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Resilience in Children Exposed to Violence: A Meta-analysis of Protective Factors Across Ecological Contexts

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Abstract

Children who experience violence in their families and communities are at increased risk for a wide range of psychological and behavioral difficulties, but some exhibit resilience, or adaptive functioning following adversity. Understanding what promotes resilience is critical for developing more effective prevention and intervention strategies. Over 100 studies have examined potential protective factors for children exposed to violence in the past 30 years, but there has been no quantitative review of this

literature. In order to identify which protective factors have received the strongest empirical support, we conducted a meta-analysis of 118 studies involving 101,592 participants. We separately evaluated cross-sectional (n = 71) and longitudinal (n = 47) studies testing bivariate, additive, and buffering effects for eleven proposed protective factors. Effect sizes generally were stronger in cross-sectional than longitudinal studies, but four protective factors—self-regulation, family support, school support, and peer support—demonstrated significant additive and/or buffering effects in longitudinal studies. Results were consistent across type of violence experienced (i.e., maltreatment, intimate partner violence, community violence). The review highlights the most robust predictors of resilience, identifies limitations of this work, and offers directions for improving our understanding of the processes and programs that foster resilience in children exposed to violence.

Keywords

Resilience; Violence; Protective factors; Children

Violence is a pervasive problem for children in the United States. A nationally representative sample of over 4000 children and adolescents found that 51% directly experienced a physical assault, 38% witnessed some form of violence (e.g., maltreatment, intimate partner violence, community violence), and 25% experienced maltreatment (e.g., physical, emotional, sexual, neglect) during childhood (Finkelhor et al. [61]). Children living in economically disadvantaged communities are particularly likely to experience violence (e.g., Gibson et al. [66]). Exposure to violence is related to a wide variety of psychological and behavioral difficulties, including depression, anxiety, suicidal behavior, posttraumatic stress disorder, substance abuse, delinquency, aggression, antisocial behavior, peer problems, and academic difficulties (for reviews, see Fowler et al. [63]; Kitzmann et al. [117]; Mazza and Overstreet [157]). However, not all children who experience violence develop symptoms of psychopathology. Studies of different forms of violence consistently find that some children appear to be resilient, as demonstrated by the absence of symptomatology and/or indicators of healthy development (e.g., DuMont et al. [49]; Grogan-Kaylor et al. [76]; Haskett et al. [87]; Herrenkohl [94]; Jaffee et al. [104]).

Understanding what differentiates children who exhibit resilience from those who develop psychopathology is critical for improving the effectiveness of prevention and intervention efforts for children exposed to violence. Research on resilience in children has identified a long list of protective factors that are associated with better functioning in these children. Narrative reviews of research on protective factors for particular types of violence (e.g., child maltreatment; Afifi and MacMillan [1]; sexual abuse; Marriott et al. [146]; community violence; Ozer et al. [173]), as well as adversity defined more broadly (e.g., poverty, natural disasters, motor vehicle accidents) (e.g., Benzies and Mychasiuk [11]; Zolkoski and Bullock [227]) have identified family-level factors, such as supportive parent–child relationships, and individual factors, such as self-regulation, as the most consistent predictors of resilience (Afifi and MacMillan [1]; Marriott et al. [146]; Ozer et al. [173]). However, there have been no attempts to quantify the magnitude of diverse predictive factors across different forms of violence. Identifying which factors have the strongest empirical support for promoting resilience would be valuable for informing prevention and public health policy and for guiding the next generation of research on resilience.

Therefore, the aim of the present study was to apply meta-analytic techniques to assess the empirical evidence on protective factors in children exposed to different types of violence (maltreatment, intimate partner violence, community violence). In their summary of research on polyvictimization, Hamby and Grych ([80]) noted that similar risk factors have been identified for children exposed to different types of violence, and the same may hold true for protective factors. If so, targeting the same set of protective factors would be beneficial for children who experience diverse forms of violence. We examined whether the strength of particular protective factors is consistent across types of violence and evaluated whether they demonstrated direct or buffering effects on children's health and well-being. We then discuss limitations of the existing work, identify how the next generation of research can improve our understanding of the processes that give rise to resilience, and consider the implications of the findings for prevention, intervention, and public policy.

Resilience

The terms "resilience" and "resiliency" have been used in a variety of ways in professional and popular writing, but leading theorists in the field operationalize resilience as positive adaptation in individuals who have been exposed to significant adversity (Luthar [140]; Masten [152]; Masten et al. [153]). There is less consensus regarding exactly what constitutes "significant" adversity and "positive" adaptation, however (Herrenkohl [94]; Luthar et al. [143]). For instance, some studies characterize significant adversity using broad demographic characteristics (e.g., socioeconomic status), while others focus on the experience of specific life events (e.g., trauma; Masten [149]), which may be chronic, intermittent, or single occurrences (Luthar et al. [143]). Positive adaptation has been defined in various ways, including attainment of relevant developmental tasks, competence in important domains (e.g., school), high levels of subjective well-being and self-esteem, and the absence or low levels of psychopathology (Bonanno [15]; Masten and Reed [155]). How many domains children need to exhibit healthy functioning to be considered resilient, and whether "healthy" refers to average or above average functioning is less clear and may depend on the nature of the adversity experienced (Luthar [141]; Masten [150]). That is, if a child experiences a traumatic event that frequently leads to psychopathology, then average functioning might be considered evidence of resilience. On the other hand, if the adversity faced has a weaker association with psychological health, then the term "resilient" might be fitting only for children who exhibit better-than-average functioning.

Contemporary resilience theorists emphasize that resilience is a state of functioning that reflects the constellation of individual characteristics, external supports, and current stressors present at a particular time rather than a stable characteristic of individuals (e.g., Harney [86]; Lerner [128]; Lerner and Overton [129]; Masten [151]; Overton [171]). Consequently, it is subject to change as circumstances change; someone who exhibits resilience after experiencing a traumatic event may not continue to do so if another trauma occurs. The changing nature of adaptation over the lifespan is demonstrated in a study that followed victims of maltreatment from childhood into adulthood (DuMont et al. [49]). Almost half (48%) of the maltreated children in the sample of 676 were considered resilient as adolescents due to their competence in domains such as education, psychological functioning, and substance abuse, but in adulthood only 22% were classified as resilient in the same domains as well as employment, homelessness, and social functioning.

Organization and Goals of Meta-analysis

In order to structure our review of research on factors proposed to foster resilience in children exposed to violence, we organized studies of protective factors using Bronfenbrenner's ([21]) ecological framework (also see Belsky [7]; Cicchetti and Lynch [33]; Salzinger et al. [191]). Bronfenbrenner ([21]) identified a set of nested contexts that interact to mutually influence children's development. By including multiple levels of analysis, this framework brings attention to potential protective factors within the individual, home, school, and community. As the results of this meta-analysis will show, some of these levels have received far more empirical study than others, and the framework thus can identify potential sources of protection that rarely have been explored and generate hypotheses about how factors at different levels may influence each other. We also evaluate what each study indicates about the nature of the association between putative protective factors and resilience. Protective factors generally are proposed to enhance adaptive functioning in one of two ways. First, protective factors may operate by improving adjustment in all individuals regardless of their level of exposure to stress. This also has been termed a "promotive" factor (e.g., Masten et al. [154]) and described as an *additive* (Grych et al. [77]) or *compensatory* (Fergus and Zimmerman [59]; Garmezy et al. [65]; Masten et al. [154]) effect. For example, if a close and supportive relationship with caregivers promotes healthy development in all children, it would represent an additive effect. Statistically, additive effects are demonstrated by significant direct associations between a proposed protective factor and indicators of adaptive functioning after accounting for the association between adversity and adaptive functioning.

Alternatively, *buffering* models indicate that protective factors have an effect only for children who have experienced significant adversity; they promote resilience by reducing the effects of the stressor on children's adjustment but do not improve functioning in children who are not exposed to the stressor. For example, if effective coping helps children maintain healthy functioning in the face of adversity but does not enhance adjustment in the absence of a stressor, it would represent a buffering effect. Buffering effects are demonstrated statistically with significant moderating or interactive effects of the protective factor rather than a direct effect on child outcomes, and can take several different forms (see Luthar and Cicchetti [142]). The term "protective factor" sometimes is used to refer specifically to this type of effect (e.g., Hawkins et al. [90]; Masten [148]; Pearce et al. [176]; Walsh et al. [220]). Additive and buffering effects have somewhat different implications for prevention. Protective factors that have additive effects are good targets for universal prevention efforts that seek to promote healthy adjustment in all children regardless of their exposure to violence or other stressors. Protective factors that have buffering effects are well-suited for targeted prevention strategies that are intended for children who have experienced a particular stressor. In this review, we use the term "protective" to refer to variables that demonstrate either type of effect because at this point it is not clear if there are particular constructs that consistently and exclusively fit into just one category.

The meta-analysis addressed four primary questions: Which protective factors have the strongest associations with adaptive functioning in children (i.e., 18 years of age or younger) exposed to violence? Do these factors vary for different forms of violence? Do the effect sizes differ for cross-sectional and longitudinal studies? Do particular protective factors appear to have additive or buffering effects?

Method

Following the techniques outline by Rosenthal and DiMatteo ([186]), a meta-analysis was conducted to evaluate the strength of the associations between protective factors and positive adaptation in children and adolescents exposed to violence. To be included in the meta-analysis, studies needed to assess both of the elements that define resilience: exposure to adversity (in this case, violence) and positive adaptation, and at least one hypothesized protective factor. Children's exposure to violence encompassed hearing or seeing violence and being directly victimized in the home or community (Boxer and Sloane-Power [18]). For example, measures of community violence pertain to any context outside of the home (typically excluding political conflicts and war), and include events such as hearing gunshots, being robbed, and witnessing murder (Brandt et al. [19]). Measures of exposure to intimate partner violence assessed children's witnessing of aggression between parents, and measures of child maltreatment assessed physical and sexual abuse, and, in some studies, neglect that threatens children's health or well-being. Indicators of adaptive functioning included measures of healthy development, such as positive self-worth and social competence, and low levels of psychological difficulties. Even though resilience is defined by functioning well despite experiencing adversity, many studies operationalize resilience solely as low levels of clinical symptomatology (Grych et al. [77]). This approach provides a narrow measure of adaptive functioning, but given its widespread use in resilience research, we include these studies as well as those assessing indicators of competence and self-worth.

We classified protective factors into 11 categories representing the individual, family, school, peer, and community levels that have been studied most frequently in this literature. Individual factors included four types of characteristics. "Positive self-perceptions" reflected favorable judgements of the self (e.g., competence, self-efficacy, perceived control over the environment; Berk [12]). "Cognitive abilities" included variables that reflect children's capacity to think, reason, and solve problems such as IQ, problem solving, and executive functioning (Masten [151]; Ones et al. [169]). "Self-Regulation" included measures that assessed individuals' capacity to adaptively manage their emotions and behavior to achieve a desired goal (Garber et al. [64]; Thompson [213]), such as emotion regulation, impulse control, and ego resilience. "Coping" included measures that assessed conscious, volitional efforts to respond adaptively to stressful events or circumstances in the environment (Compas et al. [40]). The family level included two constructs. "Family Support" is characterized by variables that measure parental warmth and acceptance, family cohesion and structure, and perceived support from family members (e.g., Graham-Bermann et al. [72]; Tajima et al. [209]). "Parental effectiveness" included more specific parenting practices, such as monitoring, authoritative discipline, and emotion socialization behaviors (e.g., David et al. [44]; Fagan et al. [57]; Proctor [181]). "School support" included variables that assessed the extent to which students felt supported and valued by teachers and staff, as well as a sense of security at school (e.g., Ozer [172]). "Peer support" included measures assessing emotional support, social support, relationship satisfaction, and level of attachment with friends, classmates, and peers (e.g., Rosario et al. [185]; Salzinger et al. [190]). Finally, the community level was represented by three constructs. "Community cohesion" included measures of collective efficacy, sense of security, and the degree to which neighbors are perceived as being helpful, involved, and trustworthy (e.g., Li et al. [135]; Löfving-Gupta et al. [138]). "Extra-curricular activities" included the assessment of participation in before- or after-school programs, sports, clubs, youth groups, and musical activities (e.g., band), which present opportunities for mastery and supportive interactions

with other children and adults in the community (e.g., Hardaway et al. [84]). "Religious Involvement" included measures that assessed involvement in a religious institution, as well as religious practices and beliefs (e.g., Edmond et al. [53]; Pearce et al. [176]).

Literature Search Procedure

To gather eligible studies for the meta-analysis, a comprehensive search of online databases, including PsycINFO, PsycARTICLES, ERIC, and Medline, was conducted for peer-reviewed articles published through July, 2017. A variety of combinations of the following search terms were used: resilience, protective factor, child abuse, maltreatment, physical abuse, sexual abuse, exposure to intimate partner violence (IPV), exposure to domestic violence, community violence, and the names of the specific protective factors described above. A secondary search then was conducted using GoogleScholar and the references from reviews and articles identified for additional relevant citations. Through this process, 2668 articles published in English were identified for potential study inclusion. The following criteria were used to select studies for inclusion in the meta-analysis:

- The study assessed at least one of the types of violence described above, a potential protective factor, and a measure of adjustment in children 18 years of age or younger. These variables could be reported by the children themselves, a caregiver, and/or a teacher. In cases where there were multiple reports of a particular construct, we aggregated all reports by computing an average effect size while accounting for the correlation between measures to calculate the variance for the composite effect size (Borenstein et al. [17]; Card [26]; Scammacca et al. [195]). Studies of samples selected on the basis of exposure to violence (e.g., referrals from Child Protective Services) were included if they assessed participants' level of exposure so that the strength of the associations among violence, protective factors and functioning could be determined. Studies of adults that collected retrospective reports of protective factors during childhood were not included in the current study.
- Sufficient statistical information was reported to calculate an effect size for the association between one or more protective factors and child adjustment. Effect sizes for bivariate associations were drawn from correlations in nearly all studies. Studies were included as testing additive effects of the protective factor if they reported statistical analyses that examined the association between the protective factor and a measure of functioning after accounting for participants' exposure to violence (e.g., beta weight in a regression analyses). Studies were included as tests of buffering effects if they conducted analyses that evaluated the interaction of the protective factor and participants' exposure to violence (e.g., beta weight in a hierarchical regression analyses).

Of the 2668 publications identified in the initial search, 118 publications met inclusion criteria and thus were included in the meta-analysis.

Coding Procedures

All studies included in the meta-analysis were coded for the (a) year of publication, (b) number of child participants, (c) age range of child participants, (d) type of violence assessed (IPV, maltreatment, community), (e) type of adjustment assessed (internalizing, externalizing, positive functioning, or

combination of positive and psychopathology), (f) type of protective factor, (g) type of effect assessed (bivariate, additive, buffering), (h) control variables, and (i) statistical results (e.g., correlation coefficients, Cohen's *d, t* statistics).

Calculation of Effect Sizes

The majority of studies reported Pearson's product moment correlation coefficient (*r*) to quantify the bivariate relationship between protective factors and indicators of adaptive functioning. Findings from other statistics that did not report correlations (e.g., Cohen's *d, t*) were converted to *r* values (see Lipsey and Wilson [137]; Wilson [224]). For studies testing additive effects, the effect size utilized in the meta-analysis represents the magnitude of the unique association between the protective factor and outcome (e.g., beta weight, odds ratio) after accounting for the association between violence and the outcome. For tests of buffering effects, the effect size represents the unique variance added by the interaction of the proposed protective factor and the measure of violence after accounting for the direct effects of violence and the protective. In many cases, other variables were included in the analyses of additive and buffering effects as well, which has the potential to reduce the unique variance attributed to the protective factor (studies that included covariates in analyses of additive and buffering effects are noted in Table 2). Most often this involved adding demographic variables such as age and gender to the equations, but approximately a third of these studies included other protective factors as well. In order to examine how inclusion of covariates affected the estimation of effect sizes, we compared effect sizes from studies that did and did not include covariates in the analyses and tested the inclusion of covariates as a categorical moderator variable.

The effect sizes from each study were coded so that positive values indicted protective factors predicting higher levels of resilience, whereas negative values indicated lower levels of resilience. When studies assessed more than one protective factor, a synthetic effect size was calculated for multiple *r* values to ensure independence of effects for each protective factor (Borenstein et al. [17]). In order to adjust for sampling error, *r* values in each study were weighted by sample size and converted using a Fisher's *Z* transformation. The aggregated *r* values for the association between each protective factor and adjustment were calculated from these weighted and transformed *r* values using SPSS 24.0 and meta-analysis macros (Field and Gillett [60]). According to Cohen ([38]), effect sizes are low when *r* values vary around 0.10, medium when *r* varies around 0.30, and large when *r* varies more than 0.50. The protective factor-resilience relationship was analyzed using the correlation Basic Meta-Analysis macro (Field and Gillett [60]).

The *Q* test and *I2* index were used to examine heterogeneity in the relationships between proposed protective factors and resilience. The *Q* test provides information on whether the variability among reported *r* values across studies is greater than what is likely to have resulted from sampling error alone, and is distributed as a chi square (Lipsey and Wilson [137]), The *Q* test has been criticized for having low power, especially when there are a small number of studies (Higgins et al. [96]), and so we also computed the *I2* index, which provides the percentage of total variability among *r* values caused by true heterogeneity rather than by sampling error (Huedo-Medina et al. [102]) and is preferred by some statisticians for calculating degree of heterogeneity in a meta-analysis (Higgins et al. [96]). The following equation was applied to test for heterogeneity: $I^2 = [Q - df/Q] \times 100\%$. A percentage of approximately 75% or higher indicates high heterogeneity, 50% indicates medium heterogeneity, 25%

indicates low heterogeneity, and 0% indicates no heterogeneity. If the protective factor-resilience relationship was heterogeneous, moderation analyses were conducted using Field and Gillett's ([60]) moderation macro for correlation coefficient effect sizes, with sample size, type of adaptive functioning, and inclusion of covariates examined separately as moderators. For all calculations, the random effects model was used to generate the most conservative and accurate, and the least biased *r* value estimate (Hedges and Vevea [92]; Schmidt et al. [196]).

Results

The meta-analysis included 101,592 participants from 118 peer-reviewed studies published between September, 1992 and March, 2017. Descriptive information about the studies is presented in Tables 1 and 2. Tables 3, 4 and 5 present the sample sizes, weighted average *r* effect size (Fischer *Z* transformation), range of average effect size (confidence interval), the variance accounted for by sampling error variance (*Q* statistic), the percentage of total true heterogeneity across studies (I^2 %), and the fail-safe *N* for bivariate, additive, and buffering effects, respectively. Across protective factors, effect sizes varied from small to medium and the I^2 statistic showed moderate to high heterogeneity for most protective factors assessed cross-sectionally and longitudinally.

Descriptive Information of studies included in the meta-analysis (N = 118)

Characteristic	**n**	**% Study sample**
Year of publication		
1992–1999	16	13
2000–2010	54	46
2011–2017	48	41
Methodology		
Cross-sectional	71	60
Longitudinal	47	40
Sample size		
≤ 100	26	22
101–300	48	40
301–600	17	14
601–999	9	8
1000–3000	14	12
6000–10,000	2	2
16,000–19,000	2	2
Mean age of child participants		
≤ 5 years	14	12
6–12 years	48	42
13–18 years	52	46
Exposure to violence		
IPV	25	21
Maltreatment	43	36
Community violence	44	38
IPV & maltreatment	2	2
IPV & community	4	3
Measure of adaptive functioning		
Internalizing	25	21
Externalizing	25	21
Internalizing & externalizing	31	26
Positive functioning	10	9

Combination	27	23

Studies included in the meta-analysis (N = 118)

Study		Sample	Methodology	Violence	Protective factors assessed	Significant results	Outcome
1	Al'Uqdah et al. (2015)	57	Cross-sectional	Community	Family support		Positive
2	Barker and Roberts (2015)[+]	74	Cross-sectional	Community	Family support*	Additive & buffering	Positive
3	Benhorin and McMahon (2008)[+]	127	Cross-sectional	Community	Family support* School support* Peer support*	Bivariate & additive All models	Externalizing
4	Berman et al. (1996)	96	Cross-sectional	Community	Peer support*	Buffering	Internalizing
5	Bolger and Patterson (2001)	785	Longitudinal	Maltreatment	Self-perceptions*	Buffering	Internalizing
6	Brookmeyer et al. (2006)[+]	6397	Longitudinal	Community	Family support* School support*	Bivariate Bivariate & additive	Externalizing
7	Brookmeyer et al. (2005)[+]	1599	Longitudinal	Community	Family support*	All models	Externalizing
8	Browning et al. (2014)[+]	1277	Longitudinal	Community	Family support* Community cohesion*	Bivariate & additive Bivariate & buffering	Int/ext
9	Burgers and Drabick (2016)[+]	104	Cross-sectional	Community	Self-regulation*	All models	Internalizing
10	Carothers et al. (2016)[+]	241	Longitudinal	Community	Coping*	All models	Int/ext
11	Ceballo et al. (2003)[+]	163	Cross-sectional	Community	Parental effectiveness*	All models	Internalizing
12	Chaffin et al. 1997	84	Cross-sectional	Maltreatment	Coping*	Bivariate	Int/ext
13	Chen et al. (2016)[+]	2980	Cross-sectional	Community	Family support* School support* Community cohesion*	Bivariate & additive All models	Externalizing

					Self-perceptions*		
14	Cicchetti and Rogosch (1997)	213	Longitudinal	Maltreatment	Cognitive ability Self-regulation* Self-perceptions* Family support*	Bivariate Buffering	Combination
15	Cicchetti and Rogosch (2007)[+]	677	Cross-sectional	Maltreatment	Self-regulation*	Bivariate & additive	Combination
16	Cicchetti et al. (1993)[+]	206	Cross-sectional	Maltreatment	Cognitive ability* Self-regulation* Self-perceptions*	Additive Bivariate & additive	Combination
17	Clarey et al. (2010)	204	Cross-sectional	IPV	Self-regulation*	Bivariate	Externalizing
18	Collishaw et al. (2007)	541	Longitudinal	Maltreatment	Family support* Peer support*	Bivariate	Int/ext
19	Copeland-Linder et al. (2010)	504	Cross-sectional	Community	Self-perceptions* Family support*	Bivariate	Int/ext
20	Daigneault et al. (2007)	86	Longitudinal	Maltreatment	Self-perceptions* Coping* Family support*	Bivariate	Combination
21	Dang (2014)[+]	150	Cross-sectional	Maltreatment	Self-perceptions* Family support* School support* Peer support*	Bivariate & additive	Internalizing
22	David et al. (2015)[+]	83	Cross-sectional	Community & IPV*	Parental Effectiveness* Family support Religion	Buffering	Positive
23	Dempsey et al. (2000)[+]	70	Cross-sectional	Community	Coping*	Bivariate & buffering	Internalizing
24	Edlynn et al. (2008)[+]	240	Longitudinal	Community	Coping	All models	Internalizing
25	Edmond et al. (2006)	99	Cross-sectional	Maltreatment	Self-perceptions* Peer support* Family support Religion	Bivariate	Int/ext

26	Ehrensaft et al. (2017)[+]	243	Longitudinal	IPV	Family support*	Bivariate & buffering	Internalizing
27	Eisman et al. (2015)	824	Longitudinal	Community & IPV	Family support* Peer support	Bivariate & additive	Internalizing
28	Ensink et al. (2016)	168	Cross-sectional	Maltreatment	Coping* Parental effectiveness*	Bivariate	Int/ext
29	Fagan et al. (2014)[+]	1718	Longitudinal	Community	Self-regulation* Parental effectiveness* Family support Peer support Community cohesion	Bivariate & additive	Externalizing
30	Fay-Stammbach et al. (2017)[+]	107	Cross-sectional	Maltreatment	Parental effectiveness*	All models	Positive
31	Flores et al. (2005)	133	Cross-sectional	Maltreatment	Cognitive ability Self-regulation*	Bivariate & additive	Combination
32	Go et al. (2017)	130	Cross-sectional	Maltreatment	Self-perceptions*	Additive	Externalizing
33	Goodearl et al. (2014)[+]	579	Longitudinal	Community* & IPV	Peer support*	All models	Int/ext
34	Gorman-Smith et al. (2004)[+]	263	Longitudinal	Community	Family support* Parental effectiveness	Buffering	Externalizing
35	Gorman-Smith and Tolan (1998)[+]	245	Longitudinal	Community	Family support* Parental effectiveness*	All models Bivariate	Int/ext
36	Graham-Bermann et al. (2009)	219	Cross-sectional	IPV	Family support* Parental effectiveness*	Bivariate & additive	Combination
37	Grip et al. (2014)	65	Cross-sectional	IPV	Self-regulation* Family support*	Bivariate & additive	Combination
38	Guerra et al. (2016)[+]	144	Cross-sectional	Maltreatment	Peer support*	Bivariate & additive	Internalizing
39	Hammack et al. (2004)	196	Longitudinal	Community	Family support* Peer support*	Bivariate & buffering	Int/ext
40	Hamner et al. (2015)[+]	81	Cross-sectional	Community	Family support*	Buffering	Externalizing

41	Hardaway et al. (2012)[+]	391	Longitudinal	Community	Family support* School support* Extracurriculars*	All models Bivariate Bivariate & buffering	Int/ext
42	Hardaway et al. (2016)[+]	312	Longitudinal	Community	Family support*	All models	Int/ext
43	He et al. (2015)	995	Cross-sectional	Maltreatment	Family support* School support* Peer support*	Bivariate & additive Bivariate	Internalizing
44	Henry et al. (2015)[+]	106	Cross-sectional	Community	Family support*	Buffering	Int/ext
45	Herrenkohl et al. (2005)	457	Longitudinal	Maltreatment	Self-perceptions* Family support* School support* Religion*	Bivariate	Externalizing
46	Houston and Grych (2016)	148	Cross-sectional	IPV & Community	Family support*	Bivariate	Externalizing
47	Howell et al. (2010)[+]	56	Cross-sectional	IPV	Parental effectiveness*	Bivariate & additive	Positive
48	Huang et al. (2015)	2410	Longitudinal	IPV	Family support		Externalizing
49	Jaffee et al. (2007)	1116	Longitudinal	Maltreatment	Cognitive ability* Self-regulation* Family support* Community cohesion*	Bivariate	Externalizing
50	Jain et al. (2012)[+]	1166	Longitudinal	Community	Family support* Peer support* Parental effectiveness* Extracurriculars* Community cohesion	Bivariate & additive Bivariate	Internalizing
51	Jessar et al. (2017)	204	Longitudinal	Maltreatment	Coping*	Bivariate	Internalizing
52	Katz et al. (2016)	58	Cross-sectional	IPV	Self-regulation* Parental effectiveness*	Bivariate & additive	Internalizing
53	Kerig et al. (1998)	254	Cross-sectional	IPV	Coping*	Bivariate	Int/ext

54	Kim (2008)	384	Cross-sectional	Maltreatment	Religion*	Buffering	Int/ext
55	Kim and Cicchetti (2003)	500	Cross-sectional	Maltreatment	Self-perceptions*	Buffering	Int/ext
56	Kim and Cicchetti (2006)	251	Longitudinal	Maltreatment	Self-perceptions*	Bivariate	Internalizing
57	Kim and Cicchetti (2010)	421	Longitudinal	Maltreatment	Peer support* Self-regulation*	Bivariate	Int/ext
58	King and Mrug (2016)[+]	80	Longitudinal	Community* & IPV	Self-regulation*	Bivariate & buffering	Positive
59	Kinsfogel and Grych (2004)	391	Cross-sectional	IPV	Self-regulation*	Bivariate	Externalizing
60	Kliewer et al. (2004)	101	Longitudinal	Community	Family support* Self-regulation* Community cohesion*	All models Bivariate & additive Bivariate	Int/ext
61	Kliewer et al. (1998)[+]	99	Cross-sectional	Community	Peer support*	Buffering	Internalizing
62	Kliewer et al. (2006)[+]	9840	Cross-sectional	Community	Family support* Parental effectiveness*	All models	Externalizing
63	Kliewer et al. (2006)	101	Longitudinal	Community	Coping*	Bivariate	Combination
64	Klika et al. (2012)	457	Longitudinal	Maltreatment	Cognitive ability* School support*	Bivariate & buffering Bivariate	Externalizing
65	Kolbo (1996)	60	Cross-sectional	IPV	Cognitive ability*	Bivariate	Combination
66	Kuther and Fisher (1998)	123	Cross-sectional	Community	Family support*	All models	Combination
67	Lansford et al. (2006)[+]	585	Longitudinal	Maltreatment	Parental effectiveness		Int/ext
68	Latzman and Latzman (2015)	986	Longitudinal	Maltreatment	Parental effectiveness*	Buffering	Externalizing
69	Leon et al. (2008)[+]	142	Longitudinal	Maltreatment	Self-regulation* Parental effectiveness* Extracurriculars*	Additive buffering	Internalizing

70	Leshem et al. (2016)[+]	1930	Cross-sectional	Community	Family support* School support*	Bivariate & additive	Internalizing
71	Levendosky and Graham-Bermann (2000)[+]	95	Cross-sectional	IPV	Family support* Parental effectiveness*	Bivariate Bivariate & additive	Combination
72	Levendosky and Graham-Bermann (2001)	120	Cross-sectional	IPV	Family support*	Bivariate	Combination
73	Levendosky et al. (2002)[+]	111	Cross-sectional	IPV & Maltreatment	Family support* Peer support*	All models	Internalizing
74	Levendosky et al. (2003)	103	Cross-sectional	IPV	Family support* Parental effectiveness*	Bivariate	Combination
75	Li et al. (2007)[+]	263	Cross-sectional	Community	Family support* Community cohesion* Self-perceptions*	All models Bivariate & buffering	Int/ext
76	Lim and Lee (2017)	2351	Cross-sectional	Maltreatment	Self-perceptions* Peer support*	Bivariate	Positive
77	Löfving-Gupta et al. (2015)[+]	757	Cross-sectional	Community	School support* Family support Community cohesion Extracurriculars	Bivariate & additive	Internalizing
78	London et al. (2015)	153	Cross-sectional	Maltreatment	Family support*	Bivariate	Internalizing
79	Manning et al. (2014)[+]	201	Longitudinal	IPV	Family support*	Bivariate & buffering	Combination
80	Martinez-Torteya et al. (2009)[+]	190	Longitudinal	IPV	Self-regulation* Cognitive ability Family support	Bivariate & additive	Int/ext
81	McCloskey et al. (1995)	365	Cross-sectional	IPV	Family support		Int/ext
82	McKelvey et al. (2015)[+]	728	Longitudinal	Community	Family support*	Bivariate & additive	Int/ext
83	Miller et al. (2014)[+]	120	Cross-sectional	IPV	Family support*	Bivariate & additive	Int/ext

84	Mohammad et al. (2015)	91	Cross-sectional	IPV	Coping*	Buffering	Int/ext
85	Moran and Eckenrode (1992)	145	Cross-sectional	Maltreatment	Self-perceptions*	All models	Internalizing
86	Münzer et al. (2017)	200	Cross-sectional	Maltreatment	Peer support*	Bivariate	Internalizing
87	Narayan et al. (2015)[+]	138	Cross-sectional	IPV	Family support*	Buffering	Positive
88	Nicolotti et al. (2003)[+]	89	Cross-sectional	IPV	Coping*	All models	Combination
89	O'Brien et al. (1997)	43	Cross-sectional	IPV	Coping		Combination
90	O'Brien et al. (1995)	83	Cross-sectional	IPV	Coping*	Bivariate & additive	Combination
91	Overstreet and Braun (2000)[+]	70	Cross-sectional	Community	Community cohesion*	Bivariate & additive	Internalizing
92	Ozer (2005)[+]	73	Longitudinal	Community	Family support* School support*	Bivariate & buffering Bivariate & additive	Combination
93	Ozer and Weinstein (2004)[+]	349	Cross-sectional	Community	Family support* School support* Peer support*	All models Buffering Bivariate	Combination
94	Pearce et al. (2003)	1705	Longitudinal	Community	Family support* Religion*	Bivariate & additive All models	Externalizing
95	Perkins and Jones (2004)	16,313	Cross-sectional	Maltreatment	Family support* School support* Peer support* Extracurriculars* Religion*	Bivariate	Combination
96	Perkins et al. (2002)	18, 592	Cross-sectional	Maltreatment	Family support* School support*	Additive	Externalizing

97	Piotrowski et al. (2014)[+]	94	Cross-sectional	IPV	Family support*	All models	Combination
98	Radovanovic (1993)	52	Cross-sectional	IPV	Coping*	Bivariate & additive	Combination
99	Riina et al. (2014)[+]	2810	Longitudinal	Maltreatment	Community cohesion*	Buffering	Int/ext
100	Rogosch et al. (1995)[+]	89	Longitudinal	Maltreatment	Cognitive ability* Self-regulation*	Bivariate	Combination
101	Rosario et al. (2008)[+]	667	Longitudinal	Community	Family support* Peer support*	Bivariate & additive All models	Internalizing
102	Rosenthal et al. (2003)	147	Longitudinal	Maltreatment	Family support* Peer support*	Bivariate	Combination
103	Sagy and Dotan (2001)[+]	226	Cross-sectional	Maltreatment	Family support* School support*	All models Bivariate & additive	Positive
104	Salzinger et al. (2011)[+]	667	Longitudinal	Community	Self-perceptions* Family support* Peer support*	Bivariate & additive All models	Int/ext
105	Schultz et al. (2009)[+]	1047	Longitudinal	Maltreatment	Peer support*	Bivariate & additive	Combination
106	Shonk and Cicchetti (2001)	229	Cross-sectional	Maltreatment	Cognitive ability* School support* Self-regulation*	Bivariate	Externalizing
107	Shpiegel (2016)	351	Cross-sectional	Maltreatment	Self-perceptions Family support School support Extracurriculars Religion		Combination
108	Skopp et al. (2007)	157	Cross-sectional	IPV	Family support*	All models	Externalizing
109	Snyder and Smith (2015)[+]	461	Cross-sectional	Community	Family support* School support*	Bivariate	Externalizing

110	Sousa et al. (2011)	457	Longitudinal	IPV & Maltreatment	Family support*	Bivariate & additive	Externalizing
111	Spaccarelli and Kim (1995)	43	Cross-sectional	Maltreatment	Coping Family support*	Bivariate	Combination
112	Sullivan et al. (2004)[+]	1282	Longitudinal	Community	Family support* Parental effectiveness*	All models	Externalizing
113	Tlapek et al. (2017)	237	Cross-sectional	Maltreatment	Self-perceptions*	All models	Int/ext
114	Tolan et al. (2002)[+]	372	Longitudinal	Community	Coping*	Bivariate	Int/ext
115	Um and Kim (2015)	1354	Cross-sectional	Maltreatment	Family support* Parental effectiveness*	Bivariate	Positive
116	Veira et al. (2014)	216	Longitudinal	Community	Family support*	Bivariate & buffering	Externalizing
117	Williams and Nelson-Gardell (2012)	237	Cross-sectional	Maltreatment	Self-perceptions* School support* Cognitive ability Family support Peer support	Bivariate	Int/ext
118	Youngstrom et al. (2003)	320	Cross-sectional	Community	Self-perceptions* Family support*	Bivariate & additive	Int/ext

*p <.05 [+]Studies noted to include additional covariates in analyses

Effect sizes for bivariate associations between protective factors and adaptive functioning

Protective factor	**Methodology**	**Bivariate effects**							
		# Of studies	**N**	**Weighted effect size r**	**95% CI**		**Q**	**I^2 %**	**Fail-safe N**
					LL	**UL**			
Positive self-perceptions	Cross-sectional	15	8592	0.31***	0.22	0.40	33.58**	94	2317
	Longitudinal	7	2178	0.06	− 0.08	0.21	8.69	90	21
Cognitive ability	Cross-sectional	6	1322	0.17*	0.01	0.33	4.77	89	81

	Longitudinal	6	3306	0.06	− 0.02	0.14	2.96	67	25
Self-regulation	Cross-sectional	12	2568	0.45***	0.35	0.53	7.28	87	2497
	Longitudinal	8	4993	0.30***	0.15	0.43	9.84	95	497
Coping	Cross-sectional	14	1881	0.11	− 0.01	0.23	9.50	83	91
	Longitudinal	6	1018	0.11	− 0.03	0.24	4.33	77	14
Family support	Cross-sectional	49	69,619	0.16***	0.12	0.20	42.63	95	11,261
	Longitudinal	30	26,524	0.18***	0.14	0.22	36.80	91	5782
Parental effectiveness	Cross-sectional	13	13,494	0.17***	0.12	0.23	23.42*	77	861
	Longitudinal	7	6216	0.06	− 0.05	0.16	4.33	94	29
School support	Cross-sectional	16	50,323	0.20***	0.13	0.28	25.13*	98	4096
	Longitudinal	5	7494	0.21***	0.19	0.24	2.77	0	378
Peer support	Cross-sectional	15	22,683	0.12**	0.05	0.19	16.59	93	50
	Longitudinal	11	7916	0.12*	0.04	0.20	12.76	93	356
Community cohesion	Cross-sectional	4	4070	0.20	− 0.05	0.43	2.04	97	238
	Longitudinal	6	9196	0.06	− 0.01	0.14	4.53	92	56
Extra-curricular activities	Cross-sectional	4	18,587	0.04**	0.02	0.06	3.20	18	18
	Longitudinal	2	1557	0.06	− 0.03	0.24	1.00	83	3
Religious involvement	Cross-sectional	5	18,544	0.05***	0.03	0.06	2.33	0	25
	Longitudinal	2	1879	0.16*	0.01	0.30	1.00	74	18

- Not enough studies to calculate an effect size *p <.05; **p <.01; ***p <.001

Effect sizes for additive tests of protective factors predicting adaptive functioning

Protective factor	**Methodology**	**Additive effects**							

		# Of studies	N	Weighted effect size r	95% CI		Q	I^2 %	Fail-safe N
					LL	UL			
Positive self-perceptions	Cross-sectional	10	5282	0.22**	0.10	0.33	12.61	93%	424
	Longitudinal	1	–	–	–	–	–	–	–
Cognitive ability	Cross-sectional	1	–	–	–	–	–	–	–
	Longitudinal	1	–	–	–	–	–	–	–
Self-regulation	Cross-sectional	6	1243	0.52***	0.40	0.62	3.91	80%	815
	Longitudinal	4	1984	0.06	−0.01	0.14	2.79	24%	4
Coping	Cross-sectional	6	577	0.12*	0.01	0.24	3.85	47%	12
	Longitudinal	2	481	0.04	−0.05	0.13	0.79	0%	0
Family support	Cross-sectional	27	33,380	0.16***	0.12	0.20	32.48	81%	4276
	Longitudinal	20	22,046	0.10**	0.04	0.15	16.88	93%	890
Parental effectiveness	Cross-sectional	8	6013	0.20***	0.10	0.30	8.66	75%	183
	Longitudinal	7	5802	0.14	−0.09	0.35	4.10	99%	341
School support	Cross-sectional	10	26,429	0.15*	0.04	0.26	4.57	98%	2151
	Longitudinal	2	6470	0.03*	0.01	0.05	0.86	0%	2
Peer support	Cross-sectional	7	2180	0.13**	0.04	0.22	5.65	73%	54
	Longitudinal	7	6276	0.06**	0.02	0.10	5.90	58%	40
Community cohesion	Cross-sectional	3	3313	0.13*	0.01	0.24	2.16	70%	17

	Longitudinal	4	5354	0	− 0.03	0.03	0	0%	0
Extra-curricular activities	Cross-sectional	1	–	–	–	–	–	–	–
	Longitudinal	3	3026	0	− 0.04	0.04	0	0%	0
Religious involvement	Cross-sectional	3	813	0	− 0.1	0.1	0	0%	0
	Longitudinal	1	–	–	–	–	–	–	–

– Not enough studies to calculate an effect size *p <.05; **p <.01; ***p <.001

Effect sizes for buffering tests of protective factors

Protective factor	**Methodology**	**Buffering effects**							
		# Of studies	**N**	**Weighted effect size r**	**95% CI**		**Q**	**I^2 %**	**Fail-safe N**
					LL	**UL**			
Positive self-perceptions	Cross-sectional	6	4255	0.14**	0.03	0.24	3.73	85%	98
	Longitudinal	3	1665	0.04	− 0.03	0.12	1.71	52%	0
Cognitive ability	Cross-sectional	1	–	–	–	–	–	–	–
	Longitudinal	2	670	0.07	− 0.04	0.18	1.00	52%	0
Self-regulation	Cross-sectional	3	914	0.05	− 0.07	0.17	2.27	51%	0
	Longitudinal	4	474	0.06	− 0.07	0.18	3.25	44%	0
Coping	Cross-sectional	3	250	0.25***	0.13	0.36	1.65	0%	13
	Longitudinal	2	481	0.21***	0.08	0.32	1.00	54%	13
Family support	Cross-sectional	17	12,012	0.10***	0.05	0.14	19.62	65%	206
	Longitudinal	16	14,401	0.07***	0.04	0.11	18.89	68%	203

Parental effectiveness	Cross-sectional	5	10,184	0.03	− 0.02	0.07	8.06	30%	5
	Longitudinal	4	2297	0.09*	− 0.05	0.16	3.30	61%	21
School support	Cross-sectional	2	365	0.04	− 0.07	0.14	0.27	0%	0
	Longitudinal	3	6861	0	− 0.02	0.02	0.0	0%	0
Peer support	Cross-sectional	5	741	0.30*	0.01	0.55	3.86	94%	89
	Longitudinal	5	2688	0.09**	0.02	0.16	3.69	68%	35
Community cohesion	Cross-sectional	1	–	–	–	–	–	–	–-
	Longitudinal	5	7126	0.02	− 0.01	0.04	3.35	0%	0
Extra-curricular activities	Cross-sectional	0	–	–	–	–	–	–	–
	Longitudinal	2	533	0	− 0.29	0.20	1.00	86%	0
Religious involvement	Cross-sectional	1	–	–	–	–	–	–	–
	Longitudinal	1	–	–	–	–	–	–	–

– Not enough studies to calculate an effect size *p <.05; **p <.01; ***p <.001

As shown in Table 2, family- and individual-level protective factors have been investigated most frequently, in 87 and 56 studies, respectively (some studies included both types of analyses). Peer (27 studies), school (20 studies), and community (19 studies) factors have received relatively less empirical attention. The most commonly assessed types of violence were community violence (44 studies) and child maltreatment (43 studies), with about half as many examining exposure to intimate partner violence (25 studies). Only 6 studies assessed exposure to multiple types of violence. There were 71 cross-sectional and 47 longitudinal studies. Participants in most studies were either in middle childhood (50 studies) or adolescence (54 studies), with relatively few studies investigating children younger than 5 years of age (14 studies). Twelve longitudinal studies followed children successively across one or more developmental periods, including the development from early to middle childhood (4 studies), middle childhood to adolescence (6 studies), and early childhood to adolescence (2 studies). Almost all studies tested bivariate associations (112 studies) between particular protective factors and indicators of resilience, and more tested additive (74 studies) than buffering (60 studies) effects. It is notable that even though resilience reflects adaptive or healthy functioning, over two-thirds of the studies examining protective factors (68%) used only measures of symptomology to assess resilience in child participants. Only 32% of the studies included measures of healthy or positive functioning, either alone or in combination with measures of psychopathology. We present the results organized by ecological context below.

Individual Factors

First, we evaluated whether the magnitude of effect sizes for the individual protective factors differed for children exposed to intimate partner violence, child maltreatment, and community violence. Analyses of variance (ANOVA) indicated that effect sizes did not significantly differ among the three types of violence (*p*s >.10) for each protective factor assessed. Consequently, we combined effect sizes across forms of violence for the analyses presented below.

Across cross-sectional studies, self-regulation (r =.45, p <.001) had the largest bivariate association with adaptive functioning, with positive self-perceptions (r =.31, p <.001) demonstrating a medium-sized effect and cognitive abilities demonstrating a small-sized effect (Cohen [38]) (see Table 3). However, the only effect size that remained significant in the 8 studies utilizing longitudinal designs was self-regulation (r =.30, p <.001). The reliability of this finding was supported by the fail-safe *N*, which indicated that 497 studies with null results would be needed for this effect to be nonsignificant. Coping did not have a significant bivariate effect in cross-sectional or longitudinal studies.

Turning to analyses of additive effects (Table 4), self-regulation again had the largest effect size (r =.52, p <.001), but both positive self-perceptions (r =.22, p <.01) and coping (r =.12, p <.05) also had significant medium to small effects in cross-sectional studies. Although there have not been a large number of studies testing additive effects for these factors, the fail-safe *N* results suggest that the self-regulation (n = 815) and positive self-perceptions (n = 424) are quite stable; fewer null studies (n = 12) would be needed for the coping effects to be nonsignificant. None of these factors demonstrated significant longitudinal effects, but very few longitudinal studies have evaluated the additive effects of these constructs. Analyses of buffering effects showed a different pattern of results. Coping skills had significant cross-sectional (r =.25, p <.001) and longitudinal (r =.21, p <.001) effect sizes, and positive self-perceptions also had a small but significant buffering effect (r =.14, p <.001) in cross-sectional but

not longitudinal studies. The fail-safe *N* results suggest that the positive self-perceptions finding is fairly stable, with 98 null studies needed for the buffering effect to be nonsignificant, while fewer null studies (*n* = 13) would be needed for the cross-sectional and longitudinal coping effects to be nonsignificant.

We examined whether there was homogeneity in the associations between the individual-level protective factors and measures of adjustment with the *Q* test and I^2 index. The *Q* test indicated that there was significant residual variation for the bivariate effect of positive self-perceptions in cross-sectional studies (Q_E = 33.58, *p* <.01). The *I2* index also indicated high heterogeneity (i.e., greater than 75%) for the bivariate effects of most individual factors in cross-sectional and longitudinal studies. High heterogeneity also was demonstrated for the additive and buffering effects of positive self-perceptions, and for the additive effects of self-regulation in cross-sectional studies, as shown by the I^2 index. Potential sources of heterogeneity were then explored, with sample size, type of adaptive functioning, and inclusion of covariates examined as separate moderator variables using Field and Gillett's ([60]) moderation macro. The only significant moderator effect found across these analyses involved one analysis of inclusion of covariates. Specifically, the inclusion of covariates significantly moderated the additive effects of self-regulation in cross-sectional studies (*b* = 0.33, *SE* = 0.07, *p* <.001). This interaction was further probed with an independent *t* test indicating that the average effect size was significantly greater when studies included covariate variables in their analyses of additive effects than when they did not (*t* (4) = − 3.76, *p* <.05; mean difference = − 0.20).

Family Factors

We first tested whether the magnitude of effect sizes for the family-level protective factors differed for children exposed to intimate partner violence, child maltreatment, and community violence. Results indicated that effect sizes did not significantly differ based on type of violence exposure (*p*s >.20) for family support or parental effectiveness. Consequently, we combined effect sizes across forms of violence for the analyses presented below.

The most frequently investigated protective factor across all studies was family support, and it demonstrated small but significant associations with children's adaptive functioning in all analyses. Specifically, family support showed bivariate effects in both cross-sectional (*r* =.16, *p* <.001) and longitudinal studies (*r* =.18, *p* <.001); significant additive effects in cross-sectional (*r* =.16, *p* <.001) and longitudinal studies (*r* =.10, *p* <.01); and significant buffering effects in cross-sectional (*r* =.10, *p* <.001) and longitudinal studies (*r* =.07, *p* <.001). The number of studies with null effects that would be needed to make the effect sizes nonsignificant is very large for each of these effects (*n*s 203–11,261), supporting their stability. Parental Effectiveness had small but significant bivariate (*r* =.17, *p* <.001) and additive associations (*r* =.20, *p* <.001) with resilience in cross-sectional studies, but nonsignificant associations in longitudinal studies. As shown by the fail-safe *N*, the bivariate and additive associations for Parental Effectiveness are quite stable, with a large number of cross-sectional studies needed to make the effect sizes nonsignificant (*n*s 183–861). The pattern was reversed in the tests of buffering effects: the effect size for Parental Effectiveness was not significant in cross-sectional studies, but it was significant in longitudinal studies (*r* =.09, *p* <.05). The fail-safe *N* results indicate that 21 studies with null findings are needed to make this effect nonsignificant.

Results from analyses examining the homogeneity of effect sizes indicated that there was significant residual variation for the cross-sectional bivariate association between parental effectiveness and resilience (Q_E = 23.42, p <.05), as well as high heterogeneity for bivariate and additive effects for family support and parental effectiveness cross-sectionally and longitudinally, with the I^2 indices ranging from 75 to 95%. Analyses examining sample size, type of adaptive functioning, and inclusion of covariates as potential moderators of effect sizes found that the type of adjustment measure moderated buffering effects of family support (χ^2 = 25.87, p <.001) in cross-sectional studies. An ANOVA was then conducted to further explore this interaction by comparing the five types of outcome measures used to assess resilience with Bonferroni post-hoc tests. These results indicated a significant difference among the five outcome measures used (F = 3.70, p <.05), but post-hoc tests did not reveal any significant pairwise differences in effect sizes between outcome measures (ps >.05).

School and Peer Factors

Two ANOVAs testing whether the magnitude of effect sizes for protective factors at the school and peer levels differed for children exposed to different forms of violence found no significant differences (ps >.30). Consequently, we combined effect sizes across forms of violence for the analyses presented below.

School support demonstrated significant bivariate associations with adaptive functioning in both cross-sectional (r =.20, p <.001) and longitudinal studies (r =.21, p <.001). Peer support also had significant but slightly smaller effects in both cross-sectional (r =.12, p <.01) and longitudinal studies (r =.12, p <.01). Both of these factors also demonstrated small but significant additive effects on adaptive functioning in cross-sectional (school support, r =.15, p <.05; peer support, r =.13, p <.05) and longitudinal studies (school support, r =.03, p <.05; peer support, r =.06, p <.01). The fail-safe N values for these results indicate that all are quite stable, with the exception of the longitudinal additive effect of School Support, which would require only 2 null studies to render it nonsignificant. Peer support also had a medium-sized buffering effect in cross-sectional studies (r =.30, p <.05) and a small but significant buffering effect in longitudinal studies (r =.09, p <.01). The fail-safe N values suggest that these findings are reliable.

Moderation analyses indicated significant residual variation for the additive effect of school support (Q_E = 25.13, p <.05) in cross-sectional studies. High heterogeneity (I^2s 73–98%) also was demonstrated for the bivariate effects in cross-sectional (school and peer support) and longitudinal (Peer Support) designs, as well as the additive effects of both protective factors in cross-sectional studies. Follow-up analyses indicated that effect sizes were not significantly moderated by the inclusion of covariates, type of adjustment measure, and sample size (ps >.20).

Community Factors

The ANOVAs testing whether the effect sizes for protective factors at the community level differed across different forms of violence were not significant (ps >.30). Consequently, effect sizes were combined across forms of violence for the analyses presented below.

Relatively few studies have been conducted on each of the community-level factors included in the meta-analysis. Studies assessing bivariate associations indicate that religious involvement had

significant effects in cross-sectional (r =.05, p <.001) and longitudinal studies (r =.16, p <.05), and engagement in extra-curricular activities had a small but significant effect size in cross-sectional designs (r =.04, p <.01). The bivariate effect size for community cohesion in cross-sectional studies was larger in magnitude than the others, but did not meet conventional levels of statistical significance (r =.20, p =.05), likely due to the large variability among study effect sizes. The fail-safe N values for these effects range from 3 (longitudinal effects of extra-curricular activities) to 238 (cross-sectional effects of community cohesion). The paucity of studies investigating additive and buffering effects of these factors makes it premature to draw conclusions about their associations with adaptive functioning.

High heterogeneity was demonstrated for the bivariate effects of each community-level factor in longitudinal designs, with I^2 indices between 74 and 92%. Moderation analyses indicated that results were not significantly moderated by the inclusion of covariates, type of adjustment measure, and sample size (ps >.70).

Discussion

There have been several narrative summaries of research on protective factors for children exposed to different forms of violence (e.g., Afifi and MacMillan [1]; Marriott et al. [146]; Ozer et al. [173]), but this is the first study to quantitatively evaluate the strength of associations between a range of protective factors and resilience in this population. It also is the first to directly test whether these protective factors have similar effect sizes for different forms of violence. The results offer new insight into which protective factors have the most robust associations with adaptive functioning in both cross-sectional and longitudinal research and the processes through which particular factors may promote resilience. They also have implications for prevention efforts and for guiding the next generation of research on resilience in children exposed to violence.

First, we found that the effect sizes of particular protective factors did not differ significantly across the types of violence assessed (child maltreatment, intimate partner violence, community violence). In the same way that a similar set of risk factors appears to increase the risk for psychopathology in children exposed to diverse forms of violence (e.g., Hamby and Grych [80]) there appear to be common protective factors as well. Thus, prevention and health promotion efforts that target particular protective factors are likely to have beneficial effects for children regardless of whether they experience maltreatment, intimate partner violence, or violence in their neighborhood or community. The magnitude of effect sizes for the protective factors also did not differ systematically for studies varying in sample size, type of outcome assessed, or, in studies that tested additive or buffering effects, whether covariates were included in the analyses. The only exception to the covariate findings concerned self-regulation: additive effect sizes were larger in studies that included one or more covariates than in those that did not.

Longitudinal designs provide the strongest evidence for potential protective effects, and four constructs had significant bivariate effect sizes in longitudinal as well as cross-sectional studies: self-regulation, family support, school support, and peer support. Many protective factors also demonstrated significant additive and/or buffering effects, but few consistently showed only one of these types of effect. Three constructs (self-regulation, school support, community cohesion)

exclusively demonstrated additive effects, but all of the variables that had significant buffering effects in either cross-sectional or longitudinal studies (coping, family support, parental effectiveness, peer support) also had significant additive effects. Thus, it appears that most protective factors predict better functioning in all children regardless of their exposure to violence. The fact that more power is required to detect significant interactions than significant additive effects (e.g., Whisman and McClelland [221]) does not appear to account for this pattern of results because sample size was not related to the magnitude of effect sizes. Although the distinction between additive and interactive effects is meaningful theoretically, it may not be critical from a prevention perspective. Given that many children experience violence and more experience other types of adversity, efforts to increase factors that have buffering effects may be as helpful for the majority of children as programs addressing additive factors.

The largest bivariate effect sizes in both cross-sectional and longitudinal studies were found for measures of self-regulation, which reflect individuals' capacity to manage their emotions, impulses, and behavior. Children who develop effective self-regulatory processes are more likely to master key developmental tasks that in turn promote competence in social, emotional, and academic functioning (e.g., McCabe and Altamura [158]; Russell et al. [188]). Exposure to violence and other forms of trauma has adverse effects on the developing brain that can undermine the healthy development of regulatory systems, including executive functioning and emotion regulation, and the developing architecture of the brain, including a reduction in size and neurons in structures involved in processes such as learning and memory (e.g., Shonkoff et al. [200]). However, the significant additive effects and nonsignificant buffering effects in cross-sectional studies indicate that self-regulatory capacities are reliably related to healthy functioning in all children regardless of their exposure to violence. Although neither additive nor buffering effects were significant in longitudinal studies, relatively few studies have tested the potential protective role of self-regulation prospectively and so it is premature to draw conclusions about whether it promotes adaptation over time.

The only variables to demonstrate significant longitudinal effects across bivariate, additive, and buffering tests were those assessing support from family members, teachers, and peers. This meta-analysis thus underscores the critical importance of the environment in promoting resilience in children exposed to traumatic and stressful events (e.g., Fergus and Zimmerman [59]; Sciaraffa et al. [198]; Shonkoff et al. [200]). Warm and caring relationships with parents, other family members, peers, and school personnel can provide critical emotional and instrumental support to children and bolster their self-worth. The significant effects for both additive and buffering tests indicate that supportive relationships are valuable for all children but may be particularly critical for children exposed to violence. Parental relationships often are the only source of support for very young children and have been a primary focus of resilience research and prevention programming, but these findings also underscore the potential for teachers and peers to foster resilience. They may be especially important for children whose parents are not reliable sources of support or nurturance (Grych et al. [77]). Positive relationships with teachers consistently have been associated with better academic and behavioral outcomes in childhood and adolescence (e.g., Ozer [172]), and given the amount of time that children spend in school, teachers have the potential to have a broader impact on their health and well-being. Similarly, peers become an increasingly important part of children's social ecology and can serve as an

important source of support, encouragement, and acceptance, which may in turn promote the development of emotional and social competencies.

Other protective factors demonstrated either significant cross-sectional or longitudinal effects, but not both. At the individual level, positive self-perceptions, which included measures of perceived competence, self-efficacy, and perceived control, had significant bivariate, additive, and buffering associations with adaptive functioning in cross-sectional studies, but no significant effects in longitudinal studies. Although longitudinal designs do not provide direct evidence for causal relationships, these findings suggest that perceiving the self as competent is an indicator or perhaps a result of adaptive functioning rather than a cause. In contrast, coping demonstrated significant buffering effects in both cross-sectional and longitudinal studies and additive effects in cross-sectional studies. Given that coping is engaged when individuals face stressful and challenging circumstances, it follows that the benefits of effective coping strategies are most likely to be seen in children exposed to higher levels of violence. At the family level, parental effectiveness, which included measures of caregiving practices such as monitoring and authoritative discipline, had significant bivariate and additive effects in cross-sectional but not longitudinal studies, and significant buffering effects in longitudinal research. Effective parenting thus was associated with healthy development in all children, but over time predicted better functioning only for those who experience violence.

Potential protective factors at the community level have received the least attention in research on resilience in children exposed to violence, particularly in longitudinal studies, but the data are promising. Involvement in a religious organization had significant bivariate effects in both cross-sectional and longitudinal research, and could promote resilience by providing a supportive network of people who share similar values and beliefs, and/or by fostering the development of individuals' spirituality, which has been related to better health and functioning in adults (e.g., Howell and Miller-Graff [100]; Paranjape and Kaslow [175]). Positive messages of gratitude, tolerance, and acceptance that are often conveyed by religious and spiritual traditions also may teach individuals more effective strategies for negotiating and resolving mental, emotional, and interpersonal difficulties (e.g., Smith and Denton [203]). Community cohesion, which had significant additive effects in cross-sectional research, reflects the presence of helpful, involved, and trustworthy neighbors and thus may be an indicator of another source of support for children and their families (e.g., Sampson et al. [193], [192]). Communities with cohesive social networks also demonstrate greater collective vigilance and shared responsibility for children, which in turn provides children greater stability, protection, and opportunities for positive guidance from adult role models (e.g., Aisenberg and Herrenkohl [2]). Extra-curricular activities outside of school, which demonstrated a small but significant additive effect in cross-sectional research, have the potential to expose to children to supportive adults and peers through structured and supervised activities that promote self-efficacy, competence, and accomplishment (e.g., Durlak and Weissberg [50]; Dworkin et al. [51]; Hansen et al. [83]; Mahoney et al. [144]). As with the other community factors, there is insufficient longitudinal research at this time to draw conclusions about their capacity to promote resilience over time.

Implications for Research

The results of this meta-analysis have several implications for guiding future research on resilience in children exposed to violence. First, it is notable that two-thirds of the studies included used only

measures of psychopathology as indicators of adaptive functioning. Low levels of psychopathology are not equivalent to good health, and operationalizing resilience solely in terms of the absence of symptoms offers a narrow view of healthy development (e.g., Grych et al. [77]; Howell et al. [98]). Further, it is possible that some protective factors foster healthy functioning without directly affecting psychological symptoms, and so it is important to conceptualize and measure resilience in multifaceted ways that include competencies and well-being. Relatedly, many protective factors can be conceptualized as one end of a continuum that is anchored on the other end by risk factors. For example, close relationships with caregivers are conceptualized as a protective factor, but the lack of caregiver support often is conceptualized as a risk factor. Consequently, it is not clear to what extent some studies of protective factors simply document the inverse of associations reported between risk factors and maladjustment (Grych et al. [77]; Masten and Tellegen [156]). This interpretive problem is compounded when low levels of symptomatology are the sole measure of resilience. For example, showing that high levels of parental support correlate with low levels of maladjustment may just be a replication of the finding that low levels of parental support predict high levels of maladjustment. To ensure that studies of resilience are providing unique information about adaptive functioning in children exposed to violence, it is essential to assess indicators of healthy development in addition to symptoms of pathology and to include measures of protective factors that are not simply the inverse of risk factors (e.g., Grych et al. [77]).

Second, this review shows that some levels of the social ecology have received much more empirical study than others. Considerable attention has been paid to individual and family factors that may promote resilience, and at this point there is little to be gained from further documenting bivariate associations between resilience and constructs such as family support, self-regulation, and self-perceptions. In contrast, we know considerably less about how other contexts, such as the school and community, can support children's health and well-being. The consistently significant effect sizes for family support indicate that children's well-being is shaped by the relationships in which they are embedded, and greater recognition of the significance of relationships outside of the family will shed light on their potential to foster healthy development in children exposed to violence as well. Further exploration of other aspects of school, peer, and community contexts also could offer new avenues for prevention.

There also has been little consideration of the macro-level cultural context, such as cultural norms, values, beliefs, and practices. Resilience or well-being may have different meanings in different cultures and be promoted through protective factors not commonly assessed by current models (e.g., Ungar [217], [218]). Ecological systems theory views human development and behavior as a dynamic process that is embedded within interdependent micro- and macro-level systems in which the macrosystem shapes the structure of the nested microsystems (Bronfenbrenner [21]). Thus, greater attention is needed to understand how sociocultural constructs may affect protective factors within family, school, and peer contexts. Such influences also would have implications for the effectiveness of prevention and health promotion efforts in diverse cultural groups (e.g., Khan et al. [110]).

Third, we know more about which factors predict resilience than *how* these factors promote resilience. Although there have been more than 40 studies reporting longitudinal data on resilience in children exposed to violence, relatively few have tested conceptually-based hypotheses of the processes by

which particular constructs lead to healthy functioning. Process-oriented research would be facilitated by the development of conceptual models that specify mechanisms by which particular constructs influence children's adjustment. The Resilience Portfolio Model presents one such framework (Grych et al. [77]). It integrates insights from research on resilience, positive psychology, coping, and posttraumatic growth and describes mechanisms by which protective factors are proposed to promote healthy functioning in children exposed to violence. The model organizes protective factors into external resources (e.g., family, school, and community factors) and internal assets (or strengths) and further categorizes the individual factors by their function: self-regulation, interpersonal interaction, and meaning-making. Many of the hypothesized protective factors included in the model are not the inverse of risk factors but positive qualities such as optimism, purpose, and gratitude that have received little attention in resilience research. The Resilience Portfolio Model describes additive and buffering mechanisms through which these factors are proposed to promote healthy adaptation to violence. Finally, it considers the interrelations among protective factors. For example, sensitive caregivers help their children develop better emotional regulation, which in turn increases their capacity to have rewarding peer relationships. Empirical investigations of the model to date are limited to studies of adults that focused on identifying which individual strengths were most strongly associated with different aspects of health, but support the idea that understudied factors like a sense of purpose have unique associations with well-being (Hamby et al. [79]).

Implications for Prevention and Intervention

Identifying the protective factors most consistently linked to resilience also offers guidance to efforts designed to prevent or reduce the adverse impact of violence on children. Given that additive effects indicate that individual, family, school-level factors have the potential to enhance functioning and well-being in all children regardless of violence exposure, these findings suggest that universal prevention efforts are likely to benefit children whether they have experienced violence or not. They also highlight the importance of sensitive caregiving and supportive family relationships, both of which have been a primary focus of effective prevention programs (e.g., *Family Check-Up*, Dishion and Kavanagh [47]; *Incredible Years Parenting Program*; Borden et al. [16]; *Triple P-Positive Parenting Program*; Sanders [194]). Prevention and intervention programs for parents also may be the most effective way to enhance the development of children's self-regulatory capacities. Beginning in early childhood, transactional exchanges with caregivers play a formative role in shaping children's ability to attend to and express their emotions and manage their behavior (Denham et al. [46]; Yates et al. [225]), and programs that teach caregivers how to promote self-regulation in their children (e.g., emotion socialization strategies) have been shown to foster preschool-aged children's socioemotional competencies and to reduce behavioral problems (Havighurst et al. [88], [89]).

Schools have received less attention as contexts for promoting resilience but provide another setting for creating healthy, supportive relationships for children and building individual strengths. Historically, schools' primary approach to mental health has been to focus on reducing disruptive behavior, often through the use of punitive discipline practices (e.g., suspensions, expulsions). In recent years, however, there have been more efforts to promote healthy development. For example, Social Emotional Learning (SEL) principles and programs are being increasingly integrated into primary and secondary schools to promote mental health and well-being in students and teachers (e.g., Anderson

et al. [4]; Greenberg et al. [73]; Hymel et al. [103]; Whitley et al. [222]). SEL programs emphasize some of the most robust protective factors identified in this meta-analysis, such as self-regulation and supportive relationships between teachers and students. A focus on self-regulatory skills has been integrated into other school-based programs as well. For instance, cognitive behavioral programs in schools (e.g., *FRIENDS*, Barrett et al. [6]; *Penn Resiliency Program*; Gillham et al. [67]) have been shown to increase positive self-perceptions in children and decrease internalizing and externalizing symptoms (e.g., Stallard et al. [207]), and mindfulness-based interventions (e.g., *Learning to BREATHE*, Broderick [20]; *Compassion and Attention in the Schools*; Terjestam et al. [212]), which teach children to focus their attention and control their mental and physical activity (Greenberg and Harris [74]), have been shown to improve self-perceptions, well-being, self-regulation, coping, and mental health outcomes in children and adolescents (for reviews, see Carsley et al. [28]; Zoogman et al. [228]). Finally, the development of trauma-sensitive schools represents a whole-school approach that incorporates a social emotional learning curriculum with a range of supports and services to students, family members, and school staff (e.g., Chafouleas et al. [31]; Plumb et al. [180]). This model recognizes the pervasive effects that exposure to trauma and adversity can have on children's behavior and ability to learn and provides a multi-tiered system that incorporates universal or primary prevention strategies (e.g., professional development for staff on the prevalence and impact of trauma), selected or secondary interventions (e.g., skill-building interventions to facilitate student competence and empowerment), and targeted or tertiary interventions (e.g., trauma-based individual, group, and family therapy) (e.g., Dorado et al. [48]; Kataoka et al. [107]; Plumb et al. [180]). Consistent with the additive effects reported in this meta-analysis, evaluations of trauma-sensitive schools provide promising support for their potential to impact all children's functioning regardless of their level of exposure to violence and other forms of trauma (e.g., Dorado et al. [48]).

Although parenting interventions and school-based programs incorporate the most robust protective factors identified in this meta-analysis (e.g., Borden et al. [16]; Tanner-Smith et al. [210]), studies evaluating these programs do not routinely examine whether the protective factors actually drive improvements in children's functioning (Taylor et al. [211]). Program evaluations provide an excellent opportunity to directly test whether factors such as self-regulation and supportive teacher-student relationships mediate their effects on children's health and well-being. Such studies would contribute to basic research on resilience as well as applied work; for example, investigating whether particular programs improve self-regulation for all children versus those exposed to violence and whether those changes in turn predict changes in functioning for all children versus at-risk children would provide a quasi-experimental test of additive versus buffering effects.

Limitations

It is important to acknowledge some limitations of this research. First, although over 100 studies have been conducted examining protective factors in children exposed to violence, the number of studies assessing particular factors—especially those testing additive or buffering effects—varied considerably. Consequently, the strength of the evidence is stronger for some protective factors than others. Relatedly, to produce more reliable estimates of effect sizes, we combined studies assessing similar constructs into larger categories (e.g., family support, positive self-perceptions), and it is possible that there are specific variables that have effect sizes that are larger or smaller than the effect sizes

obtained for the categories. Thus, although we can draw conclusions about particular categories, they may not hold for all of the constructs that fit in the category.

Second, studies testing additive and buffering effects varied in whether they included covariates in the analyses and if so, which covariates were included. This makes direct comparisons of effect sizes across studies less precise. In addition, including covariates in an analysis may reduce the effect size of the protective factor(s) being investigated. We addressed the possibility that studies utilizing covariates produced smaller effect sizes by examining whether the magnitude of effect sizes differed between studies that included covariates and those that did not. A significant difference was found in only one instance, and it was in the opposite direction (i.e., studies including covariates produced larger effect sizes for additive effects of positive self-perceptions in cross-sectional studies), and thus it does not appear that studies utilizing covariates consistently under or overestimated effect sizes for the protective factors.

Third, studies that assessed protective factors and child adjustment in samples selected on the basis of (presumed) exposure to violence (e.g., residents in a domestic violence shelter, Child Protective Services (CPS) referrals) were excluded from the meta-analysis if they did not assess children's exposure to violence because a quantitative measure of violence is necessary to test for additive or buffering effects of hypothesized protective factors. This exclusion criterion led to the omission of some studies that examined bivariate associations between protective factors and adaptive outcomes in high risk samples. However, it is not likely to significantly alter the conclusions because most children exposed to violence do not present to shelters or enter the CPS system.

Finally, studies of protective factors for children exposed to violence have not examined whether children demonstrate differential susceptibility to the potential benefits of these factors (e.g., Belsky and Pluess [8], [9]). A comprehensive model of risk and resiliency will need to consider the possibility that there are genetic factors that moderate the impact of both violence and protective processes.

Conclusion

This meta-analysis provides the most comprehensive empirical synthesis of research on protective factors and resilience in children exposed to violence. The results provide notable support for the role of families, schools, and peers and for individual self-regulation in promoting positive development in children exposed to violence, and identifies protective factors that appear to be promising but require further study. These findings also support the value of prevention and health promotion efforts that seek to strengthen supportive relationships across ecological contexts, including families, schools, and communities, and for the potential benefit of school-based programs that foster self-regulatory capacities. Advances in understanding sources of resilience in this population rest on conducting research that assesses indicators of healthy adjustment in addition to low levels of psychopathology, investigating protective factors that are not the inverse of risk factors, and testing conceptually-based hypotheses in longitudinal designs.

Compliance with Ethical Standards

Conflict of interest

The authors declare that they have no conflicts of interest.

Ethical Approval

This article does not contain any studies with human participants or animals performed by any of the authors.

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