Development and Psychopathology (2023), **35**, 433–446
doi:10.1017/S0954579421001474

CAMBRIDGE UNIVERSITY PRESS

Regular Article

Reducing suicide risk in parentally bereaved youth through promoting effective parenting: testing a developmental cascade model

Na Zhang[1], Irwin Sandler[2], Jenn-Yun Tein[2] and Sharlene Wolchik[2]

[1]Department of Human Development and Family Sciences, University of Connecticut, Stamford, CT, USA and [2]REACH Institute, Department of Psychology, Arizona State University, Tempe, AZ, USA

Abstract

Children who experience parental death are at increased risk for suicide. The Family Bereavement Program (FBP) is an upstream preventive intervention for parentally bereaved families that was found to reduce suicide risk in parentally bereaved youth up to 6 and 15 years later. We tested whether FBP-induced improvements in effective parenting led to changes in multiple proximal factors that prior theory and research implicated in the cascading pathway to suicide risk, namely, aversive self-views, caregiver connectedness, peer connectedness, complicated grief, depressive symptoms, and emotion suppression. The sample was 244 bereaved youth and their surviving caregiver from 156 families. Families were randomized into the FBP (12 group-based sessions for parents, youth, and two joint sessions) or a literature control condition. Multimethod and multiinformant data were collected at baseline, posttest, 6-year and 15-year follow-up assessments. Results showed that program-induced improvements in effective parenting at posttest were associated with reduced aversive self-views and increased caregiver connectedness at the 6-year follow-up, and each mediator was in turn associated with reduced suicide risk at the 6- and 15-year follow-up. The mediated pathways via aversive self-views remained significant while controlling for caregiver connectedness. Self-related concepts may be important targets in upstream suicide prevention for at-risk youth.

Keywords: bereavement; parenting; self; suicidal behavior; suicide prevention

(Received 24 June 2020; revised 25 October 2021; accepted 26 October 2021; First Published online 7 December 2021)

Suicide among young people has emerged as an important public health issue worldwide. According to the World Health Organization (2019), suicide is the second leading cause of death following road injury among 15–29-years-olds globally. In the United States, suicide risk in young people has continued to increase (Hedegaard et al., 2018). The National Youth Risk Behavior Surveys (Centers for Disease Control and Prevention, 2018) showed that in 2017, 17.2% of high schoolers seriously considered attempting suicide, 13.6% made a suicide plan, and 7.4% attempted suicide. Among youth who have experienced the death of a parent, there is elevated risk of suicide ideation and attempts (Adam et al., 1982; Jakobsen & Christiansen, 2011; Lewinsohn et al., 1996; Rostila et al., 2016). These youth are also at risk for suicide death (Agerbo et al., 2002; Brent et al., 1994; Guldin et al., 2015; Wilcox et al., 2010). A population-based register study found that adolescents who lost one biological parent to death showed increased risk of suicide attempts, and the risk almost doubled if both parents died (Jakobsen & Christiansen, 2011).

In suicide prevention, there is growing interest in "upstream" interventions that target risk and protective factors early in life and have cascading effects to reduce suicide risk later in adulthood (Reider & Sims, 2016; Wyman, 2014). A number of studies suggested the promise of universal or selective preventive interventions during childhood/adolescence to exert cross-over effects in reducing suicide risk in early adulthood (Connell et al., 2016; Hawkins et al., 2005; Kerr et al., 2014; Sandler et al., 2016; Wilcox et al., 2008). Because of the importance of understanding an intervention's targets that are responsible for its positive effects (Glenn et al., 2015), intervention studies with long-term follow-ups of youth provide an opportunity to investigate the developmental cascading pathways (Masten & Cicchetti, 2010) through which the targeted behaviors that were modified by the intervention can lead to a chain of positive effects across domains or systems over the course of development. For example, Connell et al. (2019) showed that children in the Family Check-Up (vs. controls) had greater growth rates in inhibitory control from age 2 to 7.5 which were subsequently, negatively associated with suicidal thoughts/attempts at age 10.5–14. No research has been conducted yet to examine the cascading pathways through which an early preventive intervention reduced suicide risk in early adulthood.

The current study focused on the cascading effects of an "upstream" early preventive intervention for parentally bereaved youth, the Family Bereavement Program (FBP), on reducing suicide risk. The FBP is a family-based, parenting-focused preventive intervention designed to reduce mental health problems in parentally bereaved youth. Prior work that used an intent-to-treat (ITT) analysis found that the FBP reduced suicide risk at the 6 and/or 15

Corresponding author. Na Zhang, Email: nazhang@uconn.edu

Cite this article: Zhang, N., *et al.* (2023). Reducing suicide risk in parentally bereaved youth through promoting effective parenting: testing a developmental cascade model. *Development and Psychopathology* **35**: 433–446, https://doi.org/10.1017/S0954579421001474

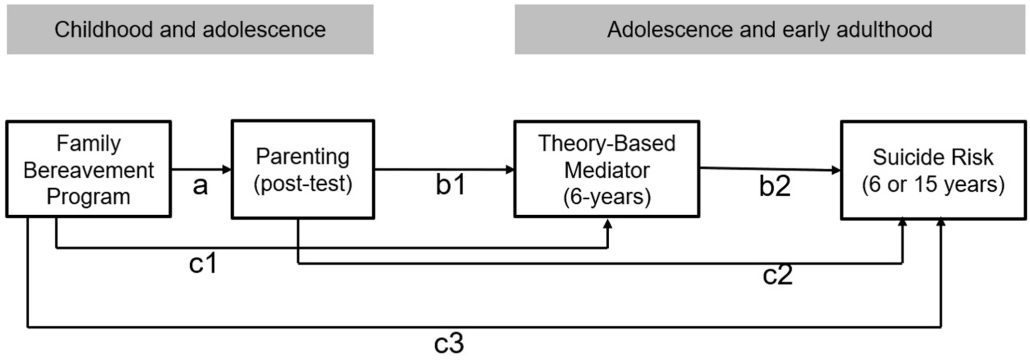

Figure 1. A conceptual model.

years follow-ups (Sandler et al., 2016), but the cascading pathways through which the FBP yielded such positive effects remain unknown. The design of the FBP was based on a contextual resilience theoretical framework (Sandler et al., 2008) which describes the hypothesized effect of the intervention to impact a proximal outcome (e.g., parenting) which in turn impacts distal outcomes to be prevented (e.g., internalizing/externalizing behaviors in youth). To elucidate the cascading pathways through which the FBP reduced suicide risk in early adulthood, the current study tested a three-path cascade model with two mediators (Taylor et al., 2008; see also Brown et al., 2019; Norr et al., 2018; Figure 1). The model tests whether program-induced improvement in one targeted protective factor – effective parenting at posttest (M1) – has cascading effects on a more proximal mediator at 6 years follow-up (M2), which lead to reductions in suicide risk at 6 or 15 years follow-up. The model specifies the causal chain of mediated effects in which the program influences M1 ("a" in Figure 1) which subsequently influences M2 (b_1) that affects suicide risk (b_2), while controlling for the effect of the program on M2, the effect of the program on suicide risk, and the effect of M1 on suicide risk (c_1, c_3, and c_2, respectively; see Taylor et al., 2008).

Research has not yet investigated whether program-induced improvement in effective parenting would lead to reduced suicide risk many years later. Effective parenting (M1, the first mediator in Figure 1) is an important target of the FBP because prior FBP studies as well as other studies of the long-term effects of parenting-focused prevention programs have found support for the role of effective parenting as a mediator of long-term program effects. For example, prior analyses showed that strengthened parenting at posttest mediated the FBP's effects to reduce internalizing and externalizing behaviors of girls at the 11 months follow-up (Tein et al., 2006). In addition, a review found that strengthened parenting mediated the long-term effects (over 3 years or longer) of parenting-focused preventive interventions in reducing externalizing (7 studies), internalizing (3 studies) and substance use/abuse problems (6 studies; Sandler et al., 2015).

There are many possible mediators (M2, the second mediator in Figure 1) that could explain the effects of parenting during childhood/adolescence on suicide ideation and attempts during adolescence/early adulthood. Current theories of suicide point to psychological processes including aversive self-views (Baumeister, 1990), perceived burdensomeness, and thwarted belongingness (Joiner, 2005), as well as pain, connectedness, and hopelessness (Klonsky et al., 2016). There are also empirical data that suggested the relations of parenting to these factors (e.g., Love & Durtschi, 2021). In addition, meta-analytical studies have identified numerous risk factors for suicide ideation and attempts such as prior suicide ideation/attempts, hopelessness, and depression (e.g., Franklin et al., 2017).

In the current study, for the more proximal mediator that explains the effect of parenting on suicide risk, we selected six factors at the 6 years follow-up because of their linkage with suicide risk *and* parenting in the contexts of bereavement and the theory of FBP: aversive self-views, caregiver connectedness, peer connectedness, complicated grief, emotion suppression, and depressive symptoms. Our selection was based on (i) theories of suicide (i.e., aversive self-views, see Baumeister, 1990; connectedness, see Joiner, 2005, and Klonsky et al., 2016), (ii) hypothesized developmental cascades within the FBP's theoretical framework (e.g., emotion suppression as a target of the FBP), (iii) the context of bereavement (e.g., depression and complicated grief in bereaved individuals), and (iv) limitations of using a secondary dataset (other factors such as hopelessness or burdensomeness were not assessed in the dataset). Below, we review the relevant literature on parenting as an important protective factor and an immediate target of FBP. We then discuss the theory and empirical evidence that support each of the six mediators linking to both parenting and suicide risk.

Parenting as a protective factor targeted by the FBP

We propose that the FBP's effects to strengthen parenting at posttest would be the first mediator in the developmental cascade (Figure 1). There are considerable correlational studies suggesting that effective parenting is negatively associated with suicidal thoughts and attempts of children and adolescents (Gallagher & Miller, 2018). Illustratively, in a nationally representative sample, Kuramoto-Crawford et al. (2017) found that parent-child connectedness during ages of 11–18 was associated with decreased risk of having suicidal thoughts during adolescence and early adulthood. The FBP was designed to strengthen caregivers' parenting based on evidence that parenting is a protective factor for multiple mental health outcomes of bereaved children, and prior research demonstrated the efficacy of the program to strengthen parenting (Sandler et al., 2003). Effective parenting is characterized by a positive, warm, and supportive parent-child relationship and the uses of consistent discipline (Sandler et al., 2011). In the context of parentally bereaved families, effective parenting of the caregiver also requires open communication about feelings, being responsive to the child's loss-related needs (Saldinger et al., 2004), as well as decreasing the child's exposure to negative events (e.g., family conflicts). The FBP teaches caregivers tools to enhance parenting practices in these areas (Sandler et al., 2003).

https://doi.org/10.1017/S0954579421001474 Published online by Cambridge University Press

Theory-based proximal mediators associated with suicide risk

We investigated six factors as the second mediator in the developmental cascade linking the effect of strengthened parenting to reduced suicide risk (Figure 1). First of all, several theoretical perspectives suggest *aversive self-views, caregiver connectedness, and peer connectedness* as proximal mediators of suicide risk. First, Baumeister (1990) proposed the escape theory of suicide, which highlights the central role of aversive self-views in suicidal behaviors. The theory proposes that suicide attempts occur as an escalation of one's desire to escape from aversive self-awareness and the related negative affect. Such aversive self-views can be related to attributing one's current stressful circumstances to the self as being "incompetent, dislikeable, guilty or otherwise bad" (Baumeister, 1990, p. 91). From a different perspective, Joiner (2005), in his Interpersonal-Psychological Theory of Suicide, focused on the interpersonal domain to explain why people desire to die. Specifically, thwarted belongingness and perceived burdensomeness together lead to suicidal thoughts whereas capacity for suicide is the key for making a suicidal attempt. Finally, Klonsky et al. (2016) highlighted that pain (due to a myriad of factors such as negative thoughts, emotions, sensations, and experiences) and hopelessness can lead to suicidal thoughts, which may be worsened by a lack of social connectedness. Social connectedness for bereaved adolescents/young adults includes caregiver and peer connectedness. Klonsky et al.'s (2016) model is inclusive of the constructs from both Baumeister's and Joiner's theories. There is evidence suggesting that parentally bereaved youth experience elevated levels of aversive self-views and social disconnectedness. For example, bereaved children were found to show higher social withdrawal, lower peer-attachment, as well as lower self-esteem and self-efficacy than non-bereaved children up to 2 years post-death (Brent et al., 2012; Worden & Silverman, 1996).

Given the context of bereavement and the theory underlying the FBP, we also examined three interrelated variables as additional proximal mediators: *complicated grief, depressive symptoms,* and *emotion suppression*. Most bereaved young people are resilient, but some experience prolonged grief reactions or complicated grief. These individuals have difficulty accepting and adapting to the death, show apparent withdrawal of attention from ongoing life, and often experience pain and hopelessness because of the loss of a parent. Most research on complicated grief is with adults. Melhem et al. (2011) found that 10.4% of children/adolescents showed high complicated grief nearly 3 years after parental death, and it was predicted by prior history of depression. A few studies have found that grief was associated with elevated risk for suicidal thoughts and attempts in young people (Melhem et al., 2007; Prigerson et al., 1999; Sandler et al., 2021). Consistent with Joiner's theory, Hill et al. (2019) showed that grief was associated with thwarted belongingness, which was further associated with suicidal thoughts in adolescents. *Depressive symptoms* are considered a risk factor of suicide in adolescents and young adults (Evans et al., 2004; Gili et al., 2019) and in bereaved youth (Brent et al., 2009). Prior findings that the FBP reduced internalizing problems suggested the plausibility of depressive symptoms as a proximal mediator in the cascading pathway (Sandler et al., 2018). Finally, *emotion suppression* is a maladaptive emotion regulation strategy that involves attempts to conceal emotion-expressive behaviors (Gross & Cassidy, 2019). A meta-analysis showed that emotion suppression has an overall small effect on depressive symptoms and anxiety in youth (Schäfer et al., 2017). Emotion suppression was also found to mediate the FBP's effect to reduce externalizing problems at the 11-month follow-up (Tein et al., 2006). A previous study with adolescents seeking emergency services found that emotion suppression mediated the relation between history of adverse events and suicide thoughts and attempts (Kaplow et al., 2014).

Conceptualization of the three-path model

The model proposes that FBP effects to strengthen effective parenting (i.e., positive parent-child relationships and consistent discipline) during childhood/adolescence (age of 6–18 years) would show cascading effects of reducing suicide risk via the proximal mediators. There are several reasons why the FBP's effect to strengthen effective parenting might reduce the development of aversive self-views and improve caregiver and peer connectedness during adolescence and young adulthood (age of 12–24 years). Effective parents use encouragement, guidance, and discipline to support their children in developing a positive sense of self (Koepke & Denissen, 2012) as reflected in higher self-esteem and age-appropriate developmental competencies. Research has found that high quality of parenting was positively associated with adolescent's self-esteem (Bulanda & Majumdar, 2009; Huey et al., 2020) and views of their competence and social acceptance (Putnick et al., 2008). Effective parenting during childhood/adolescence is also thought to provide a foundation for the formation of secure attachment to significant adult figures and peers during adolescence/adulthood which are of particular importance in bereaved young people (Brewer & Sparkes, 2011). During adolescence and young adulthood, the need for independence and autonomy may change the relationship dynamics with their surviving caregiver, but a sense of caregiver connectedness continues to be important especially when it comes to bereavement-related support (e.g., Saldinger et al., 2004). Research has also found that effective parenting was associated with the development of positive peer relationships (Dekovíc & Meeus, 1997) and that poor parenting was associated with hostility toward friends (Allen et al., 2002).

There is also research to support the relations between effective parenting and the other proximal mediators that were examined. Research has shown that effective parenting was associated with lower levels of intrusive grief thoughts (an aspect of complicated grief; Wolchik et al., 2008) and internalizing problems (Haine et al., 2006; Schoenfelder et al., 2011) in parentally bereaved youth. Effective parenting also mediated the effects of the FBP on internalizing problems at the 11-month follow-up (Tein et al., 2006). Furthermore, in their cross-sectional study, Shapiro et al. (2014) found that greater warmth in mothers' communication was associated with lower maladaptive grief and depression. A number of meta-analyses demonstrated the association between parenting and childhood depressive symptoms, although most studies were cross-sectional (McLeod et al., 2007; Pinquart, 2017). Balan et al. (2017) found the association between poor parenting practices (e.g., inconsistent discipline) and emotion suppression in adolescents.

Theoretically, caregivers can help bereaved children to cope with postdeath changes and support the child to have a continued bond with the deceased parent, which may facilitate the grieving process. As suggested by Shaver and Tancredy (2001), individuals who experience sensitive and responsive parenting are securely attached and they tend to seek and benefit from social support following loss. They can also move flexibly between the "loss-oriented" (e.g., having intrusive thoughts) and "restoration-oriented"

https://doi.org/10.1017/S0954579421001474 Published online by Cambridge University Press

(e.g., attending to new things in life) processes of bereavement (Stroebe & Schut, 2010), which is critical for adaptive grief reactions. Theoretically, parental warmth and support of youth's emotions may signal to youth that sharing their emotions is constructive, and equips them with strategies to appropriately regulate their emotions (Eisenberg et al., 1998; Gottman et al., 1996). In socializing children's emotions, parenting practices that are characterized by responsiveness and consistency can reduce children's physiological arousal levels in stressful situations, which further supports children to develop their understanding of emotions and capacities to down-regulate negative emotions, reducing risk of depressive symptoms (Eisenberg et al., 1998). If youth's emotions are not met with acceptance and warmth, sharing emotions may be seen as an unpleasant experience, reinforcing expressive suppression (Gottman et al., 1996). Also, effective parenting may provide children a sense of secure attachment and facilitate adaptive emotion regulation in children, and thus it may have an impact on children's emotion suppression (Gross & Cassidy, 2019).

The current study

The goal of the current study is to analyze a secondary dataset (from a randomized trial of the FBP) to examine the developmental cascading pathways through which the FBP had effects in reducing suicide risk. A prior study has shown that parentally bereaved youth (age of 8–16 years) and their caregivers who were randomized into the FBP (vs. a literature control condition) showed improved parenting at posttest (Sandler et al., 2003; a path, Figure 1). We tested six cascade models separately, in which the theory-based mediators were aversive self-views, caregiver and peer connectedness, complicated grief, depressive symptoms, and emotion suppression. We hypothesized that each of the six proximal mediators (measured at the 6 years follow-up) would mediate the association between program-induced improvement in parenting and suicide risk (b_1 and b_2 paths) and that the effect of FBP on suicide risk would become non-significant after including the mediator in the model. We did not formulate specific hypotheses on the relative magnitude of the mediation effects. Using the 15 years follow-up data on suicide risk outcome would allow a temporal lag between the second mediator and outcome (b_2 path, Figure 1), however, the low endorsement rate of suicide ideation/attempts at the 15 years follow-up (4.9%) in this secondary dataset may produce unstable estimates in logistic regression models (e.g., Cai et al., 2010). Thus, we chose to focus on the combined 6 and 15 years follow-up data on suicide risk as the binary outcome variable, that is, endorsement of suicide ideation/attempts at either 6 or 15 years follow-ups (endorsement rate 11.6%).

Methods

Participants

The sample was 156 families including 244 children/adolescents aged 8–16 years at the start of the study ($M = 11.39$; $SD = 2.43$); 53% of the youth were male. The racial and ethnic characteristics were: 67% non-Hispanic Caucasian, 16% Hispanic, 7% African American, and 10% others. Median family income was between $30,001–$35,000. The caregivers who participated in the study were mother (63%), father (21%), or an adult who was not a parent (e.g., aunt, grandparent; 16%). The causes of parental death were illness (67%), accident (20%), and homicide or suicide (13%).

Procedures

The procedure including sample recruitment, eligibility criteria, random assignment, program and control description, and assessment is fully described in previous publications (Sandler et al., 2003, 2010, 2018) and is briefly presented here. Families were recruited from community agencies and media advertisements. Eligibility criteria were: the parent had died between 4 to 30 months prior to the study, the child was between 8 and 16 years of age, and family members were not currently receiving other mental health services. Families were considered ineligible to participate in the study if the children or their caregiver endorsed suicide thoughts and had a plan; these families were referred to treatment. Following the baseline assessment (an in-home interview administered by trained staff), families were randomly assigned to the FBP (n = 90 families with 135 children) or a literature control group (n = 66 families with 109 children). The FBP is a 12-session group-based program that was comprised of separate groups for caregivers and children/adolescents, as well as two family sessions. The control condition consisted of three books about grief that were sent to both the caregiver and children/adolescents at 1-month intervals.

Four additional assessments were administered to caregivers and their children: posttest (3 months postbaseline) and 11 month (14 months postbaseline), 6 years, and 15 years follow-ups. Data from baseline, posttest, and the 6 years and 15 years follow-ups were used in this study. At the 15 years follow-up, data were obtained from key informants whom the young adults nominated as a person who knows them best (e.g., surviving caregiver, friend, or spouse). All study procedures were approved by the University Institutional Review Board. Informed consent from caregivers and young adults (aged 18 years and above) and assent from youth (under 18 years) were obtained.

Measures

For all mediator and suicide risk outcomes, we included the baseline measure of the same variable as the covariate for controlling the stability of the variable. When no such measure was collected, we selected a proxy variable, described below, that was conceptually closely related to the variable.

Distal outcome

Suicide risk The measure of suicide risk included items on suicidal thoughts, suicidal attempts, as well as self-harm. This composite consists of factors that are associated with death by suicide rather than indicators of high suicidality.

At the 6 years follow-up, caregivers reported on 2 items using the Child Behavior Check List (CBCL; age < 18 years; Achenbach, 1991a, 1991b) or Young Adult Behavior Check List (YABCL; age > 18 years; Achenbach & Rescorla, 2003): "Deliberately harms self or attempts suicide" (endorsement rate 1.5%; 3/206) and "Talks about killing self" (2.9%; 6/206). At the 6 years follow-up, caregiver-report (0.5%; 1/201) and self-report (1.0%; 2/200) were also collected using an item from the Diagnostic Interview Schedule for Children (Shaffer et al., 2004) "Thoughts of death, suicide ideation, suicide attempt or plan." At both of the 6 years and 15 years follow-ups, self-report on 2 items from the Youth Self Report (Achenbach, 1991b; age < 18 years) or Young Adult Self Report (Achenbach & Rescorla, 2003; age > 18 years): "I deliberately try to hurt or kill myself" (6 years, 2.4%, 5/207; 15 years, 0%, 0/181), "Talk about killing self/I think about killing myself" (6 years, 5.3%, 11/207; 15 years, 1.7%, 3/181). At the 15 years

https://doi.org/10.1017/S0954579421001474 Published online by Cambridge University Press

follow-up the key informants reported on 2 items from the YABCL: "Deliberately harms self or attempts suicide" (1.3%, 2/157) and "Talks about killing self" (3.8%, 6/157). Each of these items asked about suicidal thoughts or attempts during *the past month* for all measures except for the key informant's report which had a time frame of the past 6 months. At baseline and the 6 years follow-up, endorsement was mostly from self-report than caregiver-report. At the 15 years follow-up, endorsement by the key informant was somewhat higher than self-endorsement. Across reporters, the number of cases in which both self and the other reporter (caregiver or key informant) endorsed suicide risk (i.e., concordance) was 19, 2, and 1, at baseline, 6 years, and 15 years follow-up assessments, respectively. A dichotomous variable of suicide risk was created to indicate endorsement of suicide risk from any reporter. As described previously in Sandler et al. (2016), at the 6 years follow-up, the endorsement rate was 6.4% (7/109) for FBP and 14.1% (14/99) for control; at the 15 years follow-up, the rate was 1.9% (2/103) for FBP and 8.6% (7/81) for control. After combining the data at the 6 years and 15 years follow-ups, the rate of endorsing suicide risk at 6 or 15 years follow-ups was 6.7% (9/123) for FBP and 15.6% (17/101) for control.

At baseline, caregiver reported on 2 items from the CBCL (Achenbach & Rescorla, 2001): "Deliberately harms self or attempts suicide" (2.5%; 6/241); and "Talks about killing self" (5.8%; 14/243); and youth reported on an item from the Child Depression Inventory (CDI; Kovacs, 1992), "Think about killing self" (27.1%; 66/244). For the baseline covariate, combined self-report and caregiver-report data were used such that baseline suicide risk was coded as 1 (31.1%; 76/244) if any of the items was endorsed or 0 (68.9%) if none of the items was endorsed. The FBP (42/135) and control group (34/109) had comparable endorsement rates at baseline.

Posttest mediator

Parenting was measured at baseline and posttest via multiple methods and reporters. *Caregiver-child relationship* was reported by caregivers and children using separate versions of the following scales: (1) Acceptance (16 items, e.g., "You saw [target child]'s good points more than his/her faults/[Your caregiver] saw your good points more than your faults") and Rejection (16 items, e.g., "You were not very patient with [target child]/[Your caregiver] was not very patient with you") subscales of the Child Report of Parenting Behavior Inventory (CRPBI; Schaefer, 1965); (2) A 7-item scale on family routines that was modified from Jensen et al. (1983) (e.g., You/[your caregiver] had some time each day for just talking with [target child]/you); (3) A 5-item scale on stable positive events in the family during the past month (Sandler et al., 1991) (e.g., "Your family got together with relatives for good times"). In addition, children reported on a 10-item Sharing Emotions with Parents Scale (e.g., "[Your caregiver] really cares for you when you feel bad") to assess children's perception that their caregiver understands their feelings. Caregivers reported on how they dealt with the expressions of their own negative emotions in the presence of their children on the 6-item Talk with Reassurance subscale of the Parents Expression of Emotion Questionnaire (e.g., "If you are worried about financial problems, how likely is it that you would tell [target child] that you are concerned about your financial situation but let him/her know that you have a plan to deal with it"). Moreover, caregiver-child relationships were assessed through behavioral observation. Caregiver-child dyads completed a 12-min family interaction task during home assessments where they discussed two family issues selected from the Parent Issues Checklist (Prinz et al., 1979). Caregivers' behaviors were video-taped and rated by trained coders, with a focus on the caregiver's positive affective tone and attention (i.e., back channeling and head nodding; Griffin & Decker, 1996). Interrater reliability was acceptable (Cohen's $\kappa > .77$).

Consistent discipline was assessed by the following scales: (1) Caregiver- and child-reports on the Inconsistency of Discipline subscale (8 items, e.g., "You/[your caregiver] sometimes allowed [target child]/you to do things you/he or she said were wrong") of the CRPBI; (2) An adapted version of the Parent Perception Inventory (Hazzard et al., 1983) assessed caregiver's uses of positive reinforcement (8 items, e.g., "How often did [your caregiver] compliment you?"); (3) Caregivers completed an adapted version of the Discipline Follow-Through subscale of the Oregon Social Learning Center (1991)'s Discipline Scale (9 items, "How often did you get angry when you punished [target child]?").

The Cronbach's αs (when appropriate) of these scales were all acceptable in the sample (> .74). All scales have demonstrated adequate validity in previous research. A measurement model of effective parenting based on these measures was tested previously (Kwok et al., 2005) which consists of caregiver- and child-reported caregiver-child relationship, discipline, and observed caregiver-child relationship during video-taped family interactions. Specifically, a second-order model of parenting was estimated with five first-order factors: (1) child report of caregiver-child relationship; (2) parent report of caregiver-child relationship; (3) behavioral observation of caregiver-child relationship; (4) child report of discipline; and (5) parent report of discipline. The model fit the data adequately (Kwok et al., 2005). In this study, composite scores of effective parenting (averages of *Z* scores of each measure) were created and used in the analyses.

Theory-based mediators at the 6 years follow-up

Aversive self-views In the secondary dataset, three scales are relevant to aversive self-views. *Mastery* was assessed using a 7-item scale (Pearlin & Schooler, 1978) (e.g., "There is really no way I can solve some of the problems I have", reversely coded) and three additional items developed for the FBP project ("I am sure that the future will include more bad things", "I cannot control what will happen to me", and "There is no sense in trying hard to make my future better", all reversely coded). Items were rated on a 4-point scale (1 = strongly disagree, 4 = strongly agree). Cronbach's α was .81. *Identity* was assessed using the 12-item Identity subscale of the Psychosocial Maturity Inventory (Greenberger, 1984) (e.g., "I can't really say what my interests are", reversely coded) anchored on a 4-point scale (1 = strongly agree, 4 = strongly disagree). Cronbach's α was .87. *Self-esteem* was assessed using the 10-item Rosenberg Self Esteem Scale (Shevlin et al., 1995) (e.g., "All in all, I am inclined to feel that I am a failure", reversely coded). The items were rated on a 4-point scale (1 = strongly agree, 4 = strongly disagree). Cronbach's α was .89.

Z scores of the three scales were calculated (see Table 1 for descriptive statistics). Bivariate correlations showed that the measures were highly correlated (*r*s = .66–.70). Thus, we used these three measures for a latent factor to assess aversive self-views. In structural equation modeling analysis, we multiplied each Z score by −1 such that higher scores indicate lack of mastery, lack of identity, and lack of self-esteem, respectively. As suggested by reviewers, we also created an observed variable by averaging the Z scores and computed our hypothesized model using the observed

https://doi.org/10.1017/S0954579421001474 Published online by Cambridge University Press

Table 1. Descriptive statistics and intercorrelation matrix of study variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1 FBP																							
2 Suicide risk 6 or 15 years	−**.15**																						
3 Suicide risk BL	.00	**.20**																					
4 Parenting BL	.02	−.05	−**.21**																				
5 Parenting posttest	**.14**	- .07	−**.16**	**.80**																			
6 Global self-worth BL	- .01	- .02	−**.38**	**.24**	**.29**																		
7 Self-esteem Z score 6y	**.20**	−**.32**	−.12	.09	.13	.06																	
8 Mastery Z score 6y	.09	−**.22**	.00	.13	**.18**	**.15**	**.66**																
9 Identity Z score 6y	**.14**	−**.26**	−.10	.09	.11	.12	**.70**	**.67**															
10 Caregiver connectedness 6y	**.15**	−**.21**	−.12	**.43**	**.46**	**.14**	**.44**	**.40**	**.35**														
11 Peer connectedness BL	.03	−.05	−**.15**	**.19**	**.21**	**.18**	.08	**.15**	**.14**	.13													
12 Peer connectedness 6y	.13	−**.20**	−.13	.12	**.14**	.11	**.47**	**.43**	**.50**	**.28**	**.21**												
13 Grief BL	.00	**.16**	**.28**	−**.26**	−**.26**	−**.30**	−**.23**	−**.17**	−**.26**	−**.14**	−.10	−.11											
14 Complicated grief 6y	.02	**.28**	.09	−.13	−.11	−.12	−**.50**	−**.44**	−**.53**	−**.24**	−.09	−**.23**	**.35**										
15 Depressive symptoms BL	.02	**.14**	**.46**	−**.35**	−**.38**	−**.67**	−**.14**	−**.18**	−**.22**	−**.23**	−**.30**	−**.21**	**.50**	**.25**									
16 Depressive symptoms 6y	−.07	**.14**	.09	.06	.01	−.03	−**.34**	−**.30**	−**.40**	−**.19**	.03	−**.26**	**.15**	**.35**	.14								
17 Emotion suppression BL	.04	.10	**.27**	−**.18**	−**.22**	−**.39**	−.11	−.11	−.10	−**.25**	−**.15**	−.03	**.41**	**.19**	**.45**	−−.01							
18 Emotion suppression 6y	−.11	**.17**	.06	−.06	−.08	−**.18**	−**.49**	−**.42**	−**.47**	−**.28**	−.08	−**.22**	**.27**	**.47**	**.19**	**.27**	**.24**						
19 Time since death	.06	−.05	**.15**	−.08	.00	−.07	−.03	−.04	.04	−.05	−.06	.05	−.03	−.06	.04	−.10	.09	.00					
20 Accident (vs. natural death)	−.03	−.02	.10	−**.14**	−**.20**	.01	.02	−.03	−.03	−.14	−.01	.01	**.15**	.00	.03	.03	.12	.01	−.01				
21 Violence (vs. natural death)	.04	**.14**	**.17**	.08	.10	.00	.00	.03	−.03	.10	.05	−.01	−.07	**.17**	−.01	.01	.02	.06	−.02	−**.15**			
22 Child age	.03	−**.14**	−**.14**	−.08	−.08	−.02	**.17**	**.14**	**.24**	**.19**	**.21**	.06	−**.16**	−.07	−.05	−.10	−**.19**	−.11	−.07	−.03	−.01		
23 Girl (vs. boy)	−.02	−.01	.08	−.03	.03	−.09	−**.22**	−.13	−**.15**	−.01	**.14**	−.05	.10	**.20**	**.13**	.11	−.02	**.19**	.12	.04	−.02	.01	
N	244	224	244	244	237	244	208	208	208	206	238	208	244	206	244	200	243	208	240	240	240	244	244
Min	0.00	0.00	0.00	−1.50	−1.79	−3.41	−3.23	−3.36	−3.32	−1.89	1.43	1.71	−2.28	1.04	0.00	0.00	−2.21	1.00	3.00	0.00	0.00	7.00	0.00
Max	1.00	1.00	1.00	1.18	1.22	1.24	1.40	1.87	1.34	1.37	4.00	4.00	1.80	4.13	1.74	15.00	1.76	4.00	29.00	1.00	1.00	16.00	1.00
Mean	0.55	0.12	0.31	0.00	0.15	0.00	0.00	0.00	0.00	0.02	3.36	3.22	0.00	2.03	0.36	4.48	0.00	2.50	9.77	0.15	0.11	11.39	0.47
Standard deviation	0.50	0.32	0.46	0.54	0.54	1.00	1.00	1.00	1.00	0.69	0.49	0.47	0.93	0.66	0.28	3.29	1.00	0.65	5.70	0.36	0.31	2.43	0.50

Note: 6y = 6 years follow-up; BL = baseline; FBP = Family Bereavement Program. Correlation coefficients in bold are statistically significant ($\alpha < .05$).

variable of aversive self-views (see Online Supplemental Figure 1) which shows consistent results.

For the baseline covariate, we used the 6-item Global Self Worth subscale from the Self Perception Profile for Children (Harter, 1982). Children/adolescents chose one of two statements (e.g., "Some kids are often unhappy with themselves but other kids are pretty pleased with themselves") as being most like them and then rated the extent to which the statement represents them ("very much like this" or "somewhat like this"). The Cronbach's α was .80.

Peer connectedness was measured at baseline and the 6 years follow-up using the peer subscale of the Coatsworth Competence Scale (Coatsworth & Sandler, 1993). It has 7 items anchored on a 4-point scale (1 = very much like you, 4 = not at all like you) (e.g., "Compared to other people your age, you have lots of friends"). The Cronbach's αs were .63 at pretest and .61 at the 6 years follow-up.

Caregiver connectedness at the 6 years follow-up was assessed by a total of eight measures that are part of the measures of effective parenting at baseline and posttest: (1) child- and caregiver-reports on the Acceptance and Rejection subscales of the CRPBI, (2) child- and caregiver-reports on family routines, (3) child- and caregiver-reports on positive reinforcement, (4) caregiver-report on the Talking with Reassurance subscale, and (5) child-report on the Sharing Emotions with Parents Scale. The Cronbach's αs of these scales in the sample were all acceptable (> .81). We used confirmatory factor analysis to test a latent factor of caregiver connectedness with the eight indicators. We co-varied child- and caregiver-reports of family routines and specified the four caregiver-reported measures to be correlated with each other. The model fit the data well: χ^2 (13) = 15.01, CFI = 1.00, RMSEA = 0.03, SRMR = 0.02. We calculated the composite of Z scores of these measures for the analyses of the hypothesized cascade model. Baseline effective parenting as described above was used as the baseline covariate.

Emotion suppression was measured at baseline and the 6 years follow-up using the Active Inhibition Scale (Ayers et al., 1998; Dodd et al., 2020) which was developed for the FBP project. This 10-item scale asks about respondents' conscious effort to avoid revealing emotions to another (e.g., "You've tried to hide any bad feelings that you've had"). Each item was rated on a scale from 1 = "a lot like you" to 4 "not at all like you". Scores were calculated such that higher scores indicated greater levels of inhibition. The Cronbach's αs were .89 at both time points. Research has shown evidence supporting the reliability and validity of this scale (Dodd et al., 2020).

Complicated grief At the 6 years follow-up, a 24-item scale, adapted from the Inventory of Complicated Grief with consultation from the scale's author (Prigerson et al., 1995), was used to assess complicated grief reactions in the past month (e.g., preoccupation with thoughts of the deceased, crying, searching and yearning for the deceased, disbelief about/being stunned by the death). Items included "To what extent do you feel like the future holds no meaning or purpose without your [deceased]?", "Do you ever have trouble accepting the death?", and "Do memories of your [deceased] ever upset you?". The Cronbach's α was .91 in the sample.

At baseline, grief was measured using two measures. The Present Feeling Subscale of the Texas Revised Inventory of Grief (TRIG; Faschingbauer et al., 1987; α = .89) (e.g., "I still cry when I think of my [deceased]") and the 8-item scale Intrusive Grief Thoughts Scale (IGTS; Program for Prevention Research, 1999; α = .88) (e.g. "I think about the death when I don't want to"). The IGTS assesses the frequency of intrusive, negative or disruptive grief-related experiences in the past month. An item of the TRIG (e.g., "No one will ever take the place of my [parent] who died") and an item of IGTS (e.g., "How often have you had bad dreams related to your [parent's] death?") were dropped due to high skewness or kurtosis. Scores on the two measures were highly correlated (r = .69). A composite score of the average of the Z scores was used as a baseline covariate for complicated grief.

Depressive symptoms were assessed at the 6 years follow-up using the adolescent- or young adult-report based on the Module C of the Diagnostic Interview Schedule for Children (Shaffer et al., 2004). The interview was computer-assisted and the questions were about symptoms during the past year.

For the baseline covariate, we used the 27-item CDI (Kovacs, 1992). Each item requires that the child select one of three statements that represent different levels of depression that have occurred in the last 2 weeks such as "I am sad once in a while", "I am sad many times," and "I am sad all the time." Items are scored from 0 to 2. The α was .87.

Analysis

Given the potential problem of rare events in logistic regression models that examine predictors of a binary outcome variable (i.e., unstable estimation, e.g., Cai et al., 2010), for hypothesis testing we chose to use combined data of suicide risk at the 6 and 15 years follow-up for the suicide risk outcome variable, which is a higher endorsement rate of suicide ideation/attempts in the secondary dataset (11.6%) relative to the endorsement rate at the 15 years follow-up (4.9%). Specifically, data from the 6 and 15 years follow-up were combined so that suicide risk was coded as 1 (=Yes; 11.6%, 26/224) if any of the items at the 6 or 15 years assessments was endorsed or 0 (=No; 88.4%) if none of the items were endorsed. As supplementary analyses, we also tested the hypothesized models using the 15 years follow-up suicide risk outcome data which satisfied the criterion of time precedence between the mediator and the outcome.

Descriptive statistics (n, Min, Max, M, SD) and bivariate correlations are shown in Table 1. *M*plus 8 (Muthén & Muthén, 2017) was employed for the analyses. The ITT main effect of the FBP on suicide risk (without mediators) has already been examined previously (Sandler et al., 2016) and in the current paper we did not test the main effect separately from our mediation models. We conducted structural equation modeling that used logistic regressions for the binary dependent variable of suicide risk. A total of six models were estimated, one for each of the 6 years follow-up mediators. Because we tested three-path mediation models with a binary outcome, we used the joint significant test, which suggests that if each of the a, b_1, and b_2 paths (Figure 1) is statistically significant, then there is evidence supporting the mediated effects (Taylor et al., 2008). Simulation studies showed that the joint significant test method for detecting two-path or three-path mediation controls Type I error well and has good statistical power, comparable to both percentile and bias-corrected bootstrap methods (MacKinnon et al., 2002; Taylor et al., 2008). In the model, the effects of the FBP on each 6-year mediator (c_1) and on suicide risk (c_3) as well as the effect of parenting at posttest on suicide risk (c_2) were also controlled for (Figure 1). The models adjusted for time since death, cause of parental death, child age and gender, parenting at baseline, suicide risk at baseline, and the corresponding baseline measure of each theory-based mediator at 6 years follow-up. All analyses controlled for the family clustering effect due to

https://doi.org/10.1017/S0954579421001474 Published online by Cambridge University Press

multiple youth within the same families, using a sandwich estimator (Muthén & Muthén, 2017).

As shown in Table 1, several study variables had missing data (ranging from 0.4% to 18%). Little's MCAR tests showed that assumption of missing completely at random on study variables was not rejected ($ps > .05$). Missing data was handled with Full Information Maximum Likelihood estimation. Of note, no data was collected at follow-up assessments on whether there was any loss of participants due to suicide.

Results

Results of the bivariate correlations (Table 1) showed that each of the indicators of the theory-based mediators at 6 years follow-up was weakly to moderately correlated with suicide risk in the expected direction. Each of the six models contained similar number of participants who had no missing data on study variables (ns = 201, 202, 195, 199, 195, 200, respectively, for the models of self-aversive self-views, caregiver-connectedness, peer-connectedness, complicated grief, depressive symptoms, and emotion suppression).

As shown in Table 2, consistent with previous findings, the first path from FBP to parenting at posttest was statistically significant in all models ($ps < .01$; first column in Table 2); families who were randomized into the FBP showed higher levels of effective parenting at posttest relative to controls. In two of the six models, we found significant mediated pathways, in which FBP-induced improvement in effective parenting at posttest was related to the 6 years follow-up mediator (second column in Table 2) which was in turn related to suicide risk (third column in Table 2). First, effective parenting at posttest was associated with reduced aversive self-views at the 6 years follow-up, unstandardized coefficient b = −0.267, SE = 0.120, $p < .05$, standardized coefficient $\beta = -.184$, and aversive self-views were associated with increased suicide risk at 6 or 15 years follow-up, b = 1.493, SE = 0.559, $p < .01$, $\beta = .488$, Odds Ratio (OR) = 4.451. Note that in this model the factor loadings of the latent construct of aversive self-views ranged between 0.79 and 0.85. Second, effective parenting at posttest was associated with caregiver connectedness at the 6 years follow-up, b = 0.399, SE = 0.135, $p < .01$, $\beta = .315$, which was subsequently associated with reduced suicide risk at 6 or 15 years follow-up, b = −0.864, SE = 0.396, $p < .05$, $\beta = -.275$, OR = 0.421.

In the other four models, FBP-induced improvement of parenting at posttest was not significantly associated with the mediator (peer connectedness, complicated grief, depressive symptoms, and emotion suppression) at the 6 years follow-up ($ps > .05$). Although the joint significance test did not support a conclusion of mediation in these models, two interesting relations were found regarding factors associated with suicide risk such that complicated grief (b = 1.258, SE = 0.341, $p < .001$, $\beta = .369$, OR = 3.518) and peer connectedness (b = −1.189, SE = 0.536, $p < .05$, $\beta = -.256$, OR = 0.305) were significantly associated with reduced suicide risk in the expected directions in separate models.

As a post hoc analysis, we conducted a cascade model that included both aversive self-views and caregiver connectedness (Figure 2). This model had similar number of participants who had no missing data (n = 196) compared with the other six mediation models. Results showed that the mediation effect of aversive self-views on the association between program-induced strengthened parenting and suicide risk remained significant, above and beyond the mediation effect of caregiver connectedness. That is, controlling for the correlation between aversive self-views and caregiver connectedness as well as the indirect path from parenting at posttest to suicide risk via caregiver connectedness at the 6 years follow-up, program-induced improvement in parenting at posttest was associated with reduced aversive self-views at the 6 years follow-up (b = −0.272, SE = 0.120, $p < .05$; $\beta = -.191$), which were in turn significantly related to reduced suicide risk at 6 or 15 years follow-up (b = 1.409, SE = 0.574, $p < .05$, $\beta = .452$, OR = 4.093). On the other hand, after controlling for the mediation effect of aversive self-views, caregiver connectedness was not significantly associated with suicide risk. See Online Supplemental Figure 1 for the model with an observed (vs. latent) variable of aversive self-views.

Finally, as supplementary analyses, we estimated six cascade models separately using the 15 years data of suicide risk as the outcome variable. The results are presented in Online Supplementary Table 1. The cascading pathways of the caregiver-connectedness model were supported, such that FBP-induced improvement in parenting at posttest was associated with increased caregiver-connectedness at 6 years follow-up, which was associated with reduced suicide risk at the 15 years follow-up. We caution that these findings should not be considered reliable estimates because of the potential rare events problem in logistic regression models, as mentioned above. Nevertheless, these findings may inform future studies.

Discussion

The current study investigated a three-path mediation model to reveal how program-induced improvement in effective parenting reduced suicide risk at 6 or 15 years after the program. The findings add to correlational data on the association between parenting and suicide risk (Kuramoto-Crawford et al., 2017) by using an experimental design to show that improved parenting following the FBP during childhood/adolescence led to reduced aversive self-views and enhanced caregiver connectedness during adolescence/early adulthood, which led to reduced suicide risk in early adulthood. There are studies that used single mediator analyses to reveal how a preventive intervention or treatment may prevent suicide by modifying a risk or protective factor, but little research exists on how developmental cascades including multiple mediators lead to reductions in suicide risk over developmental periods. These studies were based on adult samples and used short periods of follow-ups (Brown et al., 2019; Gewirtz et al., 2016; Norr et al., 2018). To our awareness, this is the first study to show a chain of mediated effects of a parent-focused prevention program designed for at-risk youth to exert cascading effects in reducing suicide risk in early adulthood. Although peer competence, complicated grief, depressive symptoms, and emotion suppression did not significantly mediate the effects of parenting on suicide risk, peer connectedness and complicated grief were each associated with suicide risk in expected directions. The theoretical and intervention implications of the findings are discussed below.

The finding that aversive self-views mediated the cascading effects of the FBP and effective parenting on suicide risk is consistent with research concerning the important role of parent-child relationships in the development of self-esteem (Bulanda & Majumdar, 2009; Huey et al., 2020), sense of mastery (Moilanen & Shen, 2014) and a mature identity (Koepke & Denissen, 2012). Aversive self-views involve multiple distinguishable facets. Our latent construct consisted of measures of self-esteem, mastery, and identity (due to the use of a secondary dataset), which reflected the degree to which the young people viewed themselves as being

https://doi.org/10.1017/S0954579421001474 Published online by Cambridge University Press

Table 2. Estimated regression coefficients of the six three-paths mediation models

Models	Estimate	FBP → Parenting (posttest) [a]	Parenting (posttest) → Mediator (6 years) [b_1]	Mediator (6 years) → Suicide risk (6 or 15 years) [b_2]	FBP → Mediator (6 years) [c_1]	Parenting (posttest) FBP → Suicide risk (6 or 15 years) [c_2]	FBP → Suicide risk (6 or 15 years) [c_3]
Aversive self-views	b	0.127**	−0.267*	1.493**	−0.201†	0.167	−0.852
	SE	0.046	0.120	0.559	0.115	0.465	0.521
	β	.117	−.184	.488	.127	.037	−.176
				OR = 4.451		**OR = 1.182**	**OR = 0.427**
Caregiver connectedness	b	0.129**	0.399**	−0.864*	0.083	0.264	−1.082*
	SE	0.046	0.135	0.396	0.093	0.541	0.518
	β	.118	.315	−.275	.060	.066	−.249
				OR = 0.421		**OR = 1.302**	**OR = 0.339**
Peer connectedness	b	0.128**	0.096	−1.189*	0.083	−0.049	−1.098*
	SE	0.046	0.059	0.536	0.070	0.391	0.524
	β	.117	.109	−.256	.087	−.012	−.247
				OR = 0.305		**OR = 0.952**	**OR = 0.334**
Complicated grief	b	0.128**	−0.115	1.258***	0.056	0.085	−1.206*
	SE	0.046	0.100	0.341	0.091	0.504	0.530
	β	.117	.094	.369	.042	.020	−.266
				OR = 3.518		**OR = 1.089**	**OR = 0.299**
Depressive symptoms	b	0.128**	0.450	0.111†	−0.466	−0.365	−1.024*
	SE	0.046	0.505	0.067	0.520	0.396	0.513
	β	.117	.073	.173	−.070	−.093	−.239
				OR = 1.117		**OR = 0.694**	**OR = 0.359**
Emotion suppression	b	0.128**	−0.071	0.848†	−0.127	−0.101	−0.903†
	SE	0.046	0.081	0.458	0.095	0.425	0.505
	β	.118	−.058	.257	−.096	−.025	0.207
				OR = 2.336		**OR = 0.904**	**OR = 0.405**

Note: $^{\dagger}p \leq .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. b = unstandardized coefficients; FBP = Family Bereavement Program; **OR** (in bold) = odds ratio for the binary outcome variable (suicide risk at 6 or 15 years follow-up); SE = standard error of the unstandardized coefficient; β = standardized coefficients.

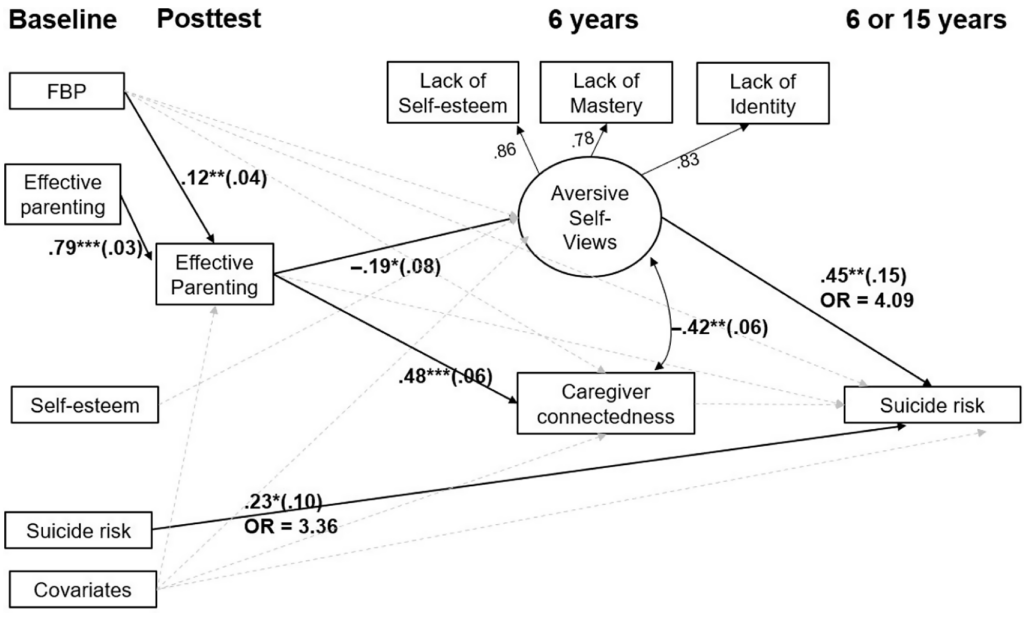

Figure 2. Standardized estimates of a cascade model with aversive self-views and caregiver connectedness. Covariates are time since death, type of death, child age, child gender. The regression coefficients of covariates and the correlations of the variables at baseline are not shown. Dotted lines are not statistically significant ($\alpha > .05$). OR = odds ratio. Standard error are shown in parentheses. *$p < .05$, **$p < .01$, ***$p < .001$.

https://doi.org/10.1017/S0954579421001474 Published online by Cambridge University Press

inadequate and unworthy, low in agency, and lacking in a meaningful identity. The finding on aversive self-views is also consistent with the escape theory of suicide (Baumeister, 1990) which proposes that suicidal behavior is an attempt to escape from aversive affect caused by negative attributions about the self and being unable to block out awareness of negative self-views. The Three-Step Theory (Klonsky et al., 2016) with its focus on the role of pain and hopelessness in suicidal thoughts is also relevant to the current findings. Although the current study did not directly test the specific processes proposed in these theories, the latent construct of aversive self-views would likely lead to the painful negative affective state and sense of hopelessness that both theories posit as leading to suicidal behaviors. Because aversive self-views were concurrently assessed with suicide risk at 6 years, the direction of causality cannot be inferred (Cole & Maxwell, 2003). Further, although prior studies have provided evidence of the prospective relations between these factors with suicide ideation and attempts (Glenn et al., 2018), additional evidence is needed to replicate the finding that these variables are prospective mediators of intervention effects on suicide risk. Finally, these findings also encourage future researchers to examine how the relations between aversive self-views and suicide risk may be mediated through more proximal processes such as through negative self-attributions (Baumeister, 1990), pain, or hopelessness (Klonsky et al., 2016).

Reductions in suicide risk were also mediated through a pathway from strengthened parenting at posttest to caregiver connectedness 6 years later. From a developmental perspective, the participants transitioned from childhood/adolescence into adolescence/young adulthood, where the caregiver-child relationships involve a greater level of independence and autonomy (Erikson, 1968; Koepke & Denissen, 2012). The finding that caregiver connectedness was related to lower suicidal risk indicates that positive attachment to the surviving parent may be a protective factor for suicide in bereaved adults. Indeed, caregiver connectedness may protect overall adjustment after parental death (Brewer & Sparkes, 2011). However, when the latent construct of aversive self-views was accounted for in the model, the effect of caregiver connectedness on suicide risk was no longer statistically significant. Possibly the effect of caregiver connectedness on suicide risk reflects variance shared with aversive self-views ($rs = -.44 \sim -.36$). There may be a dynamic process of mutual influence between young people' self-views and their relationships with their caregiver throughout development. In particular, there may be a possible serial effect of a four-path mediation model, in which program-induced improvements in parenting are associated with subsequent caregiver-connectedness as youth develop into early adulthood, which in turn is associated with their self-views that are predictive of suicide risk later. Future replication studies are needed to confirm these serial effects.

Our hypothesis that program-induced improvements in parenting would lead to higher peer connectedness 6 years later was not supported. We speculate that there may be an indirect rather than direct effect of parenting on peer connectedness. Prior research has found that effective parenting had an indirect effect on the development of peer connectedness through several factors, such as reduced externalizing problems (Wolchik et al., 2020) and increased ego resilience (Swanson et al., 2011). Alternatively, it may be that our measure of peer competence might not have captured peer connectedness sufficiently. The measure of peer competence also had a relatively low reliability. Future research may consider alternative measures of peer connectedness. For example, Wyman et al. (2019) utilized network analyses and found that lower peer network integration and cohesion increased suicide risk of high schoolers.

The finding that complicated grief at the 6 years follow-up was related to suicide risk is consistent with prior findings (Hill et al., 2019; Prigerson et al., 1999; Sandler et al., 2021). However, strengthened parenting at posttest was not associated with complicated grief at the 6 years follow-up. It may be that there are indirect effects of parenting on grief that were not examined in the current study. For example, research found that parenting was associated with children's coping efficacy and sense of security (Wolchik et al., 2008), each of which might influence long-term grief. Alternatively, it may be that parenting was related to specific dimensions of grief not captured in a unidimensional measure of complicated grief (see also Sandler et al., 2021). Prior research has identified specific dimensions of grief that may be more closely related to parenting and suicide risk, such as intrusive grief thoughts or existential grief (Kaplow et al., 2018; Sandler et al., 2010). Given that the FBP had a significant effect to reduce intrusive grief thoughts at posttest and 6 years later (Sandler et al., 2010), it may be that the effects of the program on intrusive grief thoughts mediated the effects on complicated grief. It may also be that the FBP has an effect on complicated grief via parental psychopathology or parental grief, which was not the focus of this paper.

Depressive symptoms did not mediate the relation between program-induced improvements in effective parenting and suicide risk. FBP-induced improvement in parenting did not have an effect on depressive symptoms. Neither were depressive symptoms related to suicide risk. Depression is considered one of the risk factors of suicidal behaviors by many health-related professional organizations. Also, there are numerous studies linking depression to suicidal behaviors (Evans et al., 2004; Franklin et al., 2017; Gili et al., 2019; Goldston et al., 2009) including research in bereaved samples (Prigerson et al., 1999). However, the overall predictive strength of depression on suicide is moderate at best (e.g., OR = 2.45, see Franklin et al., 2017). It may be that the extreme levels of pain and hopelessness associated with clinical depression are primarily responsible for the relations between depression and suicide risk. It may also be that specific aspects of depression are responsible for increasing risk for suicide in parentally bereaved youth. For instance, a meta-analysis study found that anhedonia (or lack of motivation) was significantly associated with suicidal thoughts when controlling for depression (Ducasse et al., 2018).

The finding that emotion suppression was not significantly related to suicide risk contradicted Kaplow et al.'s (2014)'s study which showed that emotion suppression and suicide risk were correlated in adolescents seen in the emergency room. Those seen in emergency rooms may have experienced higher levels of acute stress whereas bereaved youth in the current study experienced parental death many years earlier when they were assessed at the 6 years follow-up. The effects of the maladaptive strategy of emotion suppression may have been more salient for those assessed during an emergency room visit than those who were assessed during a scheduled interview.

The findings of this study have significant implications for the development of upstream prevention of suicide, which modifies risk or protective factors earlier in development to provide protection from suicide risk at later developmental periods (Reider & Sims, 2016; Sareen et al., 2014; Wyman, 2014). It is notable that neither parenting nor caregiver connectedness has been commonly studied as protective factors for suicide risk over the past 50 years (Franklin et al., 2017). Further, aversive self-views that involve low self-esteem and lack of identity/mastery have not received much

https://doi.org/10.1017/S0954579421001474 Published online by Cambridge University Press

attention but might be an important risk factor for suicidal thoughts and behaviors in early adulthood (e.g., Rasmussen et al., 2015). Bereaved children are an important population for upstream suicide prevention because they are at increased risk for suicide thoughts/attempts and suicide death. The current findings add to research that has supported the FBP's positive effects in reducing suicide risk (Sandler et al., 2016) by identifying parenting as part of the processes that account for the effects. Effective parenting following the FBP mediated program effects on more proximal correlates of suicide risk 6 years later (aversive self-views and caregiver connectedness), suggesting that when the program is disseminated, parenting needs to be preserved as a core component of the intervention. The fact that other studies have also shown reductions in suicide risk via parenting-focused interventions (Connell et al., 2016; Vidot et al., 2016) indicates that promoting effective parenting may be an important part of upstream suicide prevention for other populations in addition to bereaved youth. Upstream prevention programs can be integrated into systems of care in multiple settings (e.g., schools, clinics, hospitals). Community-based services tend to produce smaller effects to reduce suicidal behaviors than those delivered in clinical settings when looking at suicidality outcomes alone (Hofstra et al., 2020). However, if the overall benefits of upstream prevention programs to reduce mental health and substance use problems are also considered in addition to its benefits to reduce suicide risk, such programs are likely to have a positive cost-benefit ratio that is equal to or better than more targeted suicide prevention strategies (Brent, 2016). As suggested by the 2012 National Strategy for Suicide Prevention (Office of the Surgeon General, 2012), a broad range of interventions can be used for suicide prevention including clinical and community services that target mental and substance use disorders.

There are several limitations that need to be noted. First, the FBP was not designed to study suicide, and thus suicide risk was assessed with items from standardized scales of mental health problems to assess suicidal thoughts and attempts rather than measures designed specifically to assess suicide behaviors. The use of selected items to assess suicide thoughts or attempts is not unusual, particularly in secondary data analyses of longitudinal datasets that were not originally designed to study suicide (e.g., Connell et al., 2016; Gewirtz et al., 2016). However, future research that includes commonly used measures of suicidal thoughts and attempts would be necessary. Also, our study did not differentiate suicidal thoughts and attempts, which are two sequential but distinct aspects of suicide risk (Klonsky et al., 2016). Further, the fact that families of suicidal children/adolescents were not eligible to participate in the FBP's trial and the items asking about suicide risk were based on past month (except for key informants' report which was past 6 months) may have an impact on the endorsement rates of suicide risk in the sample. The endorsement rate was 31.1% at baseline, however, many years later the rates were quite low in the current sample. Studies with larger sample size or a longer time frame (e.g., suicide risk during the past year or lifetime) may detect higher rates which would provide higher statistical power for detecting associations between risk/protective factors and suicide risk. We combined the 6- and 15 years follow-up data on suicide risk as a way to address the limited endorsement rate in the sample, as mentioned above, which resulted in partial concurrency between the more proximal mediators and suicide risk outcome that precludes drawing inferences about the direction of causality between these variables. Future prospective studies are needed to address this limitation. In addition to the directions for future research already discussed, it would be valuable to examine other possible cascading pathways through which the FBP reduced suicide risk. Such models might include reduced grief or psychopathological symptoms and increased self-efficacy in caregivers.

Overall, the study makes an important contribution by elucidating the pathways through which the FBP reduced suicide risk. Our findings identified processes that mediated the relation between program-induced improvements in parenting and suicide risk, thus advancing understanding of how the well-documented important resource of high-quality parenting protects bereaved youth. It is worth noting that the implication of our findings should not be to blame the parents, because parenting is not easy especially in the context of bereavement. Yet, with evidence-based tools provided by interventions such as the FBP, caregivers can become a transdiagnostic resilience resource for their children, leading to reduced risk for suicide in addition to reduced prolonged grief and mental health problems (Sandler et al., 2010a, 2010b). When viewed from this perspective, the findings call for more work to identify ways to successfully support bereaved parenting as a pathway to promoting the well-being of bereaved children.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S0954579421001474.

Acknowledgements. Support for this research was provided by National Institute of Mental Health Grant R01 MH49155 to evaluate a preventive intervention for bereaved families. Na Zhang's work was supported by a National Research Service Award in Primary Prevention by the National Institute on Drug Abuse T32DA039772. Irwin Sandler's work was supported by New York Life Foundation. Jenn-Yun Tein's work was supported by grants from the National Institute on Drug Abuse (2R01DA09757). Jenn-Yun Tein's and Sharlene Wolchik's work was also supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01HD094334). A portion of this work was presented at the annual meeting of the Society for Prevention Research in 2020 which was held virtually.

Conflicts of interest. None.

References

Achenbach, T., & Rescorla, L. (2001). *Manual for the ASEBA school-age forms & profiles: An integrated system of multi-informant assessment*. University of Vermont, Research Center for Children, Youth, & Families.

Achenbach, T. M. (1991a). *Manual for the child behavior checklist/4-18 and 1991 profile*. University of Vermont, Department of Psychiatry.

Achenbach, T. M. (1991b). *Manual for the youth self-report and 1991 profile*. University of Vermont, Department of Psychiatry.

Achenbach, T. M., & Rescorla, L. A. (2003). *Manual for the ASEBA adult forms & profiles*. University of Vermont, Research Center for Children, Youth, & Families.

Adam, K. S., Lohrenz, J. G., Harper, D., & Streiner, D. (1982). Early parental loss and suicidal ideation in university students. *The Canadian Journal of Psychiatry*, *27*, 275–281. https://doi.org/10.1177/070674378202700403

Agerbo, E., Nordentoft, M., & Mortensen, P. B. (2002). Familial, psychiatric, and socioeconomic risk factors for suicide in young people: Nested case-control study. *British Medical Journal*, *325*, 74–77. https://doi.org/10.1136/bmj.325.7355.74

Allen, J. P., Hauser, S. T., O'Connor, T. G., & Bell, K. L. (2002). Prediction of peer-rated adult hostility from autonomy struggles in adolescent - Family interactions. *Development and Psychopathology*, *14*, 123–137. https://doi.org/10.1017/S0954579402001074

Ayers, T. S., Sandler, I. N., & Twohey, J. L. (1998). Conceptualization and measurement of coping in children and adolescents. In T. H. Ollendick & R. J. Prinz (Eds.), *Advances in clinical child psychology* (pp. 243–301). Springer.

Balan, R., Dobrean, A., Roman, G. D., & Balazsi, R. (2017). Indirect effects of parenting practices on internalizing problems among adolescents: The role of expressive suppression. *Journal of Child and Family studies*, *26*(1), 40–47. https://doi.org/10.1007/s10826-016-0532-4

Baumeister, R. F. (1990). Suicide as escape from self. *Psychological Review*, *97*, 90–113. https://doi.org/10.1037/0033-295X.97.1.90

Brent, D. A. (2016). Prevention programs to augment family and child resilience can have lasting effects on suicidal risk. Suicide and Life-Threatening Behavior, *46*, S39–S47. https://doi.org/10.1111/sltb.12257

Brent, D. A., Melhem, N., Donohoe, M. B., & Walker, M. (2009). The incidence and course of depression in bereaved youth 21 months after the loss of a parent to suicide, accident, or sudden natural death. *American Journal of Psychiatry*, *166*, 786–794. https://doi.org/10.1176/appi.ajp.2009.08081244

Brent, D. A., Melhem, N. M., Masten, A. S., Porta, G., & Payne, M. W. (2012). Longitudinal effects of parental bereavement on adolescent developmental competence. *Journal of Clinical Child & Adolescent Psychology*, *41*, 778–791. https://doi.org/10.1080/15374416.2012.717871

Brent, D. A., Perper, J. A., Moritz, G., Liotus, L., Schweers, J., Balach, L. . . . Roth, C. (1994). Familial risk factors for adolescent suicide: A case-control study. *Acta Psychiatrica Scandinavica*, *89*, 52–58. https://doi.org/10.1111/j.1600-0447.1994.tb01485.x

Brewer, J. D., & Sparkes, A. C. (2011). Young people living with parental bereavement: Insights from an ethnographic study of a UK childhood bereavement service. *Social Science & Medicine*, *72*, 283–290. https://doi.org/10.1016/j.socscimed.2010.10.032

Brown, L. A., Zang, Y., Benhamou, K., Taylor, D. J., Bryan, C. J., Yarvis, J. S. . . . for the STRONG STAR Consortium (2019). Mediation of suicide ideation in prolonged exposure therapy for posttraumatic stress disorder. *Behaviour Research and Therapy*, *119*, 103409, https://doi.org/10.1016/j.brat.2019.103409,

Bulanda, R. E., & Majumdar, D. (2009). Perceived parent-child relations and adolescent self-esteem. *Journal of Child and Family Studies*, *18*, 203–212. https://doi.org/10.1007/s10826-008-9220-3

Cai, T., Parast, L., & Ryan, L. (2010). Meta-analysis for rare events. *Statistics in Medicine*, *29*, 2078–2089. https://doi.org/10.1002/sim.3964

Centers for Disease Control and Prevention. *Youth risk behavior survey: Data summary and trends report 2007–2017* 2018, https://www.cdc.gov/healthyyouth/data/yrbs/pdf/trendsreport.pdf

Coatsworth, D., & Sandler, I. N.. *Multi-rater measurement of competence in children of divorce*. Paper presented at the Biennial Conference of the Society for Community Research and Action. Williamsburg, VA, 1993

Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology*, *112*, 558–577. https://doi.org/10.1037/0021-843X.112.4.558

Connell, A., McKillop, H., & Dishion, T. (2016). Long-term effects of the Family Check-Up in early adolescence on risk of suicide in early adulthood. *Suicide and Life-Threatening Behavior*, *46*, S15–S22. https://doi.org/10.1111/sltb.12254

Connell, A. M., Shaw, D., Wilson, M., Danzo, S., Weaver-Krug, C., Lemery-Chalfant, K. . . . Dishion, T. J. (2019). Indirect effects of the early childhood Family Check-Up on adolescent suicide risk: The mediating role of inhibitory control. *Development and Psychopathology*, *31*, 1901–1910. https://doi.org/10.1017/S0954579419000877

Dekovíc, M., & Meeus, W. (1997). Peer relations in adolescence: Effects of parenting and adolescents' self-concept. *Journal of Adolescence*, *20*, 163–176. https://doi.org/10.1006/jado.1996.0074

Dodd, C. G., Hill, R. M., Alvis, L. M., Rooney, E. E., Layne, C. M., Logsdon, T. . . . Kaplow, J. B. (2020). Initial validation and measurement invariance of the Active Inhibition Scale among traumatized and grieving youth. *Journal of Traumatic Stress*. Advance online publication. https://doi.org/10.1002/jts.22529

Ducasse, D., Loas, G., Dassa, D., Gramaglia, C., Zeppegno, P., Guillaume, S. . . . Courtet, P. (2018). Anhedonia is associated with suicidal ideation independently of depression: A meta-analysis. *Depression and Anxiety*, *35*, 382–392. https://doi.org/10.1002/da.22709

Eisenberg, N., Cumberland, A., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychological inquiry*, *9*, 241–273. https://doi.org/10.1207/s15327965pli0904_1

Erikson, E. (1968). *Youth: Identity and crisis*. WW. https://doi.org/10.1002/yd.29

Evans, E., Hawton, K., & Rodham, K. (2004). Factors associated with suicidal phenomena in adolescents: A systematic review of population-based studies. *Clinical Psychology Review*, *24*, 957–979. https://doi.org/10.1016/j.cpr.2004.04.005

Faschingbauer, T. R., Zisook, S., & DeVaul, R. A. (1987). The Texas Revised Inventory of Grief. In S. Zisook (Ed.), *Biopsychosocial aspects of bereavement* (pp. 111–124). American Psychiatric Press, Inc.

Franklin, J. C., Ribeiro, J. D., Fox, K. R., Bentley, K. H., Kleiman, E. M., Huang, X. . . . Nock, M. K. (2017). Risk factors for suicidal thoughts and behaviors: A meta-analysis of 50 years of research. *Psychological Bulletin*, *143*, 187–232. https://doi.org/10.1037/bul0000084

Gallagher, M., & Miller, A. (2018). Suicideal thoughts and behaviors of children and adolescents: An ecological model. *Adolescent Research Review*, *3*, 123–154. https://doi.org/10.1007/s40894-017-0066-z

Gewirtz, A. H., DeGarmo, D. S., & Zamir, O. (2016). Effects of a military parenting program on parental distress and suicidal ideation: After deployment adaptive parenting tools. *Suicide and Life-Threatening Behavior*, *46*, S23–S31. https://doi.org/10.1111/sltb.12255

Gili, M., Castellví, P., Vives, M., de la Torre-Luque, A., Almenara, J., Blasco, M. J. . . . Roca, M. (2019). Mental disorders as risk factors for suicidal behavior in young people: A meta-analysis and systematic review of longitudinal studies. *Journal of Affective Disorders*, *245*, 152–162. https://doi.org/10.1016/j.jad.2018.10.115

Glenn, C., Kleiman, Cha, C.Deming, C., Franklin, J., & Nock, M. (2018). Understanding suicide risk within the Research Domain Criteria (RDoC) framework: A meta-analytic review. *Depression and Anxiety*, *35*, 65–88. https://doi.org/10.1002/da.22686

Glenn, C. R., Franklin, J. C., & Nock, M. K. (2015). Evidence-based psychosocial treatments for self-injurious thoughts and behaviors in youth. *Journal of Clinical Child and Adolescent Psychology*, *44*, 1–29. https://doi.org/10.1080/15374416.2014.945211

Goldston, D. B., Daniel, S. S., Erkanli, A., Reboussin, B. A., Mayfield, A., Frazier, P. H. . . . Treadway, S. L. (2009). Psychiatric diagnoses as contemporaneous risk factors for suicide attempts among adolescents and young adults: Developmental changes. *Journal of Consulting and Clinical Psychology*, *77*, 281–290. https://doi.org/10.1037/a0014732

Gottman, J. M., Katz, L. F., & Hooven, C. (1996). Parental meta-emotion philosophy and the emotional life of families: Theoretical models and preliminary data. *Journal of Family Psychology*, *10*, 243–268. https://doi.org/10.1037/0893-3200.10.3.243

Greenberger, E. (1984). Psychosocial Maturity Inventory (PSM) Form D. School of Psychology and Social Behavior, SE II-3340. [Unpublished document].

Griffin, W. A., & Decker, A. A. (1996). *Family Bereavement Program parent-child interaction coding scheme (Tech. Report No. 96–02)*. Prevention Research Center, Arizona State University.

Gross, J. T., & Cassidy, J. (2019). Expressive suppression of negative emotions in children and adolescents: Theory, data, and a guide for future research. *Developmental Psychology*, *55*, 1938–1950. https://doi.org/10.1037/dev0000722

Guldin, M. B., Li, J., Pedersen, H. S., Obel, C., Agerbo, E., Gissler, M. . . . Vestergaard, M. (2015). Incidence of suicide among persons who had a parent who died during their childhood a population-based cohort study. *JAMA Psychiatry*, *72*, 1227–1234. https://doi.org/10.1001/jamapsychiatry.2015.2094

Haine, R. A., Wolchik, S. A., Sandler, I. N., Millsap, R. E., & Ayers, T. S. (2006). Positive parenting as a protective resource for parentally bereaved children. *Death Studies*, *30*, 1–28. https://doi.org/10.1080/07481180500348639

Harter, S. (1982). The perceived competence scale for children. *Child Development*, *53*, 87–97. https://doi.org/10.2307/1129640

Hawkins, J. D., Kosterman, R., Catalano, R. F., Hill, K. G., & Abbott, R. D. (2005). Promoting positive adult functioning through social development

intervention in childhood: Long-term effects from the Seattle Social Development Project. *Archives of Pediatrics & Adolescent Medicine*, *159*, 25–31. https://doi.org/10.1001/archpedi.159.1.25

Hazzard, A., Christensen, A., & Margolin, G. (1983). Children's perceptions of parental behaviors. *Journal of Abnormal Child Psychology*, *11*, 49–59. https://doi.org/10.1007/BF00912177

Hedegaard, H., Curtin, S., & Warner, M. (2018). *Suicide rates in the United States continue to increase*. National Center for Health Statistics Data Brief (No. 309). https://www.cdc.gov/nchs/data/databriefs/db309.pdf

Hill, R. M., Kaplow, J. B., Oosterhoff, B., & Layne, C. M. (2019). Understanding grief reactions, thwarted belongingness, and suicide ideation in bereaved adolescents: Toward a unifying theory. *Journal of Clinical Psychology*, *75*, 780–793. https://doi.org/10.1002/jclp.22731

Hofstra, E., Van Nieuwenhuizen, C., Bakker, M., Özgül, D., Elfeddali, I., de Jong, S. J. . . . **van der Feltz-Cornelis, C. M.** (2020). Effectiveness of suicide prevention interventions: A systematic review and meta-analysis. *General Hospital Psychiatry*, *63*, 127–140. https://doi.org/10.1016/j.genhosppsych.2019.04.011

Huey, M., Laursen, B., Kaniušonytė, G., Malinauskienė, O., & Žukauskienė, R. (2020). Self-esteem mediates longitudinal associations from adolescent perceptions of parenting to adjustment. *Journal of Abnormal Child Psychology*, *48*, 331–341. https://doi.org/10.1007/s10802-019-00599-2

Jakobsen, I. S., & Christiansen, E. (2011). Young people's risk of suicide attempts in relation to parental death: A population-based register study. *Journal of Child Psychology & Psychiatry*, *52*, 176–183. https://doi.org/10.1111/j.1469-7610.2010.02298.x

Jensen, E. W., James, S. A., Boyce, W. T., & Hartnett, S. A. (1983). The family routines inventory: Development and validation. *Social Science and Medicine*, *17*, 201–211. https://doi.org/10.1016/0277-9536(83)90117-X

Joiner, T. (2005). *Why people die by suicide*. Harvard University Press.

Kaplow, J. B., Gipson, P. Y., Horwitz, A. G., Burch, B. N., & King, C. A. (2014). Emotional suppression mediates the relation between adverse life events and adolescent suicide: Implications for prevention. *Prevention Science*, *15*, 177–185. https://doi.org/10.1007/s11121-013-0367-9

Kaplow, J. B., Layne, C. M., Oosterhoff, B., Goldenthal, H., Howell, K. H., Wamser-Nanney, R. . . . **Pynoos, R.** (2018). Validation of the Persistent Complex Bereavement Disorder (PCBD) Checklist: A developmentally informed assessment tool for bereaved youth. *Journal of Trauma Stress*, *31*, 244–254, https://doi.org/10.1002/jts.22277

Kerr, D. C., DeGarmo, D. S., Leve, L. D., & Chamberlain, P. (2014). Juvenile justice girls' depressive symptoms and suicidal ideation 9 years after multidimensional treatment foster care. *Journal of Consulting and Clinical Psychology*, *82*(4), 684–693.

Klonsky, E. D., May, A. M., & Saffer, B. Y. (2016). Suicide, suicide attempts, and suicidal ideation. *Annual Review of Clinical Psychology*, *12*, 307–330. https://doi.org/10.1146/annurev-clinpsy-021815-093204

Koepke, S., & Denissen, J. J. A. (2012). Dynamics of identity development and separation-individuation in parent-child relationships during adolescence and emerging adulthood: A conceptual integration. *Developmental Review*, *32*, 67–88. https://doi.org/10.1016/j.dr.2012.01.001

Kovacs, M. (1992). *Children's depression inventory manual*. Multi-Health Systems.

Kuramoto-Crawford, S. J., Ali, M. M., & Wilcox, H. C. (2017). Parent-child connectedness and long-term risk for suicidal ideation in a nationally representative sample of US adolescents. *Crisis-the Journal of Crisis Intervention and Suicide Prevention*, *38*, 309–318. https://doi.org/10.1027/0227-5910/a000439

Kwok, O. M., Haine, R. A., Sandler, I. N., Ayers, T. S., Wolchik, S. A., & Tein, J. Y. (2005). Positive parenting as a mediator of the relations between parental psychological distress and mental health problems of parentally bereaved children. *Journal of Clinical Child and Adolescent Psychology*, *34*, 260–271. https://doi.org/10.1207/s15374424jccp3402_5

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1996). Adolescent suicidal ideation and attempts: Prevalence, risk factors, and clinical implications. *Clinical Psychology: Science and Practice*, *3*, 25–46. https://doi.org/10.1111/j.1468-2850.1996.tb00056.x

Love, H. A., & Durtschi, J. A. (2021). Suicidal ideation and behaviors in young adults: A latent profile analysis. *Journal of family psychology*, *35*, 345–355. https://doi.org/10.1037/fam0000786

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, *7*, 83–104. https://doi.org/10.1037/1082-989X.7.1.83

Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, *22*, 491–495. https://doi.org/10.1017/S0954579410000222

McLeod, B. D., Weisz, J. R., & Wood, J. J. (2007). Examining the association between parenting and childhood depression: A meta-analysis. *Clinical Psychology Review*, *27*, 986–1003. https://doi.org/10.1016/j.cpr.2007.03.001

Melhem, N. M., Moritz, G., Walker, M., Shear, M. K., & Brent, D. (2007). Phenomenology and correlates of complicated grief in children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, *46*, 493–499. https://doi.org/10.1097/chi.0b013e31803062a9

Melhem, N. M., Porta, G., Shamseddeen, W., Walker Payne, M., & Brent, D. A. (2011). Grief in children and adolescents bereaved by sudden parental death. *Archives of General Psychiatry*, *68*, 911–919. https://doi.org/10.1001/archgenpsychiatry.2011.101

Moilanen, K. L., & Shen, Y. L. (2014). Mastery in middle adolescence: The contributions of socioeconomic status, maternal mastery and supportive-involved mothering. *Journal of Youth and Adolescence*, *43*, 298–310. https://doi.org/10.1007/s10964-013-9951-3

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Muthén & Muthén.

Norr, A. M., Allan, N. P., Reger, G. M., & Schmidt, N. B. (2018). Exploring the pathway from anxiety sensitivity intervention to suicide risk reduction: Chained mediation through anxiety and depressive symptoms. *Journal of Affective Disorders*, *231*, 27–31. https://doi.org/10.1016/j.jad.2018.01.015

Office of the Surgeon General (2012). *National strategy for suicide prevention goals and objectives for action summary list*. Paper presented at *2012 National Strategy for Suicide Prevention: Goals and Objectives for Action: A Report of the US Surgeon General and of the National Action Alliance for Suicide Prevention*. US Department of Health & Human Services (US).

Oregon Social Learning Center. LIFT Parent Interview 1991. [Unpublished manual].

Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, *19*, 2–21. https://doi.org/10.2307/2136319

Pinquart, M. (2017). Associations of parenting dimensions and styles with internalizing symptoms in children and adolescents: A meta-analysis. *Marriage & Family Review*, *53*, 613–640. https://doi.org/10.1080/01494929.2016.1247761

Prigerson, H. G., Bridge, J., Maciejewski, P. K., Beery, L. C., Rosenheck, R. A., Jacobs, S. C. . . . **Brent, D. A.** (1999). Influence of traumatic grief on suicidal ideation among young adults. *American Journal of Psychiatry*, *156*, 1994–1995. https://doi.org/10.1176/ajp.156.12.1994

Prigerson, H. G., Maciejewski, P. K., Reynolds, C. F., Bierhals, A. J., Newsom, J. T., Fasiczka, A. . . . **Miller, M.** (1995). Inventory of Complicated Grief: A scale to measure maladaptive symptoms of loss. *Psychiatry Research*, *59*, 65–79. https://doi.org/10.1016/0165-1781(95)02757-2

Prinz, R. J., Foster, S., Kent, R. N., & O'Leary, K. D. (1979). Multivariate assessment of conflict in distressed and nondistressed mother-adolescent dyads. *Journal of Applied Behavior Analysis*, *12*, 691–700. https://doi.org/10.1901/jaba.1979.12-691

Program for Prevention Research (1999). Family Bereavement Program manual. (Available from Program from Prevention, Arizona State University, P.O. Box 876005, Tempe, AZ 85287-6005).

Putnick, D. L., Bornstein, M. H., Hendricks, C., Painter, K. M., Suwalsky, J. T. D., & Collins, W. A. (2008). Parenting stress, perceived parenting behaviors, and adolescent self-concept in European American families. *Journal of Family Psychology*, *22*, 752–762. https://doi.org/10.1037/a0013177

Rasmussen, M. L., Dyregrov, K., Haavind, H., Leenaars, A. A., & Dieserud, G. (2015). The role of self-esteem in suicides among young men. *OMEGA-Journal of Death and Dying*, *77*(3), 217–239. https://doi.org/10.1177/0030222815601514

Reider, E. E., & Sims, B. E. (2016). Family-based preventive interventions: Can the onset of suicidal ideation and behavior be prevented? *Suicide and Life-Threatening Behavior*, *46*, S3–S7. https://doi.org/10.1111/sltb.12252

Rostila, M., Berg, L., Arat, A., Vinnerljung, B., & Hjern, A. (2016). Parental death in childhood and self-inflicted injuries in young adults: A national cohort study from Sweden. *European Child and Adolescent Psychiatry*, *25*, 1103–1111. https://doi.org/10.1007/s00787-016-0833-6

Saldinger, A., Porterfield, K., & Cain, A. C. (2004). Meeting the needs of parentally bereaved children: A framework for child-centered parenting. *Psychiatry.*, *67*, 331–352. https://doi.org/10.1521/psyc.67.4.331.56562

Sandler, I., Ayers, T. S., Tein, J. Y., Wolchik, S., Millsap, R., Khoo, S. T. . . . **Coxe, S.** (2010a). Six-year follow-up of a preventive intervention for parentally-bereaved youth: A randomized controlled trial. *Archives of Pediatrics and Adolescent Medicine*, *164*(10), 907–914.

Sandler, I., Gunn, H., Mazza, G., Tein, J. Y., Wolchik, S., Kim, H. . . . **Porter, M.** (2018). Three perspectives on mental health problems of young adults and their parents at a 15 years follow-up of the Family Bereavement Program. *Journal of Consulting and Clinical Psychology*, *86*, 845–855. https://doi.org/10.1037/ccp0000327

Sandler, I., Ingram, A., Wolchik, S., Tein, J. Y., & Winslow, E. (2015). Long-term effects of parenting-focused preventive interventions to promote resilience of children and adolescents. *Child Development Perspectives*, *9*, 164–171. https://doi.org/10.1111/cdep.12126

Sandler, I., Tein, J., Zhang, N., Wolchik, S., & Thieleman, K. (2021). Grief as a predictor of long-term suicidality above and beyond PTSD symptoms and other risk factors in parentally bereaved children and adolescents. *Journal of Traumatic Stress*. Advance online publication. https://doi.org/10.1002/jts.22759

Sandler, I., Wolchik, S., Braver, S., & Fogas, B. (1991). Stability and quality of life events and psychological symptomatology in children of divorce. *American Journal of Community Psychology*, *19*, 501–520. https://doi.org/10.1007/BF00937989

Sandler, I. N., Ayers, T. S., Wolchik, S. A., Tein, J. Y., Kwok, O. M., Haine, R. A. . . . **Griffin, W. A.** (2003). The Family Bereavement Program: Efficacy evaluation of a theory-based prevention program for parentally bereaved children and adolescents. *Journal of Consulting and Clinical Psychology*, *71*, 587–600. https://doi.org/10.1037/0022-006X.71.3.587

Sandler, I. N., Ma, Y., Tein, J. Y., Ayers, T. S., Wolchik, S., Kennedy, C. . . . **Millsap, R.** (2010b). Long-term effects of the Family Bereavement Program on multiple indicators of grief in parentally bereaved children and adolescents. *Journal of Consulting and Clinical Psychology*, *78*, 131–143. https://doi.org/10.1037/a0018393

Sandler, I. N., Schoenfelder, E. N., Wolchik, S. A., & MacKinnon, D. P. (2011). Long-term impact of prevention programs to promote effective parenting: Lasting effects but uncertain processes. *Annual Review of Psychology*, *62*, 299–329. https://doi.org/10.1146/annurev.psych.121208.131619

Sandler, I. N., Tein, J.-Y., Wolchik, S., & Ayers, T. S. (2016). The effects of the Family Bereavement Program to reduce suicide ideation and/or attempts of parentally bereaved children six and fifteen years later. *Suicide and Life-Threatening Behavior*, *46*, S32–S38. https://doi.org/10.1111/sltb.12256

Sandler, I. N., Wolchik, S. A., & Ayers, T. S. (2008). Resilience rather than recovery: A contextual framework on adaptation following bereavement. *Death Studies*, *32*, 59–73. https://doi.org/10.1080/07481180701741343

Sareen, J., Isaak, C., Katz, L. Y., Bolton, J., Enns, M. W., & Stein, M. B. (2014). Promising strategies for advancement in knowledge of suicide risk factors and prevention. *American Journal of Preventive Medicine*, *47*, S257–S263. https://doi.org/10.1016/j.amepre.2014.05.041

Schaefer, E. S. (1965). A configurational analysis of children's reports of parent behavior. *Journal of Consulting Psychology*, *29*, 552–557. https://doi.org/10.1037/h0022702

Schäfer, J.Ö., Naumann, E., Holmes, E. A., Tuschen-Caffier, B., & Samson, A. C. (2017). Emotion regulation strategies in depressive and anxiety symptoms in youth: A meta-analytic review. *Journal of Youth and Adolescence*, *46*, 261–276. https://doi.org/10.1007/s10964-016-0585-0

Schoenfelder, E. N., Sandler, I. N., Wolchik, S., & MacKinnon, D. (2011). Quality of social relationships and the development of depression in parentally-bereaved youth. *Journal of Youth and Adolescence*, *40*, 85–96. https://doi.org/10.1007/s10964-009-9503-z

Shaffer, D., Fisher, P., & Lucas, C. (2004). The Diagnostic Interview Schedule for Children (DISC). In M. J. Hilsenroth & D. L. Segal (Eds.), *Comprehensive handbook of psychological assessment, Vol. 2. Personality assessment* (pp. 256–270). John Wiley & Sons Inc.

Shapiro, D. N., Howell, K. H., & Kaplow, J. B. (2014). Associations among mother–child communication quality, childhood maladaptive grief, and depressive symptoms. *Death Studies*, *38*, 172–178. https://doi.org/10.1080/07481187.2012.738771

Shaver, P. R., & Tancredy, C. M. (2001). Emotion, attachment, and bereavement: A conceptual commentary. In M. S. Stroebe, R. O. Hansson, W. Stroebe, & H. Schut (Eds.), *Handbook of bereavement research: Consequences, coping, and care* (pp. 63–88). American Psychological Association. https://doi.org/10.1037/10436-003

Shevlin, M. E., Bunting, B. P., & Lewis, C. A. (1995). Confirmatory factor analysis of the Rosenberg Self-Esteem Scale. *Psychological Reports*, *76*, 707–710. https://doi.org/10.2466/pr0.1995.76.3.707

Stroebe, M., & Schut, H. (2010). The dual process model of coping with bereavement: A decade on. *Omega*, *61*, 273–289. https://doi.org/10.2190/OM.61.4.b

Swanson, J., Valiente, C., Lemery-Chalfant, K., & O'Brien, T. (2011). Predicting early adolescent's academic achievement, social competence and physical health form parenting, ego-resilience and engagement coping. *Journal of Early Adolescence*, *31*, 548–576. https://doi.org/10.1177/0272431610366249

Taylor, A. B., MacKinnon, D. P., & Tein, J. Y. (2008). Tests of the three-path mediated effect. *Organizational Research Methods*, *11*, 241–269. https://doi.org/10.1177/1094428107300344

Tein, J. Y., Sandler, I. N., Ayers, T. S., & Wolchik, S. A. (2006). Mediation of the effects of the Family Bereavement Program on mental health problems of bereaved children and adolescents. *Prevention Science*, *7*, 179–195. https://doi.org/10.1007/s11121-006-0037-2

Vidot, D. C., Huang, S., Poma, S., Estrada, Y., Lee, T., & Prado, G. (2016). Familias Unidas crossover effects on suicidal behaviors among Hispanic adolescents: Results from an effectiveness trial. *Suicide and Life-Threatening Behavior*, *46*, S8–S14, https://doi.org/10.1111/sltb.12253,

Wilcox, H. C., Kellam, S. G., Brown, C. H., Poduska, J. M., Ialongo, N. S., Wang, W. . . . **Anthony, J. C.** (2008). The impact of two universal randomized first-and second-grade classroom interventions on young adult suicide ideation and attempts. *Drug and Alcohol Dependence*, *95*, S60–S73. https://doi.org/10.1016/j.drugalcdep.2008.01.005

Wilcox, H. C., Kuramoto, S. J., Lichtenstein, P., Långström, N., Brent, D. A., & Runeson, B. (2010). Psychiatric morbidity, violent crime, and suicide among children and adolescents exposed to parental death. *Journal of the American Academy of Child & Adolescent Psychiatry*, *49*, 514–523. https://doi.org/10.1016/j.jaac.2010.01.020

Wolchik, S. A., Ma, Y., Tein, J. Y., Sandler, I. N., & Ayers, T. S. (2008). Parentally bereaved children's grief: Self-system beliefs as mediators of the relations between grief and stressors and caregiver-child relationship quality. *Death Studies*, *36*, 597–620. https://doi.org/10.1080/07481180802215551

Wolchik, S. A., Tein, J. Y., Winslow, E., Minney, J., Sandler, I. N., & Masten, A. S. (2020). Developmental cascade effects of a parenting-focused program for divorced families on competence in emerging adulthood. *Development and Psychopathology*. Advance online publication. https://doi.org/10.1017/S095457941900169X

Worden, J. W., & Silverman, P. R. (1996). Parental death and the adjustment of school-age children. *OMEGA - Journal of Death and Dying*, *33*, 91–102. https://doi.org/10.2190/P77L-F6F6-5W06-NHBX

World Health Organization. *Suicide in the world: Global health estimate* 2019, https://www.who.int/publications-detail/suicide-in-the-world.

Wyman, P. A. (2014). Developmental approach to prevent adolescent suicides: Research pathways to effective upstream preventive interventions. *American Journal of Preventive Medicine*, *47*, S251–S256. https://doi.org/10.1016/j.amepre.2014.05.039

Wyman, P. A., Pickering, T. A., Pisani, A. R., Rulison, K., Schmeelk-Cone, K., Hartley, C. . . . **Brown, C. H.** (2019). Peer-adult network structure and suicide attempts in 38 high schools: Implications for network-informed suicide prevention. *Journal of Child Psychology and Psychiatry*, *60*, 1065–1075. https://doi.org/10.1111/jcpp.13102