

**From Zero to Thrive: A Model of Cross-System and Cross-Sector Relational Health to Promote Early Childhood Development across the Child-Serving Ecosystem**

Alison L. Miller,<sup>1</sup> Sara F. Stein,<sup>1,2</sup> Rebecca Sokol,<sup>3</sup> Rachel Varisco,<sup>1</sup> Phoebe Trout,<sup>1,4</sup> Megan M. Julian,<sup>5</sup> Julie Ribauda,<sup>2</sup> Joshua Kay,<sup>6</sup> Natasha V. Pilkauskas,<sup>4</sup> Nicole Gardner-Neblett,<sup>7</sup> Todd I. Herrenkohl,<sup>2</sup> Kara Zivin,<sup>1,5,8</sup> Maria Muzik,<sup>5,8</sup> Katherine L. Rosenblum,<sup>5,8</sup>

<sup>1</sup>School of Public Health, University of Michigan, Ann Arbor, MI

<sup>2</sup>School of Social Work, University of Michigan, Ann Arbor, MI

<sup>3</sup>School of Social Work, Wayne State University, Detroit, MI

<sup>4</sup>Ford School of Public Policy, University of Michigan, Ann Arbor, MI

<sup>5</sup>Department of Psychiatry, Michigan Medicine, University of Michigan, Ann Arbor, MI

<sup>6</sup>University of Michigan Law School, Ann Arbor, MI

<sup>7</sup>Department of Psychology, University of Michigan, Ann Arbor, MI

<sup>8</sup>Department of Obstetrics and Gynecology, Michigan Medicine, University of Michigan, Ann Arbor, MI

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### **Correspondence**

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Correspondence concerning this article should be addressed to Alison L. Miller, PhD, School of Public Health, University of Michigan, 3718 SPH I, 1415 Washington Heights, Ann Arbor, MI 48109-1106, Phone: (734) 615-7459, Email: [alimill@umich.edu](mailto:alimill@umich.edu)

Abstract

Early relational health between caregivers and children is foundational for child health and well-being. Children and caregivers are also embedded within multiple systems and sectors, or a “child-serving ecosystem”, that shapes child development. Although the COVID-19 pandemic has made this embeddedness abundantly clear, systems remain siloed and lack coordination. Fostering relational health amongst layers of this ecosystem may be a way to systematically support young children and families who are facing adversity. We integrate theory, examples, and empirical findings to develop a conceptual model informed by infant mental health and public health frameworks that illustrates how relational health across the child-serving ecosystem may promote child health and well-being at a population level. Our model articulates what relational health looks like across levels of this ecosystem from primary caregiver-child relationships, to secondary relationships between caregivers and child-serving systems, to tertiary relationships among systems that shape child outcomes directly and indirectly. We posit that positive relational health across levels is critical for promoting child health and well-being broadly. We provide examples of evidence-based approaches that address primary, secondary, and tertiary relational health, and suggest ways to promote relational health through cross-sector training and psychoeducation in the science of early development. This model conceptualizes relational health across the child-serving ecosystem and can serve as a template for promoting child health and well-being in the context of adversity.

Childhood adversity and trauma represent urgent public health issues because of their high prevalence both in the United States (US; (Shonkoff, Boyce, & McEwen, 2009) and globally (Gilbert et al., 2012; Stoltenborgh, Bakermans-Kranenburg, van Ijzendoorn, & Alink, 2013). Associated negative physical and mental health outcomes can underlie lifelong health inequities (Shonkoff et al., 2009) and thus are important developmental determinants of adult health (Halfon & Hochstein, 2002). In this paper, we identify structural challenges and opportunities in addressing childhood adversity and trauma, with a focus on harnessing wisdom from the fields of infant mental health (IMH), the science of early development, and life course health development (LCHD) to propose a model of the connections among social sectors and systems that shape child health and well-being outcomes. We consider how the model could help promote child health and well-being at a population level, meaning the health and well-being of all children in society (Kindig & Stoddart, 2003).

To apply IMH, science of early development, and LCHD concepts on a broad scale, we incorporate public health perspectives that articulate how social determinants of health—such as poverty or racism—can affect population-level outcomes (Dean, Williams, & Fenton, 2013; DeSalvo et al., 2017) and that describe how cross-sector, systems-level connections can promote societal health and well-being (DeSalvo et al., 2017). Here, we define *sector* as a broad subdivision of society addressing a type of social, economic, or political need; for example, the education sector. We define *systems* as interacting entities and processes that share organizing principles and are embedded within sectors that focus on a specific set of needs for a population (e.g., a school district is a system within the education sector). Engaging systems across sectors (e.g., health, housing, education) is essential for promoting the health and well-being of young children (DeSalvo et al., 2017). We specifically consider the complexity and interconnectedness of many systems—such as systems within the educational sector (e.g., early childhood education centers) or food sector (e.g.,

local food banks)—that shape the lives of young children. We apply concepts from IMH and the science of early development to illustrate how to model connections across systems and sectors to foster well-being for children on a population level, particularly children facing adversity (Harries & O’Donnell, 2019; Miles, Espiritu, Horen, Sebian, & Waetzig, 2010).

Decades of research on the science of early development (Shonkoff & Phillips, 2000) suggests that experiences of adversity and trauma, including poverty and associated material hardships, have the most damaging impacts early in development as they can disrupt foundational processes such as brain development (Brito & Noble, 2014; Engel & Gunnar, 2020) and biological stress regulation capacity (Johnson, Riis, & Noble, 2016; Loman & Gunnar, 2010) that evolve rapidly during early childhood. Some responses to stress—hypervigilance to threat, for example—may be adaptive for coping in the moment, but over time can take a toll on the body’s immune functioning and cardiovascular health (Pakulak, Stevens, & Neville, 2018). LCHD models further suggest that when such disruptions become embedded in the organism during this sensitive period, they can have costly and negative long-lasting impacts on adult functioning, health, and productivity (Halfon & Hochstein, 2002). Such models inform some public health efforts to enhance child health; for example, those that seek to connect pediatric care and early childhood education systems to promote a healthy adult population (DeSalvo et al., 2017; Halfon, Wise, & Forrest, 2014). The current paper extends these ideas by applying the key concept of “relational health”—or positive and nurturing relationships that advance health, wellbeing, and resilience—to the broad systems that shape early childhood development and well-being across levels of the social-ecological contexts in which children and families exist (Bronfenbrenner, 1979), and by suggesting ways to enhance relational health across these levels.

One in five US children under age five years grow up poor or near-poor (Pac, Nam, Waldfogel, & Wimer, 2017), a higher rate than many other developed countries (Gilbert et al., 2012), and 10-36% experience violence and maltreatment (Finkelhor, Turner, Shattuck, & Hamby, 2013). Exposure to both poverty (Pac et al., 2017) and violence is higher among children of color (Koenen, Roberts, Stone, & Dunn, 2010). The COVID-19 pandemic has exacerbated children's risk for exposure to trauma globally including the loss of primary caregivers (Hillis et al., 2021), increased family violence and limited supports (Usher, Bhullar, Durkin, Gyamfi, & Jackson, 2020), and economic and psychological stress (Wang et al., 2020). As later remediation is difficult and costly, preventing trauma and mitigating its impact during early development are urgent priorities for long-term health and well-being in children. Indeed, doing so could also ultimately improve long-term public health by impacting not only the lives of the many children who have experienced such adversities but also intergenerationally, as these children become adults and begin their own childrearing journeys (Bowers & Yehuda, 2016).

### **Goals of Paper**

The goals of the current paper were therefore twofold. First, we sought to develop a model for addressing child health and well-being at a population level using key concepts from IMH and the science of early development, such as relational health, that could be integrated with theoretical frameworks focused on broader social-contextual factors. Second, based on this model, we sought to identify strategies to promote child health and well-being in sectors and systems that do not primarily focus on children, but that often impact young children and families directly (e.g., early childhood education) or indirectly (e.g., correctional systems).

### **Approach**

We first integrated different theoretical perspectives to develop our conceptual model of multi-level relational health. Specifically, we drew on perspectives from IMH (Weatherston & Ribaud, 2020), which gives primacy to early relationships, particularly that between child and caregiver, as foundational for healthy child development (Sroufe, 2016); Ecological Systems Theory (Bronfenbrenner, 1979), which specifies the multiple, nested levels of social-contextual influences shaping children's lives; the broad science of early development literature that articulates mechanisms by which such influences get under the skin to shape child development (Shonkoff et al., 2009; Shonkoff & Phillips, 2000); and the LCHD framework, which considers how early adversities can become embedded and impact adult health, with population-level public health implications (Halfon & Hochstein, 2002). We applied these theoretical perspectives to develop a model for cross-system, cross-sector collaboration. We identified and present examples of programs that address relational health to illustrate how relational health applies across each level of the social-ecological model. These programs provide real-world examples of collaborations that support early childhood development across different sectors and include community-based clinical services, pediatric screening for social-contextual risks, and a translational network of interdisciplinary university partners informing policy decisions.

We next considered recommendations from the inter-professional education literature (Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011; Schelbe, Wilson, Fickler, Williams-Mbengue, & Klika, 2020) to identify opportunities for promoting relational health across the child-serving ecosystem. We describe strategies and opportunities for cross-sector developmentally-informed psychoeducation that use novel approaches to engage learners and integrate principles of IMH, such as space for reflection, for both child-serving and indirectly-child-serving professions (see Figure 1). Such approaches may enhance cross-system investment in services and effective cooperation to

prevent adversity and address the effects of early-life exposure to trauma, thus fostering positive child health and well-being.

This model of multi-level relational health, combined with suggestions for cross-sector education and training in the science of early development, represents a novel way to promote child health and well-being at a population level by infusing these perspectives in contexts where they are not yet well-recognized. For example, although there have been recent calls in the public health sector to integrate families as a “cornerstone”, families are rarely centered in public health efforts, which often focus on health indicator surveillance and/or behavior change either at a broader environmental or individual level (Weiss-Laxer, Crandall, Hughes, & Riley, 2020). Yet, for young children, health is shaped through family environments and early relationships (Weatherston & Ribaldo, 2020). Families with young children are therefore an essential voice that should be placed at the center of efforts to promote the health of young children. Greater awareness of IMH and science of early development principles could prompt public health efforts to center families by including parent perspectives and engaging parents as partners in identifying child health priorities. The current paper seeks to move the field forward to equitably promote positive developmental outcomes for young children and mitigate the impact of adversity on child health. This model is therefore intended for all practitioners who work across sectors and systems that serve families with young children both directly and indirectly, to highlight the importance of relational health across all different levels of our social systems.

### **Addressing Impacts of Early-Life Adversity: Structural Challenges and Opportunities**

Ecological Systems Theory (Bronfenbrenner, 1979) details layers of the social systems or environments in which children are embedded. Science of early development (Shonkoff et al., 2009; Shonkoff & Phillips, 2000) and LCHD frameworks (Halfon & Hochstein, 2002) further specify the

mechanisms by which early-life influences can shape long-term health and well-being. An ecological system, or ecosystem, includes socially organized subsystems nested within each other, with the individual at the center. To model human development, one must consider the entire ecosystem. Children are nested within hierarchically layered social structures, or the “child-serving ecosystem”, whose impacts funnel down, most often through caregivers, to shape children’s health and well-being (see Figure 1). Key actors in the child-serving ecosystem include primary caregiver/s and direct and indirect child-serving persons and systems (Figure 1). As each of these direct and indirect influences can impact child development, each one also represents an opportunity for intervention to promote child well-being. For example, when young children witness their parents being arrested, they may experience trauma and mental health challenges related to the event (Roberts et al., 2014). It has been suggested that correctional officers who are called to scenes where young children are present may benefit from better understanding child development to inform their actions and reduce the likelihood of increased trauma to the child (Kurs, Peterson, Cramer, Fontaine, & Center, 2015).

The child-serving ecosystem also exists within a broader sociocultural context of social determinants of health (SDOHs), including racial bias and racism, that can manifest (directly and indirectly) across child-serving systems and persons (Fluke, Yuan, Hedderson, & Curtis, 2003; Reskin, 2012). Some recent efforts in early childhood education have called attention to implicit race bias, for example, given excessive rates of preschool expulsions of children of color (Neitzel, 2018). Thus, it is also critical to situate this model within these larger structural factors, which are often the focus of public health-informed approaches that seek to address inequities in health at a population level (Satcher, 2010), and are increasingly recognized as impacting health and well-being early in the lifespan (Crear-Perry et al., 2021; Moore, McDonald, Carlon, & O'Rourke, 2015).



[Insert Figure 1 here]

Although most families with young children engage with some of the systems illustrated in Figure 1 (e.g., childcare), families facing adversity often interact with a multitude of these systems to meet basic needs (Pac et al., 2017). Researchers have recognized difficulties in coordinating services across systems and sectors (Mattessich & Rausch, 2014). The COVID-19 pandemic has made these challenges more urgent, and the implications of systems not meeting these needs for child health and well-being have become more evident. For example, school systems faced nutrition policy restrictions when trying to address children’s food needs during the pandemic, creating barriers to effective implementation (Dunn, Kenney, Fleischhacker, & Bleich, 2020). Although programs to address basic needs may exist, systems offering such programs are not designed to function together, they communicate infrequently or ineffectively, and sectors may even work at cross-purposes (Campbell, Wuthrich, & Norlin, 2020; Herrenkohl, Mersky, & Topitzes, 2019). In this regard, it is possible to conceptualize the ineffective coordination and limited integration as a *lack of relational health* (Metzler, 2020) among and between layers of the child-serving ecosystem. Furthermore, not meeting the needs of young children in a timely fashion to limit the impacts of exposure of adversities on development may reflect perspectives or priorities that are not *developmentally informed*, meaning that they fail to integrate science of early development and LCHD frameworks.

### **Need for Relationally and Developmentally Informed Systems and Sectors**

We use the wisdom of the field of IMH and the science of early relationships regarding the foundational importance of relational health (Weatherston & Ribaud, 2020) to highlight the need for cross-system, cross-sector relational health. Even within systems, service coordination often relies on extraordinary efforts of individual workers despite suboptimal working conditions and

compensation (Harries & O'Donnell, 2019; Krystal & McNeil, 2020). The onus of services coordination thus frequently falls on the caregiver/s seeking support (Lawless, Coveney, & MacDougall, 2014), Seeking services and coordinating across systems can be a time-consuming and demanding effort under the best of circumstances, and associated stressors can “pile up” over time both for families and providers. These individuals may benefit from reflective spaces to support the processing of these challenging realities. Families may not engage in services for varied reasons, including individual (e.g., emotional overwhelm, substance abuse, mental health issues) and broader social context factors (e.g., welfare stigma, cultural insensitivity and racial bias, social isolation), as well as practical barriers (e.g., time scarcity, housing instability, unpredictable schedules, unreliable transportation, system complexity; (Ingoldsby, 2010; Kemp, Marcenko, Hoagwood, & Vesneski, 2009; Ofonedu, Belcher, Budhathoki, & Gross, 2017)).

The COVID-19 pandemic exacerbated such issues as families faced unique home isolation challenges. Family capacity to cope with pandemic-related restrictions varied immensely, shaped by the social structures in which families exist. For example, parents who served as “essential workers” (e.g., grocery store employees) may have had limited control over work schedules and insufficient technology and/or time to access services, supervise online schooling, or provide childcare. Although these issues have existed for decades and are recognized by IMH providers (Weatherston & Ribaud, 2020), the COVID-19 pandemic underscored how systems across sectors (e.g., housing, public health) indirectly affect child and family welfare and brought unprecedented societal and public health urgency to the need to coordinate and organize systems to effectively support families with young children (Herrenkohl, Scott, Higgins, Klika, & Lonne, 2020; Yaeger, Kaczorowski, & Brophy, 2020). As new models of service provision have emerged out of necessity, we face a timely opportunity to consider how to integrate developmentally and relationally informed perspectives into such models, including into systems that rarely interface directly with children.

Despite increased attention to the needs of young children, relatively few professionals in sectors that serve young children and families directly or indirectly have training in the science of early development or LCHD frameworks (Garner, Forkey, & Szilagyi, 2015). For example, despite growing interest in trauma-informed care, which considers how trauma affects development, trauma-informed approaches are primarily implemented by persons within direct child-serving systems (e.g. teachers, pediatricians, social workers (Herrenkohl et al., 2019)). Recently, efforts within health care and public health sectors have highlighted the need to address child trauma exposure and SDOH's, yet not all providers have such training (Garg, Byhoff, & Wexler, 2020; Garner et al., 2015; Herrenkohl et al., 2020; Sokol et al., 2019). Although not all members of the child-serving ecosystem can become trauma-informed care providers or IMH specialists, knowledge regarding the science of early development may be important in informing decision-making across sectors that directly or indirectly impact children and families. Insights regarding the importance of relational health can shape relationally-informed models to coordinate systems across sectors to mitigate impacts of adversity and trauma on children and reduce the burden of responsibility on individual caregivers and service providers. *Taken together, conceptualizing both direct and indirect child-serving systems as part of an overall child-serving ecosystem and applying insights from these frameworks can lay the groundwork for promoting the health and well-being of children at a population level.*

### **A Developmentally- and Relationally-Informed Model for Cross-System and Cross-Sector Collaboration**

Our model illustrates how IMH and science of early development perspectives can inform coordinated efforts to address the effects of exposure to adversity and trauma during early childhood. A key tenet of these perspectives is the importance of relational health (Weatherston &

Ribaudo, 2020), specifically that the primary caregiver/s-child relationship (the primary relationship; Figure 2) represents the central context for child development (Metzler, 2020). Yet, these models do not explicitly center the broader social forces that indirectly impact child health starting in early life by shaping the health of this primary relationship (Garner et al., 2015). Our model provides a framework for understanding not only the importance of the primary relationship/s between a young child and caregiver/s for long-term child outcomes (a focus of IMH and science of early development models (Shonkoff et al., 2009; Weatherston & Ribaudo, 2020), but also the importance of supporting parents and the relationships between parents and providers within systems (also a focus of many IMH practices and labeled here as secondary relationships; Figure 2) as well as the relationships between individuals/providers across different (indirect and direct) child-serving systems and sectors (labeled as tertiary relationships; Figure 2), all in the service of supporting long-term health and well-being of children. Thus, this conceptual model is an extension of the IMH and science of early development perspectives that address the relationships among the embedded layers of the child-serving ecosystem and the direct and indirect effects of these layers on children. It is explicitly situated in Ecological Systems Theory by including macrosystem factors (Bronfenbrenner, 1979) and highlights how the health of *relationships between people within layers and between layers of the ecosystem* jointly shape children's long-term health and well-being. We review below the implications of the health of the primary, secondary, and tertiary relationships for child health and well-being, and provide examples of exemplar programs that focus on promoting relational health within each of these relationship levels.

[Insert Figure 2 here]

**The Primary Relationship: Child-Caregiver Relational Health.** The caregiving (primary) relationship/s is the most formative context for early childhood development (Gorski, 2011; Sroufe,

2016). Caregiver-child relational health is predicated on the caregiver/s serving as a secure base from which the child experiences a sense of safety and can explore, as well as a soothing place to return and receive comfort (Sroufe, 2016). Across repeated, everyday interactions over time, early relational health provides children a trusted context for learning and exploring, as well as a reliable place to receive help. Early relationships also serve as a template shaping future relationships with others (Gorski, 2011; Sroufe, 2016). Positive childhood relationship experiences are associated with less depression and more supportive adult relationships and are especially important in buffering the negative consequences of adversity and trauma (Bethell, Jones, Gombojav, Linkenbach, & Sege, 2019). Relational health has been associated with positive social-emotional functioning (Ludy-Dobson & Perry, 2010) as well as better cognitive (Hambrick et al., 2019) and physical health outcomes in childhood, including obesity risk (Anderson & Keim, 2016) and sleep (Bordeleau, Bernier, & Carrier, 2012). As such, caregiver-child relationship-focused interventions have received increased attention as a way to promote child health (Frosch, Schoppe-Sullivan, & O'Banion, 2019; Marsh et al., 2019; Sege & Harper Browne, 2017).

**Supporting the Primary Relationship: Mom Power.** Mom Power, one of a suite of “Strong Roots” programs (<https://zerotothrive.org/strong-roots-programs/>), is one example of a program working on the primary relationship. This program is a multifamily, trauma-informed group intervention designed to strengthen relational health among mothers facing adversities and their young children (K. Rosenblum et al., 2018; K. L. Rosenblum et al., 2017). Mom Power is an evidence-based intervention that, aligned with the Strengthening Families protective factors framework, uses an attachment-based framework to support children through enhancing parents’ mental health, sensitivity, and nurturing parenting (i.e., the primary relationship). Women receive experientially-based psychoeducation on the science of early development, specifically early relational health. While mothers attend group sessions, children are paired with a caregiver (sometimes community

volunteers, but often students training to be psychotherapists, early childhood education teachers, or nurses) for child-led play; this arm of the intervention addresses the child's attachment system and capacity to accurately signal attachment-related needs. Mothers also receive interactive support and coaching from group leaders during in-vivo dyadic interactions with their children during times of separation and reunion to further parental understanding and experience of aspects of relational health in the primary relationship. Together, these two arms of the intervention support the relational health of the dyad for the child's health and well-being. Conceptualized as a brief "introductory" program for relational health, Mom Power also seeks to be just the first step for families and ultimately a warm hand-off to services in the community that fit identified needs, to establish individually-tailored networks of comprehensive community supports. In this way, Mom Power also begins to address the next relational layer in the child-serving ecosystem: the relationship between caregivers and child-serving systems, or the secondary relationship (see Figure 2), which in turn, can ensure long-term support for the primary relationship.

**The Secondary Relationship: Caregivers' Well-being and their Relationships with Child-Serving System Providers.** The IMH field has pioneered the importance of considering not only the needs and well-being of the child but also the primary caregiver/s whose needs are often overlooked or dismissed (Weatherston & Ribaud, 2020). When caregivers' needs are met, they are better able to foster optimal relational health with their child (Frosch et al., 2019; Lawless et al., 2014; Masarik & Conger, 2017). Support for caregiver needs can come through caregivers' own relationships, as well as larger social systems (see Figure 1). The health of the relationship between these systems and caregivers (the secondary relationship; see Figure 2) can impact the child directly and indirectly (Lawless et al., 2014). For example, if a caregiver cannot obtain childcare in order to work, caregiver stress may affect how well the caregiver can support the child (Masarik & Conger, 2017). If parents who have experienced trauma cannot obtain needed mental health care, their struggles may lead to

less sensitive and responsive caregiving, negatively affecting the child via the primary relationship.

The health of the secondary relationship is especially important for caregivers of very young children, as they tend to experience higher poverty rates and mental health challenges (Mistry, Stevens, Sareen, Vogli, & Halfon, 2007) and face needs unique to their children's developmental stages, for example affordable high-quality childcare. Relational health between primary caregivers and direct child-serving providers (e.g. pediatricians, teachers) is critical for early development, as trusting and respectful relationships among caregivers and child-serving providers can facilitate clear, proactive communication around child needs (Frosch et al., 2019). Attending to relational health between caregivers and indirect child-serving providers to meet a caregiver's needs may therefore facilitate the health of the primary relationship and ultimately, the child.

**Supporting the Secondary Relationship: Well Child Care, Evaluation, Community Resources, Advocacy, Referral, Education (WE CARE).** WE CARE (Garg et al., 2020; Garg, Toy, Tripodis, Silverstein, & Freeman, 2015) is an example that focuses on the relationship between parents and child-serving providers (the secondary relationship). WE CARE involves screening families for SDOHs at pediatric primary care clinics and using screening information to link families to community resources. WE CARE is a clinic-based SDOH screening and referral system developed for pediatric settings, and it has been implemented with parents of children ages zero to five years (Garg et al., 2015). SDOH screening and referral could occur in a variety of settings (e.g., daycares, workplaces) but pediatric settings are the most common to date (Sokol et al., 2019). WE CARE includes three core activities. First, practices identify local resources that address various needs (including two to four free community resources per social need) and develop resource referral information. Second, practices screen parents for unmet needs (e.g., childcare, homelessness risk, food security, household heat, electricity). Third, practices make referrals to and provide parents with information on the resources previously identified. To date, WE CARE has been the subject of

three RCTs in pediatric primary care settings, and researchers have demonstrated its ability to facilitate linkages between families and community resources (Garg et al., 2020; Garg et al., 2015). Specifically, researchers have found that parents who complete WE CARE are more likely to be enrolled in a new community resource one year later (Garg et al., 2015). This model has promise for widespread adoption—both within and outside of the clinical setting. Indeed, an ongoing study is currently testing the effectiveness, implementation, and sustainability of WE CARE in pediatric practices (1R01HD090191). Importantly, the effectiveness and sustainability of a program like WE CARE may be driven in part by awareness of appropriate referral resources, which largely depend on the next relational layer of the child-serving ecosystem: the relationships between the individuals within the clinic and the individuals within the community-based organizations, or the tertiary relationship (see Figure 2).

**The Tertiary Relationship: Relational Health Among Child-Serving Systems.** The implications of relational health between the systems shaping child health and well-being (the tertiary relationship; Figure 2) are often not considered. Yet, relational health among individuals across direct and indirect child-serving systems could facilitate caregiver capacity to meet their own and their children's needs. For example, relational health between stakeholders in the housing and education sectors could provide a foundation for managing future crises that require rapid cross-sector collaboration, such as the COVID-19 pandemic. As with healthy parent-child relationships, cross-system and cross-sector relationships that are characterized by trust, established connections, and clear communication infrastructures may allow for increased exploration and risk-taking, such as trying new creative solutions to coordinating care (Campbell et al., 2020). As families are embedded in multiple systems, they can be optimally supported if systems work together to provide care.



**Supporting the Tertiary Relationship: Zero to Thrive Translational Network.** The Zero to Thrive (Z2T) Translational Network is an example that addresses the tertiary relationship. The Translational Network includes interdisciplinary university faculty members and staff, each of whom conducts research, clinical, teaching, and/or advocacy work across various sectors on behalf of pregnant people, young children, and their families who face adversities such as poverty, community racism, and mental health concerns. The Translational Network connects providers, academics, policymakers, and families to address real-world problems and the needs of young children and their families. During the COVID-19 pandemic, community stakeholders across the child-serving ecosystem asked the Network to guide daycare reopening, how to talk to young children about the pandemic and social distancing, challenges of working at home with young children, and provide trainings for early care and education providers. Network members also gathered and shared materials for parents regarding how to discuss the Black Lives Matter protests, racism, and media coverage of community racial trauma with children (<https://zerotothrive.org/race-racism/>). Members ensured that all materials reflected the science of early development, for example daycare policies that addressed social-emotional as well as physical health of young children and caregivers and the relational health of the secondary and primary relationships as children transitioned back to daycare. Suggestions included maintaining open communication among providers and parents to ease parent stress about reopening (secondary relationship) and reminding caregivers how their stress could impact children while providing mitigation tips (primary relationship). Given existing strong relational health among Network members (tertiary relationship), the Z2T Translational Network was able to quickly develop and distribute these tailored resources with help from child-serving ecosystem partners (<https://zerotothrive.org/covid-19/>; <https://www.dptv.org/education/tools-for-hope/>). In addition to providing information grounded in IMH and science of early development principles, the Z2T Translational Network is seeking to change

how organizations coordinate to support families by providing experiential training in key concepts from IMH and the science of early development for professionals in sectors who do not typically receive such training (e.g., community-based organizations, family law clinics).

As an illustration of efforts to nurture relational health at the tertiary, cross-systems level, Z2T faculty have partnered with the Rhode Island Association for Infant Mental Health to support a multi-year initiative (the “Baby Leadership Learning Academy” or Baby LLC; Dickstein & Rosenblum, 2020), bringing together staff from across a wide range of child-serving systems (e.g., social service agencies, court systems, children’s museum, health care, early intervention, mental health, education, and others) to improve care for infants and young children and their families involved in the child welfare system. This support included delivering a series of light-touch, lunch-and-learn type trainings (“Strong Roots Encounters”) and more in-depth workshops (“Strong Roots Principles and Practices”) to diverse child serving systems and participating in the community-driven efforts to strengthen collaboration across these systems. For example, based on this initiative, interest was garnered in strengthening the co-parenting relationship between parents and caregivers supporting young children in foster care. An adaptation of the Mom Power program, called Strong Beginnings, was launched in response to this need, with involvement from multiple community partners to deliver a parenting program to support and encourage connection between foster parents or kin and biological parents, and, as the program was delivered and overseen by diverse child-serving programs, between child-serving systems. This initiative thus extended beyond simple delivery of psychoeducation to partnering with communities to translate best practices based on the science of early development to strengthen relational health at the primary (e.g., Strong Beginnings group to nurture parent-child relationships), secondary (e.g., support for relationship building between foster and kin parents and biological parents), and tertiary (e.g., Baby LLC) levels (Dickstein & Rosenblum, 2020).

We posit that collaborations characterized by positive relational health among stakeholders across systems and sectors (tertiary relationship) can meet families' needs more proactively at the provider level (secondary relationship), thereby promoting stronger relational health in the caregiver-child dyad (primary relationship), which ultimately should foster positive health outcomes and well-being for children, particularly those who have faced trauma and adversity. We next consider strategies for fostering relational health across these levels of the child-serving ecosystem.

### **Strategies for Creating Relational Health Across the Child-Serving Ecosystem**

Promoting relational health across the child-serving ecosystem could foster more effective cross-system and cross-sector collaborations that benefit children. Shared understanding underlies relational health. Integrating an understanding of the science of early development and the importance of relational health across direct and indirect child-serving sectors is therefore essential. This goal could be accomplished through education and training, specifically: 1) basic psychoeducation in the science of early development, IMH, and LHCD for individuals across the child-serving ecosystem to create shared knowledge regarding key influences on child development and their long-lasting impacts; and 2) shared inter-professional experiences for direct and indirect child-serving trainees and stakeholders across systems and sectors to develop collaborative child health advocates (Bridges et al., 2011; Dickstein & Rosenblum, 2020; Schelbe et al., 2020). Such training experiences should facilitate relational health across layers of the child-serving ecosystem, ultimately producing connections that can promote strategic changes, such as sharing data to inform cross-sector decision making (Campbell et al., 2020; Halfon & Hochstein, 2002; Halfon et al., 2014; Mattessich & Rausch, 2014; Schelbe et al., 2020). Although promoting relational health across the child-serving ecosystem ultimately requires structural solutions and supports, we suggest immediate

change can start from the “bottom-up.” We describe below how such approaches could be integrated across the child-serving ecosystem.

**Psychoeducation in the Science of Early Development.** Educating individuals across the child-serving ecosystem in key tenets underlying the science of early development, including the multi-level nature of influences on children and families, the lasting impacts of exposure to early adversities, and the power of early nurturing relationships to counteract long-term effects of adversity and trauma on children may build capacity for relational health across the primary, secondary, and tertiary relationships. For example, recognizing how young children respond to adversity and trauma, the importance of early relational health in the primary relationship, and how the impact of early adversity may emerge over time and/or become more apparent during developmental transitions such as puberty are fundamental to a science of early development perspective (Engel & Gunnar, 2020; Garner et al., 2015). We have summarized examples of programs focused on educating parents and caregivers about the important role they can play for children even in the context of adversity, which is a goal of Mom Power and the Strong Roots programs (Dickstein & Rosenblum, 2020; K. Rosenblum et al., 2018; K. L. Rosenblum et al., 2017). Educating providers about how parents need support so that they can be emotionally available for children may also promote the relational health of the secondary relationship by emphasizing how important providers are in supporting parents. Relatedly, programs like WE-CARE that focus on the secondary relationship may benefit from educating both pediatric and adult providers on the connections between SDOH and early brain development (Shonkoff et al., 2009; Shonkoff & Phillips, 2000). Engaging direct providers to advocate in their broader networks regarding the harmful impact of racism on child development has also been identified as an important workforce development goal in pediatrics and is an opportunity to increase shared understanding of how social determinants of health shape child development across the tertiary relationship (Trent, Dooley, & Dougé, 2019). For

example, raising awareness of how racial bias in systems that directly serve children and families can create inequities for children and families of color (Dettlaff & Boyd, 2020) across sectors may be effective in also starting conversations around this issue among providers who engage more indirectly with young children and families.

Although not all systems and sectors require the same level of intensity of psychoeducation, infusing appreciation of the science of early development across the greater child-serving ecosystem in this manner may help foster positive child outcomes at a population level over time. Considering the tertiary relationship in particular, promoting an understanding of the science of early development in sectors that indirectly shape child and family outcomes (see Figure 1) may be a powerful way to drive decision making that prioritizes the needs of young children and families. It is essential to develop appropriate methods that effectively engage key audiences in relevant sectors, however. For example, media-based vignettes and stories (e.g., whiteboard videos; short podcast episodes) coupled with testimonials could be used to educate police officers around child development science and the impacts of trauma, including the role of community trauma and racism on children (Trent et al., 2019). Another example could be community listening sessions (DeSalvo et al., 2017) with policymakers or landlords to highlight the importance of minimizing residential moves for families with young children, as stability and predictability are important aspects of early-life environments (Doan & Evans, 2020). In fact, a recent pilot project (Lax, Cohen, Mandavia, Morrin, & Avner, 2021) demonstrated the potential of the tertiary relationship across health care and housing sectors to improve children's housing conditions. In this project, pediatricians provided letters to landlords based on screening results of unsafe housing conditions (i.e., roaches, utilities, mold, lead) that advocated for the landlord to fix the conditions; children whose landlord received such a letter were more likely than children who did not receive the letter to have the requested housing changes implemented (Lax et al., 2021). Efforts to engage stakeholders in the housing sector could also

highlight that reduced tenant turnover may allow for improved relational health between landlord and lessee and ultimately greater dedication of the tenant to the rental property and potential adherence to payment schedules when possible. Centering the voices of families as a method to engage policymakers and other stakeholders is critical in all such efforts, particularly for individuals in sectors that do not work with young children, as this can create advocates for children and families in sectors that do not traditionally engage with child and family issues (Weiss-Laxer et al., 2020). Of note, a starting point for many of these efforts can be basic information provision, in order to establish shared language and trust among stakeholders.

**Cross-Sector Training.** Another strategy to promote relational health, particularly in secondary and tertiary relationships, is to establish cross-sector connections early in professional training (Schelbe et al., 2020). Trainees in direct child-serving sectors may learn about early childhood adversity/trauma and prevention in career-relevant settings, yet may not have the opportunity to understand how such processes are shaped by other systems that also impact the child, or how such systems interact. Trainees who deliver the Mom Power program have an opportunity to learn about some of these issues first-hand as the program is both delivered in community settings and aims to engage the secondary relationship through helping families access needed resources and supports. Similarly, the WE CARE model exposes direct care providers to broader systems in the context of SDOH screening. Training settings that model cross-system collaborations such as mental health consultation in preschool classrooms (Gleason, 2019) or community-based integrated care clinics that provide both parent job training and pediatric care (Duby, 2007) can also provide excellent opportunities for trainees to experience how such models work in practice. Yet, many trainees in fields such as pediatric medicine, nursing, and mental health care complete specialized coursework, practica, and internships in child development and deliver health care services primarily in direct child-serving settings. Trainees in other child-serving sectors

such as education may similarly learn about child development and educational resources that families may access to mitigate effects of trauma and adversity, but less about pediatric concerns.

It is challenging to learn how multiple systems work when isolated within a single system or sector, and key information may be “lost in translation” when working across systems (Campbell et al., 2020). Intentionally increasing exposure to and interaction with trainees across sectors during early career stages can increase familiarity with the myriad factors and systems that impact child well-being, and help trainees frame their current and future thinking about determinants of child health and well-being. Highlighting the value of cross-sector coordination during early-career training can allow trainees across fields to start building a shared language and relationships that may reduce barriers to their later collaboration and coordination (Schelbe et al., 2020). Strategies may include developing opportunities to engage in case examples that illustrate the impacts of different sectors on the well-being of young children and co-creating educational products, tools, infographics, or techniques that can be tailored and shared both within and across different sectors. Networks such as Z2T that engage community members, researchers, clinicians, and professionals across sectors can provide important opportunities for such interaction across career stages. For example, the Z2T Translational Network has hosted Rapid Response Talks in response to child health crises (e.g., detention of children at the US border) that engage a range of stakeholders and intentionally provide space for reflection, including the opportunity to process the issue with colleagues who bring different viewpoints. Over time, such activities can result in cohorts of developmentally-informed professionals who can conduct research, serve, and advocate for children within and across sectors; relationships forged between individuals during training experiences can be powerful and long-lasting.

Finally, encouraging trainees to consider the impact of what they see, hear, and experience in their interactions with families or systems that affect families, how it affects them, and how to manage some of the challenging feelings may further enhance each of the above training strategies. Allowing space to reflect in this manner can help reduce practitioner burnout (Shea, 2020) and compassion fatigue among clinicians and community-based workers alike (Cocker & Joss, 2016) in addition to enhancing understanding and empathy (Watson, 2012). IMH practitioners describe this process as reflective practice, often cultivated through reflective supervision (Weatherston & Ribaud, 2020). Though implementing reflective supervision across the child-serving ecosystem is not workable given time, priorities, and budget constraints, cross-disciplinary training opportunities can foster awareness of reflective practice early on and emphasize the importance of trainees carrying these principles and practices forward throughout their careers.

## Conclusions

In conclusion, we posit that extending IMH-based wisdom to inform cross-sector psychoeducation and training in the science of early development, including a focus on relational health and the effects of exposure to early life adversity, has the potential to improve child health and well-being at a population level by promoting an understanding of the importance of early experience and developmental determinants of health. We suggest that conceptualizing relational health at a systems-level provides a model for how to develop trusting relationships at the primary (caregiver-child), secondary (caregiver-systems), and tertiary (across systems) levels, resulting in more closely connected and effective systems and sectors, support for caregivers, and better caregiver-child relationships that promote child health and well-being on a broad scale. Pursuing such goals will support the families raising children while facing adversities and promote equity and healthy development for all children. COVID-19 has highlighted key gaps in meeting the needs of



young children (Bauer et al., 2021) and exacerbated existing societal fissures, particularly in the United States where the safety net for young children remains fragmented and inequities are vast compared to other countries (Moffitt & Ziliak, 2020). Globally, we need policy-level changes and funding to address these gaps and effective cross-sector collaborations given limited resources. Although the challenges in encouraging institutions to think about relational health and child development are immense given siloed structures, constrained funding mechanisms, and political priorities, embracing this challenge is vital to promote child health and well-being and, over time, population health.

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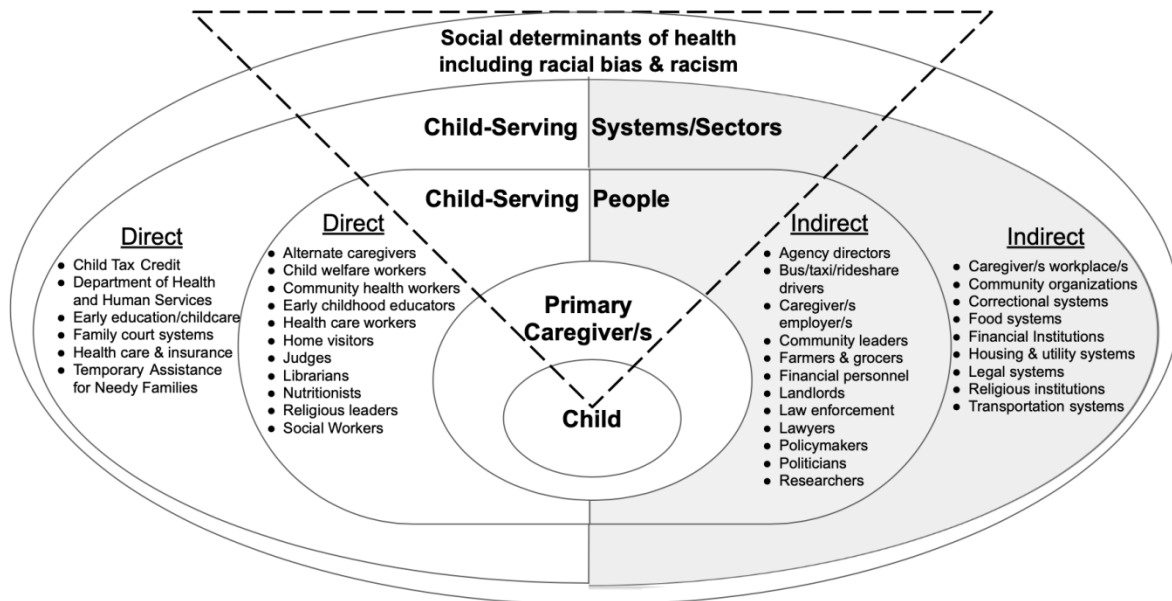
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Figure 1.

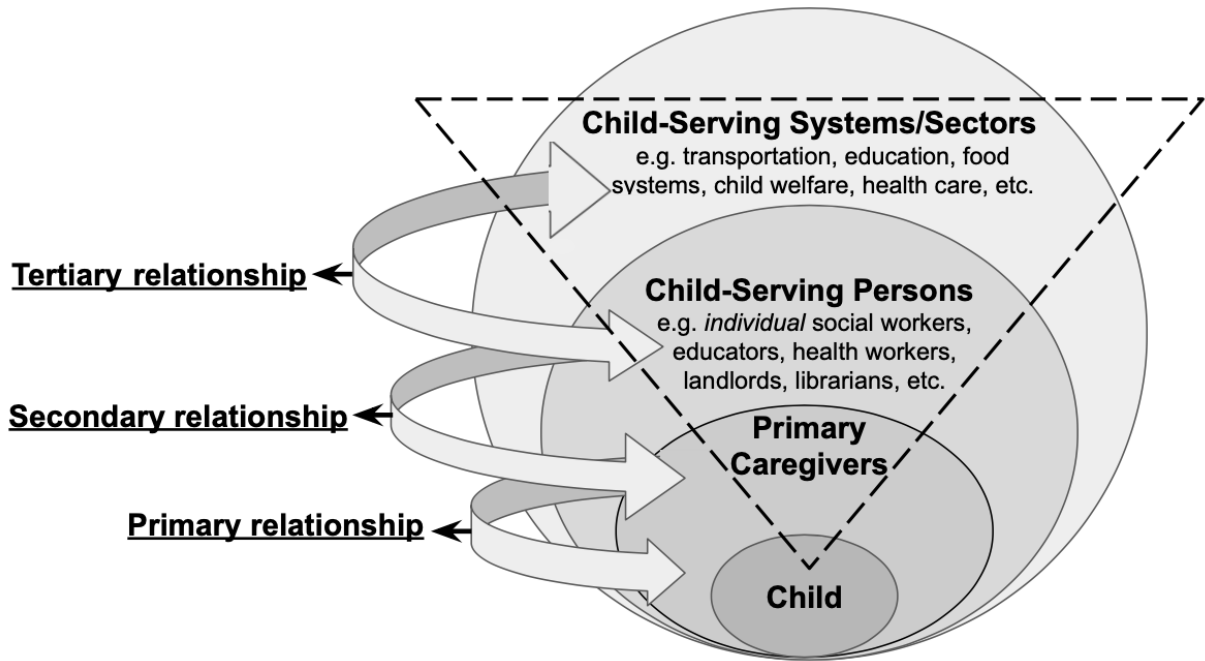
The Child-Serving Ecosystem



Author M

Figure 2.

Conceptual Model



Author M: