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SPECIAL FEATURES – THEORY

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The Eco-Social Trauma Intervention Model

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Abstract

Objectives: We describe a transdisciplinary theory of change for interventions to promote trauma recovery that utilizes an eco-social approach to enhance health status and well-being following trauma exposures. This four-level theory of change could be applied to other population health problems, as well.

Methods: This theory-development process included reviewing existing literature, identifying assumptions, defining core concepts, stating propositions, depicting concepts and propositions for clarity, and illustrating with case examples grounded in our focus on trauma.

Results: The resulting Eco-Social Trauma Intervention Model offers a framework for interventions that address the impact of trauma on the individual level through self-regulation, interpersonal level through relationships, community/organizational level through safety, and societal level through identities. Application of this model to intervention development for those affected by trauma is intended to promote resilience, recovery, posttraumatic growth, and positive adaptations to traumatic stress for populations, going beyond the current Western paradigm of treating individuals for psychopathology.

Conclusions: The Eco-Social Trauma Intervention Model offers an adaptable transdisciplinary framework for developing and researching scalable trauma interventions for individuals, communities, and populations.

KEYWORDS
interprofessional, interventions, theory, transdisciplinary, trauma

1 | INTRODUCTION

Transdisciplinary collaboration is essential to the field of public health, and theory development is an early task to organize team science (Hall et al., 2008). A theory of change is a required aspect of behavioral interventions as well (Bellg et al., 2004). Many complex public health problems could benefit from interventions targeting multiple eco-social levels. Trauma is one such complex problem that affects populations at multiple levels and calls forth interprofessional efforts at secondary and tertiary prevention in order to redress the developmental and health sequelae that inequitably affect vulnerable people. It warrants transdisciplinary research, especially with priority populations. A transdisciplinary theory of change could hasten the time to dissemination of evidence-based responses.

Traumatic events and their traumatic stress sequelae are toxic and are major public health concerns. Around the globe, exposure to one or more traumatic events is a common human experience, with 70% of people reporting at least one trauma exposure (Kessler & Üstün, 2008). Some people are resilient in the aftermath of trauma, but acute stress reactions are normative and involve avoidance of

anything (thoughts, places, cues) related to the trauma, intense feelings, and reactions related to trauma reminders or cues, sleep disruptions, irritability, negative thoughts and emotions, and being hypervigilant (APA, 2013; WHO, 1992). The majority of people recover, but the risk of trauma-related mental health conditions, primarily posttraumatic stress disorder (PTSD) varies based on the type of trauma (e.g., lower rates of PTSD after non-interpersonal events, such as car crashes and higher rates of PTSD after interpersonal events, such as homicide of a close friend or relative or sexual assault). For example, in a sample of U.S. adolescents exposed to a range of trauma types, 10% developed PTSD after experiencing a non-interpersonal trauma, compared to 25% that developed PTSD after experiencing an interpersonal trauma (Alistic et al., 2014). In an international sample, rates of PTSD range from 2.6% after an automobile accident to 19% following rape (Kessler et al., 2017). Only 50% of PTSD cases remit within 2 years, and chronic PTSD is associated with mental health comorbidities such as anxiety disorders (Rosellini et al., 2018). PTSD is also associated with physical comorbidities such as chronic pain syndromes (Beckham et al., 1997; McFarlane, Atchison, Rafalowicz, & Papay, 1994; Shipherd et al., 2007) and early morbidity and mortality (Wolf, 2016) from diseases associated with stress and allostatic overload (Tomasdottir et al., 2015). Additionally, even individuals who do not develop PTSD may develop other negative sequelae of trauma, as recognized in a growing body of research (Dutton et al., 2006; Felitti et al., 1998). The disease burden of conditions such as cardiovascular disease, cancer, obesity, substance use disorders, and pulmonary disease correlated with the exposures to traumatic stress in childhood (Felitti et al., 1998) and across the life span (Tomasdottir et al., 2015), contributing to growing health care costs and reduced quality of life.

Trauma affects population health over time. Many of the most pervasive and detrimental traumatic events are interpersonal (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), occur early in the life span (Schalinski et al., 2016), and impinge on development (Murphy et al., 2014), attachments (Romano, Babchishin, Marquis, & Fréchette, 2015), health (Sledjeski, Speisman, & Dierker, 2008), and subsequent life outcomes (Shonkoff, Richter, van der Gaag, & Bhutta, 2012). Trauma exposures leave traces across generations in gene by environment interactions (National Scientific Council on the Developing Child, 2010), consistent with evolutionary biology (Meaney & Szyf, 2005) and population health perspectives such as life history theory (Kruger, 2011) and developmental origins of health and disease (Seng et al., 2018). The price society pays surpasses the health care costs and disease burden (Shonkoff et al., 2012).

Individual experiences of trauma and recovery from PTSD are influenced by one's cultural context, including one's religious beliefs, support systems, and interpretation of events as traumatic (de Jong, 2004). Differences in vulnerability and exposure to traumatic events may also differ among individuals based on social and ethnocultural context. For example, in the wake of natural disasters like Hurricanes Andrew and Katrina, PTSD symptom prevalence and severity were shown to vary by race and ethnicity, with Black and Latino individuals experiencing more symptoms with greater severity than White individuals (Mills, Edmondson, & Park, 2007; Perilla, Norris, & Lavizzo, 2002). Relatedly, women consistently exhibit twice the rate of PTSD as men, in spite of men experiencing greater lifetime exposure to traumatic events overall (Nemeroff et al., 2006; Seedat, Stein, & Carey, 2005). Although cultural and gender differences in the presentation, diagnosis, and treatment of PTSD at the individual level have been described (Galovski, Mott, Young-Xu, & Resnick, 2011; Marsella, 2010; de Silva, 1999; Wilson & So-kum Tang, 2007), interventions addressing trauma at multiple levels must be developed with attention to the ways in which intersectional identities influence the experience of trauma and recovery. Addressing the adverse effects of trauma exposure is becoming the work of numerous professions and disciplines. While traditional psychotherapy and use of pharmacologic agents (e.g., antidepressants, antianxiety medications) hold an important place in the treatment of PTSD and symptomatology, these approaches tend to be very individualized and may lack scalability to larger populations of traumatized people. Interventions are needed to redress the broad negative effects of trauma and traumatic stress that go beyond the established individual Western mental health treatment and are efficient as well as effective. Current trauma-focused theories lack descriptive detail regarding how, when, and where to implement interventions. Outcomes research will be needed to build the evidence base for a broader range of interventions and to support policy and advocacy efforts to make the case that intervening, sometimes at multiple levels, improves both health status and social welfare. Progress is hampered by the lack of a transdisciplinary theory of change. The purpose of this paper is to suggest a transdisciplinary theory of change that is broad enough to guide practice and service delivery, organize research, and inform public policy so that we can move forward in a more concerted way. The efforts described in the case examples that follow are the ones that public health nurses are well positioned to lead, resulting in interventions that cross traditional disciplinary bounds and address numerous levels of influence.

2 | APPROACH

Theory development is an early step in transdisciplinary and interprofessional efforts to address a major problem (Hall et al., 2008). A transdisciplinary theory frames the component concepts and propositions common across professional, scientific, and advocacy understandings of the phenomenon of interest. As an organizing framework, such theory can promote work that is effective because it is integrated, coordinated, and informed by experience and analysis. Explication of a transdisciplinary theory often amounts to stating what common sense is because it distills what all contributors can agree upon about a complex phenomenon. This can guide both interventions and analysis of outcomes and justify the allocation of limited resources. The theory of change to guide Eco-Social Trauma Interventions we propose is no exception.

We followed the basic theory-development steps of drawing upon the literature, naming assumptions, defining component

concepts, stating propositions, depicting these concepts and propositions in a diagram for clarity, and illustrating with concrete examples (Walker & Avant, 2011). The goal is to advance posttrauma health and welfare. The objective of this paper is to propose a theory useful for the health professions, sciences, and policy bodies that frames trauma-specific individual, group, or population interventions using a social-ecological approach. We deliberately draw upon established definitions for three components: trauma, the proximal outcome (health status), and the distal outcome (individual and societal welfare). The novel contribution is to define the target mechanism component as having four eco-social levels of intervention, which could be used singly but should have additive or synergistic effects if bundled (Sallis & Owen, 2015).

3 | EXPLICATION OF THE ECO-SOCIAL TRAUMA INTERVENTION MODEL

3.1 | Drawing upon the literature

The professional literature on trauma and posttraumatic stress is long-standing and vast, beginning in early 20th century psychiatry (Herman, 1992) and now spreading progressively wider, to the point where breaking silence about individual, group, and societal effects has become a movement (Zacharek, Dockterman, & Edwards, 2017). At first, the focus was on individuals in need of psychiatric treatment. We now know that trauma exposure is not "outside the range of normal human experience" (APA, 1987); but rather is part of the human condition and something to which we all are vulnerable, alone and together. Early theory focused both on individual treatment (Breuer & Freud, 1893), and on evolutionary concepts of survival of the individual in danger and survival of the species via recovery when danger is over (Janet, 1889). These understandings remain applicable. The Centers for Disease Control and Prevention (CDC) articulates a clear social-ecological model for violence prevention, reflecting the multidimensional influences and sources of traumatic exposures (CDC, 2018). From a public health perspective, acute and long-term needs can be addressed at all eco-social levels. Professionals in clinical practice likely will work with individuals or groups, but population health programs will also come into play, especially in contexts of humanitarian crises. Whether working for individual, group, or population benefit, interventions may be most effective if they target multiple eco-social levels.

3.2 | Naming assumptions

Three major assumptions underpin this Eco-Social Trauma Intervention Model. These assumptions, detailed below, focus on the importance of: (a) History; (b) Development; and (c) Multilevel responses within this model. Bronfenbrenner's Social Ecological Framework was created to describe the multiple levels of influence on child development but these levels are now considered in relation to numerous public health issues (Bronfenbrenner, 1979). *History* ("chronosystem") is a key concept. In this theory, what is happening in the social-historical context strongly affects—for better or worse—the experience of trauma. History particular to personal, familial, and racial, ethnic, gender, class, national, religious, and other identities also has strong effects, and these effects cross generations. *Development* is a related concept that should be considered. Where the person is in the life span and where a population is in its political-economic evolution affects both vulnerability and capacity to respond to trauma with resources. *Multilevel* responses are useful in the aftermath of trauma. Trauma disrupts functioning of the body and mind, relationships, safety (or the sense of safety), and one's place in the world or that of the one's social group. Interventions to restore at one level may help, but synergies are likely to be positive if we intervene at multiple levels.

3.3 | Defining component concepts

Shared definitions exist for the trauma, health status, and life attainment/social welfare components of this theory, and we utilize these rather than define them anew (Table 1). *Trauma* has been defined by the National Center for Trauma-Informed Care (NCTIC) at the U.S. Substance Abuse and Mental Health Services Administration as being comprised of events, experiences, and effects (SAMHSA, 2017). Trauma consists of the events that are experienced by an individual or population as harmful or life threatening, leading to lasting negative effects on health and well-being (SAMHSA, 2017). *Health status* is understood to have subjective and objective facets and both are relevant because suffering and morbidity each are related to increased service utilization by survivors after trauma exposure. *Life attainment* for individuals and *Social welfare* for the group or population are derailed or disrupted by trauma. We use the eight positive life outcomes defined by the U.S. Department of Justice to study life attainment of youth who have been adjudicated to conceptualize these individuals and aggregate outcomes (Abram et al., 2017). These positive life outcomes include educational attainment, engagement in gainful activity, desistance from criminal activity, interpersonal functioning, meeting parental responsibilities, attaining residential independence, mental health, and abstaining from substance use (Abram et al., 2017). Although health professionals may see some of these as unusual (abstaining from criminal activity, for example), they are relevant to some trauma exposures, such as childhood abuse, that can lead to perpetrating violence in adulthood.

To organize intervention, we use NCTIC's four-level eco-social system vocabulary (societal, communal/organizational, interpersonal, and individual) because they are closer to commonsense language than Bronfenbrenner's macro-, exo-, meso-, and micro-system terms (Bronfenbrenner, 1979; SAMHSA, 2014). We provide labels for interventions that express what the target mechanism would be or what the intervention we deploy is aiming to affect: *identity, safety, relationship, and self-regulation*. Each of these appears in the trauma literature as a mechanism of resilience, recovery, adaptation, or growth in the aftermath of trauma.

TABLE 1 Components of the Eco-Social Trauma Intervention Model

Assumptions		
Chronosystem context matters.	Social and life history processes affect and are affected by trauma and response to trauma (e.g., #MeToo movement, chronic disease increase).	
Developmental context matters.	Individual, group, and social development affect and are affected by trauma and response to trauma (e.g., childhood, minority status, low-income country).	
Multilevel, multitarget interventions are useful.	The target "client" can be a population, group, or person. The target mechanisms range across eco-social levels and are known to play a role in posttrauma resilience, recovery, adaptation, or growth. The primary target outcome for health professions and disciplines is health status (subjective and objective) of individuals, groups, and populations. The distal target outcome is posttrauma restoration of pretrauma level of individual, group, or social welfare, or, ideally, improvement as a function of learning and increased coherence or cohesion.	
Antecedents		
Trauma	An Event or series of events Experienced by an individual as harmful or life threatening that has lasting negative Effects (SAMHSA, 2017).	
Four eco-social levels and targets for interventions to apply to population, group, or person		
Societal	Identity	Leverage strengths of socio-political standpoint, survivor status, positive sense of self and belonging, and connection to the larger world.
Community/organizational	Safety	Facilitate freedom or security from immediate danger and harm from self or others.
Interpersonal	Relationship	Confirm or broker ties to at least one person for attachment, alliance, or immediate care.
Individual	Self-regulation	Promote action to bring basic somatic and emotional responses to traumatic stress into homeostatic ranges where well-being can be experienced for greater periods of time.
Outcomes—Resilience, recovery, positive adaptation to traumatic stress, posttraumatic growth		
Proximal outcome: health status	Subjective well-being, willing to care for others, not care-seeking. Objective physiologic stability, physical integrity, able to care for others, not needing services.	
Distal outcome: individual life attainments or social welfare	Meeting, maintaining, or re-establishing the eight positive life outcomes outlined in Abram et al., 2017, that is, educational attainment, gainful activity, desistance from criminal activity, interpersonal functioning, parenting responsibilities, residential independence, mental health, abstaining from substance use.	

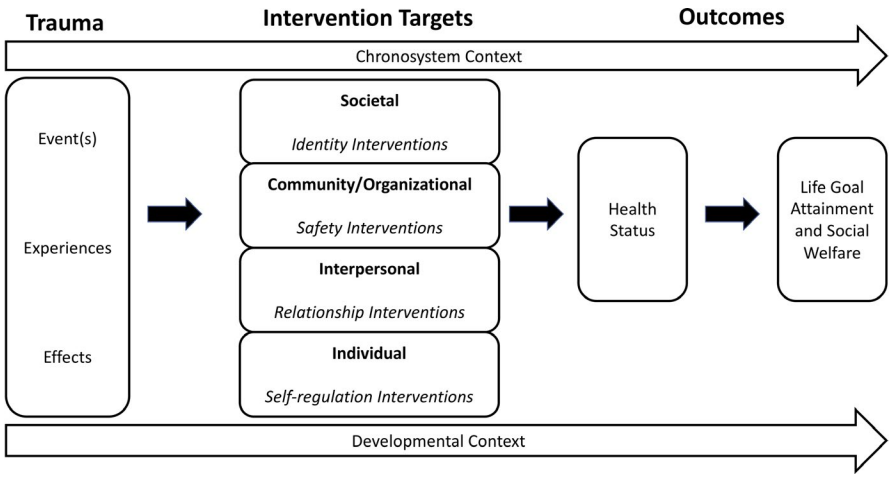

FIGURE 1 The Eco-Social Trauma Intervention Model

3.4 | Stating propositions

We use a very simple set of propositions that can underpin both design of interventions and outcomes research (Figure 1). Simply stated, intervention is an intermediary factor between trauma and health status and, ultimately, individual life attainment and social welfare. The assumptions related to historical and developmental context will suggest design features and covariates to consider. Leveraging multilevel interventions will likely entail interprofessional and cross-system collaborations, social network engagement, and individual activation. Despite the simple framing, capturing the impact of synergies from intervening at multiple levels will likely require statistical techniques for complex analyses.

3.5 | Illustrating with case examples

In theory explication, case examples serve to anchor abstractions in the concrete. We offer two sets of examples. We illustrate interventions to redress different types of exposures across individual, group, and population clients (Table 2). Case 1 reflects a focus on an individual traumatic exposure, but reflects how interventions can be developed that support recovery for the individual and a collective community of students with similar traumatic experiences. In contrast, Case 2 focuses on a shared traumatic event with example levels of intervention that target recovery for the individual as well as the community as a whole.

4 | DISCUSSION

The Eco-Social Trauma Intervention Model offers a framework for structuring interventions that promote recovery from trauma for individuals, groups, and populations and for organizing evaluation and research on these interventions. At first glance, the simplicity of the theory belies the complex nature of trauma and its sequelae. However, this theory of change recognizes that trauma disrupts developmental tasks, social interactions, and identity, as well as self-regulation. It encourages a structured yet adaptable, multilevel approach to aiding those who are suffering from the effects of trauma. The usefulness of a transdisciplinary theory is to provide a unifying view. Within this very basic model, each subfield can enrich the model with details from its own lens to guide work at more detailed levels. Our goal was to offer a single theoretical framework that is built upon commonalities across fields.

This theory was developed by scholars whose work supports the practice of nursing, but is intended for use across disciplines, with the potential for interprofessional use that is often essential in treating trauma exposures. Thus, the decision to use the term "intervention" rather than "care" was intentional. The term "care" reflects delivery of service that is highly individualized. Trauma is a phenomenon that can over-tax systems of individual care, and thus Public Health Nursing, with a focus on population health, is well positioned to utilize this Eco-Social Trauma Intervention model. Interventions are provided in protocol or manualized form—often based on exposure rather than diagnosis, with attention to creating an evidence base and dissemination for broad, efficient, and effective use. Focusing on scalable

TABLE 2 Case illustrations of interventions organized by the theory of change

Case 1: Student survivors of campus sexual violence (individual intervention)	
Trauma	Date rape (often following childhood abuse or neglect).
Intervention: A coordinated student services response to disclosure of assault or harassment	
Societal level: Identity	Organize a "Take Back the Night" event that brings survivors and their allies together to interact and develop a sense of community.
Community/organizational level: Safety	Provide a service that helps victim/survivor move quickly through the process of getting housing and class schedules free of contact with the perpetrator and academic accommodations.
Interpersonal Level: Positive relationship	Facilitate peer-to-peer support, matching gender identity, and sexual orientation, especially for victims pursuing college/legal consequences for the perpetrator.
Individual level: Self-regulation	Schedule tandem weekly visits with student counseling and health service staff to promote return to mental and physical baseline after acute trauma response.
Target for health status	Subjective: Feeling energized to perform school and social roles. Objective: Able to concentrate, able to attend classes, prophylaxis/treatment of sexually transmitted infections, sleeping, eating, positive emotional regulation.
Target for social welfare	Completion of the student's degree and resumption of emerging adult trajectory on all eight life outcomes; aggregate statistics to show increase in prosecutions and decrease in campus rape and harassment (decreased criminal activity).
Case 2: Natural disaster on a Caribbean island (community intervention)	
Trauma	A devastating hurricane.
Intervention: A preplanned social marketing + emergency first-aid campaign in disaster relief package	
Identity	Organize a social marketing campaign designed to promote resilience and collective efficacy in local communities.
Safety	Provide emergency medical relief, shelter, access to food and safe drinking water, and clothing.
Positive relationship	Facilitate volunteer groups to provide outreach to most vulnerable subgroups and individuals.
Self-regulation	Schedule mental health first aid clinics/appointments via emergency relief personnel to process the immediate aftermath of the disaster.
Target for health status	Subjective: Feeling able to positively cope with disaster-related trauma. Objective: Able to access necessary medications, able to access food, able to access safe drinking water, sleeping, treatment of acute injuries, control of communicable disease.
Target for social welfare	Return to trajectory of educational and professional attainment and daily routine.

interventions, and saving individual treatment for severely affected individuals are vital to advance population health. Large proportions of populations are adversely affected by trauma—in isolation, at times, but often as part of a family, community, or identity group. When primary prevention of trauma fails, secondary prevention designed to respond to the exposure is likely to be more efficient than awaiting onset of disorder and provision of individual treatment.

There remains work to be done to operationalize this theory. Likely, this conceptualization is consistent with the work that practitioners in the field are already doing. They may be able to harmonize particular, discipline-specific frameworks using this theory of change. Measures may also be able to be chosen that can become a rapidly deployed suite of instruments consistent with the components. In addition, while this article did not address education, this model offers a framework for training health and service providers across professions and from a variety of educational entry points. Our intent is that the Eco-Social Trauma Intervention Model provides the foundation upon which multilevel approaches should be developed to address the needs of patients, clients, and populations that are exposed to traumatic events.

5 | CONCLUSION

The Eco-Social Trauma Intervention Model offers a common starting point and language for developing and testing trauma-informed interventions. By sharing language and structure, we will enhance interprofessional and transdisciplinary work in a domain where our concerted expertize is needed. Given the growing understanding of the impact of complex trauma and traumatic stress on health and social well-being across the life span, there is an increased and urgent need to develop evidence-based interventions that promote healing not just for the individual, but for communities and populations that may share a need for recovery from a common trauma experience. Addressing trauma and traumatic stress across health disciplines has the potential to reduce the burden of toxic stress across the life course and around the world.

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