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Social Work and Adverse Childhood Experiences Research: Implications for Practice and Health Policy

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Medical research on "adverse childhood experiences" (ACEs) reveals a compelling relationship between the extent of childhood adversity, adult health risk behaviors, and principal causes of death in the United States. This article provides a selective review of the ACE Study and related social science research to describe how effective social work practice that prevents ACEs and mobilizes resilience and recovery from childhood adversity could support the achievement of national health policy goals. This article applies a biopsychosocial perspective, with an emphasis on mind–body coping processes to demonstrate that social work responses to adverse childhood experiences may contribute to improvement in overall health. Consistent with this framework, the article sets forth prevention and intervention response strategies with individuals, families, communities, and the larger society. Economic research on human capital development is reviewed that suggests significant cost savings may result from effective implementation of these strategies.

Keywords: Health policy, prevention, intervention, family support, community development, mind–body, integrally informed

INTRODUCTION

There is increasing interest in, and exploration of, the biopsychosocial susceptibilities and resiliencies contributing to both health and disease later in life. Recent medical research, known as the ACE Study, was developed to determine whether childhood events had long-term health consequences, which has important implications for Healthy People 2020 Policy planning, as well as for key social work roles in disease prevention. Kaiser Permanente, a large health maintenance organization, and the Centers for Disease Control partnered in 1994 on a large scale epidemiologic study of the relationship of adverse childhood experiences (ACEs) to adult health and social well-being throughout the lifespan. The ACE Study has found that "adverse childhood experiences"

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(ACEs), defined by ten categories of abuse, neglect, and household dysfunction, are widespread, largely unrecognized, and play a decisive role in the overall health, well-being, and social function of the nation (Felitti et al., 1998).

ACE Study participants were self-selected members of Kaiser Permanente who visited a health clinic, seeking comprehensive medical evaluation for preventive purposes. Study participation was offered in two waves to 26,000 consecutive adult members undergoing medical examination. Agreement to participate was received from 17,421 (68%) who answered an additional questionnaire seeking information from childhood about ten categories of emotional abuse, physical abuse, neglect, and lack of support/closeness within the family of origin, sexual abuse by anyone, loss of a parent, witnessing domestic violence, or substance abuse, mental illness, or incarceration of a family member—all experienced prior to the age of 18 years of age. An ACE Score was created on a scale of 0–10, based on the number of categories (not incidents) experienced (Felitti et al., 1998). These categories are inter-related and linked to health risk behaviors and health problems (Dong, Anda, et al., 2004).

Retrospective reports of ACEs were associated with adult health risk behaviors and non-infectious causes of illness and death like heart disease, respiratory illness, and cancer (Brown et al., 2010; Dube et al., 2001; Felitti et al., 1998). ACE Score is correlated with ischemic heart disease (Dong, Giles, et al., 2004), chronic obstructive pulmonary disease (COPD) (Anda et al., 2008), lung cancer (Brown et al., 2010), and liver disease (Dong et al., 2003). Also, as ACE Score increases, this is connected to a greater likelihood of current smoking, sexual risk behaviors, teenage pregnancy, obesity, substance abuse, depression, suicide attempts, hallucinations, and multiple types of cancer (Anda et al., 1999; Chapman et al., 2004; Dong et al., 2003; Dube et al., 2002; Felitti et al., 1998; Whitfield et al., 2005). By considering the inter-relation and accumulation of risk categories, and the impact on overall health, the ACE Study enhances social science research.

We begin with a discussion of the biopsychosocial appreciation of human development in social work, including an overview of the stress and coping framework offered by Lazarus and Folkman (1984) which is further connected to health by adding the concept of allostasis and allostatic load (McEwen & Seeman, 2009). Next, we present a selective review of the effects of adverse childhood experiences documented in social science research. Social science research also demonstrates that protective factors can be enhanced to promote resilience and moderate high cost ACE outcomes. This knowledge base guides helpful prevention and intervention strategies with communities, families, and individuals. Economic research on human capital development suggests significant cost savings may result from effective implementation of these strategies. We propose that the ACE Study research findings call for a biopsychosocial understanding and response, which provides a blueprint for action to achieve Healthy People Policy goals. Policy advocacy implications and next steps are set forth.

A BIOPSYCHOSOCIAL PERSPECTIVE

With a mission to serve the most vulnerable and promote societal well-being (National Association of Social Workers [NASW], 2008), social workers operate from a biopsychosocial perspective to resolve adversity. This perspective fosters an ability to simultaneously perceive the individual and the collective, appreciating that development and behaviors across the lifespan emerge within cultural and systemic contexts (Larkin, 2006, 2008). Mind-body coping processes, including the role of individual development and contextual resources, are presented here as particularly useful to a biopsychosocial understanding of adversity and recovery.

Numerous developmental scientists have studied different aspects of development, demonstrating the complexity of overall healthy developmental processes. Areas of development include,

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but are not limited to, cognitive (Piaget, 1972), affective (Curry, 1986), social (Marshall & Fox, 2006), and behavioral (Olson & Sameroff, 2009). Developmental scientists describe the navigation of developmental stages, with each stage providing the foundation for the next. Recognizing that human development takes place within person–environment interactions (Larkin, 2006, 2008), Lazarus and Folkman's (1984) stress and coping framework supports consideration of the interface between possible stressors and developmental processes. For example, it appears that cognitive development is crucial to one's ability to manage stress. Within Lazarus and Folkman's stress and coping framework, the experience of stress arises out of a person–environment interaction when there is a divergence between a person's subjective assessment of the demands of an event and that person's subjective assessment of their own inner and outer resources available to meet the demands of the event. Both psychological and physiological responses occur, with cognitive appraisal and coping serving as two key mediating processes. Cognition plays an important role in discerning danger as well as labeling an event as a challenge or a threat, which influences a person's behavioral coping response to the event. If a person experiences an event as a challenge rather than a threat, and perceives adequate internal and external resources to meet the challenge, there is a greater likelihood of that person's ability to cope by either modifying their own emotional response to stress or by modifying the stressor itself (Lazarus & Folkman).

McEwen (1998) further points out that behavior, biology, and experiences all work together to influence the perception of stress. The body enacts a complex system of responses to changing internal and external conditions (McEwen & Seaman, 2009). Recognizing the ambiguity of the term "stress" in attempting to describe bodily coping responses to biopsychosocial challenges, and the need for an integrative view of collective influences on bodily health, Sterling and Eyer (1988) introduced the term "allostasis," which refers to the body's ongoing adaptive capacity, within the limits of bodily structures, to the changing environment (McEwen & Seaman, 2009).

When an event is assessed to be stressful by the brain, both behavioral and physiological courses of action are set in motion, which lead to allostasis as the body adapts to conditions. Early life stress, including neglect and abuse, can impact development and combines with genetic predisposition and other experiences, thereby contributing to unique personal variations in coping. While allostasis is a protective response that involves immediate adaptation to stress, the allostatic load associated with inadequate or prolonged allostatic response, the need to cope with numerous types of adverse events, or the inability to adapt, has a cost. When the body is continuously pressed to adapt to numerous adverse events, the stress mediators (such as growth and other hormones, amino acids and other tissue mediators, and adrenal steroids) that are typically adaptive can become chronically elevated or stop turning on and off properly. Not unexpectedly, allostatic load can thus lead to an increased likelihood of ongoing excessive physiological and behavioral reactions (Garland et al., 2011; McEwen & Seaman, 2009).

As the number of categories of adverse childhood experiences increases, each new type of risk to the body's allostatic system can potentially lead to excessive allostatic load and associated physiological and behavioral symptoms. Recognizing that young people seek environmental resources in an attempt to cope, the ACE researchers propose that substance abuse and other health risk behaviors may actually be attempts at coping when more adequate supports are unavailable. In this paradoxical way, public health *problems* are also seen as attempted personal *solutions* to problems buried in time and protected by shame and secrecy. As a result, public health policy geared only to treating the specific health outcome, or to changing health risk behaviors that are also coping mechanisms, falls short in effectiveness because it focuses on taking away an attempted solution that has well-recognized major long term risks and unacknowledged short-term benefits. For example, people often continue to smoke even when public health policies make it difficult and even after the onset of smoking-related symptoms and illness (Edwards et al., 2007). Understanding the immediate psychoactive benefits of nicotine, as well as its major long-term risks, changing behavior may mean asking someone to give up their coping

mechanisms and immediate relief for a hazy, long-term goal of improving general health (Felitti et al., 1998).

Ideally, healthy development and coping would be facilitated within a context of societal well-being. Yet, when adverse childhood experiences are accompanied by family and cultural denial, or inadequate remedial response, individual development can be derailed, with resulting societal costs (Larkin & Records, 2007). Better knowledge of adverse childhood experiences and mind-body coping processes can inform policies to support families and individual development.

HEALTHY PEOPLE POLICY

Current United States Health Policy is outlined in Healthy People 2010, a government statement of national health aims. Designed with the goals of increasing quality and years of healthy life and eliminating health disparities, Healthy People 2010 Policy identifies leading health indicators by which to gauge national health. These include "physical activity, overweight and obesity, tobacco use, substance abuse, responsible sexual behavior, mental health, injury and violence, environmental quality, immunization, and access to health care" (U.S. Department of Health and Human Services, 2013). Healthy People 2020 intends to mobilize cross-sector interdisciplinary partnerships to improve individual and collective health and place a stronger emphasis on the lifespan, connecting childhood experiences to later life health outcomes (U.S. Department of Health and Human Services, 2013). ACE research from the medical field, integrated with social science literature and social work knowledge, can provide a compelling foundation for addressing core issues that can prevent the costly health outcomes of concern to national policy.

CORRELATES OF ACEs AND OUTCOMES

There is a long history of research, including in social work, on adverse effects of different kinds of child abuse and maltreatment, which bolster ACE Study findings. Numerous examples indicate that health problems are related to child abuse and the coping strategies people may adopt in response to child abuse (Fletcher, 2009; Kendall-Tackett, 2002; Springer, 2009; Springer et al., 2007). Selected examples are illustrative of the correlates between adversity earlier in life and overall health later in life.

Child abuse is connected to a greater likelihood of domestic violence for women (Afifi et al., 2009; Carlson et al., 2003; Ramos & Carlson, 2004), and women who have experienced abuse in both childhood and adulthood have poorer health, fewer social supports, and higher depression rates (Carlson et al., 2003; McNutt et al., 2002; Ramos et al., 2004; Weisbart et al., 2008). Among both men and women, prior child sexual abuse correlates with domestic violence, which is itself related to poor mental health outcomes (Afifi et al., 2009).

The experience of domestic violence is also a category of adverse childhood experience (Felitti et al., 1998), pointing to a possible intergenerational cycle of adversity. In fact, several social science studies demonstrate the intergenerational nature of abuse. As an example, Noll et al. (2009) found that mothers who have been abused are more apt to have dropped out of high school and to have experienced domestic violence, psychiatric problems, substance dependence, and obesity. Mothers with sexual abuse backgrounds were more likely to give birth as teenagers, with their children increasingly likely to have been born preterm and involved with child protective services (Noll et al.).

As the ACE Study demonstrates, cumulative risk can have a greater impact on overall health (Felitti et al., 1998). The experience of one risk can contribute to other risks, which also makes it more challenging for protective resources to mitigate the combination of risks and for a person to

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recover from the combined risks. A large body of social science research demonstrates the way in which risks are cumulative and co-occur (Herrenkohl et al., 2008; C. Smith & Carlson, 1997). For example, child abuse is associated with youth runaway behavior, which is in turn correlated with later victimization as well as delinquency (Kim Jung et al., 2009). Child abuse has also been connected with juvenile arrest and violent delinquency (Lansford et al., 2007; Mersky & Reynolds, 2007).

The cost to the body's adaptive systems when faced with repeated categories of risk can lead to allostatic load and extreme behavioral and physiological reactions (McEwen & Seaman, 2009). In addition, when there is attentional bias toward threat, threat sensitization, and heightened stress reactivity, this can modify one's ability to engage in the cognitive appraisal process described by Lazarus and Folkman (1984) as important to coping. Multiple dangerous events may also appear to be a greater threat, unless there is also an appraisal of adequate inner and outer resources to respond to the events. A person's developmental capacity, along with other resources, influences one's experience of an event (Larkin, 2008; Larkin & Records, 2007). These mind-body processes, taking place across development within person-environment interactions, help to explain some of the correlations between early adversity and later life health challenges, as well as why the accumulation of risks can increase the likelihood of more risks.

Finkelhor (2009) utilizes data from the prospective Developmental Victimization Survey to demonstrate the way in which childhood adversity (including the experience of having emotional problems, living in an unsafe or disorganized and highly stressed family, and living in an unsafe community) is connected to adolescent risk behaviors, which are associated with a reduction in the adolescent's ability to guard against victimization and greater relational hostility (Cuevas et al., 2009; Finkelhor et al., 2007; M. K. Holt et al., 2007; Turner et al., 2006). The combined experience of child abuse and witnessing domestic violence is negatively related to adult self-esteem (Shen, 2009), though there are mixed results of the "double whammy" hypothesis that the combination of domestic violence and child abuse leads to worse outcomes (Silverman & Gelles, 2001). This likely speaks to the important role that other resources can play to mitigate adversity outcomes.

Environmental Risks and Resources

It is clear that the mind and body are challenged by both inner and outer events and that healthy overall development contributes to the capacity to both cognitively and physiologically manage those events. Environmental contexts can support development through the provision of resources or hinder development through neighborhood risk, poverty, lack of access to resources, and oppression. Some of the mixed social science findings in regard to the outcomes related to these stressors likely result from the interplay of risk and resources. For example, poverty, oppression, or lack of services may not be cognitively assessed as a threat if other resources exist. Given the presence of protective factors, such as social networks or spiritual resources, development could be promoted even in the face of adversity.

Yet, there are some findings indicating that children living in poverty experience both greater risk and more negative outcomes related to child abuse than those with more socio-economic resources (Jonson-Reid et al., 2009). Depression and aggression among youth is associated with prior child abuse, while anger, anxiety, depression, and aggression are associated with observing violence in the home or neighborhood (Johnson et al., 2002). A longitudinal study of children and families at urban Baltimore pediatric clinics serving mostly African Americans with low-income found that a combination of maltreatment and failure-to-thrive backgrounds in children were connected to greater problems with school and cognitive functioning (Kerr et al., 2000). Systemic risks such as poverty and oppression may be compounded, or moderated, by interpersonal relationships.

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Relational Disruption and Adversity

The quality of interpersonal relationships provides an example of a mechanism through which adverse childhood experiences could lead to health risk outcomes (or which could serve as a protective factor to prevent the health risk outcomes). Frederick and Goddard (2008) found that adults with ACEs often had experienced weak social networks with volatile, and frequently violent, adult relationships (Frederick & Goddard). Among Latina adolescents, childhood abuse was associated with multiple substance abuse and anxiety about weight, with current relational attachments mediating the linkages. Bulimia and low social conformity have both been found to be associated with family disconnection, and poly-substance abuse has been associated with low adolescent social conformity (Hodson et al., 2006). This suggests a policy opportunity to provide resources in support of healthy social networks, an implication that is strengthened by social science research on the role of protective factors.

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CONSIDERATIONS TO ENHANCE PROTECTIVE FACTORS

S. Holt et al. (2008) point to relationships between child abuse and associated difficulties and domestic violence, while also noting numerous protective factors that can enhance people's resilience and influence later life outcomes. Furthermore, the social science literature suggests that preventing and treating child neglect requires comprehensive research, assessment, and treatment involving professionals across practice fields offering early intervention to at-risk families in school, medical, and other program settings. To raise awareness and move toward prevention of child neglect, it has been suggested that professionals work together with parents, community members, and policymakers (Tyler et al., 2006). These cross-sector partnerships are in keeping with Healthy People 2020 planning.

If ACEs are correlated with later life health risks, it follows that achievement of Healthy People policy goals requires implementation of effective ways to foster healthy development. Thus, it is important to take notice of both susceptibilities and protective factors to mobilize each child's resilience (Iwaniec et al., 2006). Resiliency research supports response strategies involving the cultivation of strengths to reduce outcomes such as depression, substance abuse, and health problems (Henderson, 2003).

Increasing protective factors can decrease risk for long-term psychological outcomes of abuse, neglect, and foster care placement (Anctil et al., 2007). Furthermore, while unstable foster care placements contribute to increased chances of adult mental illness, the experience of helpful foster parents in combination with mental health support is related to improved self-esteem (Anctil et al., 2007). Among people with severe abuse backgrounds, those with better social supports and higher self-esteem had better health outcomes than the rest; self-esteem was especially critical and strongly connected to health outcomes (Jonzon & Lindblad, 2006). The pervasiveness of ACEs can be lessened through the development of community-wide service structures that support healthy parenting through accessible culturally relevant effective interventions (M. R. Sanders et al., 2003a, 2003b). In these ways, there is a link between services enhancing protective resources and potential reduction of ACEs and associated health risks.

SOCIAL WORK PREVENTION AND INTERVENTION

The biopsychosocial conceptual framework utilized in this article suggests that context plays a major role in healthy development, and the mind and body are simultaneously responding to both interior and exterior events, contributing to behavioral outcomes. Resources and support

may prevent adverse events in the first place and can play a role in both the cognitive appraisal process and the body's responses to various types of events, thereby contributing to healthy coping behaviors and physiological health. From a biopsychosocial perspective, it becomes clear that intervention with one family generation enhances the protective resources for the next generation, which might prevent intergenerational ACE transmission.

Family Support

An emphasis on prevention and on supportive responses to child welfare concerns has fueled rising interest in family support programs (Walker, 2001), which have been found to improve child well-being and family functioning (Geeraert et al., 2004; R. Sanders & Roach, 2007). In fact, a variety of program types have contributed to positive outcomes for children and families (Dagenais et al., 2004), thus informing ACE response strategies. Access to integrated, multidisciplinary family support is important to assist disadvantaged families (Hardy & Darlington, 2008; Trask et al., 2005; Tyler et al., 2006; Window et al., 2004). Parental and family support networks, mentoring, and resource support can reduce stress and contribute to successful outcomes (Chaffin et al., 2001; Ireys et al., 2001; Kirk, 2003). Parenting improvements are affected by a combination of participant and program factors, and family support program characteristics can have an even stronger influence on high risk parents (Asscher et al., 2007). A school-based family support program known as Families and Schools Together (FAST) has led to increased adaptability and cohesion among families and declines in child behavioral challenges (Fischer, 2003). Behaviorally-oriented, group-based family support programs have been found successful, calling for further evaluation (Bunting, 2004).

Overcoming parenting challenges in a culturally relevant manner. The parents to whom support is offered, and their cultures and communities, possess capacities, knowledge, and experiences related to parenting. This is an important consideration when seeking to help parents prevent or address adversity in their children's lives. Effective parenting skills may be different depending upon a family and community's cultural background, making it important to provide culturally informed and community-based parenting education. For instance, low-income Mexican American families highlight social skills as much as kinesthetic or cognitive ability, and these social skills are important to successful functioning in their own culture. Therefore, family and local culture should be considered before introducing parenting strategies characteristic of the dominant culture (Delgado & Ford, 1998).

Weak or destructive parenting skills, that either give rise to ACEs or involve ineffective response to damaging experiences external to the family, have a variety of origins. These include, but are not limited to, the impacts of adverse earlier experiences operating in the lives of parents. For example, it might be the case that a parent with a substance abuse problem (a category of adverse experience for their child) has their own ACE background. This is consistent with an increasing recognition of the need to treat parental substance abuse problems in conjunction with child welfare involvement (Carlson, 2006; B. Smith & Mogro-Wilson, 2007).

ACE response also entails adequate support for parents of children with disabilities and improving access to services, particularly in poor communities. Parents are sometimes presented with problem behaviors or disabilities in their children for which they may not have the knowledge or social support to respond effectively to prevent adverse experiences for their children. Knowledge that adolescent delinquent behavior also affects parenting can help inform interventions and serve as an aid in actually engaging parents (Stern & Smith, 1999). Raising a child with a disability adds to parental stressors (T. B. Smith et al., 2001); grandparents may also be involved in the care of children with disabilities (Green, 2001). In working towards interventions with parents,

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a broad view that includes attention to the family social context and the provision of adequate supports is critical, requiring a community-based, streamlined continuum of care (Stern & Smith, 2002).

It is often the case that parents with their own ACE backgrounds are experiencing the additional impact of oppression and poverty, which contribute to stress and limit access to needed services for the family. In fact, minority health disparities are usually connected to these conditions (Copeland, 2005; Eiraldi et al., 2006; Gee et al., 2007). There are links between health and socioeconomic status of children and adolescents (Chen et al., 2006), and serious health problems are more common among children from low-income and minority families (Case & Paxson, 2006). It is also important to recognize bi-cultural challenges and engage in culturally sensitive service provision (Jones et al., 2007). Furthermore, many grandparents are raising their grandchildren, facing their own financial and health concerns; these stressors are further heightened in minority and low-income communities (Fuller-Thompson & Minkler, 2000). In order to effectively help with complex combinations of challenges, service system design can be enhanced and community awareness raised to support culturally competent parenting skills.

Service system transformation, community partnerships, and media. The service system can be transformed to support appropriate ACE responses. Integrative, family-centered and child-focused services foster partnerships with indigenous community leaders and families to identify needs and mobilize toward culturally competent ACE responses that will interrupt intergenerational patterns and promote effective and healthy parenting. This involves investing in families and communities and developing systems to support mutual aid (Briar-Lawson, 1998). There is also increased recognition of the need for trauma-informed service (Fallot & Harris, 2004; Finkelstein & Markoff, 2004). Logically, ACE response combines ACE outcome intervention with prevention-based programming offered through a variety of means—these are approaches in support of national health policy. For example, bonding to a healthy school environment is connected to reduced health risk behaviors as well as stronger social and academic skills (Catalano et al., 2004). In these ways, service systems could ideally facilitate community development and offer complementary prevention and intervention services within the local context.

In addition to direct service and community development, the media offers a relatively inexpensive opportunity to share effective educational strategies to improve parenting skills and social support for families (Bensley et al., 2004; Foster et al., 2008; M. R. Sanders et al., 2003b). MTV's 2002 HIV Prevention campaign provides an example of successful use of media that reached millions of young people, positively impacting HIV prevention beliefs and social norms (Geary et al., 2007). Raising awareness and increasing societal support are complementary to clinical interventions designed to support ACE survivors, many of whom may be parents.

Clinical interventions. There are many clinical interventions to directly serve individuals and families experiencing ACEs; some are more strongly supported by research at this time. The Substance Abuse and Mental Health Services Administration (SAMHSA) provides a useful guide to websites outlining evidence-based practices available at http://www.samhsa.gov/ebpWebGuide/index.asp. One recognized evidence based practice for children, trauma-focused cognitive-behavioral therapy (TF-CBT) is being taught through live training, internet learning, and phone consultation (Cohen & Mannarino, 2008). Cultural modifications to TF-CBT, as well as structured psychotherapy for adolescents responding to chronic stress (SPARCS), and child-parent psychotherapy (CPP), all established evidence-based clinical interventions, have been found helpful to minority young people in an Illinois foster care program (Weiner et al., 2009). The Centers for Disease Control (CDC) has highlighted the Positive Parenting Program (Triple P) as an effective ACE response (Valle et al., 2004), which has both decreased parenting problems and

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improved children's behavior (Bor et al., 2002; Sanders et al., 2003a, 2003b; M. R. Sanders et al., 2007; Thomas & Zimmer-Gembeck, 2007).

Other emerging practices guided by theory and supported by basic science or pilot studies call for further intervention research. Imagery rescripting teaches clients to modify intrusive imagery of past traumas to engender a sense of self-efficacy and safety (Blakley, 2009). Mindfulness training reduces psychological and physiological correlates of the stress response (Ditto et al., 2006; Grossman et al., 2004; Marcus et al., 2003; Ortner et al., 2007). Mindfulness meditation has been successfully employed in the treatment of anxiety disorders (Kabat-Zinn et al., 1992) and has helped prevent relapse of depressive symptoms (Teasdale et al., 2000). A recent randomized trial by Garland et al. (2010) identifies effects of mindfulness training on heart rate variability recovery from stress-primed alcohol cues (one allostatic marker) among alcohol dependent adults with trauma histories. Integrative Restoration (iREST), a meditative and deep relaxation practice designed to calm the nervous system and release negative emotions, has reduced post-traumatic stress symptoms among soldiers at Walter Reed Army Medical Center (WRAMC; Money et al., 2008).

Aligned with a conceptual appreciation of bodily coping responses to stress, social work practitioners are increasingly exploring body-oriented interventions, seeking out research partnerships to evaluate the effectiveness of these approaches. Practitioners have sought to explain the legitimacy of Somatic Experiencing (SE; Levine, 1997), as well as the acu-point tapping techniques (Feinstein, 2010; Lane, 2009) known as Thought Field Therapy (TFT; Bray, 2006; Callahan, 2000; Pignotti, 2007) and the Emotional Freedom Techniques (EFT; Craig, 2008; Flint et al., 2006) by pointing to neuroscience research and polyvagal theory (Perry, 1999; Porges, 2001, 2007, 2008; Sahar et al., 2001; van der Kolk, 2003, 2004, 2007), though clear linkages have yet to be established by researchers. Also, while there is a need for more rigorous intervention research in each of these areas, uncontrolled research designs have found Somatic Experiencing (SE) to promote resilience and decrease post-traumatic stress symptoms among social service providers who are disaster survivors (Leitch et al., 2009) as well as Indian tsunami survivors (Parker et al., 2008). A randomized controlled trial (Church et al., 2013) and small quasi-experimental pilot studies suggest that EFT holds promise for treatment of post-traumatic stress disorder (Church, 2010; Church et al., 2009).

A case study of the Committee on the Shelterless (COTS), an award winning homeless service agency in Petaluma, CA, provides an example of explicitly ACE-informed programming that has drawn together best practices within the context of intentionally developed social networks that support resilience and recovery (Larkin et al., 2012). This integrated approach to helping homeless people calls for comprehensive evaluation research, applicable to a variety of ACE-informed social service programs (Larkin et al., in press). While many social work interventions are relevant to ACE response, there is a need for more explicitly ACE-informed research on a variety of prevention and intervention activities, including associated policies and service delivery systems, which can be complementary to one another in promoting resilience and recovery from ACEs. In addition, it will be useful to evaluate whether specifically ACE-informed prevention and intervention does, in fact, improve health and save societal costs.

HEALTHY CITIZENS SAVE SOCIETAL COSTS

If effective social work activities are associated with disease prevention and overall health, this suggests that social work services may lead to societal cost-savings (Larkin & Records, 2007). However, just as there is a need for explicitly ACE-informed social work prevention and intervention research, there is also a need for empirical cost-effectiveness research on these activities. The cost savings associated with human capital development (Heckman & Krueger,

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2003) supports the idea that effective social work practices contributing to health are a worthwhile investment.

The concept of human capital helps to explain the profitability of protecting children from adverse experiences and fostering development within the context of healthy environments and supportive relationships. A number of studies have already identified noteworthy returns from early intervention programs for disadvantaged children (Heckman & Krueger, 2003; Karoly et al., 2005). For example, one study by the 2000 Nobelist in Economics, James Heckman, found that by the time a child was 27 years old, there was a return of $5.70 on each dollar spent in childhood, with further returns over time. In addition to these individual returns, society is saved the expense of programs created to intervene with costly effects of adverse childhood experiences, and other members of society gain from more constructive social relations. Families, schools, and other systems all contribute to human capital development (Heckman & Krueger, 2003; Karoly et al., 2005). If ACE prevention and intervention develops human capital, there are probably high payoffs associated with effective social work response strategies. This is worthy of attention from policymakers and social workers, calling for action.

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POLICY ADVOCACY IMPLICATIONS AND NEXT STEPS

The ACE Study connects social work activities to national health policy through social work's evident role in health promotion and disease prevention. The following steps are recommended to social workers and policymakers to enhance national health outcomes: (a) Utilize the biopsychosocial perspective to appreciate the interactions of human development, cognitive appraisal, and physiological processes within the context of culture and systems, integrating medical ACE research with social science research; (b) Utilize ACE Study findings to point to the need for ACE prevention and intervention in reaching Healthy People 2020 goals; (c) Draw upon social science research to inform comprehensive ACE response strategies that mobilize protective factors and resilience, highlighting effective family support and culturally relevant parenting services; (d) Integrate services and develop post-disciplinary team ACE responses to streamline and increase service access (especially among disadvantaged communities), evaluating the policies and programs coordinating these activities; (e) Support local communities in promoting culturally competent parenting skills; (f) Mobilize the media to raise awareness of ACEs, positive parenting, and parenting supports on a population-wide basis; (g) Pursue ACE-informed clinical intervention, community development, prevention, and services research; and (h) Partner with economists to analyze cost-savings associated with ACE-informed social work prevention and intervention.

CONCLUSION

The ACE Study usefully demonstrates the relationship of effective social work services to overall health and well-being for the nation. In addition to raising awareness of the generally hidden problem of adverse childhood experiences and their costs, it will be important to specify widely those solutions that lead to healthier developmental environments for children. Social workers can connect policymakers, program directors, professionals, and community members to transform service delivery systems in support of comprehensive ACE response that mobilizes protective factors and resilience. This includes mechanisms that promote community partnerships for positive parenting, enhance family support, and increase access to effective treatments. Simultaneously, use of media can increase societal impact. Social work researchers continue to play a crucial role in furthering knowledge through existing and emerging prospective research studies on risk and resilience and bringing forth present and developing knowledge on prevention and intervention.

There is a need for ACE-specific clinical intervention and prevention research that attends to mind-body processes contributing to health, ACE-informed community development and services research, and evaluation of ACE-informed policies and programs. Investments in effective ACE prevention and intervention are likely to save notable human and economic costs, calling for partnerships with economists.

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