ACADEMIA MEDICINE

Research Article
Published: 2024-07-19
https://doi.org/10.20935/AcadMed6252

Interpersonal, not existential, adversities predict postwar deterioration in youth social support

Kelly E. Dixon[1,*], Christopher M. Layne[1,2], Kimberly S. Ho Misiaszek[3], Chloe Golden[2]

Academic Editor: Luca Ansaloni

Abstract

Social support is a robust predictor of posttraumatic outcomes in diverse populations. Nevertheless, questions remain whether perceived social support is better conceptualized as the outgrowth of early attachment relationships that create capacities for interpersonal connection across development, or alternatively, as a more proximal, transactional, and dynamic interpersonal process that evolves under the influence of both prior and present life experiences. As applied to war-exposed youth, these unanswered questions impede efforts to build theory capable of identifying psychosocial mechanisms (early attachment relationships or ongoing interpersonal transactions?) and time frames (prewar, wartime, or postwar?) that influence the stability of perceived social support from youth's support networks. This longitudinal study (N = 1,590 war-exposed Bosnian adolescents) used structural equation modeling to compare and contrast the predictive potency of three hypothesized contributors to adolescents' postwar perceived social support: (a) prewar disruptions in early attachment relationships, (b) wartime and postwar interpersonal adversities, and (c) wartime and postwar adverse living conditions. Adolescents completed the War Trauma and Adversities Inventory at Time 1 and the Multi-Sector Social Support Inventory (assessing perceived social support from youths' nuclear family, extended family, adult friends and mentors, and same-age peer social network sectors) six months later at Time 2. Prewar disruptions in attachment relationships predicted deteriorations in perceived social support across all network sectors, and wartime/postwar interpersonal adversities exerted differential (sector-specific) predictive effects on perceived social support. In contrast, adverse living conditions did not exert predictive effects on any sectors of adolescent perceived social support.

Keywords: *social support, war, traumatic stress, longitudinal, adolescent, theory*

Citation: Dixon KE, Layne CM, Ho Misiaszek KS, Golden C. Interpersonal, not existential, adversities predict postwar deterioration in youth social support. *Academia Medicine* 2024;1. https://doi.org/10.20935/AcadMed6252

1. Wars and disasters as global public health emergencies

War contains many potent traumatogenic experiences for young people. Field studies report a broad range of adverse mental health sequelae to war exposure, including posttraumatic stress disorder (PTSD), depression and other internalizing disorders, externalizing behaviors, impaired academic performance, and developmental arrests in personality formation and moral development [1–4]. War exposure can take many different forms including direct physical harm, life threat, witnessing harm to others, and material losses. For example, protracted sieges, genocide, and ethnic cleansing campaigns during the 1991–1995 Bosnian War resulted in widespread destruction of homes, purged villages, forced mass evacuations, destruction or shutdown of heavy industry and businesses, mass unemployment, and loss of family income. Interpersonal losses included traumatic deaths, disappearances, and involuntary separation from loved ones as a result of internal displacement, emigration, and providers forced to seek work outside the warzone [5].

Even after wars have concluded, many factors can continue to act as mediators (e.g., trauma reminders, loss reminders, secondary adversities) that prolong intense distress, impede developmental progression, and inhibit resilient recovery [6]. For example, the inability to return home, poverty, and poor living conditions can act as potent impediments to establishing a postwar recovery environment that offers sufficient safety and security needed to recover from traumatic experiences [7]. Other postwar adversities can include ongoing political instability and living with caregivers struggling with major financial strains, unemployment, housing insecurity, poor living conditions, and mental health disorders including posttraumatic stress and depression [8]. These ongoing needs, paired with limited access to mental health resources in war-impacted settings, make identifying influential and therapeutically modifiable psychosocial factors all the more important [9, 10].

[1]Department of Psychology, University of Colorado at Colorado Springs, Colorado Springs, CO 80918, USA.
[2]Department of Clinical and School Psychology, Nova Southeastern University, Fort Lauderdale, FL 33328, USA.
[3]Department of Educational and Psychological Studies, University of Miami, Coral Gables, FL 33146, USA.
*email: kodonne2@uccs.edu

2. Social support in war- and disaster-exposed populations

Social support shows considerable promise as a potentially modifiable bipolar buffer (protective when sufficient, vulnerability-enhancing when insufficient) for youth in war-impacted areas [10, 11]. Underscoring its utility, social support can increase naturally after a traumatic exposure. Norris and Kaniasty [12] proposed a model of social support deterioration deterrence in which the severity of trauma exposure is positively related to the extent of received support, which in turn serves to buffer or offset resource deterioration. As an example, during Hurricanes Hugo and Andrew, individuals with strong social support were more likely to evacuate danger zones than those with weak social support because they perceived greater access to support provisions (e.g., ability to borrow money, transportation, having a safe place to stay [13]).

In referencing Lazarus and Folkman's [14] classic appraisal model of coping, the *perception* of social support may obviate the need to actually *use* social support to confront adversity given that one's confidence in the availability of social resources if needed (i.e., secondary appraisal) leads to a less threatening primary appraisal of the stressor. That is, believing one has "backup" makes stressors seem less overwhelming [15]. Regarding PTSD, social support has emerged as a bipolar moderator [11] linked to both protective effects when present and vulnerability effects when absent [16–18].

Perceived support is a potentially robust and portable resource that can either grow or deteriorate over time as a function of resource infusion or effusion. Social networks offer ongoing opportunities to create new relationships and deepen existing relationships [9]. Social support is an especially promising factor to examine in war-exposed groups, given evidence that it acts as (a) a vulnerability factor when in deficit, (b) a protective factor when sufficiently present, and (c) can be therapeutically modified (e.g., teaching youth social support skills [19, 20]).

A useful framework for understanding and applying social support in war-exposed populations can be found in the social provisions theory of Robert Weiss [21]. Weiss proposed six broad types of social support (e.g., Social Integration, Guidance) while suggesting that deficiencies in a specific type evoke specific types of distress (e.g., insufficient social integration leads to social isolation and boredom). Weiss's conceptual framework is flexible in its assertion that a variety of social network configurations can provide the types of social provisions a person may need. This framework has proved fruitful in guiding the development of social support assessment measures [11] and social support recruiting/furnishing interventions [20, 22] for war-exposed youth. Additionally, such frameworks also lay the foundation for subsequent research, investigating both the protective aspects of support (when available) and significant health risks when it is deficient.

3. Social support: a robust and potent resource

Beyond exacerbating or mitigating the harm of trauma (e.g., war) exposure, social support has emerged as a widely applicable and potent predictor of positive psychosocial outcomes in adolescents including behavioral and academic adjustment [23]. More broadly, social support has emerged as a potent promotive factor that exerts consistent wide-spectrum beneficial effects on mental and physical health to the general population. Various hypotheses have been proposed to explain the potent relations between beneficial outcomes when social support is present and adverse outcomes when social support is in deficit. These include hypotheses that social networks provide individuals with supportive emotional relationships that confer benefits via reducing physiological arousal and distress, exert social control over health-promoting behaviors (e.g., sleep, diet), and facilitate access to additional resources (e.g., opportunities, financial aid) [24]. In one such evaluation of the physiological impact of social support, Taylor et al. [25] concluded that social support can act as a buffer against the harmful effects of stress on the brain. More recently, Holt-Lunstad et al. [26] identified social disconnection as a causal risk factor for mortality and many types of morbidity, concluding that social disconnection may indeed be a more reliable predictor than such physical risk factors as cancer and hypertension.

Highlighting its broad utility, social support may serve as what Layne, Ruzek, and Dixon [10] define as a "supercharger" *promotive/protective factor*. The authors define promotive/protective factors as highly valuable resources that (a) act as a "main-effect" promotive factor that confers consistent benefit to the general population, (b) can be further mobilized as a protective factor to buffer the effects of significant stressors when they occur, and (c) create a combined promotive (consistent main effect) plus protective (timely interactive stress-buffering) effect when and as needed. Promotive/protective factors thus carry the dual advantages of benefiting the general population consistently while also being capable of being further mobilized at times of major stress to provide incremental "supercharger" support to subgroups in special need (e.g., an outpouring of social support for grieving families of terror victims).

4. Debate within the social support literature

Notwithstanding these promising developments, the social support literature has been criticized on multiple fronts, including for a lack of theoretical clarity, methodological rigor, and clinical utility. These criticisms include the following: (a) social support–related constructs and delineations between different types of support are too general and vague to be useful; (b) social support measures vary so greatly in their composition and undergirding theories that they are difficult to reconcile and integrate; and (c) the specific mechanisms through which social support confers positive outcomes remain unclear [15, 27, 28]. Indeed, Norris and Kaniasty [12] argue that it is unclear where social support resides. To wit, is the capacity to access and mobilize social support *endogenous* to the individual person (e.g., outgrowths of attachment style and self-efficacy), related to *specific relationships* (an outgrowth of interpersonal transactions), or an outgrowth of contextual factors that either promote or deteriorate support (e.g., material resources, structural adversities, opportunities)? Over the years, researchers have undertaken different approaches to addressing these questions. As a result, diverging and competing theoretical "camps" have emerged regarding the development, maintenance, and deterioration of social support. This lack of consensus between theoretical camps impedes the identification of factors most likely to impact post-disaster

perceived social support. By extension, this confusion impedes identification of optimal targets for intervening with high-risk groups such as war- and disaster-exposed populations.

4.1. Theoretical perspective 1: social support as enduring, stable, and individual-centric

Core propositions. The first camp of researchers view social support as an enduring and stable construct that forms part of an individual's personality [28]. Proponents of this view assert that perceived social support is a generalized expectancy that people carry with them throughout the life course. Social support is thus a working model of an individual's sense of self, other, and world that develops within an infant's early caregiving environment. This view is based on early attachment theories, including the seminal work of Bowlby [29], which postulates that attachment styles formed in early childhood influence a child's capacity to develop and benefit from social relationships. Proponents of this view assert that perceived social support is formed during childhood and becomes more stable over time as personality consolidates. Given the key role of parenting behaviors in shaping positive expectations that interpersonal relationships are attuned, responsive, and beneficial, children who grow up in nurturing and predictable caregiving environments are more likely to develop self-regulation, interpersonal effectiveness, and prosocial behavior [30, 31]. Proponents of this theoretical camp point to research illustrating that children who grow up with an attachment figure that provides stability and safety tend to engage in more exploratory behavior, maintain emotional balance, and have feelings of personal effectiveness and self-efficacy, future feelings of self-worth, and greater capacity to enjoy intimacy [28, 29, 31]. Furthermore, many studies report evidence of social support stability over time [32–35], as demonstrated by high correlations between one's early family environment and later adolescent and adult social outcomes (e.g., [36, 37]). These findings suggest that perceived social support emerges as a stable aspect of personality formed from early and enduring cognitive and behavioral styles [38, 39]. Supporting this view, social support measures predicated on this assumption (e.g., Interpersonal Support Evaluation [40]) have very high test–retest reliability (intraclass correlation coefficients ranged from 0.63 to 0.85 over a period of three to four months in a Greek sample [41]) and often correlate highly with measures of such constructs as self-disclosure and self-esteem [40].

Implications. Given its theorized endogenous locus, youths' perceived social support is less likely to fluctuate significantly in response to subsequent life adversities (e.g., death of or separation from loved ones, poverty). By extension, if perceived social support is a stable aspect of personality formed by childhood influences, then mobilizing social networks is not an entirely promising intervention target later in life.

Limitations. An important limitation of this perspective, however, is that it focuses on both early-life experiences (largely ignoring later close relationships) and characteristics of the recipient, while largely ignoring factors of both support providers (e.g., values, attitudes) and the broader context (e.g., resource availability, barriers) [42]. Accordingly, more recent research efforts (e.g., [43]) propose integrative frameworks that emphasize contextual factors by conceptualizing social support as "an interpersonal process that functions to prompt thriving in two life contexts—experiences of adversity and opportunities for growth in the absence of adversity" (p. 3). Indeed, a robust and growing literature [30, 44–46] documents the potent and formative effects of early-life adversities (e.g., trauma, war exposure) over the life course. In these instances, individual's prior perceptions of social support influence the way they respond to and cope with adversity as they tend to deploy and employ support consistent with their pre-existing schemas (e.g., "I believe I have supportive and trusting relationships that I will now lean on" vs. "No one cares about me, I don't matter and so why bother to try and make things better"). Other integrative research efforts emphasize contextual factors extending beyond childhood, including environmental harshness and unpredictability, neuroplasticity, and learning [45].

4.2. Theoretical perspective 2: social support as dynamic interpersonal transactions

Core propositions. An alternative perspective comes from research teams who contend that viewing social support as a property of a person is too restrictive, and instead emphasize the key roles of relational dynamics and interactions [15]. Consistent with this view, Shumaker and Brownell [42] define social support as an exchange of resources between individuals intended to enhance the well-being of the recipient. Similarly, Feeny and Collins [43] conceptualize social support as transactions "enacted in dyadic interaction" (p. 31) that can support thriving during both adverse and non-adverse conditions. The authors also call for research to better understand pathways through which social support promotes long-term thriving not only in close relationships (e.g., parent–child dyads) but also in other relationships (e.g., teacher–student, pastor–parishioner, therapist–client) [43].

Implications. If social support arises from interpersonal interactions, then, by extension, strains or damage to youths' social support networks should be inversely associated with perceived social support [15]. Thus, perceived social support is both susceptible to what happens to and within one's social networks, and presumably therapeutically modifiable—making it (learning to exchange social support in current relationships) a promising focus of intervention. Viewing support as a dynamic process of interpersonal exchange also invites the scientific study of how individuals and groups recruit, mobilize, and utilize social support—both to buffer the harmful effects of major adversities and to take advantage of life opportunities [15].

Limitations. Critics of a transactional conception of social support note that it adopts an economic exchange model. Such reductionist assumptions may trivialize socially supportive transactions to a cost-benefit analysis predicated on assumptions that social support is quantifiable and necessarily reciprocal [42]. Furthermore, other research conceptualizes perceived social support as a multi-faceted construct highly contingent on numerous personal, environmental, and cultural factors that may not permanently reside in social networks [47]. From this stance, a limitation of the transactional view of perceived social support is that it lacks the power to explain many nonreciprocal supportive transactions, including those motivated by a sense of duty (loyalty to family, protecting the vulnerable), compassion (serving the poor), or altruism (anonymous gifts).

4.3. Theoretical perspective 3: social support as a byproduct of environmental factors

Core propositions. A third theoretical perspective emphasizes ways in which severe adversities (e.g., forced relocations,

unstable housing) and structural and material losses can impede individuals' ability to access and utilize their social support networks. For example, Gottlieb [15] advocates that environmental conditions "precipitate the activation of needs for support", which then prompt individuals to evaluate the availability of people to fulfill their needs. This extends beyond a transactional reciprocal model, and indeed, some studies have found that even the physical layout of a setting influences social behavior among network members [48].

Implications. Implications for both prediction of adjustment over time and intervention are found in the conclusions of such researchers as Viner et al. [49], who note that structural factors (e.g., income inequality, access to education) are some of the strongest predictors of adolescent health. Furthermore, structural changes that improve young peoples' access to education and employment constitute some of the most effective interventions. As an example, when asked what would improve their living conditions in a postwar survey, war-exposed Bosnian adolescents identified having a stable place to live, having parents less stressed by poverty and unemployment, the arrest of war criminals, and increased security [50]. Continuous academic engagement for adolescents has been consistently identified as an important determinant of mental health [51–53]. Thus, disruptions to education (due to forced displacement or an inability to access educational institutions) may serve as potent impediments to youths' ability to adjust during and after war.

Limitations. Notwithstanding the utility of highlighting the role of environmental factors, the heavy emphasis placed by this third perspective on contextual barriers and resources suffers from blind spots regarding ways in which both historical childhood factors (parenting, attachment) and interpersonal dynamics between support providers and receivers can influence social support.

5. A general critique of the three theoretical perspectives of social support

These differing views of social support each carry merit. However, a cross-cutting criticism for the social support literature is that studies often do not specify the *social sector* of an individual's support network (e.g., parents, friends, teachers) from which support originates. Therefore, conclusions regarding the stability of social support over time may not reflect important nuances, such as the type of relationship within which social support is provided. For example, Newcomb [32] found stability correlations higher for parent and family support than for peer/other adult support. Furthermore, some social support measures cover a fairly narrow range of *types* of support (e.g., connection, reliable alliance, material). This creates further blind spots in both depicting the potentially broad spectrum of social provisions that relationships might provide and the capacity to test the "matching hypothesis" (the ability of a given support type to buffer a given stressor depends on the degree to which it addresses the demands it imposes [11]). For example, Dunkel-Schetter et al. [54] examined correlates of social support receipt and found differential relationships among personal factors (e.g., demographic and personality variables), socio-contextual factors (e.g., coping style, situational appraisals), and various *types* of social support.

Furthermore, given evidence that perceived social support is a multidimensional construct, it is important to design and utilize measures of support that span multiple *types* of support (supportive provisions) and social network *sectors* (sources of support) that may play an influential role in buffering stressors and/or promoting positive adjustment in a given context [11, 55]. We thus propose that a broader three-dimensional theoretical conception of social support is needed. This framework should encompass (a) the *multidimensionality* of social support (encompassing a broad range of types of provisions), (b) *temporal* aspects of supportive relationships (e.g., across developmental periods; and before, during, and after focal stressors), and (c) the *sectors* of social networks within which supportive transactions can occur. Measures and study designs that integrate these features are better equipped to examine the construct of perceived social support as an aspect of lifelong social development that not only borne from early attachment relationships, but also shaped and expressed over the developmental lifespan through proximal transactions between individuals and their social environments [56, 57]. Additionally, mechanisms of social support may present uniquely within particular types of relationships (e.g., family versus friends). With a growing body of literature exploring mechanisms of social support development, maintenance, and deterioration, researchers, such as Kravić et al. [58], call for studies that better elucidate interrelated factors underpinning support outcomes in war-exposed youth. They advocate for research that explores intra-individual factors, environmental factors, postwar circumstances, and perceived social support [58].

6. The current study

Why study adolescents and adolescence? The tragedies and havoc that war wreaks on adolescents' social networks through such horrors as ethnic cleansing, genocide, violent deaths, and mass refugee flights—coupled with such brutal postwar factors as internal displacement, deprivation, poverty, and political and economic uncertainty [5]—create a rare crucible in which the core propositions of each theoretical camp of social support are empirically evaluated. More broadly, adolescence offers a valuable developmental window of opportunity in which the comparative potency of differing insults to youths' social networks is evaluated [32]. These insults may differentially impact (a) attachment relationships early in life, (b) relationships established later in life that operate with greater flux (e.g., peers, adult mentors), and (c) contextual barriers to supportive transactions (e.g., poverty, involuntary separations).

Ethnic cleansing and mass death: Postwar Bosnia as a study setting. The Bosnian War was a devastating internecine conflict that occurred between 1992 and 1995 during the breakup of the multiethnic Socialist Federal Republic of Yugoslavia [59]. The region, which at the time was reportedly 44% ethnic Bosniak (Muslim), 33% Serb, and 17% Croat (Britannica, 2021), was subjected to prolonged sieges, ethnic cleansing, mass refugee flights, and genocidal campaigns, as well as torture, mass rape, and large-scale destruction of infrastructure [60]. An estimated 200,000 people were killed [59], and another two million were displaced, with postwar political instability and economic strains that have now endured for decades [61]. The war also disrupted the educational trajectories of a generation of youth and led to prolonged internal displacement; loss of population through

emigration; lengthy and sometimes permanent separation from loved ones; and elevated rates of posttraumatic stress disorder, depression, anxiety, and maladaptive grief reactions [60, 62, 63].

6.1. Study design

This study used structural equation modeling to evaluate the comparative predictive potency of adversity categories representing each of three theoretical 'camps' (1: prewar disruptions in early attachment relationships; 2: wartime/postwar interpersonal adversities; and 3: wartime/postwar adverse living conditions) on various sectors (nuclear family, extended family, other adult friends/mentors, and same-age peers) of adolescent perceived social support. We expected that all three adversity categories were likely to exert significant predictive effects on postwar perceived social support; however, based on prior research [27, 32, 54, 64], we hypothesized that differential predictive effects would emerge between a specific category of social network insult and a specific social network sector, as articulated in three primary hypotheses.

Hypothesis 1: *Prewar disruptions in early attachment relationships* will be the strongest predictor when examining total social support (combined across all four social network sectors, i.e., nuclear family, extended family, same-age peers, and adult friends/mentors), and will also emerge as a significant predictor across all models. *Rationale*: Intrinsic relational skills are most likely to transcend situational contexts and exert the most universal/uniform impact (positive or negative) on postwar social support [65].

Hypothesis 2: The predictive impacts of *wartime/postwar interpersonal adversities* will be strongest in models examining perceived social support of adult friends/mentors and same-age peers. *Rationale*: War/postwar interpersonal adversities may have more targeted impacts on social support that do not extend as uniformly across sectors. These two network sectors (adults and peers) are less stable compared to nuclear and extended family sectors [32].

Hypothesis 3: *Wartime/postwar adverse living conditions* will exert a moderate predictive effect on perceived social support of same-age peers only. *Rationale*: Wartime/postwar adverse living conditions may impose structural barriers to accessing social support (e.g., losing contact during geographical displacement). These barriers are likely to most strongly impact perceived availability of support from same-age peers because such friendships may be more contingent on structural factors (e.g., geographical proximity, school attendance) than more stable relationships with members of other support sectors (i.e., family and other adults).

7. Methods

7.1. Ethics

The study design and classroom surveys were approved by an ad hoc local IRB panel consisting of a study author (CML), supervising UNICEF officer, university psychologist/program supervisor, and community clinician/program supervisor. Written consent was obtained from the parents of all adolescents surveyed in this study; adolescents provided verbal assent. Participants were identified only by a designated code number on each questionnaire, and data were handled by study personnel only. Adolescents were provided with the contact information for school psychologists who had received specialized training in working with war-exposed youths and were available to help participants find appropriate counseling services available in the community.

7.2. Participants and procedure

War-exposed adolescents (N = 1,590) were surveyed at Bosnian secondary schools across two time points approximately six months apart. Time 1 (T1) data were collected from 16 schools in Fall 1997; Time 2 (T2) data were collected from a subset (eight) of these schools in Spring 1998. Cases missing data on all variables of interest were excluded, creating a final study sample size of 1,568 at T1. The average age of surveyed adolescents at T1 was 16.18 years (SD = 1.07); 68.4% were girls, and 31.6% were boys. Geographically, 49.7% were living in the Republika Srpska (predominantly ethnically Serbian), 31.9% were living in Bosnia (predominantly ethnically Muslim/Bosniaks), and 18.4% were located in Hercegovina (comprised of both Croatian and Muslim/Bosniak ethnicities). The average age at T2 (N = 739) was 16.75 years (SD = 1.51); 68.1% were girls. Chi-square and t-tests were used to examine differences between T2 participants and non-participants on baseline sociodemographic characteristics and composite predictor variables. No significant differences were observed related to age, gender, or predictor variables (prewar disruptions in early attachment insults, wartime/postwar interpersonal adversities, and wartime/postwar adverse living conditions). Because no schools in Bosnia were surveyed at follow-up, students living in Republika Srpska (85.9%) and Herzegovina (14.1%) were overrepresented at T2.

7.3. Measures

7.3.1. Prewar, wartime, and postwar trauma exposures

The *War Trauma and Adversities Index* (WTAI [66]) is a self-report measure of exposure to a range of prewar, wartime, and postwar traumatic experiences. Items were generated from qualitative field research and from a review of existing war exposure measures. Items are dichotomous (yes/no) and span prewar, wartime, and postwar traumas and other adversities endemic to the Bosnian conflict (see Layne et al. [5], for all items, categories, and psychometric data). As recommended by Layne and colleagues [5], a formative composite score was rationally created based on the hypothesis that the formative indicators therein led to common causal consequences (i.e., equifinality). This approach is considered preferable when the primary interest is in evaluating paths linking risk factors to theorized consequences, without concern for how risk factors systematically co-occur—which may merit more traditional analytical approaches such as factor analysis [5]. Because each item is an independent contributor to the composite, internal consistency among indicators is of little importance; rather, the emphasis remains on identifying theoretically cogent risk factors (i.e., specific constellations of war-related traumatic experiences) that are theorized to exert similar effects on a specified set of outcomes (i.e., social support). The first and second study authors undertook a collaborative coding process, drawing upon theory and extant literature to inform the grouping of indicators into composites with hypothesized equifinality. As recommended by Layne et al. [5], *different* composites were created (e.g., parsing postwar stressors into interpersonal vs. existential adversities) based on their hypothesized *differential* predictive effects and theorized mechanisms of action on outcomes (perceived social

support) in accordance with the study hypotheses. Items were then averaged within each category (range 0–1); standardizing and lower/upper bounding the composite subscale scores in this manner increased both subscale interpretability and cross-subscale comparability.

Prewar Adversities (nine total items) were rationally assigned to either of two subscales based on their hypothesized differential predictive effects on the longitudinal course of postwar adolescent perceived social support: *Prewar Interpersonal Stressors* (parental divorce, parental incarceration, parental substance use, and psychological problems of a family member) and *Prewar Trauma* (life-threatening illness of a nuclear family member, serious injury to a nuclear family member, death of a nuclear family member, or other traumatic experience).

WTAI wartime trauma exposure items consist of 35 items spanning a broad range of traumatic experiences (e.g., material loss, harm to loved ones, threat to loved ones) [5]. Only WTAI items relevant to study questions were selected for analysis. These included three items pertaining to *wartime material loss* (serious damage to one's home during the war, being expelled from one's home during the war, being forced to leave one's village and/or town because of the war; $\alpha = 0.81$), three items pertaining to *wartime harm to loved ones* (a loved one was sexually assaulted, tortured, taken prisoner/held in a detention camp; $\alpha = 0.61$), three items pertaining to *wartime threat to loved ones* (a nuclear family member served in the military, a loved one with a serious illness or chronic health condition, and a loved one went missing; $\alpha = 0.19$), and one item assessing *wartime interpersonal stress* (parents divorced during the war).

WTAI postwar adversity exposure consisted of 20 items (again, only items relevant to study questions were retained for analysis). These included five items pertaining to *postwar existential stress* (overcrowded living accommodations, uncertainty over stability of living accommodations, lack of money to fund basic necessities, unemployment of primary family wage earner; $\alpha = 0.51$), two items pertaining to *postwar threat to loved ones* (a loved one is currently missing, a family member has a serious illness or chronic health condition; $\alpha = 0.06$), eight items pertaining to *postwar interpersonal stress* (postwar parental divorce; rarely seeing a parent due to work or other obligations; a loved one struggles with psychological problems; a loved one struggles with substance use; significant family responsibilities greatly interfere with school work; postwar separation from parents, siblings, close relatives, or close friends; $\alpha = 0.49$), one item assessed *geographical relocation* ("how many times has your family changed residences since the war?"), and one item assessed *postwar harm to loved ones* ("has a loved one been seriously injured since the war?").

Study-specific subscale scoring. For study analyses, composite categories of adversity exposures were re-aggregated across time periods (prewar, wartime, postwar) into three rationally derived composite subscales corresponding to the three study hypotheses regarding contributors to social support: (1) *Prewar Disruptions in Early Attachment Relationships* was calculated as the average of *prewar interpersonal stress* and *prewar trauma*. (2) *Wartime/Postwar Interpersonal Adversities* was calculated as the average composite of *wartime interpersonal stress, wartime harm to loved ones, wartime threat to loved ones, postwar threat to loved ones, postwar harm to loved ones,* and *postwar interpersonal stress*. (3) *Wartime/Postwar Adverse Living Conditions* was calculated as the average composite of *wartime material loss, postwar existential stress,* and *geographical relocation*.

7.4. Adolescent perceived social support

The Multi-Sector Social Support Inventory (MSSI [11]) is a measure of perceived social support originally developed for use with war-exposed youth. The MSSI, based on the social provisions theory of Robert Weiss [21], assesses six theorized social provisions (*Attachment*, *Social Integration*, *Reliable Alliance*, *Feeling Needed*, *Reassurance of Worth*, and *Guidance*) in addition to two theorized interpersonal strains (*Conflict* and *Interpersonal Burden*). The MSSI is especially useful for assessing perceived availability of social provisions across four social network sectors (*Nuclear Family*, *Extended Family*, *Adult Friends and Mentors*, and *Same-Age Peers*) that lie within different levels of the ecology and may potentially interact with one another to compensate for deficits in a given ecological level [11]. Respondents are instructed to indicate how much they agreed with each social provision or strain (e.g., "I feel like I can count on friend(s) my age if I need help") on a 5-point Likert scale from 0 (*never*) to 4 (*almost always*). Each of the four social network sectors contains four items. Psychometric properties reported by the measure authors include good test–retest reliability, internal consistency, and convergent validity [11]. Consistent with recommended scoring guidelines, MSSI items within each sector were summed to create four sector-specific subscale scores reflecting the frequency of supportive provisions perceived to be available from the respondent's interpersonal relationships within each sector. Internal consistency values ranged from acceptable to strong for each sector in the present study: nuclear family ($\alpha = 0.78$), extended family ($\alpha = 0.94$), other adult friends and mentors ($\alpha = 0.94$), and same-age peers ($\alpha = 0.85$).

7.5. Data analysis

Descriptive statistics were calculated using SPSS Version 29 (IBM Corp. IBM SPSS Statistics for Windows, Version 29.0.2.0 Armonk, NY, USA). Structural equation models were estimated using Mplus 8.0 (Muthén & Muthén, Los Angeles, CA, USA). No imputation was necessary for the data because Mplus uses all available data to estimate model parameters with full information maximum likelihood (FIML). Adversity variables were modeled as three observed composite variables, corresponding to the three theoretical perspectives delineated previously in this article. Aggregate perceived social support was modeled as a latent variable in order to reduce measurement error and allow for unique factor loadings of support types on the overall construct, mapping onto observed indicators of nuclear family support, extended family support, friend support, and other adult support.

Consistent with established two-step procedures [67], a measurement model for total perceived social support using a latent factor was first estimated using confirmatory factor analysis (CFA) before adding structural paths. CFA model fit was evaluated using four separate indices including the Tucker–Lewis fit index (TLI [68, 69]), the comparative fit index (CFI [70]), the root mean square error of approximation (RMSEA [71]), and the standardized root mean square residual (SRMR [72]). Values for RMSEA less than 0.10 and SRMR values less than 0.05 are indicators of good model fit [72, 73], whereas values higher than

0.90 for TLI and CFI suggest the same [74]. In a second step, a structural equation model was built to examine the strength of pathways between prewar disruptions in early attachment relationships, wartime/postwar interpersonal adversities, and wartime/postwar adverse living conditions on aggregate perceived social support at Time 2. We used bootstrapping with 2,000 iterations to estimate the significance of paths, with bias-corrected 95% confidence intervals (CI [75, 76]).

To distinguish the effects of adversities on sector-specific perceived social support, we utilized path analysis to estimate four models. Similarly, these models used FIML to handle missing data and specified 2,000 iterations of bootstrapped, bias-corrected 95% confidence intervals. Because these models were just-identified, goodness-of-fit statistics could not be computed; nevertheless, path analysis in SEM is an advantageous analytical strategy as compared to multiple regression due to the ability to estimate measurement error.

8. Results

Descriptive statistics are presented in **Table 1**. Participants were most likely to endorse experiences related to Wartime/Postwar Interpersonal Adversities (M = 1.05, SD = 0.82), followed by experiences related to Wartime/Postwar Adverse Living Conditions (M = 0.78, SD = 1.27).

Table 1 • Descriptive properties of sample

Variable	*M* (SD)
Prewar disruptions in early attachment relationships	0.12 (0.21)
Prewar interpersonal stress	0.04 (0.11)
Prewar trauma	0.08 (0.16)
Wartime/postwar interpersonal adversities	1.05 (0.82)
Wartime interpersonal stress	0.02 (0.13)
Wartime harm to loved ones	0.22 (0.26)
Wartime threat to loved ones	0.38 (0.26)
Postwar threat to loved ones	0.13 (0.24)
Postwar harm to loved ones	0.16 (0.37)
Postwar interpersonal stress	0.15 (0.16)
Wartime/postwar adverse living conditions	0.78 (1.27)
Wartime material loss	0.35 (0.38)
Postwar existential stress	0.17 (0.23)
Geographical relocation	0.35 (0.97)
Social support	
Nuclear family	24.07 (5.36)
Extended family	20.86 (6.14)
Other adult friends/mentors	18.13 (6.45)
Same-age peers	21.78 (5.38)

Prewar Disruptions in Early Attachment Relationships were least frequently endorsed (M = 0.12, SD = 0.21). Low mean values within each of these three categories reflect the averaged composite method of scoring; individual dichotomous endorsements for each item on the WTAI ranged from 1.1% ("before the war, did a parent go to jail for breaking the law?") to 66.3% ("during the war, did a member of your immediate family serve in the military or another extremely dangerous occupation?").

8.1. Confirmatory factor analysis

A CFA was specified for the aggregate social support model with the observed factors of Prewar Disruptions in Early Attachment Relationships, Wartime/Postwar Interpersonal Adversities, and Wartime/Postwar Adverse Living Conditions, and latent factor of aggregate perceived social support. Fit indices for CFA (χ^2 (11, N = 1,568) = 40.83, p < 0.001, χ^2/df = 0.09, TLI = 0.93; CFI = 0.97; RMSEA = 0.04, 95% CI: [0.04–0.05], SRMR = 0.03) indicated good model fit. Structural paths were then incorporated into a predictive model.

8.2. Structural equation models

8.2.1. Model 1: aggregate perceived social support

The hypothesized structural equation model was a saturated model predicting paths from Prewar Disruptions in Early Attachment Relationships, Wartime/Postwar Interpersonal Adversities, and Wartime/Postwar Adverse Living Conditions to aggregate (total-scale) social support while allowing for correlation between each independent variable. Fit indices for this model were acceptable, χ^2 (11, N = 1,568) = 40.83, p < 0.001, χ^2/df = 0.09, TLI = 0.96; CFI = 0.94; RMSEA = 0.04, 95% CI: [0.04–0.05], SRMR = 0.03; the model was thus retained for further analyses. Standardized parameter estimates for significant paths are depicted in **Figure 1**. Bootstrapped bias-corrected 95% confidence intervals demonstrated that the path to aggregate social support from Prewar Disruptions in Early Attachment Relationships (Hypothesis 1) reached statistical significance, β = −0.17, p < 0.001, 95% CI [0.13, 0.21]. The path from Wartime/Postwar Interpersonal Adversities (Hypothesis 2) also reached significance, β = −0.11, p = 0.025, 95% CI [0.06, 0.16]. In contrast, the path from Wartime/Postwar Adverse Living Conditions (Hypothesis 3) did not reach significance, p = 0.522.

8.2.2. Model 2: nuclear family perceived social support

Standardized parameter estimates for significant paths in this just-identified model are depicted in **Figure 2**. Bootstrapped bias-corrected 95% confidence intervals demonstrated that the path to nuclear family social support from Prewar Disruptions in Early Attachment Relationships (Hypothesis 1) was significant, β = −0.12, p = 0.005, 95% CI [0.08, 0.16]. The path from Wartime/Postwar Interpersonal Adversities (Hypothesis 2) was also significant, β = −0.11, p = 0.022, 95% CI [0.06, 0.16]. In contrast, the path from Wartime/Postwar Adverse Living Conditions (Hypothesis 3) did not reach significance, p = 0.436.

8.2.3. Model 3: extended family perceived social support

Standardized parameter estimates for significant paths in this just-identified model are depicted in **Figure 3**. Bootstrapped bias-corrected 95% confidence intervals demonstrated that the path to extended family social support from Prewar Disruptions in Early Attachment Relationships (Hypothesis 1) reached significance, β = −0.14, p = 0.001, 95% CI [0.10, 0.18]. In contrast, neither the path from Wartime/Postwar Interpersonal Adversities (Hypothesis 2; p = 0.08) nor from Wartime/Postwar Adverse Living Conditions (Hypothesis 3; p = 0.755) reached significance.

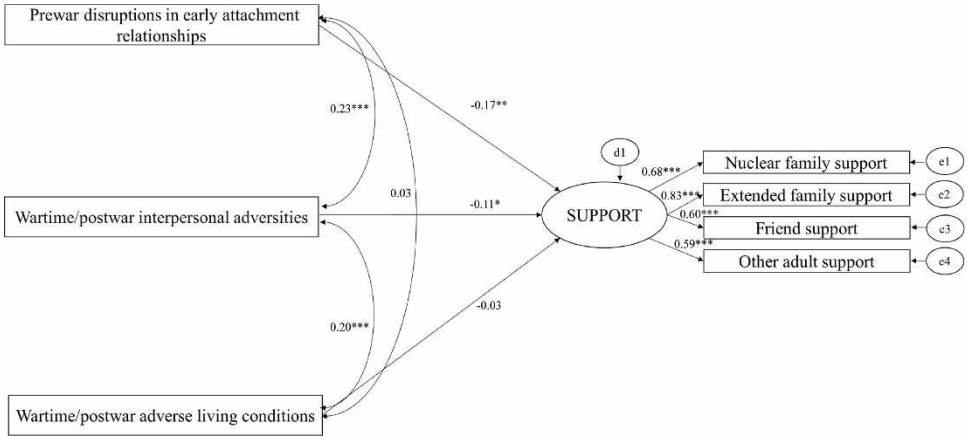

Figure 1 • Standardized paths from theorized categories of predictors to aggregate social support. Note: *p < 0.05, **p < 0.01, ***p < 0.001.

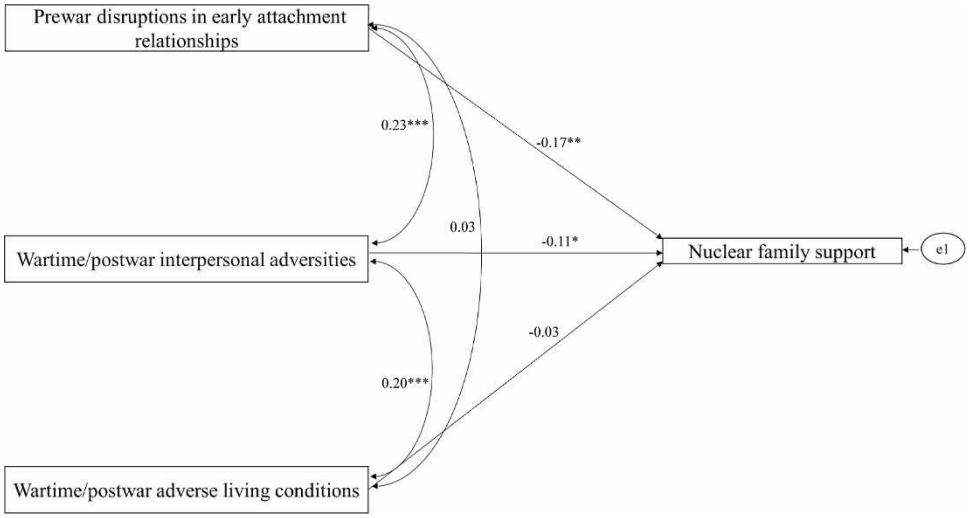

Figure 2 • Standardized paths from theorized categories of predictors to nuclear family perceived social support. Note: *p < 0.05, **p < 0.01, ***p < 0.001.

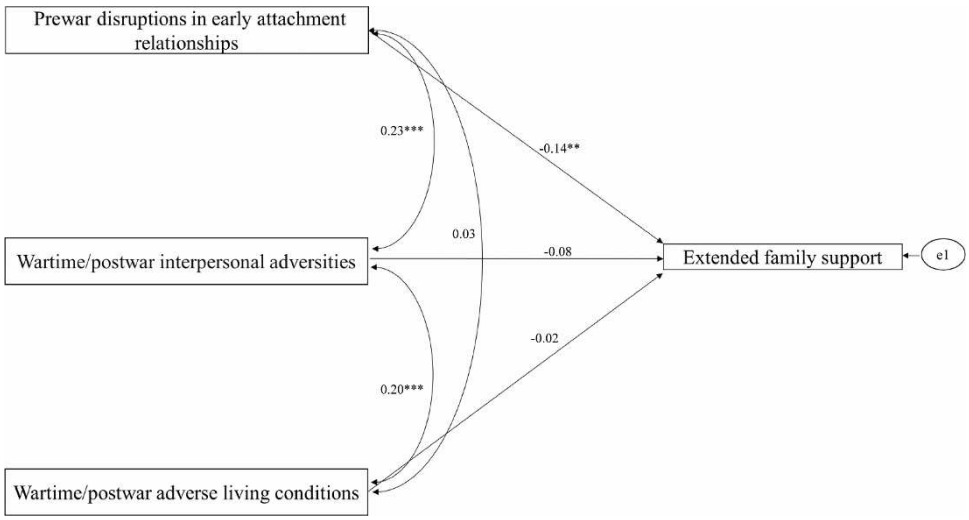

Figure 3 • Standardized paths from theorized categories of predictors to extended family perceived social support. Note: *p < 0.05, **p < 0.01, ***p < 0.001.

8.2.4. Model 4: adult friends and mentors' perceived social support

The standardized parameter estimates for significant paths in this just-identified model are depicted in **Figure 4**. Bootstrapped bias-corrected 95% confidence intervals demonstrated that the path to adult friends and mentors' social support from Prewar Disruptions in Early Attachment Relationships (Hypothesis 1) reached significance, β = −0.10, p = 0.008, 95% CI [0.06, 0.14]. In contrast, neither paths from Wartime/Postwar Interpersonal Adversities (Hypothesis 2; p = 0.772) nor from Wartime/Postwar Adverse Living Conditions (Hypothesis 3; p = 0.735) reached significance.

8.2.5. Model 5: same-age peers' perceived social support

Standardized parameter estimates for significant paths in this just-identified model are depicted in **Figure 5**. Bootstrapped bias-corrected 95% confidence intervals demonstrated that the path to same-age peers' social support from Prewar Disruptions in Early Attachment Relationships (Hypothesis 1) reached significance, $\beta = -0.11$, $p = 0.009$, 95% CI [0.07, 0.15]. The path from Wartime/Postwar Interpersonal Adversities (Hypothesis 2) also reached significance, $\beta = -0.12$, $p = 0.004$, 95% CI [0.08, 0.16]. In contrast, the path from Wartime/Postwar Adverse Living Conditions (Hypothesis 3) did not reach significance, $p = 0.808$.

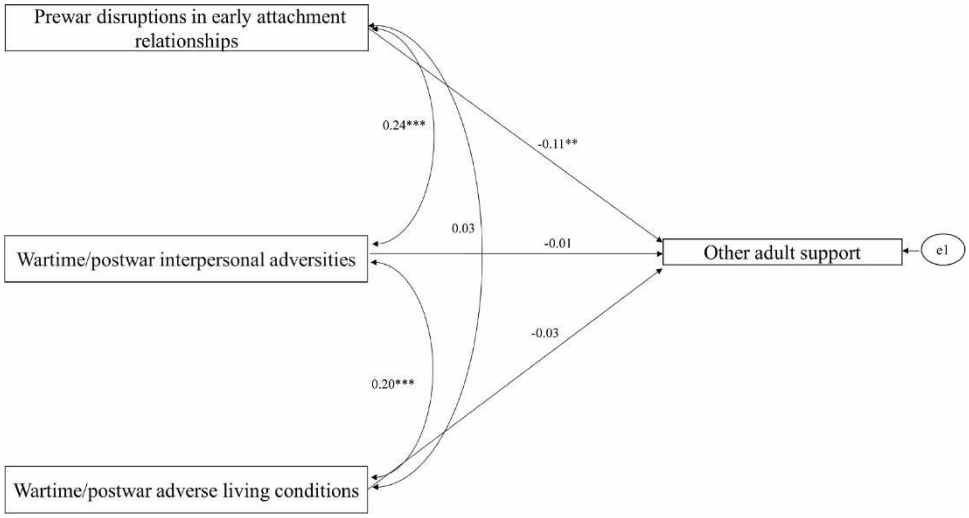

Figure 4 • Standardized paths from theorized categories of predictors to adult friends/mentors' perceived social support. Note: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

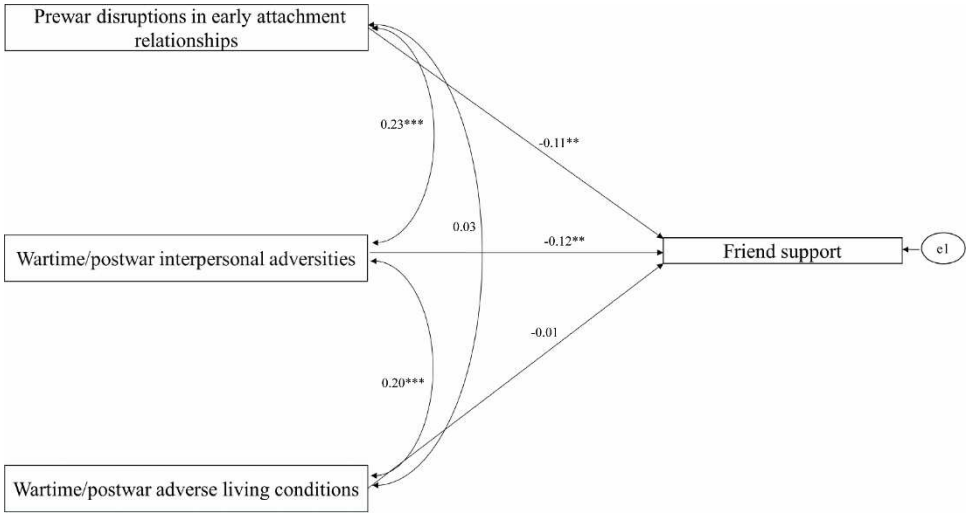

Figure 5 • Standardized paths from theorized categories of predictors to same-age peers' perceived social support. Note: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

9. Discussion

The aim of this study was to evaluate three hypotheses—each, respectively, testing a key proposition of one of the three theoretical camps—in predicting deteriorations in perceived social support in war-exposed adolescents. These propositions were that social support is (1) an outgrowth of early attachment relationships and thus comparatively stable over time, (2) a dynamic interpersonal process susceptible to current interpersonal adversities, and (3) susceptible to structural barriers including available resources and adverse living conditions. Using a series of structural equation models examining data across two postwar timepoints spaced six months apart, we evaluated the predictive potency of different types of adversities on perceived social support from four different sectors of adolescents' social networks (Nuclear Family, Extended Family, Same-Age Friends, and Adult Friends and Mentors). Consistent with Hypothesis 1, Prewar Disruptions in Early Attachment Relationships was a consistent predictor of reductions (deterioration) in perceived social support across all five SEM models (total-scale aggregate, nuclear family, extended family, adult friends/mentors, and same-age peers). Partially supporting Hypothesis 2, Wartime/Postwar Interpersonal Adversities predicted reductions in perceived social support across some social network sectors (aggregate social support, nuclear family, same-age peers). Contrary to Hypothesis 3, Wartime/Postwar Adverse Living Conditions did not significantly predict postwar perceived social support in any model.

Hypothesis 1: *Prewar Disruptions in Early Attachment Relationships*. Our findings (reaching significance in all five models) that Prewar Disruptions in Early Attachment Relationships was

the most robust predictor of deterioration in perceived social support across all social network sectors (aggregate, nuclear family, extended family, peers, adult friends and mentors) underscore the oft-documented potency of childhood trauma and interpersonal adversities across the developmental lifespan. That childhood trauma and adversities exerted consistent predictive effects, even in the aftermath of a devastating civil war (in which civilians were directly exposed to prolonged sieges, ethnic cleansing purges, internal displacement, mass death, fragmentation of social networks, and mass unemployment) makes these findings all the more remarkable.

Hypothesis 2: *Wartime/Postwar Interpersonal Adversities*. Wartime and Postwar Interpersonal Adversities exerted fairly consistent significant predictive effects on adolescent postwar perceived social support deterioration in three of five models (aggregate, nuclear, and peer social network sectors). These findings are also consistent with prior studies documenting the predictive potency of interpersonal transactions and experiences on social support networks [15]. We view such findings as intuitively apparent given that such events as having loved ones threatened, harmed, or killed during mass conflict diminishes the capacity of social networks to provide provisions (e.g., guidance, material support) youths value and need. Such findings are incredibly consequential; contemporary research on war-exposed youth (e.g., in Palestine, Syria, and Ukraine) continues to illustrate that loss of social support confers increased risk for the development of posttraumatic stress disorder [4, 77]. Nevertheless, evidence that interpersonal adversities reached significance in only three of five models suggests that these predictive effects are less universal than prewar disruptions in early attachment relationships. Contrary to our hypothesis that interpersonal adversities would most strongly impact *non*-familial network sectors (peers, and adult friends and mentors), a significant predictive path was found for nuclear family; conversely, the path leading to adult friends and mentors did not reach significance. These findings suggest that compared to early childhood factors, interpersonal dynamics are less robust predictors of long-term postwar social support.

Hypothesis 3: *Wartime/Postwar Adverse Living Conditions*. Our findings that Wartime/Postwar Adverse Living Conditions (financial strife, displacement) did not reach significance as a predictor of postwar perceived social support in any of the models (0 of 5) is unexpected but nevertheless promising, as we discuss below. Rather, our findings indicate that interpersonal-relational postwar factors (which are generally much more therapeutically accessible, modifiable, and inexpensive) supersede—in their predictive potency—physical infrastructure factors (which are more wide-scale, expensive, and time-consuming to address—e.g., rebuilding housing and businesses, reviving the economy, restoring political stability).

9.1. Implications

Our findings carry implications for advancing theory building, increasing the rigor of future studies, improving intervention, and informing public policy.

Theory building. First, our findings that both *Prewar Disruptions in Early Attachment Relationships* (Hypothesis 1) and *Wartime/Postwar Interpersonal Adversities* (Hypothesis 2) predict adolescent perceived social support build on prior work (e.g., [32]) by identifying candidate contributors to the causal origins and course of perceived social support in post-conflict settings. Second, evidence of differential effects—that predictive paths differed by specific social network sectors—can promote further theory building (e.g., [43, 57]) by helping to integrate a diverse array of supportive provisions, relationship factors, and social network sectors—deficiencies for which, as noted earlier, the field has been criticized. Third, these sector-specific effects underscore the value of methodologically deconstructing social networks through measures designed for that purpose [11]. Researchers should thus consider the utility that such measures hold not only for more accurately assessing youth's support networks, but also for their ability to empirically trace the relevance and potency of specific factors on perceived support availability. Fourth, our finding that interpersonal adversities incrementally added to some models underscores the utility of assessing for *wartime and postwar* contextual variables that may act as significant barriers to youths' ability to access and utilize their social support networks. Fifth, the broad support we found for Hypothesis 1 is consistent with evidence documenting the stability—beginning in early childhood development—of generalized interpersonal expectancies regarding the safety and security of interpersonal relationships [28, 29, 78]. These findings are also consistent with propositions [9] that early attachment relationships create "resource caravan passageways" that can build potent, robust, and durable personal resources including optimism, mastery, self-efficacy, and interpersonal skills [10]. Last, our finding that *both* prewar disruptions in early attachment relationships and wartime/postwar interpersonal adversities predicted six-month postwar deterioration across several social network sectors supports a more expansive and integrative interpretation of social support, conceptualized holistically as both an extension of early attachment relationships *and* a dynamic process that is susceptible to, expressed, and shaped through current interpersonal transactions [32, 54].

Guiding interventions and policy. Clinically, the robust support found for Hypothesis 1 (the predominance of early disruptions to attachment relationships over the life course) can inform risk screening. To wit, the robustness of early-life adversities in predicting deterioration in postwar social support across all four social network sectors suggests that adolescents with histories of exposure to prewar interpersonal risk factors (especially in their nuclear families) are at the highest risk for deterioration in perceived social support—and by extension, for an array of mental and physical health difficulties and impaired functioning linked to poor social support [26]. With respect to intervention, the superior performance of prewar factors in predicting postwar deterioration in adolescent perceived social support adds from an unusual postwar longitudinal dataset to a broad chorus of voices (e.g., [30, 44, 56]) underscoring the practicality and high return-on-investment strategic value of early prevention programs. Such programs can focus on developing strong parent–child attachment through play, emotional attunement and engagement, and bolstering parent skills and confidence where warranted. Interventions that focus on building positive communication practices between caregivers and children are also warranted as having a strong foundation from early on may lead to improved supportive communication as children move through developmental stages [79]. As one such example, a 2022 study found that family-based supportive intervention to bolster communication and emotional security between parents and children in Gaza resulted in improvements in adolescent adjustment [80]. Research has found that the more support and less alone children

and youth feel, particularly in the face of adversity, the better off they will do psychologically given that support buffers against and reduces psychological distress [81].

Given the current political conflicts and their harsh aftermaths, our findings suggest that interventions for youth and their families should include assessment of both perceived support and barriers to accessing support, with the aim of fostering security and safety, hope, and connection—factors found to foster resilient recovery following war and trauma [82]. Significant advancements in technology in recent decades may provide novel avenues for promoting connectedness among war-exposed youth; for example, access to information technology (including social media and online communication platforms) was identified by Ukrainian adolescents as a pivotal mechanism by which to maintain communication with family and friends from whom they had been separated during the war [83]. Moderate support found for Hypothesis 2 further suggests that—beyond the predictive effects of prewar childhood trauma/adversities, youth facing serious interpersonal adversities (e.g., loved ones harmed or killed) during either wartime or postwar periods are vulnerable (at incrementally greater risk) for postwar deterioration in perceived social support. In addition, disruptions that war-exposed youth face across the ecology (e.g., individual, family, school, community, infrastructure), and their associated risks for psychological and medical difficulties, underscore the need to coordinate care across child-serving systems [84]. This can include equipping organizations across a variety of settings (e.g., schools, hospitals, pediatric offices, churches) with materials and training needed to provide risk screening and referral for distressed youth and families, as well as enhancing the in-house capacity of schools to provide specialized mental health services.

Intervention and policy implications also arise from the lack of empirical support for Hypothesis 3 (postwar poverty, poor housing, and other structural barriers to accessing social networks would inversely predict perceived social support at Time 2). This finding suggests that existential hardships were less potent predictors of youth's perceptions that their social networks could support them in undertaking the major tasks of developmental recovery and preparing for a future in a country devastated by war. Interestingly, a recent scoping review of interventions to decrease social isolation and loneliness discovered that few interventions focus on addressing structural barriers to accessing support; as such, the role of structural factors that can inhibit or promote social connection is still not well understood [85]. Nevertheless, the finding that interpersonal relationships were better predictors of postwar adolescent perceived social support than financial/environmental factors points to the role that families and schools can play in facilitating youth postwar recovery.

More broadly, our findings point to the utility—for both interventions and policy of focusing on restoring, repairing, empowering, and mobilizing supportive interpersonal relationships to reduce long-term postwar risk. Our results further suggest that connecting and reconnecting *people* within social networks, and strengthening bonds between *people* and social agencies and institutions including schools and community agencies, is a worthwhile companion aim to rebuilding physical infrastructure, stabilizing political institutions, and rebooting the economy. Although predictive, our findings raise the question for funding agencies whether reconnecting, rebuilding, and buttressing adolescents' social networks (including bonds within nuclear and extended families, peer relationships, mentored relationships, and school bonding) may yield greater return-on-investment value for adolescent postwar recovery than rebuilding physical infrastructure. It thus seems prudent to invest in both people *and* infrastructure to enable the rising generation to resiliently recover and take on the roles, responsibilities, and privileges of full adulthood [86]. As a promising example, a field evaluation (conducted in the same postwar setting and time period) of a school-based trauma- and grief-focused intervention [20, 22] found that participants (students and caregivers) identified, as their most valued benefit, a social support recruitment skill [19]. Evidence that war-exposed youth self-describe as being deficient in support [87] underscores the widespread need and utility of such undertakings. Furthermore, our finding that prewar factors exerted significant predictive effects on postwar social support underscores the potential value of early childhood initiatives given their promise for prevention of subsequent risks in later life.

9.2. Strengths, limitations, and future directions

Study strengths include (a) our "horserace" study design pitted three competing hypotheses derived from three different theoretical camps that generated distinctly different propositions and a priori hypotheses; (b) use of a large archival dataset collected in Bosnia shortly after a large-scale conflict—a dataset that, given conflicts raging in Ukraine and elsewhere around the world, remains highly relevant; (c) use of a two-wave longitudinal design that enabled testing for incremental predictive effects; (d) continuation of a systematic line of research (e.g., [5, 88]) focusing on identifying predictors and mechanisms of long-term postwar adjustment; (e) use of retrospective questionnaires (e.g., WTAI) that spanned prewar, wartime, and postwar settings and enabled comparisons of predictors across time periods; (f) a study setting in which wartime factors are likely to be causally independent of prewar risk factors (e.g., sieges and displacement are *not* likely causal consequences of child maltreatment), enhancing the ability to isolate the predictive effects of different types of factors; (g) use of the MSSI captured a broad array of social support provisions and allowed for the partitioning of social support networks by sector (i.e., nuclear family, extended family, adult friends/mentors, same-age peers), enhancing the specificity and actionability of findings and implications; and (f) use of rigorous statistical methods (e.g., SEM) to test for predictive and incremental predictive effects.

Study limitations include the following: (a) reports on prewar and wartime events were retrospective; (b) classroom surveys relied solely on youth self-report and were not corroborated by other assessment sources or methods; (c) use of a convenience sample (the baseline Time 1 assessment was a classroom-based risk screening survey turned into a follow-up longitudinal study); (d) data were collected in the late 1990s (yet remain highly relevant); (e) schools in the Federation of Bosnia and Herzegovina declined to participate at T2, resulting in a lack of follow-up for ethnic Muslim/Bosniak students and associated lack of insight into how adolescents in this sociodemographic subset fared; (f) social support was not assessed across multiple timepoints; and (g) our rationally derived method for forming composite scales relied strongly on guiding theory as well as empirical evidence regarding causal consequences of focal stressors (see [5]).

Future research can involve rigorous prospective longitudinal studies of how social support evolves over time. This can include contributions of early and subsequent attachment relationships, interpersonal dynamics, and potential barriers to accessing support; inclusion of measures of attachment and relationship quality/intimacy; robust baseline measures; and more (3+) waves of data collection to help identify longer-lasting predictive effects and support causal inference.

10. Conclusion

Adopting a "horserace" design that pitted three alternative theoretical perspectives and propositions against one another, our study findings underscore—even in the grinding aftermath of a brutal civil war—the predictive potency of childhood developmental insults across the life course while also making room for interpersonal transactions during and after the war. We hope that the integration of these historical and present-focused approaches will enhance theory building, research methods, risk screening, and intervention efforts for countless youth exposed to war and its aftermath. We also hope that this study sheds sobering light on *how*, *why*, and *for how long* war exposure is harmful to youth and outlines steps that organizations can take toward preventing (i.e., invest in restoring and mobilizing social networks rather than prioritizing rebuilding infrastructure only) long-term postwar maladjustment and its accompanying risks for producing another lost generation [86]. As the emerging adult generation, adolescents are vital for promoting postwar recovery in war-stricken regions. This recovery should not only involve the reduction of distress symptoms but also developmental recovery in important life domains (e.g., school, peer and romantic relationships, civic engagement) [89]. Without adequate support for the rising generation, war-devastated nations are at risk for weak and protracted (even decades-long) recovery trajectories [88], or even for lapsing into failed states languishing from loss of human capital and lack of opportunities for work and family life [9]. Strengthening psychosocial factors that enhance adolescents' ability to recover from war are vital for helping the emerging generation undertake this vital nation-rebuilding task.

Acknowledgments

The authors gratefully acknowledge UNICEF Bosnia & Hercegovina for its financial support; Dr. Berina Arslanagić (UNICEF program officer), Milena Kutlaca (University of Banja Luka), and Nermin Djapo (University of Sarajevo) for data collection and entry; Nadezda Savjak, Tatjana Popovic, Elvira Durakovic, and Nihada Campara (local supervision and adaptation); and Alma Pašalić (field coordinator).

Funding

The research was funded by UNICEF Bosnia & Hercegovina.

Author contributions

Conceptualization, C.M.L. and K.E.D.; methodology, C.M.L. and K.E.D.; formal analysis, K.E.D.; resources, C.M.L.; data curation, C.M.L. and K.E.D.; writing—original draft preparation, K.E.D., C.G., and K.S.H.M.; writing—review and editing, C.M.L. and K.E.D.; project administration, C.M.L.; funding acquisition, C.M.L. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

Data availability statement

Data available from the corresponding author upon reasonable request.

Institutional review board statement

The study design and classroom surveys were approved by an ad hoc local IRB panel consisting of a study author (CML), supervising UNICEF officer, university psychologist/program supervisor, and community clinician/program supervisor.

Informed consent statement

Not applicable.

Sample availability

The authors declare no physical samples were used in the study.

Additional information

Received: 2024-03-20

Accepted: 2024-07-05

Published: 2024-07-19

Academia Medicine papers should be cited as *Academia Medicine 2024*, ISSN 2994-435X, https://doi.org/10.20935/AcadMed6252. The journal's official abbreviation is *Acad. Med.*

Publisher's note

Academia.edu Journals stays neutral with regard to jurisdictional claims in published maps and institutional affiliations. All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors, and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

References

1. Barenbaum J, Ruchkin V, Schwab-Stone M. The psychosocial aspects of children exposed to war: practice and policy

initiatives. J Child Psychol Psychiatry. 2004;45(1):41–62. doi: 10.1046/j.0021-9630.2003.00304.x

2. Shaw JA. Children exposed to war/terrorism. Clin Child Fam Psychol Rev. 2003;6:237–46.
3. Baroud E, Dirani LA. The invisible wounds: mental health support for the war injured children. In: Abu-Sittah GS, Hoballah JJ, editors. The war injured child: from point of injury treatment through management and continuum of care. Cham: Springer; 2023. p. 219–37.
4. Osokina O, Silwal S, Bohdanova T, Hodes M, Sourander A, Skokauskas N. Impact of the Russian invasion on mental health of adolescents in Ukraine. J Am Acad Child Adolesc Psychiatry. 2023;62(3):335–43.
5. Layne CM, Olsen JA, Baker A, Legerski JP, Isakson B, Pašalić AP, et al. Unpacking trauma exposure risk factors and differential pathways of influence: predicting postwar mental distress in Bosnian adolescents. Child Dev. 2010; 81(4):1053–76.
6. Layne CM, Warren JS, Saltzman WR, Fulton J, Steinberg AM, Pynoos RS. Contextual influences on posttraumatic adjustment: retraumatization and the roles of revictimization, posttraumatic adversities, and distressing reminders. In: Schein LA, Spitz HI, Burlingame GM, Muskin PR, editors. Psychological effects of catastrophic disasters: group approaches to treatment. New York: Routledge;2006. p. 235–86.
7. Bürgin D, Anagnostopoulos D, Vitiello B, Sukale T, Schmid M, Fegert JM. Impact of war and forced displacement on children's mental health—multilevel, needs-oriented, and trauma-informed approaches. Eur Child Adolesc Psychiatry. 2022;31(6):845–53.
8. Houston-Dial RC. Understanding intergenerational transmission and frequency of ethnic-racial socialization practices among racial ethnic minority groups [Master's thesis]. Columbia (SC): University of South Carolina ProQuest Dissertations Publishing; 2023.
9. Layne CM, Hobfoll S. Understanding post-traumatic adjustment trajectories in school-age youth: supporting stress resistance, resilient recovery, and growth. In: Rossen E, editor. Supporting and educating traumatized students: a guide for school-based professionals. New York: Oxford University Press; 2020. p. 75–98.
10. Layne CM, Ruzek JI, Dixon K. From resilience and restoration to resistance and resource caravans: a developmental framework for advancing the disaster field. Psychiatry. 2021;84(4):393–409.
11. Layne CM, Warren JS, Hilton S, Lin D, Pašalić A, Fulton J, et al. Measuring adolescent perceived support amidst war and disaster the multi-sector social support inventory. In: Adolescents and war: how youth deal with political violence. Oxford: Oxford University Press; 2009. p. 145–76.
12. Norris FH, Kaniasty K. Received and perceived social support in times of stress: a test of the social support deterioration deterrence model. J Pers Soc Psychol. 1996;71(3): 498.
13. Riad JK, Norris FH, Ruback RB. Predicting evacuation in two major disasters: risk perception, social influence, and access to resources. J Appl Soc Psychol. 1999;29(5):918–34.
14. Lazarus RS, Folkman S. Stress, appraisal, and coping. New York: Springer Publishing Company; 1984.
15. Gottlieb B. Social support and the study of personal relationships. J Soc Pers Relat. 1985;2:351–75.
16. Brewin CR, Andrews B, Valentine JD, Holloway R, Breslau N, Bromet E, et al. Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. J Consult Clin Psychol. 2000;68(5):748–66.
17. Ozer EJ, Best SR, Lipsey TL, Weiss DS. Predictors of posttraumatic stress disorder and symptoms in adults: a meta-analysis. Psychol Bull. 2003;129(1):52.
18. Cheng P, Wang L, Zhou Y, Ma W, Li W. Exploring the differential effects of psychological resilience and social support in mitigating post-traumatic psychiatric symptoms: real-world network analysis of front-line rescuers. BJPsych Open. 2024;10(3):e109.
19. Cox J, Davies DR, Burlingame GM, Campbell JE, Layne CM, Katzenbach RJ. Effectiveness of a trauma/grief-focused group intervention: a qualitative study with war-exposed bosnian adolescents. Int J Group Psychother. 2007;57(3): 319–45.
20. Saltzman W, Layne C, Pynoos R, Olafson E, Kaplow J, Boat B. Trauma and grief component therapy for adolescents: a modular approach to treating traumatized and bereaved youth. Cambridge: Cambridge University Press; 2017.
21. Weiss R. The provisions of social relationships. In: Rubin Z, editor. Doing unto others. Englewood Cliffs (NJ): Prentice Hall; 1974. p. 17–26.
22. Layne CM, Saltzman WR, Poppleton L, Burlingame GM, Pašalić A, Duraković E, et al. Effectiveness of a school-based group psychotherapy program for war-exposed adolescents: a randomized controlled trial. J Am Acad Child Adolesc Psychiatry. 2008;47(9):1048–62.
23. Chaudhry S, Tandon A, Shinde S, Bhattacharya A. Student psychological well-being in higher education: the role of internal team environment, institutional, friends and family support and academic engagement. PLoS One. 2024;19(1): e0297508.
24. House JS. Adolescents and war: how youth deal with political violence. Psychosom Med. 2001;63:273–4.
25. Taylor SE, Burklund LJ, Eisenberger NI, Lehman BJ, Hilmert CJ, Lieberman MD. Neural bases of moderation of cortisol stress responses by psychosocial resources. J Pers Soc Psychol. 2008;95(1):197.
26. Holt-Lunstad J. The major health implications of social connection. Curr Dir Psychol Sci. 2021;30(3):251–9.
27. Kaniasty KZ, Norms FH, Murrell SA. Received and perceived social support following natural disaster. J Appl Soc Psychol. 1990;20(2):85–114.
28. Sarason IG, Sarason BR, Pierce GR. Social support: the search for theory. J Soc Clin Psychol. 1990;9(1):133–47.

29. Bowlby J. ATTACHMENT AND LOSS: Retrospect and prospect . Am J Orthopsychiatry. 1982;52(4):664–78.

30. Kohlhoff J, Cibralic S. The impact of attachment-based parenting interventions on externalizing behaviors in toddlers and preschoolers: a systematic narrative review. Child Youth Care Forum. 2021;51:1005–29.

31. Mikulincer M, Shaver PR, Gal I. An attachment perspective on solitude and loneliness. The handbook of solitude: Psychological perspectives on social isolation, social withdrawal, and being alone. 2021;31–41.

32. Newcomb MD. Social support and personal characteristics: a developmental and interactional perspective. J Soc Clin Psychol. 1990;9(1):54–68.

33. Dubow EF, Tisak J, Causey D, Hryshko A, Reid G. A two-year longitudinal study of stressful life events, social support, and social problem-solving skills: contributions to children's behavioral and academic adjustment. Child Dev. 1991;62(3): 583–99.

34. Demaray MK, Malecki CK, Davidson LM, Hodgson KK, Rebus PJ. The relationship between social support and student adjustment: a longitudinal analysis. Psychol Sch. 2005;42(7):691–705.

35. Cohen S, McKay G. Social support, stress and the buffering hypothesis: a theoretical analysis. In: Taylor SE, Singer JE, Baum A, editors. Handbook of psychology and health, Volume IV. London: Routledge; 2020. p. 253–67.

36. Bronfenbrenner U. Some familial antecedents of responsibility and leadership in adolescents. In: Petrullo, L., and Bass, B, editors. Leadership and interpersonal behavior. New York: Holt, Rinehart & Winston; 1961. p. 239–71.

37. Vaillant GE. Natural history of male psychological health: II. Some antecedents of healthy adult adjustment. Arch Gen Psychiatry. 1974;31(1):15–22.

38. Sarason IG, Sarason BR. Social support: mapping the construct. J Soc Pers Relat. 2009;26(1):113–20.

39. Meuleman EM, van der Veld WM, Laceulle OM, van der Heijden PT, Verhagen M, van Ee E. Youth perceived social support and symptom distress: a random-intercept cross-lagged panel model. J Youth Adolesc. 2024;53(1):117–29.

40. Cohen S, Mermelstein R, Kamarck T, Hoberman HM. Measuring the functional components of social support. In: Irwin G. Sarason, Barbara R. Sarason, editors. Social support: theory, research and applications. New York City (NY): Springer; 1985. p. 73–94.

41. Delistamati E, Samakouri MA, Davis EA, Vorvolakos T, Xenitidis K, Livaditis M. Interpersonal Support Evaluation List (ISEL)-college version: validation and application in a Greek sample. Int J Soc Psychiatry. 2006;52(6):552–60.

42. Shumaker SA, Brownell A. Toward a theory of social support: closing conceptual gaps. J Soc Issues. 1984;40(4):11–36.

43. Feeney BC, Collins NL. A new look at social support: a theoretical perspective on thriving through relationships. Pers Soc Psychol Rev. 2015;19(2):113–47.

44. Shonkoff JP, Boyce WT, Bush NR, Gunnar MR, Hensch TK, Levitt P, et al. Translating the biology of adversity and resilience into new measures for pediatric practice. Pediatrics. 2022;149(6):e2021054493.

45. Ellis BJ, Sheridan MA, Belsky J, McLaughlin KA. Why and how does early adversity influence development? Toward an integrated model of dimensions of environmental experience. Dev Psychopathol. 2022;34(2):447–71.

46. Sölva K, Haselgruber A, Lueger-Schuster B. Resilience in the face of adversity: classes of positive adaptation in trauma-exposed children and adolescents in residential care. BMC Psychol. 2023;11(1):30.

47. Gottlieb BH, Bergen AE. Social support concepts and measures. J Psychosom Res. 2010;69(5):511–20.

48. Astell-Burt T, Hartig T, Putra IGNE, Walsan R, Dendup T, Feng X. Green space and loneliness: A systematic review with theoretical and methodological guidance for future research. Sci Total Environ. 2022;847:157521.

49. Viner RM, Ozer EM, Denny S, Marmot M, Resnick M, Fatusi A, et al. Adolescence and the social determinants of health. Lancet. 2012;379(9826):1641–52.

50. Jones L. Adolescent understandings of political violence and psychological well-being: a qualitative study from Bosnia Herzegovina. Soc Sci Med. 2002;55(8):1351–71.

51. World Health Organization. Social determinants of mental health. World Health Organization; 2014. Available from: https://iris.who.int/bitstream/handle/10665/112828/9789241506809_eng.pdf?sequence=1

52. Gartland D, Riggs E, Muyeen S, Giallo R, Afifi TO, MacMillan H, et al. What factors are associated with resilient outcomes in children exposed to social adversity? A systematic review. BMJ Open. 2019;9(4):e024870.

53. Matías-García JA, Cubero M, Santamaría A, Bascón MJ. The learner identity of adolescents with trajectories of resilience: the role of risk, academic experience, and gender. Eur J Psychol Educ. 2024;1–23.

54. Dunkel-Schetter C, Folkman S, Lazarus RS. Correlates of social support receipt. J Pers Soc Psychol. 1987;53(1):71–80.

55. Barrera M. Distinctions between social support concepts, measures, and models. Am J Community Psychol. 1986; 14(4):413–45.

56. Masten AS. Resilience in children threatened by extreme adversity: frameworks for research, practice, and translational synergy. Dev Psychopathol. 2011;23(2):493–506.

57. Varga SM, Zaff JF. Webs of support: an integrative framework of relationships, social networks, and social support for positive youth development. Adolesc Res Rev. 2018;3:1–11.

58. Kravić N, Pajević I, Hasanović M, Karahasanović N, Voracek M, Baca-Garcia E, et al. Bosnian paternal war orphans: mental health in postwar time. J Nerv Ment Dis. 2023; 211(7):486–95.

59. Lampe JR. Bosnian War. Encyclopedia Britannica. 2024 [cited 2024 June 6]. Available from: https://www.britannica.com/event/Bosnian-War

60. Howell KH, Kaplow JB, Layne CM, Benson MA, Compas BE, Katalinski R, et al. Predicting adolescent posttraumatic

stress in the aftermath of war: differential effects of coping strategies across trauma reminder, loss reminder, and family conflict domains. Anxiety Stress Coping. 2015;28(1): 88–104.

61. Commission E. Bosnia and Herzegovina 2011 progress report. Commission Staff Working Document, SEC (2011). 2011 [cited 2024 June 6]. Available from: http://aei.pitt.edu/id/eprint/44853
62. Allwood MA, Bell-Dolan D, Husain SA. Children's trauma and adjustment reactions to violent and nonviolent war experiences. J Am Acad Child Adolesc Psychiatry. 2002; 41(4):450–7.
63. Smith P, Perrin S, Yule W, Rabe-Hesketh S. War exposure and maternal reactions in the psychological adjustment of children from Bosnia-Hercegovina. J Child Psychol Psychiatry. 2001;42(3):395–404.
64. Hobfoll SE, Lerman M. Predicting receipt of social support: a longitudinal study of parents' reactions to their child's illness. Health Psychol. 1989;8(1):61.
65. Sarason IG, Levine HM, Basham RB, Sarason BR. Assessing social support: the social support questionnaire. J Pers Soc Psychol. 1983;44(1):127–39.
66. Layne CM, Stuvland R, Saltzman WR, Djapo N, Pynoos RS. War trauma and adversities index. Los Angeles: University of California; 1999.
67. Anderson JC, Gerbing DW. Structural equation modeling in practice: a review and recommended two-step approach. Psychol Bull. 1988;103(3):411.
68. Bentler PM, Bonett DG. Significance tests and goodness of fit in the analysis of covariance structures. Psychol Bull. 1980;88(3):588.
69. Tucker LR, Lewis C. A reliability coefficient for maximum likelihood factor analysis. Psychometrika. 1973;38(1):1–10.
70. Bentler PM. Comparative fit indexes in structural models. Psychol Bull. 1990;107(2):238.
71. Steiger JH. Structural model evaluation and modification: an interval estimation approach. Multivariate Behav Res. 1990;25(2):173–80.
72. Hu L, Bentler PM. Fit indices in covariance structure modeling: sensitivity to underparameterized model misspecification. Psychol Methods. 1998;3(4):424.
73. Browne MW, Cudeck R. Alternative ways of assessing model fit. Sociol Methods Res. 1992;21(2):230–58.
74. Schermelleh-Engel K, Moosbrugger H, Müller H. Evaluating the fit of structural equation models: tests of significance and descriptive goodness-of-fit measures. Methods Psychol Res. 2003;8(2):23–74.
75. Hayes AF. Introduction to mediation, moderation, and conditional process analysis: a regression-based approach. New York City (NY): Guilford Press; 2017.
76. Preacher KJ, Hayes AF. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behav Res Methods. 2008;40(3):879–91.
77. Duren R, Yalçın Ö. Social capital and mental health problems among Syrian refugee adolescents: the mediating roles of perceived social support and post-traumatic symptoms. Int J Soc Psychiatry. 2021;67(3):243–50.
78. Shaver P, Hazan C. Being lonely, falling in love. J Soc Behav Pers. 1987;2(2):105.
79. Bauer A, Stevens M, Purtscheller D, Knapp M, Fonagy P, Evans-Lacko S, et al. Mobilising social support to improve mental health for children and adolescents: a systematic review using principles of realist synthesis. PLoS One. 2021; 16(5):e0251750.
80. Miller-Graff LE, Cummings EM. Supporting youth and families in Gaza: a randomized controlled trial of a family-based intervention program. Int J Environ Res Public Health. 2022;19(14):8337.
81. Walsh C. Disrupting the cycle of youth violence: the role of social support for youth in a Northern Irish Youth Work Programme. J Child Adolesc Trauma. 2023;16(3):671–9.
82. Betancourt TS, Meyers-Ohki SE, Charrow AP, Tol WA. Interventions for children affected by war: an ecological perspective on psychosocial support and mental health care. Harv Rev Psychiatry. 2013;21(2):70–91.
83. Lopatovska I, Arora K, Fernandes FV, Rao A, Sivkoff-Livneh S, Stamm B. Experiences of the Ukrainian adolescents during the Russia-Ukraine 2022 War. Inform Learn Sci. 2022;123(11/12):666–704.
84. Ko SJ, Ford JD, Kassam-Adams N, Berkowitz SJ, Wilson C, Wong M, et al. Creating trauma-informed systems: child welfare, education, first responders, health care, juvenile justice. Prof Psychol Res Pr. 2008;39(4):396.
85. Welch V, Ghogomu ET, Dowling S, Barbeau VI, Al-Zubaidi AAA, Beveridge E, et al. In-person interventions to reduce social isolation and loneliness: an evidence and gap map. Campbell Syst Rev. 2024;20(2):e1408.
86. Layne CM, Beck C, Rimmasch H, Southwick J, Moreno M, Hobfoll S. Promoting "resilient" posttraumatic adjustment in childhood and beyond: "unpacking" life events, adjustment trajectories, resources, and interventions. In: Brom D, Pat-Horenczyk R, Ford JD, editors. Treating traumatized children: risk, resilience, and recovery. New York: Routledge; 2008. p. 13–47.
87. Schiff M, Pat-Horenczyk R, Benbenishty R, Brom D, Baum N, Astor RA. Do adolescents know when they need help in the aftermath of war? J Trauma Stress. 2010;23(5):657–60.
88. Al-Sabah R, Legerski JP, Layne C, Isakson B, Katalinski R, Pasalic H, et al. Adolescent adjustment, caregiver-adolescent relationships, and outlook towards the future in the long-term aftermath of the Bosnian war. J Child Adolesc Trauma. 2015;8:45–60.
89. Layne CM, Kasi I, Andre K, Stafford C, Carter L, Michner S. Evidence-based assessment of childhood trauma and bereavement: an integrative developmentally informed approach. In: Landholt MA, Cloitre M, Schnyder U, editors. Evidence based treatments for trauma-related disorders in children and adolescents. 2nd ed. Cham: Springer International Publishing AG; 2017.