluation and support effective use of ACEs practices in Alberta. The evaluation framework will be informed by: this environmental scan, identification and review of promising models and practices in Alberta, and through collaboration and engagement with key stakeholders and Indigenous knowledge keepers.

This environmental scan report outlines current evidence and knowledge on effective approaches and practices to identify adverse childhood experiences. This report is focused on 'ACEs identification approaches', which refer to a range of approaches that identify exposure to childhood adversity and can include, for example, universal screening, assessment, and therapeutic inquiry. Methods to conduct the environmental scan included a rapid review of academic and grey literature and interviews with key informants. Qualitative data from all sources were analyzed through an iterative collaborative approach and synthesized through triangulation to identify the four key findings presented in this report.

Findings

The findings from the environmental scan are intended to provide insight into key considerations and evidence for effective ACEs identification practice.

Finding 1: It is important that ACEs identification is implemented as part of broader collaborative action on adversity, trauma, and resilience that includes prevention, response, and ACE-informed and/or trauma-informed practice. To facilitate broader collaboration and alignment, a shared understanding of the scope and meaning of 'ACEs approaches' is needed.

ACEs research has helped bring attention to the impact of negative childhood experiences on individual and public health outcomes and initiated what some refer to as an "ACEs tsunami" or the "ACEs

movement" (e.g., McEwen & Gregerson, 2019). Despite, or possibly because of, the widespread momentum and action on ACEs, the meaning and scope of 'ACEs approaches' is not currently well defined in research or practice. Identifying and defining a shared understanding of action on ACEs, adversity, trauma, and resilience would support the development of a coordinated and cohesive approach to ACEs in Alberta. Literature indicates that a community-wide approach that is strengths-based, trauma-informed, and holistic is important to truly mitigate childhood adversity and trauma and build resilience (e.g., Corvini, Cox, O'Neil, Ryer, & Tutko, 2018; McEwen & Gregerson, 2019; Murphey & Bartlett, 2019).

Finding 2: Holistic assessment approaches that capture the scope, impact, and context of adversity and resilience are supported by emerging evidence as potentially effective to guide response. The exclusive use of ACEs questionnaires and scores to identify experiences of adversity and guide response is not supported by evidence at this time.

The ways that ACEs identification practices are conducted have a significant impact on effectiveness and capacity to guide response. Several sources caution against the exclusive use of ACEs questionnaires and scores to identify adversity and guide response because they risk missing relevant and impactful experiences, particularly those associated with structural and contextual adversity and resilience (e.g., McEwen & Gregerson, 2019; Quigg, Wallis, & Butler, 2018; White, Edwards, Gillies, & Wastell, 2019). A strengths-based, person-centered approach to ACEs assessment that includes consideration of stress and trauma, contextual and structural adversity, resiliency and protective factors, and current impacts of childhood adversity may result in more relevant referrals and supports, although further research and evaluation is needed to strengthen this emerging evidence (e.g., Bethell et al., 2017).

Finding 3: Implementation considerations include the importance of settings and practitioners that allow for trusting relationships, skillful and sensitive inquiry, and adequate support and follow-up. This includes environments that are responsive to diverse contexts and populations and take power differentials and vulnerability into account.

Several sources indicated that ACEs identification practice, when implemented within appropriate settings and by qualified and skilled practitioners, can support self-compassion and sense-making in service users and stronger relationships and empathy in service providers. Characteristics of settings and environments to support trust and mitigate re-traumatization included: fostering a safe, sensitive, and compassionate environment (e.g., Ford et al., 2019); ACE identification occurring in settings that interact regularly with service users (e.g., Gillespie & Folger 2017); and consideration of the implication that ACEs identification has for parents and children such as self-incrimination and mandatory reporting (e.g., McKelvey, Conners Edge, Fitzgerald, Kraleti, & Whiteside-Mansell, 2017). Service provider characteristics were also identified to support a safe, sensitive, and compassionate environment, including: an existing relationship between the service provider and service user (e.g., Bright, Thompson, Esernio-Jenssen, Alford, & Shenkman, 2015); competency in asking about ACEs in a therapeutic manner (e.g., Quigg et al., 2018); and ability and capacity to provide support for people who have experienced adversity and trauma (e.g., Bethell, 2017).

<u>Finding 4:</u> Research and evaluation regarding the effectiveness and outcomes of ACEs identification practice needs to be strengthened to support a stronger evidence- and knowledge-base for ACEs policy and practice.

ACEs is an emerging field of research and practice, with many key questions and assumptions that have not yet been addressed. Limitations in the rigour, scope, context, methodology, and interpretation of the original research raise questions about the appropriateness of wide-spread implementation of ACEs practice. There is also limited research on the outcomes, feasibility, and acceptability of ACEs identification in practice (e.g., Ford et al., 2019) and a lack of published research on ACEs identification practice and long-term health and social outcomes (e.g., Finkelhor, 2018; McLennan & MacMillan, 2016). At the same time, the volume and speed of implementation of ACEs approaches is beginning to provide insight into effectiveness, outcomes, and implementation considerations for ACEs practice (e.g., Flanagan et al., 2018; Gillespie & Folger, 2017; Hardcastle & Bellis, 2018; Selvaraj et al., 2019). Strengthening research, monitoring, and evaluation of ACEs practice would provide opportunities to learn from practice and implementation to ensure that ACEs approaches are client-centred, flexible, feasible, and impact outcomes in practice.

Next Steps

The findings from this report have implications for the development of an ACEs evaluation framework for Alberta. The findings from this report indicate that it may be beneficial to widen the scope of the evaluation framework beyond ACEs to incorporate broader adversity, trauma, and resilience approaches. Engagement with practitioners and service providers in the next steps of the project will further explore this potential shift in project scope.

In the next steps of this project, exploration of promising ACEs identification and response practices in Alberta through cross-sectoral engagement with diverse stakeholders, including policy makers and service providers, will identify and contextualize:

- How ACEs approaches in Alberta connect and align with broader trauma, adversity, and resilience approaches, including prevention, intervention, and trauma-informed approaches
- The current state, scope, and understanding of ACEs approaches in Alberta across settings, sectors, and diverse contexts
- Practice-based knowledge and evidence regarding the effectiveness and outcomes of holistic assessment approaches and questionnaire and scoring approaches
- Implementation considerations in practice, including practice that is responsive to diverse contexts and considers vulnerability
- How best to address evidence and knowledge gaps regarding effectiveness and outcomes of ACEs approaches through the evaluation framework and corresponding data collection, monitoring, and reporting

Introduction

There is considerable momentum in research and practice focused on preventing and addressing adverse childhood experiences (ACEs). This momentum emerged from early research which defined ACEs as a set of adverse experiences within the household setting and found that ACEs are common and associated with a variety of poor physical, psychological, and behavioural outcomes related to early death (Felitti et al., 1998). There has been limited research done on ACEs in Alberta. The Alberta ACEs study (McDonald & Tough, 2013) identified that ACEs were common among the people who responded to the survey and "that there were strong associations between childhood trauma and increased risk for poor health outcomes in adulthood" (p. 4).

In 2018, the Children's Mental Health Science Policy Practice Network (SPPN) conducted a broad environmental scan of Alberta initiatives focused on preventing and addressing ACEs and building resilience. The SPPN's environmental scan found that there is a need for practice guidance and increased understanding of the effectiveness and outcomes of ACEs screening and assessment practice (McDonald et al., 2018). The objective of this report is to outline current evidence and knowledge on effective practice to identify and respond to experiences of childhood adversity. This report is focused on 'ACEs identification approaches', which refer to a range of approaches that identify individuals' exposure to childhood adversity and can include, for example, universal screening, assessment, and therapeutic inquiry. Evidence and knowledge related to broader ACEs response, prevention, and awareness will be explored and reflected in the next stages of the project.

To outline current evidence and knowledge related to ACEs identification, we present a brief background on the origins of ACEs research and relevant key concepts followed by an overview of four key findings related to considerations and evidence for effective ACEs identification practice.

Project Background

Alberta's Mental Health Review Committee (2015) identified the need to support individuals who have experienced adversity and trauma and build awareness about the impacts of adversity and trauma on brain development. In 2018, the SPPN conducted research and stakeholder engagement to provide recommendations for evidence-informed development and evaluation of ACEs models, programs, and practice. These recommendations included the development of an evaluation framework that allows agencies to evaluate and improve ACEs approaches (McDonald et al., 2018).

On behalf of Alberta Health, PolicyWise for Children & Families (PolicyWise) is developing an evaluation framework that will guide evidence-informed ACEs policy, practice, and evaluation and support effective use of ACEs practices in Alberta. The evaluation framework will be informed by this environmental scan which, in addition to the literature review and interviews described in this report, includes forthcoming exploration of promising models and practices in Alberta and collaboration and engagement with key stakeholders and Indigenous knowledge keepers.

Key Concepts and Terminology

Clarification of key concepts and terminology is important for understanding the ACEs approaches discussed in this report. Though these concepts are prevalent in the ACEs field, they are not consistently applied or understood. This section will outline the relationships and connections among these terms and how they have been conceptualized for use throughout the rest of this report.

Adversity and ACEs

'Adversity' is a broad term that refers to a range of circumstances or events that threaten physical or psychological well-being (Bartlett & Sacks, 2019). These events, particularly if they are severe, chronic, and occur during childhood, can result in trauma and toxic stress for some individuals and have long-term physical and psychological consequences (Bartlett & Sacks, 2019).

The distinction between childhood adversity and ACEs is not clearly defined in the literature or in practice (e.g., Wade, Shea, Rubin, & Wood, 2014). ACEs is a term coined by Felitti et al. (1998) through the original ACEs study for the Kaiser Permanente Health Institute in partnership with the Centre for Disease Control. The original ACEs study was a retrospective epidemiological study that looked at the dose-response relationship of a set of adverse childhood experiences to current poor health outcomes of a cohort of adults. Kaiser Permanente Health Institute clients were mailed a questionnaire on adverse childhood experiences within the household setting. The ten categories of adverse experiences included in the original ACEs Questionnaire are typically referred to as the 'original' list of ACEs and include the following:

Abuse or neglect
- Psychological abuse
- Physical abuse
- Sexual abuse
- Physical neglect
- Emotional neglect[1]

Household dysfunction
- Household substance use
- Household mental illness
- Violence against mother
- Incarceration of a family member
- Divorce or separation

Researchers who have continued to develop the body of ACEs research have expanded the scope of ACEs to include other adverse experiences that impact development and life-long outcomes. Appendix A provides a more detailed summary of the methods, findings, and interpretation of the original and ongoing ACEs research. The inconsistency in the way the term ACEs is understood and applied makes it unclear what is an 'ACE' and what is an adversity outside of the ACE scope. For example, adverse experiences such as neighborhood violence, bullying, discrimination, and parental death have been added to revised versions of ACEs questionnaires in practice (Bethell et al., 2017). It is unclear in these contexts whether these kinds of experiences are understood specifically as ACEs or under the broad scope of adversity. This lack of clarity can make it challenging to define the scope of ACEs policy and practice at a system and organizational level.

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[1] The experiences of physical and emotional neglect were not included in the original iteration of the ACEs study but were added in subsequent iterations.

Trauma and Toxic Stress

The importance of understanding the distinction between adversity and trauma is emphasized by some in the ACEs discourse (e.g., Bartlett & Sacks, 2019). Trauma has occurred when a person experiences strong negative emotions and physiological symptoms in response to exposure to adversity (Bartlett & Sacks, 2019). Prolonged exposure to extreme and severe trauma can lead to toxic stress, which is the over-activation of the body's physiological and psychological stress response, leading to changes in development and physiology that have potential for lasting physical and mental health outcomes (Bartlett & Sacks, 2019; Murphey & Bartlett, 2019).

Toxic stress is one of the mechanisms by which the associations between adversity and lifelong outcomes have been explained, and has brought ACEs to the attention of the health field (Felitti et al., 1998). However, not every individual who experiences adversity will experience trauma, toxic stress, and negative health outcomes. There are modifying factors that can disrupt the relationship between adversity, trauma, and the effects of toxic stress.

Protective Factors and Resilience

Although adversity and trauma can have a negative impact on lifelong outcomes, this impact can be mitigated through protective factors and resilience. There is a distinction between protective factors and resilience, and it is important to define these within the ACEs field. There is inconsistency within the grey literature and the interviews as to whether resilience refers to a trait or capability that an individual possesses (Burns, 2018) or as a state of being that results from supportive relationships and networks (Bunting et al., 2018). Regardless, resilience is generally thought of as positive adaptation from adversity as a result of protective factors. The most commonly noted protective factor in the literature was supportive relationships with family, peers, and extended networks, but there are also other key protective factors within physical and social environments such as having a supportive school environment, living in a safe neighbourhood, and having a strong sense of cultural identity (e.g., Bethell et al., 2017; Bunting et al., 2018; Luther, 2019; Leitch, 2016; Soleimanpour, Geierstanger, & Brindis, 2017).

Methods

Methods to conduct this environmental scan included a rapid academic and grey literature review and interviews with a range of key informants. The academic and grey literature search identified 34 academic articles and 19 grey literature articles related to ACEs screening, assessment, and outcomes from major medical, psychological, and sociological databases and Google Scholar. See Appendix B for further detail on the literature search criteria and process. The literature retrieved included:

- Research papers examining of the scope of adversities included on ACE screening tools
- Pilot studies and evaluations of ACEs identification in practice
- Scoping reviews that examine the evidence for effectiveness of ACEs screening and outcomes

- Commentaries on transitioning ACEs knowledge from research into practice

The ACEs research field is actively exploring ACEs identification concepts and practice, and is regularly publishing new articles. Development of the environmental scan and evaluation framework will involve revisits to the literature to ensure that relevant articles will inform the development of the evaluation framework until its completion.

Key informants were identified for interviews through purposive sampling. Potential interviewees were selected from articles in the academic and grey literature, and through identification from the project sponsors and PolicyWise executive leadership. Snowball sampling was then used with interviewees to identify additional key informants to contact. These sampling approaches aimed to capture a range of perspectives in the interviews; participants included a variety of academic and research perspectives in the fields of ACEs, trauma, and mental health, as well as individuals who have been involved in leading or implementing ACEs initiatives at various scales and across jurisdictions. A total of 34 interviewees were invited to participate and 20 interviews were conducted. Jurisdictions represented in the interviews include Canada (5 from Alberta, 5 from other provinces), the United States (4) and the United Kingdom (6). Interviews were completed over the phone, lasted an average of one hour, were audio recorded, and transcribed non-verbatim for analysis (see Appendix C for the interview guide).

The findings presented in this report have been identified and synthesized through triangulation of all data sources. The qualitative data collected from these sources were analyzed through an iterative collaborative approach, using qualitative data analysis software (NVivo 12). An initial coding structure was developed deductively based on the environmental scan objectives, and then underwent iterative revisions to include codes identified through an inductive process (see Appendix D for a summary of the coding structure). Codes were then iteratively and collaboratively synthesized into themes and findings.

Findings

The findings from the environmental scan are intended to provide insight into key considerations and evidence for effective ACEs identification practice. Through synthesis of the data sources the following key findings were identified.

1. It is important that ACEs identification is implemented as part of broader collaborative action on adversity, trauma, and resilience that includes prevention, response, and ACE-informed and/or trauma-informed practice. To facilitate broader collaboration and alignment, a shared understanding of the scope and meaning of 'ACEs approaches' is needed.

2. Holistic assessment approaches that capture the scope, impact, and context of adversity and resilience are supported by emerging evidence as potentially effective to improve practice and guide response. The exclusive use of ACEs questionnaires and scores to identify experiences of adversity and guide response is not supported by evidence.

3. Implementation considerations include the importance of settings and practitioners that allow for trusting relationships, skillful and sensitive inquiry, and adequate support and follow-up. This includes environments that are responsive to diverse contexts and populations and take power differentials and vulnerability into account.

4. Research and evaluation regarding the effectiveness and outcomes of ACEs identification practice needs to be strengthened to support a stronger evidence- and knowledge-base for ACEs policy and practice.

Each finding will be explored in more detail below.

Finding 1: ACEs Approaches as part of Broader Collaborative Action

It is important that ACEs identification is implemented as part of broader collaborative action on adversity, trauma, and resilience that includes prevention, response, and ACE-informed and/or trauma-informed practice. To facilitate broader collaboration and alignment, a shared understanding of the scope and meaning of 'ACEs approaches' is needed.

ACEs as a body of research and knowledge has helped bring attention to the impact of negative childhood experiences on future outcomes. Although knowledge of the impact of adversity or trauma on outcomes did not originate with the arrival of ACEs research, there is a perspective that the ACEs research brings a "framework of vulnerability" to a wider scope of authorities and policy makers, particularly in the health field (Bateson, McManus, & Johnson, 2019, p.3). It has been argued that understanding, preventing, and addressing ACEs has the potential to impact population health. This is demonstrated by McKelvey et al. (2017), who state: "Extrapolating from the research would suggest that preventing exposure of young children to ACEs and their resulting trauma is a public health opportunity to improve health and wellness for coming generations" (p.421).

Inconsistency in Understanding and Scope of ACEs Approaches

ACEs research and its potential public health implications initiated what some refer to as an "ACEs tsunami" or the "ACEs movement" (e.g., McEwen & Gregerson, 2019). Since the original ACEs study was published, identifying exposure to ACEs in individuals to guide services, supports, and clinical interventions has been promoted by governments and institutions across several jurisdictions and practice settings. For example, California passed legislation supporting the use of universal ACEs screening in pediatric settings in 2017 and, also in 2017, Illinois passed legislation requiring social and emotional screening for children as part of their examinations for school entry (Centre for Youth Wellness, 2017; Prewitt, 2017). Practice that identifies and assesses exposure to ACEs is currently occurring within a range of settings, including:

- general medical practice (e.g., Aponté, 2017; Glowa, Olson, & Johnson, 2016; Hardcastle & Bellis, 2018)
- mental health care (e.g., Quigg, Wallis, & Butler, 2018)

- pediatrics (e.g., American Academy of Pediatrics, 2014; Koita et al., 2018; Marie-Mitchell, Studer, & O'Connor, 2016; Purewal et al., 2016; Selvaraj et al., 2019)
- prenatal care (e.g., Flanagan et al., 2018)
- schools (e.g., Blodgett, 2012)
- children's services and family and parent supports (e.g., McBride, 2016; McKelvey et al., 2017)
- justice, corrections, and policing (e.g., Bateson et al., 2019)
- addictions and recovery (e.g., Quigg et al., 2018)
- homelessness supports (e.g., Keeshin & Campbell, 2011)

Despite, or possibly because of, the widespread momentum and action on ACEs, the meaning and scope of 'ACEs approaches' is not currently well defined in research or practice. Language to describe approaches that identify exposure to ACEs is inconsistent and reflective of the various ways that multiple sectors and jurisdictions are applying ACEs in practice. Examples of terminology used throughout the literature and interviews to refer to this practice include ACEs screening (e.g., Flanagan et al., 2018; McKelvey et al., 2017; Pardee, Kuzma, Dahlem, Boucher, & Darling-Fisher, 2017), assessment (e.g., Bethell et al., 2017; Gillespie & Folger, 2017; McBride, 2017; Pardee et al., 2017), case-finding (e.g., Lewis-O'Connor, Burke-Harris, & Hadley, 2015; McLennan & MacMillan, 2016), and inquiry or routine inquiry (e.g., Bunting et al., 2018; Goldstein, Athale, Sciolla, & Catz, 2017; Kalmakis, Chandler, Roberts, & Leung, 2017). These terms appear to sometimes be used differently or assigned different meaning depending on the sector, setting, or discipline.

In addition, several organizations' and institutions' action on ACEs involves building and incorporating knowledge and awareness of ACEs to become ACEs-aware or ACEs-informed (e.g., Ford et al., 2019; Hardcastle & Bellis, 2018; Patcher, Lieberman, Bloom, & Fein, 2017; Quigg et al., 2018). Key informants noted that this knowledge and awareness is typically intended to leverage ACEs science and research to influence organizational change initiatives, staff capacity-building and training, policy decisions, service delivery, and practice. There is not current clarity on a specific definition for ACEs-aware or ACEs-informed practice or organizations. Further, the way that these activities align with or are differentiated from trauma-informed practice is not clearly defined and is an area for further exploration.

Connection and Alignment with Broader Collaborative Action

Although much of the prominent response to ACEs research at this time is rooted in medical and therapeutic screening, inquiry, and intervention (McEwen & Gregerson, 2019), ACEs identification practice connects to, aligns with, and can be incorporated into a broader framework of adversity, trauma, and resilience approaches (See Figure 1: Framework of Adversity, Trauma, and Resilience Approaches). This broader framework includes prevention and intervention activities, which connect and align with ACEs approaches but are not necessarily ACEs approaches themselves.
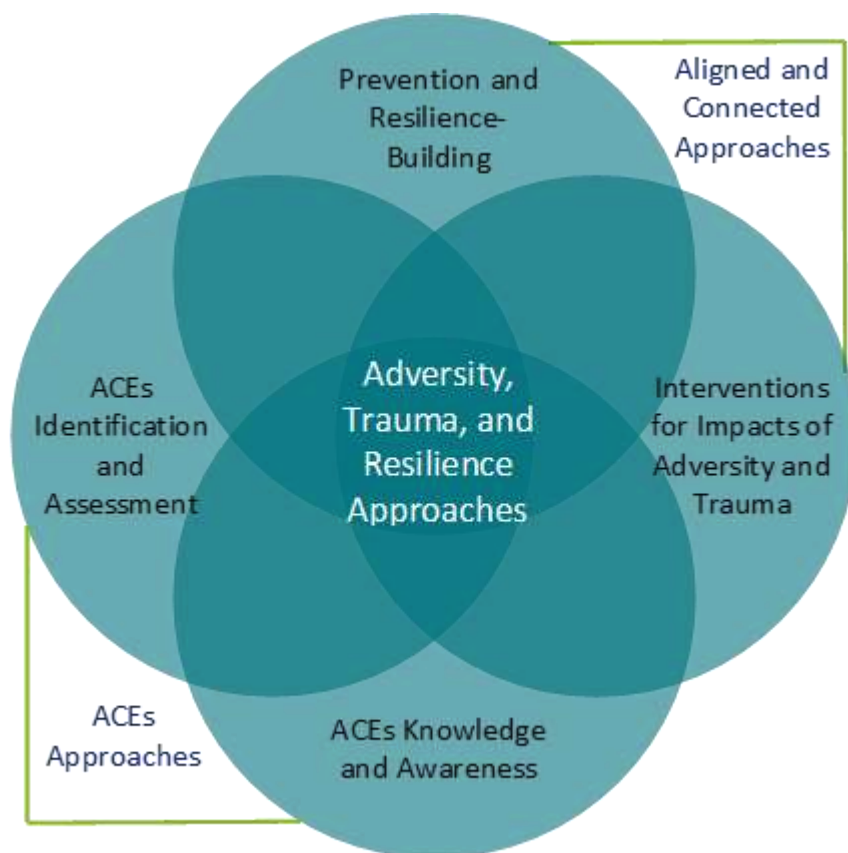
Figure 1: Framework of Adversity, Trauma, and Resilience Approaches

Literature indicates that a framework around the complexity of childhood adversity, trauma, and resilience can prompt sectors and organizations to work collaboratively for a common purpose rather than in silos based on specific issues or services (Patcher et al., 2017). This can guide action away from focusing on single issues through single strategies, but rather forming connections among sectors and systems to address the complexity of childhood adversity (Patcher et al., 2017). A community-wide approach that is strengths-based, trauma-informed, and holistic is important to truly mitigate childhood adversity and trauma and build resilience (Corvini, Cox, O'Neil, Ryer, & Tutko, 2018; Murphey & Bartlett, 2019). Action to prevent childhood adversity and trauma is wide ranging and includes supports for resilience in children, parents, families, and communities and activity to address structural and social inequities. ACEs knowledge and awareness can be leveraged to promote policy, practice, and funding initiatives focused on preventing childhood adversity and trauma and building resilience.

"We need more comprehensive, trauma-informed approaches that account for social-structural adversity and are aligned with current science on recognizing, understanding, responding effectively to –and preventing– childhood adversity.

- Murphey & Bartlett, 2019, p. 2

Literature and established public health practice call for the benefits of screening to outweigh potential harm and that any screening or assessment approach is

integrated with services related to education and response (e.g., Dobrow, Hagens, Chafe, Sullivan, & Rabeneck, 2018). Researchers have reinforced these principles by indicating that ACEs identification cannot ethically or effectively take place without interventions and responses in place (Finkelhor, 2018; McLennan et al., 2019; Soleimanpour et al., 2017). At the same time, these aligned and connected responses do not exclusively occur within the context of ACEs approaches. For example, programs to support addictions recovery for parents or build community resilience may or may not be framed or considered by providers to be ACEs programs. In addition, interventions such as trauma counselling, post-traumatic stress disorder treatment, addictions treatment, and broader mental health supports occur in response to ACEs identification but also in response to other screening, referral, and service access mechanisms. It is important to note that ACEs identification practice is also aligned and connected to other forms of screening and assessment relevant to adversity, trauma, and resilience. For example, practice that focuses specifically on child abuse screening or domestic violence screening are not necessarily considered ACEs approaches, but are highly relevant for broader collaborative and cohesive action.

Regardless of the ACEs approach or aligned and connected activities implemented, there is a perspective that the "heart of the matter" is not adversity but rather resilience (Leitch, 2017, p.4). From this perspective, collaborative action should look at ways to use and build upon structural, social, and community resilience. Adopting a broad collaborative approach that considers and builds on biological, social, and ecological resilience may support a policy and practice focus beyond individuals' characteristics and prompt structural and community-level support for resilience (McEwen & Gregerson, 2019).

> "We have to build local communities with resilient children at their heart."
>
> - Key Informant

One example of this type of approach identified by a key informant is the Building Community Resilience Model (BCR), proposed by Ellis and Dietz (2017). The BCR model includes four components needed to increase community resilience and address ACEs: 1) a shared understanding of the relationship between ACEs and community resilience; 2) readiness for community approaches to mitigating ACEs and building resilience; 3) establishing and working in partnerships across sectors; and 4) building partnerships between the clinical and community environment (Ellis & Dietz, 2017). Another approach that has been recommended is a three-pronged approach that includes ACE prevention, identification through inquiry, and resilience (Bunting et al., 2018). Regardless of the way that ACEs approaches align and connect with broader collaborative action in practice, it is clear that ACEs approaches cannot be considered or implemented in isolation and that consideration of the broader context of prevention, intervention, and resilience is necessary for effective action on ACEs.

> "No matter how vulnerable a person or family is they also have strengths, they have dreams for the future, they have bounced back from challenges."
>
> - Leitch, 2017, p. 6

Finding 2: Holistic Assessment for Effective Identification and Response

Holistic assessment approaches that capture the scope, impact, and context of adversity and resilience are supported by emerging evidence as potentially effective to guide response. The exclusive use of ACEs questionnaires and scores to identify experiences of adversity and guide response is not supported by evidence at this time.

The way that ACEs identification practice is conducted has a significant impact on effectiveness and capacity to guide response. Through the implementation of ACEs identification processes (i.e., using questionnaires to determine people's ACEs score, conducting holistic assessments and supportively inquiring about people's experiences with ACEs), practice generally aims to support service providers to have a stronger understanding of their service users to lead to more relevant and effective support, referrals, and response.

To guide supports and services, several sources recommend that ACEs information is collected as a part of a larger assessment including data on stress and trauma, resilience, protective factors, mental and physical symptoms, and well-being (e.g., Bethell et al., 2017; Murphey & Bartlett, 2019). Inquiring about ACEs, resiliency, and protective factors promotes a person-centered approach to care, which can allow for the opportunity to understand experiences and impacts of trauma, lead to more appropriate supports and services, and identify and build on protective factors and resilience (Bateson et al., 2019; Dube, 2018; Gillespie & Folger, 2017; Kalmakis, Shafer, Chandler, Aponte, & Roberts, 2018; Leitch, 2017). Holistic assessment approaches engage service users in conversations to create a comprehensive understanding of an individual's experiences for both the service provider and the service user (e.g., Bateson et al., 2019; Bethell et al., 2017; Leitch, 2017).

> "If people are going to have conversations about ACEs, they need to… [have a] strengths-based conversation so you can work out what factors there are in the community or family."
>
> - Key Informant

Interviewees discussed how holistic assessment can support the use of resources towards treating underlying issues instead of presenting symptoms or coping mechanisms. One interviewee also commented on how this approach results in fewer repeat referrals, because supports address the right issues. At the same time, emerging evidence indicates that service users who have experienced multiple ACEs may be unsatisfied with the response of the provider to ACEs identification (Flanagan et al., 2018). See Appendix E for a more in-depth discussion of the evidence and considerations for ACEs identification practice's impact on guiding referral, response, and ultimately improving outcomes for individuals and systems.

It is recommended that ACEs identification approaches be used as a part of a wider more holistic assessment rather than in isolation solely through an ACEs questionnaire (e.g., McBride, 2016). Some interviewees identified that using a structured, scored ACEs questionnaire can help increase consistency and clarity in ACEs identification and improve ACEs disclosure by providing professionals a guide for

ACEs identification. At the same time, ACEs questionnaires and scores are criticized for missing relevant and impactful experiences, particularly those associated with structural and contextual adversity, impacts of adversity, cultural contexts of adversity, and resilience (e.g., McEwen & Gregerson, 2019; Quigg et al., 2018; White, Edwards, Gillies, & Wastell, 2019).

> "However, adopting a 'number-focused' approach when identifying ACEs is not supported by any practice research. … We do not yet understand what type, number or experience of ACEs should be prioritised for intervention."
>
> - Bateson et al., 2019, p 10

An ACEs score does not necessarily identify those who will most benefit from supports and services (Murphey & Bartlett, 2019). Research has not yet indicated what number, type, or experience of ACEs should be prioritized for intervention at a practice level (Bateson et al., 2019). Bateson et al (2019) presents the example of a policing program in the United States that used information from databases to calculate ACEs scores with the intent of identifying children at risk for criminality to provide preventative referrals to support and services. An evaluation of this program raised cautions about whether ACEs scores are the most appropriate predictor for future adversity or criminality and whether the cut-off score for determining risk was appropriate. Bateson et al. (2019) reinforced that a numbers-focused approach to ACEs is not supported by research, and that there needs to be a greater understanding of contextual factors and priority ACEs to guide intervention and influence outcomes. See Appendix F for a more detailed summary of findings related to the effectiveness and outcomes of ACEs questionnaires and scores in practice. Rather than focusing on the narrow scope of identifying ACEs exposure to guide clinical or social service intervention, literature indicates that it is important to focus research, policy, and practice on contextual and structural sources of adversity and resilience (McEwen & Gregerson, 2019; White et al., 2019).

Contextual and Structural Adversity

Many adversities outside of those included in traditional ACEs screening or questionnaire tools can be traumatic and have significant impacts on people's wellbeing. These experiences can be associated with structural and systemic disadvantage and be disproportionately experienced by minority and disadvantaged populations. Researchers are beginning to explore experiences with adversity in different populations including low-income urban youth (Wade et al., 2014) and low-income ethnic minority parents (Gillespie & Folger, 2017). In addition, research is emerging in the ACE field to identify relevant stressors that are community or context-specific (Mersky, Janczewski, & Topitzes, 2017; Patcher et al., 2017; Wade et al., 2014).

> "[We must] be aware of and understand the socio-political context of childhood. Poverty, deprivation, and disadvantage underpin so many core outcomes."
>
> - Key Informant

Indigenous people in Canada experience unique adversities such as colonialism, history of experiences with residential schools, child welfare involvement, cultural trauma, differences in infrastructure and

public services, gender-based adversities, and racial discrimination (Luther, 2019). Immigrant and refugee populations also have unique adverse experiences; for example, experiencing and fleeing war, forced displacement, deportation, being an unauthorized immigrant, anti-immigrant racism or discrimination; or living with poor nutrition (Burns, 2018; Murphey & Bartlett, 2019). An interviewee also brought to attention how people from diverse contexts may have unique protective factors that are not captured, such as living in a tightly knit ethnic community.

Childhood adversity associated with poverty can include neighbourhood violence, over-policing, environmental pollutants, and exposure to natural disasters (McEwen & Gregerson, 2019; Murphey & Bartlett, 2019). Poverty and economic hardship have also been associated with stressors within the household, including witnessing a parent struggling financially, eviction, overcrowded housing, and witnessing the stress of single parents with weak support networks (McEwen & Gregerson, 2019; Wade et al., 2014). Experiences with poverty and socio-economic disadvantage can intersect with other population-specific contexts. For example, Indigenous people in Canada disproportionately experience poverty, social vulnerability, and economically disadvantaged communities (Luther, 2019).

In addition to ensuring that contextual and structural adversity is identified and understood through ACEs identification practice, it is important that the social and cultural context of adversity is considered. Interviewees frequently discussed the lack of community and cultural context in many ACEs questionnaires and the need to consider cultural influences on experiences of adversity. Different cultures may interpret questions about ACEs through different lenses, impacting whether a questionnaire would capture the experience of trauma. One study also found that those identifying as a racial minority have lower rates of completion for ACEs questionnaires (Flanagan et al., 2018). Wade et al. (2014) found that discrimination was not identified as a significant stressor by racial or ethnic minority youth, and speculates that the pervasiveness of these inequities may have become normalized to such an extent minority youth do not report them as stressors. Research that explores the reasons for lower disclosure of adversities among racial or ethnic minorities, including factors such as racism, discrimination, and relevance of included adversities, would strengthen the understanding of how to meaningfully identify adversities within these populations and potential implications for provision of supports and services. Involving people from the community of interest in research on conceptualizing adversity is an important aspect in understanding the role of cultural norms in the experience of ACEs (Wade et al., 2014).

> "Trauma is culturally bound."
>
> - Key Informant

Practice that does not capture broad experiences of adversity risks underrepresenting and potentially failing to respond to important experiences of adversity. In addition, ignoring contextual factors that can influence outcomes risks stigmatizing and pathologizing people, who in many cases may already be vulnerable (White et al., 2019). ACEs identification practice often focuses on providing resources that support behaviour change for individuals and within families (e.g., parenting skills). Both interviewees and literature raised concerns about using ACEs to identify de-contextualized household adversities and guide behaviour change responses (e.g., White et al., 2019). This approach can imply that problems are caused by an individual's characteristics or choices and does not address the contextual and structural aspects of adversity (e.g., Gillespie & Folger, 2017; White et al., 2019).

Some questionnaires have been developed and refined to identify experiences with structural and contextual adversity. The most common adversity categories added to ACEs tools include witnessing neighborhood violence, bullying, discrimination, and parental death (Bethell et al., 2017). Examples of other additional ACEs items from the grey literature include: physical disability and homelessness (World Health Organization, 2009); food insecurity, prejudice, and time in foster care (Gillespie & Pettersen, 2015); and serious disability or illness in the household (McBride, 2016). The academic research examining ACE identification with youth has looked at modifying the ACE questionnaire to include adversities of significance to youth (Wade et al., 2014), and examined existing ACE tools and implications of screening for youth in primary care (Pardee et al., 2017 and Soleimanpour et al., 2017).

> "ACEs [identification] gives you a way in to determining what happened that might contribute to someone's health problems, or to get people additional resources if needed, to help them cope."
>
> - Key Informant

Emerging evidence suggests that broadening the scope of adversities that are captured through ACEs questionnaires may lead to more relevant and responsive referrals and supports. A pilot study by Selvaraj et al. (2019) that implemented a combined ACEs and unmet social needs screen into pediatric practice found that the majority of referrals resulting from the screen were for unmet social needs (e.g., parental employment, secure housing) rather than ACEs. When referrals were provided for ACEs, it was most commonly for supports that addressed bullying rather than for the most frequently identified ACEs of parental mental illness, substance abuse, and separation from caregiver. Selvaraj et al. (2019) suggested this may have been related to the areas that parents wanted support from the pediatrician; that parents may have received previous support for other identified ACEs, or the areas in which pediatricians were most comfortable providing support.

Despite these advances in refining and expanding the scope of ACEs questionnaires, some argue that these tools are still insufficient for capturing diverse contexts and structural adversities. Luther (2019) argues that conventional ACEs tools that add new adversity items relevant for Indigenous populations still do not capture enough details or Indigenous-specific experiences. ACEs tools may capture an adverse event but miss context-specific factors that are unique to the experience of specific communities or populations such as immigrants and refugees (Burns, 2018).

Impact of Adversity

There are many factors that may influence the impact of exposure to adversity and potential outcomes which have been largely under-explored in research and absent from traditional ACEs questionnaire tools. ACEs questionnaires and scoring has been criticized for limitations in capturing the impact that exposure to adversity may have had on an individual, instead focusing on a quantified measure of exposure to ACEs. White et al. (2019) cautions that using a yes/no response questionnaire does not capture whether the event was experienced by an individual as negative, neutral, or even potentially positive. Factors that can inform the impact of an event include: chronicity, type, frequency, and severity as well as the presence of protective factors (e.g., Bateson et al., 2019; Bunting et al., 2018; Murphy & Bartlett, 2019). The importance of these factors were also present as a significant theme in

the interviews, underpinning the concept that individuals will respond to, and be impacted by, ACEs differently and that many of the adversities people face cannot be compared through a standardized questionnaire or scoring mechanism.

The use of a yes/no questionnaire to determine an ACEs score treats each adverse event equally regardless of how an individual experienced it; this can misrepresent an individual's actual experience and response to that experience (White et al., 2019). Because yes/no responses, and corresponding ACEs scores, capture only exposure to incidents of adversities, and do not capture the impact or context of that exposure as well as whether an individual has already received supports, there is potential to both over- and under-identify people who have experienced trauma and are considered to be "at risk" of negative outcomes (Bateson et al., 2019; Dube, 2018; Wade, Clark, & Bair Merritt, 2015). Finkelhor (2018) and McLennan et al. (2019) have cautioned that there is a lack of research evidence at this time on the impact of service provision for people who have "false-positives" from ACEs identification. Several authors (e.g. Bethell et al., 2017; Dube, 2018) and key informants stressed that the ACEs tool is not a diagnostic tool, but rather a tool to open conversations between service users and service providers on trauma and its impacts.

Resilience and Protective Factors

A strengths-based approach to ACEs identification in which resilience and protective factors are acknowledged is important for effectively and meaningfully understanding experiences of adversity. While the ACEs body of research has demonstrated the association between ACEs and negative outcomes at a population level, there are cautions about deterministic application of this concept at an individual level when resilience and protective factors are ignored. Mainly, not every person with a high ACEs score goes on to develop associated negative outcomes. Interpreting ACEs research as a deterministic pathway from adversity exposure to outcomes was criticized by interviewees as pathologizing people, who in many cases may already be vulnerable, without recognition of how resilience and protective factors can impact outcomes. Both key informants and literature sources (Bateson et al., 2019; Murphey & Bartlett, 2019; White et al., 2019) cautioned that deterministic use of ACEs and consequent pathologizing of individuals can result in people labelling themselves as biologically broken based on an ACE score, which may impact their self-identity, behaviour, and concerns about the future.

> "At an epidemiological level these [ACEs research findings] are interesting and important, but applied to specific families I think is really problematic because they are not predictive."
>
> - Key Informant

Understanding that some individuals build strength and resilience from experiences of adversity is important to avoid drawing unfounded conclusions about individuals who have experienced adversity or trauma. For example, in an ACEs screening pilot project with youth who are homeless, Keeshin and Campbell (2011) found that some youth with histories of abuse declined the offer for services such as support groups or referral to a mental health center. These youth talked about positive aspects of the

adversity they had experienced, such as the way it changed their parenting or motivated them to make positive choices in their lives. One participant in the pilot raised the consideration that adverse experiences in childhood can actually serve as the ignition for future success, which provides a strengths-based perspective on adverse experiences (Keeshin & Campbell, 2011). This perspective was also provided by some interview key informants, who noted that adversity can also contribute to positive outcomes, especially with the presence of protective factors. These examples illustrate the importance of a strengths-based approach for promoting healing from past adversity. Leitch (2017) and some key informants suggest that inclusion of strengths-based questions may help to form a more complete picture of a person's experience, what strengths can be built upon, and how to utilize these along with supports and services.

"Resilience is a factor that ought to be brought into this process of inquiry... it's a good idea to make sure that it's explicit that resiliency is the counter point for adversity."

- Key Informant

There is an emerging movement to including questions about protective factors and resiliency in ACEs questionnaires. Questions on protective factors and resilience are among some of the most commonly added questions to ACE tools (Bethell et al., 2017). At the same time, there are many widely used tools that do not have a strengths-based focus (Leitch, 2017). Interviewees reported that ACEs identification without identification of protective factors is misleading as it characterizes a person's experience by their deficits rather than providing a holistic view of an individual's circumstances. Blodgett (2012) argues that this holistic understanding of an individual's or family's adversities as well their resources and resilience is required for a balanced approach that supports renewal and growth.

Finding 3: Implementation Settings and Practitioners

Implementation considerations include the importance of settings and practitioners that allow for trusting relationships, skillful and sensitive inquiry, and adequate support and follow-up. This includes environments that are responsive to diverse contexts and populations and take power differentials and vulnerability into account.

Several sources indicated that ACEs identification practice, when implemented within appropriate settings and by qualified and skilled practitioners, can support self-compassion and sense-making in service users and empathy and stronger relationships with service providers. Ultimately this sense-making and compassion is thought to lead to healing from trauma and improved well-being (Bethell et al., 2017). There are considerations about the settings and practitioners that may be most appropriate and equipped to support these positive experiences with ACEs identification practice.

The aim of supporting self-compassion and sense-making through holistic ACEs identification practice was the outcome most discussed by key informants in the interviews. Providing service users with information on how adversity may have contributed to their current health situation is thought by some health professionals to have an empowering effect (Kalmakis et al., 2017). There is some evidence that demonstrates adults do not object to being asked about ACEs and may in fact feel that not being asked about ACEs perpetuates victimization from trauma (Bethell et al., 2017). Some research has found that adults are comfortable being asked about ACEs and that inquiring about ACEs can help people feel better understood, feel that their experiences are real and matter, and increase their understanding of early adversity on current behaviours and health (Bateson et al., 2019; Bright, Thompson, Esernio-Jenssen, Alford, & Shenkman, 2015; Flanagan et al., 2018; Goldstein et al., 2017; Selvaraj et al., 2019).

> "We have found that the parents said this is a 'kinder approach', that we were prepared to listen to them. And instead of telling them what the problem was and… what services they had to do, we were asking them to think of what their life was like, what they've lived with, what's still impacting them."
>
> - Key Informant

In addition, there is emerging evidence that providers find ACEs identification to increase empathy and understanding of clients and improves communication and relationships with clients by creating a safe environment to talk (Gillespie & Folger, 2017). Although there are some studies that look at the impact of ACEs identification on the service user/service provider relationship, none of the studies use a comparison group to establish how ACEs identification impacts this relationship differently than routine practice (Ford et al., 2019). It would be beneficial to better understand the impact of ACEs identification on the service user/provider relationship, including comparing this impact to that of routine practice (Ford et al., 2019) and further exploring any negative effects (Finkelhor, 2018). There is a need to understand acceptability and therapeutic effect of ACEs identification from the service user perspective and with diverse populations (Ford et al., 2019; Goldstein et al., 2017).

Some research indicates that some people feel discomfort talking about ACEs and that it can trigger painful memories, even if they appreciate sharing their experience (Koita et al., 2018). Potential negative effects of ACEs screening/identification include experiencing it as intrusive and discomforting and disrupting the relationship with the care provider (Finkelhor, 2018), as supported by domestic violence research by Feder et al. (as cited in Finkelhor, 2018, p. 176) which found a significant minority of participants, especially young adults, found being screened for domestic violence in health care to be objectionable.

Settings and Environments to Support Trust

There is emphasis that people need to talk about ACEs in a safe, sensitive, and compassionate environment with time for adequate follow-up to mitigate impacts of re-traumatization from ACEs identification (Ford et al., 2019; Kalmakis et al., 2017; Soleimanpour et al., 2017). A safe environment for clients can lead to improved trust (Gillespie & Pettersen, 2015). A pilot study by Gillespie & Folger (2017)

in pediatric care found that ACEs identification with families created the opportunity for tailored conversations over multiple visits that sent the message to parents that their trauma matters to the provider, potentially creating a relationship where parents will use the provider as support when future stress occurs (Gillespie & Folger, 2017). There is some evidence that formal ACEs identification has resulted in future spontaneous disclosure of adversity (Gillespie & Folger, 2017). This relationship may help support parents in identifying and working towards parenting goals, and support understandings of resilience (Conn et al., 2018).

As the same time, asking about ACEs within the family context can be potentially self-incriminating for parents and brings challenges to both disclosure and maintaining a trusting relationship (see McKelvey et al., 2017). Two suggested responses to mitigate the self-incriminating nature of ACE disclosure have been to approach ACE identification through proxy measures already collected during service provision (e.g., using a family mapping initiative as in McKelvey et al., 2017) as well as aggregating ACEs items to provide a total un-itemized score (see Gillespie & Folger, 2017).

Regardless of the data collection method, key informants emphasized that service providers need to clearly communicate the purpose of asking parents to disclose ACEs. Conn et al. (2018) explored parental experience with ACE identification, and found that parents appreciated being asked about their family circumstances, but were unsure of the relevance of their personal ACE history to their child's health and cautious about the potential re-traumatization from recalling such experiences. The research that Conn et al. (2018) conducted underscores the importance parents place on sensitivity in ACE identification, parental autonomy in responding, and providing a clear rationale and response pathway for ACE identification.

Service Provider Relationships, Power Dynamics, and Scope of Practice

There is consistency across sources in the recommendation to assess ACEs within a service provider/service user relationship that has existing rapport for sensitive questions (WHO-IQ in Bateson et al., 2019; Bright et al., 2015; Conn et al., 2018; Flanagan et al., 2018) and with practitioners who can provide support for people who have experienced ACEs (Bethell et al., 2017; Bright et al., 2015; Koita et al., 2018). The value of being asked about ACEs within an established, trusting relationship and the contribution of ACEs knowledge to deepening that relationship was cited by patients in a pediatric setting (Koita et al., 2018). There is some indication that this may be especially pertinent for people who have experienced multiple childhood adversities as this may result in lower trust of health professions, although this relationship and its implications requires further research (Munoz et al., 2019). There are also unique considerations with adolescents as they are gaining independence in decision making and need time independently with the service provider to build the trusting relationship (Soleimanpour et al., 2017).

Interviewees also noted how relationships were important in the context of ACEs identification, and that lack of connection could be a barrier. This is particularly important for individuals who are members of populations that are marginalized or vulnerable. Service users need to be comfortable in the setting and with the person asking ACEs questions, in order to establish trust and answer the questions accurately. One interviewee provided an example of applying ACEs identification in a school setting with young men of colour. These students reported that they

> "Our findings are also significant for providers who serve populations known to have higher rates of ACEs by providing insight into the particular importance of trust-building with such patients"
>
> \- Munoz et al., 2019, p 245

really wanted to hear from "someone like them" in order to establish a trusting relationship. The need for an ongoing, trusted relationship is an argument some interviewees expressed for why ACE identification is not appropriate in some settings, such as emergency departments. Having a service provider with a strong connection to the community can also help to mitigate power differentials and ensure effective results from identification practice.

Training on relationship building and how to ask ACE-related questions is an important consideration for implementing an ACE identification approach. Relationships and sensitivity in asking ACE questions were identified through interviews as specifically relevant for Indigenous populations, due to the mistrust with child intervention systems. This involves sensitivity in how questions are asked and framed, and respecting the person's right not to answer. Respecting autonomy is key for building ongoing relationships with the support services for their continued use. Another opinion expressed in the interviews was that a skilled history taker can successfully get answers to ACEs questions without a previous relationship. This interviewee explained that this is possible if there is adequate training around sensitive delivery and response.

At the same time, it is important that professionals' scope of practice is considered in implementation of ACEs identification practice. Professionals with clinical, therapeutic, or specialized expertise may be able to use ACEs inquiry to support empathy and healing for clients. Finkelhor (2018) contrasts the perspective that asking about ACEs can be therapeutic in itself by referring to the research that trauma treatment requires multiple sessions, and cautions that the assumption that asking about ACEs is therapeutic needs to be explored by research.

> "It [ACEs identification] is about carefully asking in a clinical context, when it's appropriate to do so. And making sure whoever is asking knows how to respond."
>
> \- Key Informant

Conducting ACEs inquiry outside of one's scope of practice or without adequate skill and expertise can increase the risk of losing a relationship with service users (Quigg et al., 2018). Screening parents with untrained interviewers has been found to increase parent's feeling of guilt or shame, and may lead to re-traumatization (Murphey & Bartlett, 2019). A position throughout many key informant interviews and some academic sources (Bateson et al., 2019; Soleimanpour et al., 2017) is that settings that work with individuals who may be presenting with issues but with less specialized professionals (e.g., teachers,

police officers, general intake workers) are best positioned to use ACEs science and knowledge to support and strengthen practice that does not include identification of ACEs exposure (e.g., trauma-informed practice).

Finding 4: Strengthening Evidence through Research and Evaluation

Further research and evaluation regarding the effectiveness and outcomes of ACEs identification practice is needed to support a stronger evidence- and knowledge-base for ACEs policy and practice.

The conceptual simplicity of ACEs can be appealing which has contributed to its uptake in practice and policy-making; however, ACEs is still an emerging field of research and practice and there are many key questions and assumptions that have not been addressed. At the same time, the volume and speed of implementation of ACEs identification approaches is beginning to provide emerging insight into effectiveness, outcomes, and implementation considerations of ACEs practice. It is important to understand areas for further understanding from the original ACEs research, its application to practice, and the effectiveness and outcomes of practice itself. There is considerable opportunity for further research and evaluation of ACEs practice to contribute to the existing body of knowledge.

> "From the research literature, there is a suggestion that… cumulative adversity impacts long-term health outcomes, but that is a long way away from trying to untangle the benefits of screening ACEs at a clinical visit."
>
> - Key Informant

Application of Original ACEs Research to Practice

ACEs research has had a significant influence on the momentum and evolution of ACEs identification practice. Limitations in the rigour, scope, context, methodology, and interpretation of the original research raise questions about the appropriateness of wide-spread implementation of ACEs practice. Critical literature and key informants have identified the following limitations of the original ACEs study.

- The non-rigorous process of selecting adverse experiences for inclusion. There is caution that the adversities included in the original and early iterations of the ACE questionnaire, and henceforth the most studied adversities in the field, were not selected through a rigorous and iterative process of identifying the most influential adversities on outcomes (Finkelhor, 2018). In Felitti's commentary on the inception of the ACE study (Felitti, 2019), he describes how the list of ACEs was developed from the most common client-reported childhood adversities in the Kaiser Permanente obesity clinic.

- The lack of measurement of protective factors. The original study did not measure or identify protective factors as part of the analysis of adversity and outcomes (Leitch, 2017). This is an important limitation that may have impacted the results since protective factors and resilience are known to buffer the impact of adversity on outcomes (Soleimanpour et al., 2017; White et al., 2019).

- The limited scope and context. Concerns that ACEs practice is based on original research that did not incorporate important contextual factors that were raised through the literature and interviews. The original scope of ACEs was developed within the United States with a focus on adversities within households and without consideration of broader social factors (The Academy of Medical Sciences, 2017; Bunting et al., 2018; Ford et al., 2019; Luther, 2019; McEwen & Gregerson , 2019; Murphey & Bartlett, 2019; World Health Organization, 2009). The narrow population from which the scope of ACEs was developed and researched has implications for transferring the evidence to other countries, including Canada, due to differences in culture and norms (Ford et al., 2019; Luther, 2019). In addition to different cultural contexts, differences between the United States and Canada's health care systems, and implications for access to care, were also raised by key informants as contextual factors that are relevant to understanding individuals' experiences with adversity and health outcomes later in life.

- The methodology. Many sources identified cautions around the methodology of ACEs research, including both the original study and the broader body of research. Cautions relate to, for example: the reliability of recollecting details of childhood events; the lack of data on other variables that may impact outcomes; inconsistent tools to measure exposure to adversity; and the lack of consideration of whether the person is still impacted by the adversity (The Academy of Medical Sciences, 2017; Bunting et al., 2018; Burns, 2018; Finkelhor, 2018; White et al., 2019; World Health Organization, 2009).

  White et al. (2019) also explored limitations in statistical analysis and how this can impact the way the research is interpreted, such as the methods used to assess strength of the associations between categories of ACE exposure and outcomes, measurement error, and the statistical significance of the results. White et al. (2019) demonstrates that the odds ratios used to show association between ACEs and outcomes in the original ACE study do not always translate into strong associations when other statistical methods are used.

In addition to the above limitations, there have been social changes that have occurred since the development of the original ACEs questionnaire that may impact the experiences and consequences of ACEs (Finkelhor, Shattuck, Turner, & Hamby, 2013). This is most evident in the example of parental separation or divorce, which has become more common and socially accepted since the original ACE research (Finkelhor et al., 2013). In addition, according to Finkelhor et al. (2013), increased open discussion of sexual abuse and support for survivors of sexual abuse since the original study may also impact the consequences or impacts of sexual abuse for individuals. It has also been suggested that since ACEs research commenced there has been a shift towards more trauma-informed environments, which may also have implications for the effects of ACEs on outcomes compared to these associations in the past (Finkelhor, 2018).

While the association between ACEs and health and behaviour outcomes has been demonstrated through the body of ACEs research, some have criticized the oversimplification of this pathway when research is applied to ACEs practice. There are many literature sources (e.g., Bateson et al., 2019;

Finkelhor et al., 2013; White et al., 2019) and key informants who criticized the oversimplification of ACEs to outcomes through the minimization of:

- differences in biological and genetic responses to chronic stress;
- the impact of protective factors and resilience;
- the meaning of adversity for individuals; and
- the role of structural adversity.

An increased understanding of the contextual and complex pathway from adversities to outcomes would help inform effective ACEs identification practice. Many researchers have recommended that future studies further examine the pathway from ACEs to outcomes, including: which adversities are the strongest predictors of outcomes (e.g., Bateson et al., 2019; Mersky et al., 2017; Finkelhor, 2018), the mediating processes between ACEs and outcomes including contextual and structural factors and resilience and protective factors (e.g., Finkelhor, 2018; White et al., 2019); and longitudinal research to understand causal contributions of ACEs to future health outcomes (e.g., Bethell et al., 2017; Finkelhor et al., 2013). The influence of resilience and protective factors on the experience of adversity has been explored in research, as summarized from a neurobiological perspective by McEwen & Gregerson (2019). Soleimanpour et al. (2017) also explores the relationship between resilience and particularly adversities. However, the ACEs body of knowledge would benefit from a deeper understanding of this relationship (Bateson et al., 2019; Bethell et al., 2017; Leitch, 2017).

The lack of research in these areas has led many to caution that it is premature for widespread implementation of ACEs identification approaches (e.g., Bethell et al., 2017; Finkelhor, 2018; Ford et al., 2019; McLennan et al., 2019). In her commentary on the application of ACEs to policy and practice, White et al. (2019) discusses the lack of direction that existing ACEs research provides on how to best intervene from ACEs to outcomes, what the most effective supports and services are for ACEs, and who will benefit most from these supports and services.

Current State of Research on and Evaluation of ACEs Practice

At this time, scholarly and practice-based evidence on ACEs identification practice is limited but emerging. One scoping review that examined the evidence-base for the application of ACEs inquiry in practice was located (Ford et al., 2019). In their review, Ford et al. (2019) analyzed 15 academic articles, primarily situated in primary care settings, with empirical findings that examined ACEs inquiry. They found significant gaps in information and evidence on outcomes, feasibility, and acceptability of ACE identification approaches and tools in practice and concluded that "focus should remain on evaluating developing models of ACE enquiry to advance understanding of its impact" (Ford et al., 2019, p 131).

> "Critically, the push and enthusiasm for responses to ACEs across multiple agencies has led to growing demand for, and implementation of, routine ACE enquiry ahead of evidence being available to understand its utility and benefits."
>
> - Ford et al., 2019, p. 132

Many of the literature sources aligned with this perspective and identified the need to continue developing an understanding of the application of ACE identification in practice settings (e.g., Aponté, 2017; Finkelhor, 2018; Pardee et al., 2017).

There is a small body of documented monitoring and evaluation research on ACEs approaches in practice, which reflects the limited but emerging generation of practice-based knowledge and evidence. Seven pilot or feasibility studies examining the implementation of ACEs identification processes (Flanagan et al., 2018; Gillespie & Folger, 2017; Glowa et al., 2016; Kalmakis et al., 2018; Koita et al., 2018; McKelvey et al., 2017; and Selvaraj et al., 2019) and three evaluations of ACES identification initiatives in practice (McBride, 2016; Quigg et al., 2018; Hardcastle & Bellis, 2018) were located for this environmental scan. In addition to this work, there is indication from key informants of evaluations examining outcomes of ACEs identification that are planned or currently underway; for example, a formative evaluation of ACEs practice implementation at the Center for Youth Wellness (2017b) in California. This emerging work illustrates the momentum in practice and research regarding ACEs approaches, and signifies that the knowledge base is continuing to evolve.

The purpose or objectives of ACEs identification practice approaches, beyond identifying exposure to ACEs, are not always clearly articulated in the literature. Intended outcomes range from improved long-term health and social outcomes for individuals, to more relevant referrals, to more effective responses and interventions. Across the range of approaches in the intended outcomes of ACEs identification practice, there are several gaps in evidence as well as emerging or inconsistent evidence that requires further investigation. At present there is no published academic or grey literature that demonstrates the impact of ACEs identification on long-term health and social outcomes for individuals. This gap in evidence has been noted repeatedly in the literature (e.g., Bethell et al., 2017; Finkelhor, 2018; Ford et al., 2019; McLennan & MacMillan, 2016).

Strengthening research, monitoring, and evaluation of ACEs practice would provide opportunities to learn from practice and implementation to ensure that ACEs approaches are client-centred, flexible, and feasible. Leveraging practice knowledge would also help address the inconsistency in understanding application of ACEs approaches across sectors and support a coordinated cohesive approach that is informed by evidence and practice-based knowledge. A consistent framework for evaluating ACEs measures to inform the transition from research to practice would support effective ACEs practice (Bethell et al., 2017).

Conclusion and Next Steps

The aim of this first phase of the environmental scan was to identify current evidence and knowledge on the effectiveness and outcomes of ACEs identification approaches. Synthesis of the data sources revealed four key findings; these key findings have implications for the next steps of the project, which involve engagement to identify promising practice in Alberta and the development of an evaluation framework for ACEs in Alberta.

First, the evidence generated through the literature review and interviews demonstrated that it is important for ACEs identification approaches to be implemented as part of broader collaborative action that includes prevention, response, and ACEs-informed or trauma-informed practice, and that a shared understanding of the scope and meaning of 'ACEs approaches' is needed for a collaborative and cohesive broader approach. This finding has implications for exploration of promising practices in Alberta. Specifically, cross-sectoral engagement with diverse Alberta stakeholders, including policy makers and service providers, is needed to identify and contextualize:

- How ACEs approaches connect and align with broader trauma, adversity, and resilience approaches, including prevention, intervention, and trauma-informed approaches
- The current state, scope, and understanding of ACEs approaches in Alberta across settings, sectors, and diverse contexts

Second, the evidence also highlights that holistic assessment approaches that capture the scope, impact, and context of adversity and resilience are supported by emerging evidence as potentially effective to improve practice and guide response and that the exclusive use of ACEs questionnaires and scores to identify experiences of adversity and guide response is not supported at this time. Exploration of promising practices in Alberta will contextualize these findings by contrasting holistic and questionnaire-based identification approaches and exploring the objectives, activities, considerations, and outcomes seen in practice across Alberta. In addition, to align with this finding, the full scope, impact, and context of adversity and resilience will be acknowledged and incorporated into Alberta's ACEs evaluation framework.

The findings of this report also revealed implementation considerations, including the importance of settings and practitioners that allow for trusting relationships, skillful and sensitive inquiry, and adequate supports and follow-up. This includes environments that are responsive to diverse contexts and populations and take power differentials and vulnerability into account. Exploration of promising practices in Alberta will contextualize these findings by looking more closely at implementation considerations in practice and understanding how approaches are responsive to diverse contexts and populations and consider vulnerability.

Finally, the results also identified that research and evaluation regarding the effectiveness and outcomes of ACEs identification practice needs to be strengthened to support a stronger evidence- and knowledge-base for ACEs policy and practice. In the next steps of this project, the current state of practice-based knowledge and evidence in Alberta will be assessed through exploration of promising practice. Development of the evaluation framework will involve consideration of the most significant knowledge and evidence gaps and support the generation of knowledge, including data collection, monitoring, and reporting, to help address these gaps.

The findings from this report indicate that it may be beneficial to widen the scope of the evaluation framework beyond ACEs to incorporate broader adversity, trauma, and resilience approaches. Engagement with practitioners and service providers in the next steps of the project will further explore this potential shift in project scope.

Appendix A: Summary of ACEs Research Origins

An understanding of the history and evolution of ACEs research provides important context for current ACEs policy and practice. Although research that examines the relationship between adversity and outcomes is not the focus of this environmental scan, this research has provided the impetus and rationale for current ACEs policy and practice.

ACEs research originated in the health field, stemming from a seminal study by Vincent Felitti et al. (1998) from the Kaiser Permanente Institute in partnership with the Centers for Disease Control and Prevention. The original ACEs study was a retrospective epidemiological study that looked at the dose-response relationship of a set of adverse childhood experiences to current poor health outcomes of a cohort of adults. The study was spurred by Felitti's observation that some clients who received obesity treatment were not maintaining weight loss and spontaneous reports from these clients of childhood abuse or neglect (Felitti, 2019). Kaiser Permanente Health Institute clients were sent a survey on adverse childhood experiences within the household setting. The ten categories of adverse experiences included in the original ACEs Questionnaire, which are the most studied adverse experiences in the ACEs body of research, are typically referred to as the 'original' list of ACEs and include the following:

Abuse or neglect	*Household dysfunction*
• Psychological abuse	• Household substance use
• Physical abuse	• Household mental illness
• Sexual abuse	• Violence against mother
• Physical neglect	• Incarceration of a family member
• Emotional neglect[2]	• Divorce or separation

Participants identified their ACE exposure in a yes/no format. The 'yes' responses were then summed to generate an ACEs score which was used in statistical analysis to identify health outcome associations (Felitti et al., 1998).

Two key findings emerged from this study that set the trajectory of ACEs research:

1) The experience of ACEs within the sample was more common than previously acknowledged
2) There was a significant relationship between the total number of ACEs experienced and negative health outcomes later in life (Felitti et al., 1998)

The association between ACEs and outcomes that was found in the ACEs research has been explained by the physiological effects of a prolonged stress response. This type of stress is often referred to as toxic stress, which can impact brain development and consequently long term mental health, physical health, and behavioural outcomes (National Scientific Council on the Developing Child, 2007).

While the original ACEs study was influential in shaping understandings of the importance of childhood adversity within the health context, limitations have been noted. These limitations are discussed in the

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[2] The experiences of physical and emotional neglect were not included in the original iteration of the ACEs study but were added in subsequent iterations.

ACEs in Practice section of the report in relation to their implications for applying ACEs research to practice. ACEs research did not originate the concept that adversity and trauma have a connection to, and impact on, people's well-being. Indigenous communities, advocates, and scholars in several fields within the social sciences and humanities; e.g., psychology, sociology, and social work, have a long-standing history of studying and responding to trauma and its impact. ACEs research has contributed to this field of knowledge and bridged the importance of understanding adversity into the medical context.

Ongoing ACEs Research

ACEs research has continued to build and expand on the original study. As part of this expanded research, the original questionnaire has been adapted for additional population research studies. For example, the Centers for Disease Control and Prevention has an annual state-level population survey, the Behavioral Risk Factor Surveillance System, which includes an optional ACEs component adapted from the original questionnaire (Centre for Disease Control and Prevention, 2019). Additionally, the World Health Organization developed a modified version of the ACE questionnaire called the ACE-IQ, which includes additional questions on peer violence, community violence, and exposure to war or collective violence and is available for researchers to use (World Health Organization, 2018).

There has also been significant focus in research and practice on identifying and responding to adversity that children, youth, and families are currently experiencing. Drawing on the fields of neurobiology and early childhood development, it is generally accepted that trauma, including that caused by ACEs, can have an impact on early neurological development (e.g., McEwen & Gregerson, 2019). Some literature (e.g., Bunting et al, 2018; Burns, 2018; Marie-Mitchell & O'Connor, 2013; McKelvey et al., 2017; World Health Organization, 2009) has pointed to early childhood outcomes of trauma to support ACEs identification and response in childhood. These outcomes include behavioural and developmental challenges, lower access to preventive health care, and higher urgent care visits. There is emerging research that demonstrates an association between parental and child ACE exposure (e.g., Gillespie & Folger, 2017; Marie-Mitchell et al., 2016) though it is an area that requires further exploration.

Research has continued to explore the association of additional adverse experiences, beyond the 'original ACEs', to negative outcomes, the impact of ACEs at different ages, and the relationship between ACEs and mental, physical, behavioural, and developmental outcomes beyond those in the original study (e.g., Finkehor, 2018; Kalmakis et al., 2018; Marie-Mitchell & O'Connor, 2013; Koita et al., 2018; Soleimanpour et al., 2017). Research has also examined how the relationship between adversity and outcomes can be mitigated with protective factors; for example, the presence of a supportive adult in a child's life, which can support resilience in the presence of adversity (National Scientific Council on the Developing Child, 2007).

Appendix B: Search Strategy

Background

In 2017, the Government of Alberta's *Mental Health Review: Next Steps* report was released which called for 18 actions relating to social determinants of health and complex root causes related to addictions and mental health issues. It recognized the impact of adverse childhood experiences (ACEs) on mental health and the need for evidence-informed prevention as well as screening practices to support tailored early intervention for children and families. Action 2.11 is to *proactively support Albertans with adverse childhood experiences* (p. 14) through evaluating the use of the ACE risk assessment tool in Alberta.

This project will focus on development of a provincial framework that will guide evidence-informed ACEs program and policy development and evaluation in Alberta by supporting effective use of ACEs practice and ultimately enhancing outcomes for Albertans with adverse childhood experiences.

Project Components

The project components, while outlined sequentially, have overlapping timeframes.

1. Conduct an environmental scan to:
   a. Outline current evidence and knowledge from local and international literature and thought leaders
   b. Identify promising models and practice to better equip service providers and policymakers with evidence of effectiveness of ACEs screening and assessment.
   c. Perspectives from Indigenous knowledge keepers
   d. Engage with Indigenous knowledge keepers to better understand Indigenous experiences of ACEs, resilience, healing, and well-being and to support implementation of practices developed based on Indigenous ways of knowing.
   e. Work with key provincial stakeholders to support strategic alignment of ACEs and resiliency knowledge, principles, and approaches across provincial initiatives.
2. Develop an evaluation framework to measure effectiveness of ACEs models and provide consistent provincial reporting to support ongoing monitoring, adaptation, and improvement.

This initial search strategy addresses project component 1 (environmental scan). Data collection will include:

- A rapid literature review (academic and grey) [3]
- Analysis of initial results and revision of search strategy
- Interviews with thought leaders

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[3] All seminal and noteworthy articles will be shared in an ongoing manner with all members of the project team.

Environmental Scan

The first phase of the environmental scan will be carried out from March to August 2019. The objectives are:

1. Explore, at a high-level, the current state of ACEs identification practice across jurisdictions and sectors
2. Explore key perspectives, cautions, and considerations in relation to ACEs identification in practice
3. Identify what is known and unknown about the effectiveness and outcomes of ACEs identification in practice
4. Highlight contexts and conditions to support promising practice around ACEs identification

Search Strategy for Academic and Grey Literature

The search strategy scope focuses on outlining the evidence behind ACEs screening and assessment in practice settings. The search term combinations will be used in Google to retrieve leading grey literature as well as in a database search for academic literature in the following academic databases:

- Google Scholar
- CINAHL (Including Medline)
- SocIndex
- PsychINFO

Table 1: Search Strategy

ACE Terms	Intervention	Purpose	Population	Sector
Adverse childhood experiences	Screening	Strategy	Indigenous	Multi-disciplinary
Toxic stress	Assessment	Framework	First Nations	Multi-sectoral
		Implementation	Metis	Healthcare
		Evaluation	Inuit	Education
		Outcome	Refugee	Child Welfare
		Prevention	Immigrant	Child Intervention
		Early intervention	Rural	
		Measurement	Remote	
		Implications	Vulnerable	
		Policy	High-risk	
		Legislation		

Search Combinations

- ACE term + intervention + purpose
- Ace term + intervention + purpose + population

- Ace term + intervention + purpose + sector

Search combinations will be used until saturation in the literature retrieved is reached

Inclusion Criteria

- Article from 2009-2019 (with exception of seminal articles)
- Must focus on ACEs
- Must discuss outcomes or implications
- English language
- Canada, United States, New Zealand, Australia, United Kingdom

Exclusion Criteria

- Study does not focus on ACE *screening* or *assessment*
- Focus is on screening or assessment for one particular adversity (e.g., child abuse), or outcomes associated with adversity (e.g., trauma)

Document Review

- Documents provided by project sponsors
- Documents provided by key informants and that meet the above inclusion and exclusion criteria

Key Informants

Key informants from academic and practice-based perspectives working with ACE screening and assessment from within and outside Alberta will be identified through purposive sampling. *Interviews and/or focus groups will be conducted until maximum variation is reached.*

Project sponsors will further support identification of leading practitioners, thought leaders, and researchers for interviewing.

Appendix C: Interview Guide

ACEs: Environmental Scan – Interview Guide

Introduction and Consent

Thank you for agreeing to participate in an interview. We greatly value your time and feedback.

I/we work for PolicyWise for Children & Families, which is a provincial not-for-profit organization that exists to improve well-being by leading, creating, enabling, and mobilizing research and evaluation for evidence-informed policy and practice.

PolicyWise is conducting an environmental scan, which includes an academic and grey literature review, to synthesize the evidence on different screening and assessment approaches for adverse childhood experiences (ACEs) to better understand what is effective and improves outcomes. This includes developing a better understanding of ACEs in specific contexts and with specific populations including Indigenous peoples, refugee populations, and rural and remote areas. **The goal of this interview is to better understand outcomes and considerations related to implementation of ACEs screening.**

We estimate that this interview will take approximately one hour. Participation in this interview is voluntary and you can end the conversation at any time or choose not to answer certain questions. Your answers are confidential and will only be used for project purposes.

With your permission, we would like to record the interview. The recording of our conversation will be kept on a secured, locked and protected site, and nobody outside the project will have access to it. Are you comfortable with this interview being recorded?

Do you have any questions for us before we get started?

Context

1. Please briefly describe your experience within the fields of childhood adversity and child well-being.
2. Through our ongoing data collection, we have noticed that practitioners and academics define the scope of adverse childhood experiences, or ACEs, in varying ways. How do you define the scope of ACEs in your work?
3. From your perspective, what are the key benefits and/or cautions that need to be understood in relation to screening for ACEs?

Current Practice

4. Does your organization currently screen for ACEs?

- If so, how is ACEs screening implemented?
- Which tools does your organization use?
- What criteria are used to determine the response after screening?

5. What interventions are in place for people whose screening results indicate they have experienced adversity?
   - What does that referral process look like?
6. What practice supports are in place for the service providers conducting the ACEs screen?

Outcomes

7. So far in our literature review, we are seeing a gap in research related to outcomes for service users as a result from ACEs screening. From your perspective, what outcomes are associated with ACEs screening?
   - How does ACEs screening impact:
     - Health and social outcomes for service users?
     - The current experience of adversity?
     - Access to interventions and supports?

Implementation Considerations

8. What do you think needs to be considered when implementing ACEs screening?
9. What ACEs screening tools do you have experience with or knowledge of?
10. It is well known that screening has strengths and limitations. Can you share with us your thoughts on the strengths and limitations of using an ACEs screening tool?
    - With different populations
    - In different settings
    - Targeted or universal approaches to screening
11. How can knowledge and practice related to resilience be incorporated into the implementation of ACEs screening?

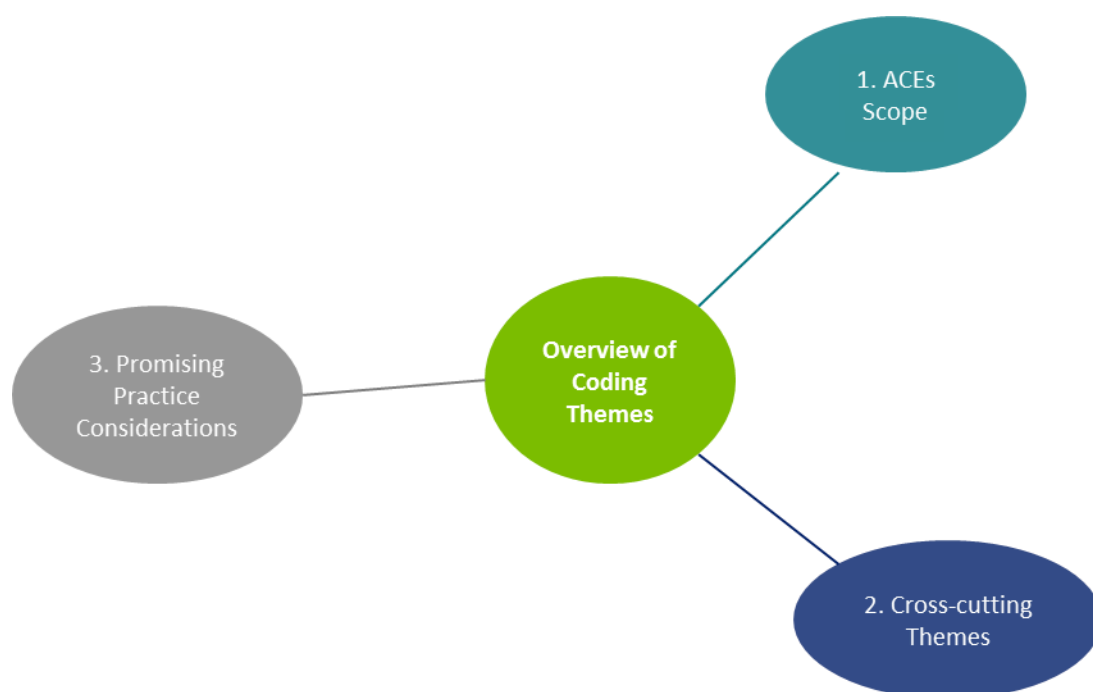## Conclusion

12. Is there anything else that you would like to share with us?
13. Are there any other people that you think would be important for us to speak to, either from an academic or practice perspective? Are there any specific resources or evidence you think would be important for us to review?
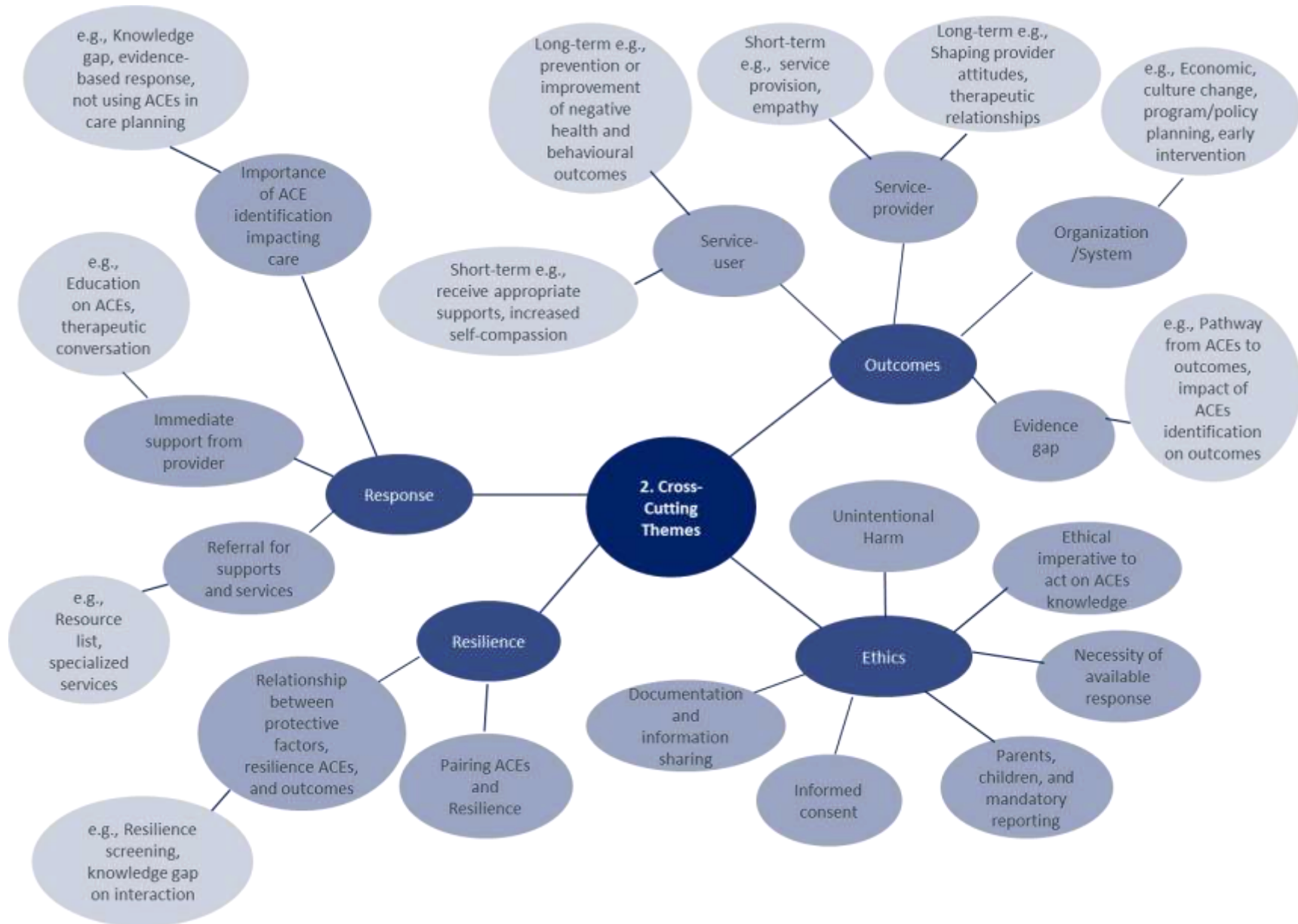
Appendix D: Coding Structure Summary

The initial coding structure was developed deductively from the environmental scan questions, with inductive codes added based on content present in the academic literature. This coding structure was reviewed by the team to identify patterns across codes and for relevance to the project purpose, and re-structured accordingly. This iteration of the coding structure was then used to code academic literature, grey literature, and key informant interviews in separate NVivo files, to allow inductive coding to emerge as appropriate within each type of data. The coded data was then triangulated from all sources to develop the themes presented in the environmental scan.
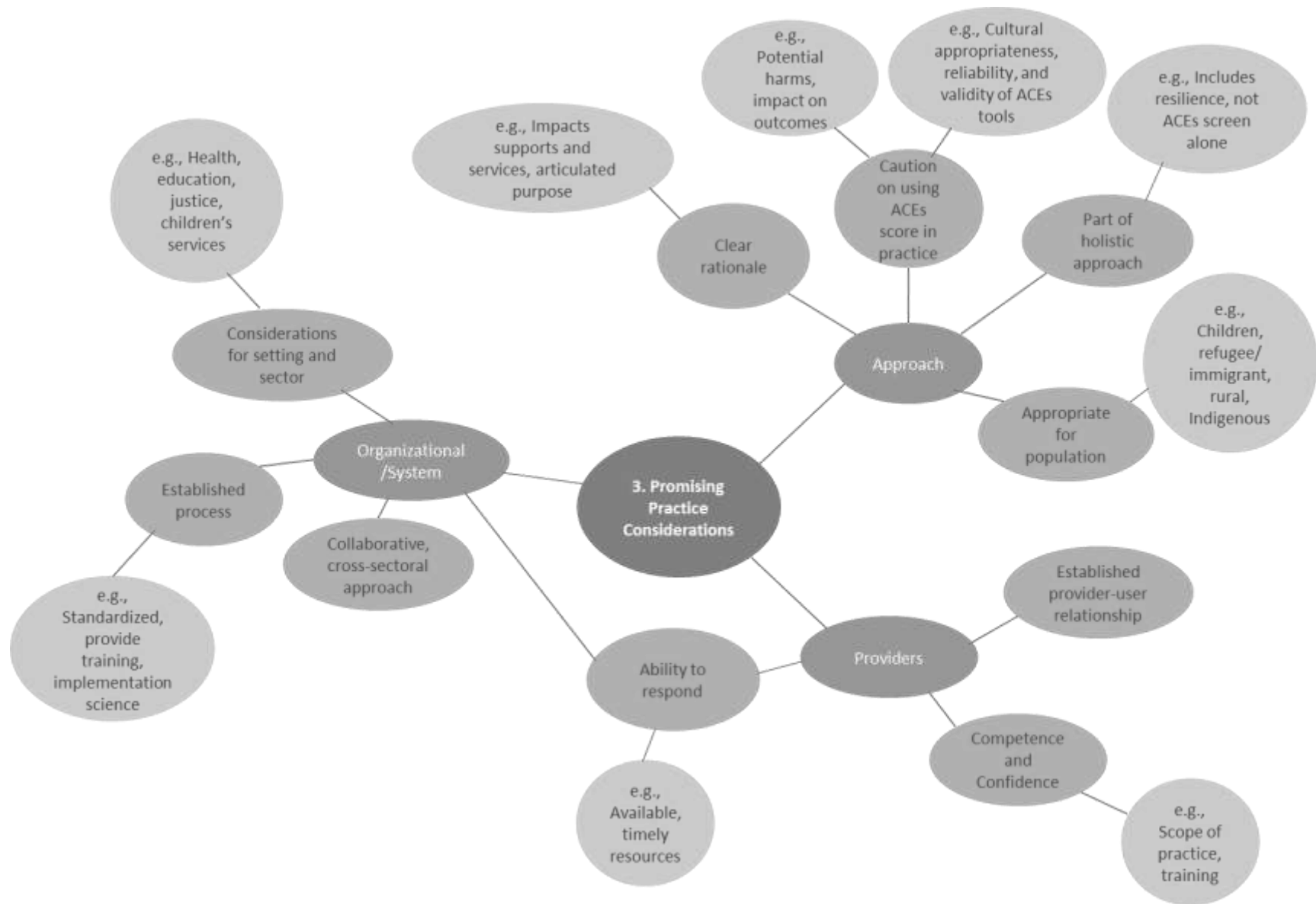
Figure 1 provides a high-level visual summary of the high-level themes in the coding structure used for the environmental scan. This diagram is followed below with examples of lower level granular codes within each broad theme.

Figure 1: Overview of Coding Themes

A mind map centred on "1. ACEs Scope" with four main branches:

- **Concepts**: ACEs (e.g., Lack of clarity, the original ACEs), Childhood Adversity, Trauma, Toxic Stress, Resilience
- **Evolution**: Original ACEs, Complexity of ACEs in Practice (e.g., Context, diverse populations, expanded ACEs categories, various settings), Modification and development of screening tools, Becoming more Holistic
- **Approaches**: ACE-aware or ACE-informed, Part of Trauma-informed practice, Population research and surveillance, Universal vs targeted, Screening, Inquiry

Appendix E: Evidence of ACEs Identification Guiding Effective Response and Impacting Outcomes

There is currently no evidence in academic or grey literature showing the impact that ACEs identification practice has on long-term health and social outcomes for individuals who have experienced ACEs. At the same time, there is some emerging evidence on the short-term outcomes of practice, specifically guiding referral and effective intervention, although this evidence is inconsistent and evolving.

Guidance for Effective Referral and Response for Individuals

ACEs identification approaches generally aim to have an effective immediate response to identification through referral and/or provision of supports and interventions. In the short-term, responses to identification approaches generally aim to:

- Facilitate referrals for further relevant screening or assessments (e.g. trauma screening, developmental and behaviour screening)
- Facilitate referrals to proactive and responsive supports for individuals who have experienced childhood adversity

Research has demonstrated that ACEs identification can lead to referrals and supports for those with a history of childhood abuse or other ACEs (e.g., Corvini et al, 2018; Hardcastle & Bellis, 2018; Kalmakis et al., 2017; Kalmakis et al., 2018; Murphey & Bartlett, 2019; Purewal et al, 2016; Quigg et al., 2018). These referrals and supports include:

- educating families on ACEs, the stress response, and health and learning outcomes (Watson, 2019);
- referring clients to integrated care to address developmental needs (e.g., Purewal et al., 2016; Schulman & Maul, 2019);
- referring clients to services that support healing from trauma (Murphey & Bartlett, 2019);
- providing anticipatory guidance for families and proactive supports and services (e.g., Gillespie & Folger, 2017; Watson, 2019).

Although the research referenced above indicates that referrals and supports occur in response to ACEs identification, there is debate over whether ACEs identification impacts referral rates and the provision of services and supports. Supports and interventions for high ACE scores are emerging in practice, and tend to focus either on referral to a professional with knowledge of a variety of treatments and support pathways or referral to professional who can respond to specific ACEs or symptoms (Finkelhor, 2018; Watson, 2019). Referrals to trauma supports have also been suggested for people with high ACEs scores, though Finkelhor (2018) raises concern with this as the person may not actually have experienced trauma, even with a high ACE score. Finkelhor (2018) notes that screening mechanisms typically apply evidence-based interventions to specific risk factors, for example, treatment programs for substance abuse. However, Finkelhor (2018) and McLennan et al. (2019) state that there is a lack of specific,

evidence-based interventions tied to ACE scores or measures of exposure to ACEs as a sub-set of adversities.

Some research has found that ACEs identification leads to increased referrals to mental health supports and services (Flanagan et al., 2018; Kalmakis et al., 2017; Kalmakis et al., 2018). However, other studies have found that ACEs identification results in very few referrals for mental health services to respond to current effects of past trauma (Gillespie & Folger, 2017). Some research has found that service providers having an increased understanding of the impact of adversity does not necessarily lead to change in support to service users (e.g., Ford et al., 2019; Glowa et al., 2016; Kalmakis et al., 2017). Emerging evidence indicates that service users who have experienced multiple ACEs may be unsatisfied with the response of the provider to ACEs identification (Flanagan et al., 2018). Overall, there is a lack of evidence examining the impact of ACE conversations or referrals on parenting or on child outcomes (Bethell et al., 2017; Ford et al., 2019).

There is a need for more research in relation to the outcomes of referrals and interventions that occur in response to ACEs identification. It is important to understand whether service users follow up on accessing supports and services and contributing factors to service utilization. Ford's et al. (2019) scoping review found that, at this time, there are no studies examining the long-term impact of ACE identification on the service provider-user relationship and future care provision. Both academic literature (e.g., Bethell et al., 2017) and interviewees recommended consideration of the availability and accessibility of supports and services that people with ACEs would be referred to, especially for those who are part of vulnerable or marginalized communities. Some interviewees noted that it is unethical to identify ACEs if there is not access to evidence-informed supports and services.

Impact on Long-Term Health and Social Outcomes for Individuals

 The purpose or objectives of ACEs identification practice approaches, beyond identifying exposure to ACEs, are not always clearly articulated in the literature. However, synthesis of the data sources indicates that in the long-term, these approaches generally aim to prevent and address negative health and social outcomes for individuals who have experienced childhood adversity. Practice focused on children and families also generally aim to break the cycle of intergenerational trauma and adversity by supporting parents to address the effects of their own ACEs and avoid inflicting ACEs upon their own children.

At present there is no published academic or grey literature that demonstrates the impact of ACEs identification on long-term health and social outcomes for individuals. This gap in evidence has been noted repeatedly in the literature (e.g., Bethell et al., 2017; Finkelhor, 2018; Ford et al., 2019; McLennan & MacMillan, 2016). In addition, no literature could be located that establishes the impact of ACEs identification practice on the intergenerational transmission of trauma and adversity.

Impact on Economic and Public Health Outcomes for Systems

Desired system outcomes of ACEs identification practice include the aim to achieve economic benefits by reducing public health costs associated with outcomes of ACEs exposure. There is debate about

whether ACEs identification leads to increased or reduced burdens on system resources. Some key informants referred to anecdotal or emerging evidence that ACEs identification has a neutral or positive impact on efficient use of system resources as a result of more targeted and relevant referrals. At the same time, some caution that using ACEs identification for referral to preventative or proactive supports and services may result in over-referral to people who will not benefit from the services (e.g., Finkelhor, 2018). Evidence currently does not indicate the actual burden on service agencies or systems, such as the health system, as a whole (Finkelhor, 2018; Quigg et al., 2018). There currently is not data to show how ACEs identification has impacted public health costs.

Aponté (2017) outlined the position that ACEs identification has significant cost saving potential due to the association between ACEs and high-cost chronic disease outcomes. This position and consequent economic imperative to take action on ACEs is also explored by Gerson & Corwin (2015). While the economic theory to support ACEs prevention and identification has been explored, there is a lack of published evidence on the actual system outcomes of ACEs identification practice. There is a need for further research that examines the cost of ACEs identification, as well as the impact of ACEs identification and response on costs of service provision within various systems including health and children's services (Academy of Medical Sciences, 2017; Bethell et al., 2017; Finkelhor, 2018). McLennan and MacMillan (2016) noted that cost-benefit research must also consider the costs of allocating resources to ACEs identification over other interventions competing for the same resources. Future research that is focused on measuring the expenses and benefits of screening would be beneficial to help determine whether this practice is appropriate for wide-scale implementation (Burns, 2018).

Appendix F: Limitations of ACEs Questionnaires and Scores in Practice

Following the original ACEs study, the ACEs questionnaire, or modified versions of it, began to be used as individualized screening tools to inform practice within clinical settings (e.g., Hardcastle & Bellis, 2018; Purewal et al., 2016; Selvaraj et al., 2019), social services settings (e.g., McBride, 2016), and specialized intervention settings such as drug and alcohol services, sexual violence support, and child and adolescent mental health (Quigg et al., 2018). New and refined ACEs identification tools, with a widened scope of ACEs categories, have been rapidly developed and implemented leading to inconsistency in the methods and scope of identification approaches. The number of ACEs categories included in tools identified in the academic literature, based on a systematic review by Bethell et al., (2017), range from 6-20, with the majority of tools having fewer than 14 items.

These approaches use ACEs questionnaires and scores to identifying or measure the dose of individuals' exposure to a specific list of ACEs. The number of ACEs an individual has been exposed to is usually expressed through yes/no answers. Respondents 'yes' answers are then added together to generate an ACE score. ACEs scores are being used in several practice settings including prenatal and pediatric clinics (e.g., Flanagan et al., 2018; Purewal et al., 2016).

Scoring mechanisms can vary across practice and include the traditional approach of identifying the summative value of the number of adversities a person has experienced (e.g., Flanagan et al., 2018), using a graded scoring approach by offering options such a scale of how frequently the event occurred (e.g., the World Health Organization, 2018), or aggregate scoring by only identifying the total number of ACEs experienced rather than identifying specific events (e.g., Gillespie & Folger, 2017). By not providing information on experiences with particular ACEs, aggregate collects less detail but may increase disclosure of adversity due to a level of anonymity in information shared with service providers. This is particularly relevant for parents, who may risk incriminating themselves if they are completing an ACEs questionnaire on behalf of their child (Gillespie & Folger, 2017).

Several cautions and considerations were identified from the literature and key informants about determining and using an ACEs score including the lack of validation of many ACEs questionnaires, lack of consideration of the buffering impact of resilience and protective factors, and general exclusion of contextual and structural sources of adversity.

Tool Validity

Some interviewees and authors caution that use of the ACEs questionnaire as an individualized clinical diagnostic or screening tool constitutes a concerning departure from its original purpose as a population-level data collection tool for the original ACEs study (e.g., Ford et al., 2019). ACE scores provide information about risk factors at a population level, but do not convey information about an individual and their response to adverse experiences (Shonkoff, 2018 in Bateson et al., 2019). In addition to cautions on how the ACEs measurement tools have evolved from the research context, there is debate about the validity and reliability of both the original and refined or expanded versions of the tool

in practice (e.g., Bethell et al., 2017; McLennan et al., 2019). At this time, only a small percent of ACEs screening tools are validated, partially validated, or in the validation process (Corvini et al, 2018).

Critiques about the validity of ACEs screening tools include examination of the traditional questionnaire's ability to accurately measure exposure to adversity. Within the original questionnaire, some ACEs are much more specific or clear in their conceptualization and phrasing (e.g., incarceration of a member of the household) compared to other ACEs that are more open to interpretation (e.g., substance abuse) (Bethell et al., 2017). These differences may impact accuracy and consistency in how questions are answered and therefore have implications for whether the ACE score reflects an individuals' actual level or dose of ACEs exposure. In addition, some literature sources (Bateson et al., 2019; Finkelhor et al., 2013; White et al., 2019) identified research that indicates high ACE scores can impact the recall of childhood experiences (i.e., attributional bias), which has implications for validity of measuring ACEs retrospectively.

Some interviewees identified that using a structured, scored ACEs questionnaire can help increase consistency and clarity in ACEs identification and improve ACEs disclosure by providing professionals a guide for ACEs identification. At the same time, there have been cautions about the value of the information that can be interpreted from an ACEs score. The use of a yes/no questionnaire to determine an ACEs score treats each adverse event equally regardless of how an individual experienced it; this can misrepresent an individual's actual experience and response to that experience (White et al., 2019).

Because yes/no responses, and corresponding ACEs scores, capture only exposure to incidents of adversities, and do not capture the impact or context of that exposure as well as whether an individual has already received supports, there is potential to both over- and under-identify people who have experienced trauma and are considered to be "at risk" of negative outcomes (Bateson et al., 2019; Wade et al., 2015; Dube, 2018). Finkehor (2018) and McLennan et al. (2019) have cautioned that there is a lack of research evidence at this time on the impact of service provision for people who have "false-positives" from ACEs identification. Several authors (e.g. Bethell et al., 2017; Dube, 2018) and key informants stressed that the ACEs tool is not a diagnostic tool, but rather a tool to open conversations between service users and service providers on trauma and its impacts.

Identifying Experiences of Adversity

Through the identification of ACEs exposure, ACEs questionnaires and scores are generally used with the intent to:

- support a stronger understanding by service providers of the needs of their patient population and
- facilitate proactive identification of service users who may benefit from further relevant screening or assessments (e.g. trauma screening)

However, ACEs questionnaires and scoring approaches have been the subject of critique from some regarding the lack of capability to achieve these intended outcomes. Specifically, these tools have been criticized for their limitations in capturing the impact that exposure to adversity may have had on an individual, as opposed to solely a quantified measure of exposure to ACEs. White et al. (2019) cautions

that using a yes/no response questionnaire does not capture whether the event was experienced by an individual as negative, neutral, or even potentially positive. Factors that can inform the impact of an event include: chronicity, type, frequency, and severity of the event as well as the presence of protective factors (Bateson et al., 2019; Bunting et al., 2018; Murphy & Bartlett, 2019). The importance of these factors were also present as a significant theme in the interviews, underpinning the concept that individuals will respond to, and be impacted by, ACEs differently and that many of the adversities people face cannot be compared through a standardized questionnaire or scoring mechanism. There are many factors that may influence the impact of exposure to adversity and potential outcomes which have been largely under-explored in research and absent from traditional ACEs questionnaire tools.

Resilience and Protective Factors

A strengths-based approach to ACEs identification in which resilience and protective factors are acknowledged is important for effectively and meaningfully understanding experiences of adversity. There is an emerging movement to including questions about protective factors and resiliency in ACEs questionnaires. Questions on protective factors and resilience are among some of the most commonly added questions to ACE tools (Bethell et al., 2017). At the same time, there are many widely used tools that do not have a strengths-based focus (Leitch, 2017). Interviewees reported that ACEs identification without identification of protective factors is misleading as it characterizes a person's experience by their deficits rather than providing a holistic view of an individual's circumstances. Blodgett (2012) argues that this holistic understanding of an individual's or family's adversities as well their resources and resilience is required for a balanced approach that supports renewal and growth.

Structural and Contextual Adversity

Traditional ACEs questionnaires and scoring approaches are critiqued by several authors for capturing a limited scope of adversity and thereby missing other relevant and impactful experiences, particularly those associated with structural and contextual adversity (e.g., McEwen & Gregerson, 2019; Quigg et al., 2018; White et al., 2019). Many adversities outside of traditional ACEs screening or questionnaire tools can be traumatic and have significant impacts on people's wellbeing. These experiences can be associated with structural and systemic disadvantage and be disproportionately experienced by minority and disadvantaged populations.

Some questionnaires have been developed and refined to identify experiences with structural and contextual adversity. The most common adversity categories added to ACEs tools include witnessing neighborhood violence, bullying, discrimination, and parental death (Bethell et al., 2017). Examples of other additional ACEs items from the grey literature include: physical disability and homelessness (WHO, 2009); food insecurity, prejudice, and time in foster care (Gillespie & Pettersen, 2015); and serious disability or illness in the household (McBride, 2016). The academic research examining ACE identification with youth has looked at modifying the ACE questionnaire to include adversities of significance to youth (Wade et al., 2014), and examined existing ACE tools and implications of screening for youth in primary care (Pardee et al, 2017; Soleimanpour et al., 2017).

Despite these advances in refining and expanding the scope of ACEs questionnaires, some argue that these tools are still insufficient for capturing diverse contexts and structural adversities. Luther (2019) argues that conventional ACEs tools that add new adversity items relevant for Indigenous populations still do not capture enough details or Indigenous-specific experiences. ACEs tools may capture an adverse event but miss context-specific factors that are unique to the experience of specific communities or populations such as immigrants and refugees (Burns, 2018).

Interviewees frequently discussed the lack of community and cultural context in many ACEs questionnaires and the need to consider cultural influences on experiences of adversity. Different cultures may interpret questions about ACEs through a different lens, impacting whether the question would capture the experience of trauma. One study also found that those identifying as a racial minority have lower rates of completion for ACEs questionnaires (Flanagan et al., 2018).Wade et al., (2014) found that discrimination was not identified as a significant stressor by racial or ethnic minority youth, and speculates that the pervasiveness of these inequities may have become normalized to such an extent minority youth do not report them as stressors. Research that explores the reasons for lower disclosure of adversities among racial or ethnic minorities, including factors such as racism, discrimination, and relevance of included adversities, would strengthen the understanding of how to meaningfully identify adversities within these populations and potential implications for provision of supports and services. Involving people from the community of interest in research on conceptualizing adversity is an important aspect in understanding the role of cultural norms in the experience of ACEs (Wade et al., 2014).

Guiding Response and Supports

Practice that identifies and assesses individuals' exposure to ACEs generally aims to proactively support individuals who have been exposed to ACEs with the goal of preventing and addressing associated negative health and social outcomes. One way these approaches aim to achieve this is by using ACEs scores to target referrals for proactive and responsive supports for individuals who have been exposed to ACEs. Use of ACEs questionnaires for screening is suggested to be an efficient way to identify people who would benefit from further screening and potential intervention, and to help to guide appropriate care (e.g., Koita et al., 2018; Soleimanpour et al., 2017).

However, approaches that rely primarily or solely on an ACEs score generated from a questionnaire have been criticized for their lack of effectiveness in guiding responses to prevent or improve individuals' outcomes. Several authors and key informants expressed that ACEs questionnaires and scores have the potential to simplify complex experiences and focus on exposure to a past event rather than context that may inform a person's perspective on the event, how they are coping, the impact of the experience, or potential symptoms that may be a concern in the present (e.g. Burns, 2018; Dube, 2018, Lietch, 2017; McLennan et al., 2019; Wade et al., 2014). There is a perspective that measurement of ACEs exposure is not required to understand and respond to current or past experiences that may be impacting health or behaviour. Instead, there is a need for sensitive practice that is able to capture and respond to the impact of trauma (Bateson et al., 2019; White et al., 2019). Murphey & Bartlett (2019) argue that the

way that an individual experiences an ACE exposure provides important information to guide appropriate supports and services in response to ACEs identification.

Using the ACE score to guide intervention indicates that there is a strong relationship between the "dose" of ACEs exposure and outcomes (White et al., 2019), however research has not yet indicated what number, type, or experience of ACEs should be prioritized for intervention at a practice level (Bateson et al., 2019). An ACEs score does not necessarily identify those who will most benefit from supports and services (Murphey & Bartlett, 2019). Consequently, there is caution that use of an ACEs score risks labelling and responding to people in a deterministic way (Bunting et al., 2018). For example, a policing program in the United States used databases to calculate ACE scores with the intent of identifying children at risk for criminality to provide preventive referrals to support and services (Bateson et al., 2019). An evaluation of this program raised cautions about whether ACE scores are the most appropriate predictor for future adversity or criminality and whether the cut-off score for determining risk was appropriate (Bateson et al., 2019). Bateson et al. (2019) reinforced that a numbers-focused approach to ACEs is not supported by research, and that there needs to be a greater understanding of contextual factors and priority ACEs to guide intervention and impact outcomes.

Although using a structured format to identify ACEs may have some benefit in increasing consistency in the approach ACEs, the concept of an ACEs score in practice needs further understanding prior to supporting its application.

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