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Understanding grief reactions, thwarted belongingness, and suicide ideation in bereaved adolescents: Toward a unifying theory

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Abstract

Objective: Childhood bereavement is linked to suicide-related behaviors in adolescence and adulthood, but candidate mechanisms through which bereavement may lead to suicide-related behaviors have not been explored. One candidate pathway is that grief reaction arising from bereavement lead to increased perceived burdensomeness and/or thwarted belongingness, resulting in increased suicide ideation. This cross-sectional study of bereaved adolescents explored indirect effects between grief reactions as distal predictors, perceived burdensomeness and thwarted belongingness as proximal predictors, and suicide ideation.

Method: Participants were 58 bereaved youth, 12–17 years of age (mean = 14.21, *SD* = 1.65; 81.0% female; 51.7% Hispanic, 17.2% African American, and 22.4% Caucasian), and their parents/guardians seeking services at a trauma and grief specialty outpatient clinic.

Results: The indirect effect of grief reactions on suicide ideation via thwarted belongingness, but not perceived burdensomeness, was statistically significant.

Conclusions: Clinicians may wish to consider signs of thwarted belongingness as possible indicators of suicide risk among bereaved youth.

KEYWORDS

bereavement, grief, perceived burdensomeness, suicide ideation, thwarted belongingness

1 | INTRODUCTION

Suicide is the second leading cause of death among US adolescents (Centers for Disease Control and Prevention, 2016). Data from the Youth Risk Behavior Surveillance Survey indicate that 1 in 6 adolescents experience suicide ideation each year (Kann et al., 2016). Of particular concern, suicide risk is especially prominent among bereaved youth: Nationally-representative epidemiologic studies have identified links between parental bereavement during childhood and suicide attempts in adolescence (Thompson & Light, 2011), as well as later in life (Guldin et al., 2015; Wilcox et al., 2010).

The worldwide lifetime prevalence of children bereaved by one or both parents was 151 million in 2011, not including deaths of other close loved ones, such as siblings or other caregivers (UN Children's Fund [UNICEF], 2013). Bereavement is not only the most common, but also the most distressing form of trauma among both clinic-referred youth and youth in the general population (Kaplow, Saunders, Angold, & Costello, 2010; Pynoos et al., 2014; UNICEF, 2013). In addition, bereavement is one of the strongest predictors of poor school functioning above and beyond any other type of trauma (Oosterhoff, Kaplow, & Layne, in press). The high prevalence of bereavement, as well as its link to suicide ideation, establish suicide risk among bereaved adolescents as a significant public health concern. Although knowledge regarding childhood bereavement has increased over the past 20 years, little attention has been given to exploring potential mechanisms capable of explaining observed links between bereavement and adolescent suicide ideation. Accordingly, studies that explore potential mechanisms by which childhood bereavement conduces to increased risk for suicide-related behaviors can advance the field in two primary ways. These include (a) identifying useful indicators for suicide risk among bereaved youth (thereby enhancing risk screening efforts), and (b) laying the foundation for the clinically useful theory that describes key components of the pathway linking bereavement to suicide ideation (thereby identifying candidate targets for suicide prevention).

1.1 | Grief reactions as defined by persistent complex bereavement disorder

Despite the high prevalence of childhood bereavement worldwide, the field of childhood grief remains in a relatively nascent state. The *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (DSM-5; American Psychiatric Association, 2013) now includes *Persistent-Complex Bereavement Disorder (PCBD)* as a candidate disorder, representing a call for further research into the clinical manifestations of maladaptive grief (Kaplow, Layne, & Pynoos, 2014). As proposed in DSM-5, the PCBD diagnosis involves significant distress or impairment stemming from bereavement that is inconsistent with or out of proportion with existing cultural and religious norms. PCBD has been characterized as a “hybrid” disorder intended to integrate the perspectives of several schools of thought regarding the nature and distinguishing features of maladaptive grief (Kaplow, Layne, Saltzman, Cozza, & Pynoos, 2013), as reflected by such labels as “pathological grief” (e.g., Horowitz, Bonanno, & Holen, 1993), “complicated grief” (e.g., Shear et al., 2011), and “prolonged grief” (e.g., Prigerson et al., 2009).

Criteria B and C of the proposed PCBD diagnostic criteria outline a set of grief reactions (i.e., behavioral and emotional responses to bereavement) proposed to be associated with maladaptive outcomes for bereaved youth (American Psychiatric Association, 2013). Criterion B symptoms encompass (a) separation distress, including persistent, intense yearning, and longing for the person who died; (b) intense sorrow; (c) preoccupation with the deceased; and/or (d) preoccupation with the circumstances of the death. Criterion C symptoms encompass (a) reactive distress in response to the death, including difficulty accepting the death, difficulty reminiscing, and excessive avoidance of loss reminders (e.g., the deceased's belongings or friends; formerly shared activities); and (b) disruptions in personal and social identity, including, feeling like part of oneself has died with the deceased or that life is meaningless.

Experiencing the loss of a loved one and accompanying grief reactions may be especially pernicious during childhood and adolescence. Late childhood and adolescence are developmental periods characterized by

exploration—a developmental task in which youth begin to form their personal and social identities and expand their social networks (e.g., McLean & Breen, 2009). Potential grief-related disruptions in exploratory behavior may thus interfere with normative identity development (Kaplow et al., 2013). The loss of a loved one may also alter normative neurobiological growth. Youth who have experienced bereavement demonstrate lower connectivity between the amygdala and hippocampus, which is theorized to contribute to the development of internalizing symptoms such as anxiety and depression (Herringa et al., 2013). Accordingly, experiencing bereavement and grief during late childhood and adolescence may have lasting effects on personal and social development.

1.2 | Linking grief reactions to suicide ideation

These disruptions in interpersonal relationships inherent to bereavement call for an interpersonally-oriented theoretical framework capable of describing potential associations between grief reactions and suicide ideation in bereaved individuals. The *interpersonal-psychological theory of suicide (IPTS)* (Joiner, 2005; Van Orden et al., 2010) offers a framework for conceptualizing and organizing correlates of suicide risk and has received considerable empirical support among adolescent samples (e.g., Stewart, Eaddy, Horton, Hughes, & Kennard, 2017). The IPTS proposes that suicide ideation arises from the interplay between two factors: *perceived burdensomeness* and *thwarted belongingness*. Perceived burdensomeness is the belief that one has become a drain on the resources of others and that others would benefit in some way from one's death (e.g., "My family would be happier or better off without me."). Thwarted belongingness comprises a sense of loneliness and perceived lack of reciprocal care, including social isolation, low connectedness, and poor social support (Joiner, 2005; Van Orden et al., 2010). The IPTS further proposes that the interaction of these two risk factors (i.e., high burdensomeness *and* high-thwarted belongingness) contributes most strongly to suicide ideation (Van Orden et al., 2010), compared with either alone, a finding that has received support in the empirical literature (Chu et al., 2017). However, the IPTS has not yet been evaluated in a sample of bereaved youth.

According to IPTS, perceived burdensomeness and thwarted belongingness act as proximal risk factors through which more distal risk markers—including anxiety, depression, interpersonal trust, and interpersonal stress—contribute to suicide ideation. This proposition has received empirical support in studies with adolescent samples, which produced evidence that these distal risk markers were indirectly associated with suicide ideation via perceived burdensomeness and/or thwarted belongingness (Buitron et al., 2016; Hill, del Busto, Buitron, & Pettit, 2018; Hill, Penner, et al., 2018). Although promising, this line of inquiry centering on the IPTS model has not yet been extended to the study of childhood bereavement. The potential fruitfulness of applying the IPTS framework to childhood bereavement is underscored by the inherently interpersonal nature of the death of a loved one and its aftermath. We thus propose that grief reactions to the loss of a loved one are ideal for conceptualizing suicide ideation within the context of adolescent bereavement. In particular, the death of a loved one—especially a caregiver or confidant—creates deficits in youths' social support networks and associated deprivations in valued social provisions occasioned by the loss (Layne, Kaplow, Oosterhoff, Hill, & Pynoos, 2017). By extension, grief reactions to the loss of social provisions can detract from bereaved youths' sense of belongingness. If this gap in youths' interpersonal support network remains unfilled or is insufficient to meet bereaved youths' evolving needs (Layne et al., 2009), these youth may experience prolonged elevations in thwarted belongingness. Hence, it is reasonable to propose that thwarted belongingness may play a particularly salient role in the development of suicide ideation among bereaved youth.

Accordingly, building on prior empirical studies and core propositions of IPTS, we propose that grief reactions (viz., emotional, cognitive, and behavioral responses to bereavement) may serve as distal predictors, and perceived burdensomeness and thwarted belongingness may serve as proximal predictors, of suicide ideation. Further, within the context of bereavement, we propose that elevated grief reactions may inhibit healthy repair of the youth's supportive interpersonal network and/or exacerbate a youth's sense of perceived burdensomeness and thwarted belongingness. For example, grief reactions related to social/identity disruption (PCBD Criterion C) may lead youth to perceive themselves as different from others (e.g., "Nobody

understands me”), contributing to a sense of social isolation or actual social withdrawal. Similarly, youth experiencing reactive distress (Criterion C) frequently avoid people, places, or situations that remind them of their deceased loved one, given that these loss reminders tend to segue into disturbing recollections of the way they died. Because people who look like the deceased or were present around the time of the person’s death can be potent loss reminders, adolescents high in avoidance may experience significant disruptions in social connectedness (e.g., avoiding certain family members, friends, social gatherings, or previously attended peer groups). Additionally, intense sorrow and emotional pain (Criterion B) may interfere with youths’ ability to recruit social support, including by forming new relationships. Youth who are preoccupied with the circumstances of the death (Criterion B), especially under traumatic or otherwise tragic circumstances, may believe that they are “jinxed” and refrain from forming new relationships out of fear of suffering another loss (Layne, Pynoos, Cardenas, Shafii & Shafii, 2001). Intense grief reactions and accompanying social isolation may thus disrupt youths’ social connectedness and lead to greater thwarted belongingness.

As an alternative pathway, the death of a loved one may increase perceived burdensomeness. Bereaved youth may perceive that expressing persistent loneliness and intense sorrow (Criterion B) creates a burden on surviving caregivers/loved ones, particularly when the surviving caregiver is also grieving (e.g., “Mom starts to cry every time I mention how much I miss Dad”). Reactive distress (Criterion C) may include excessive self-blame, particularly when youth believe they caused or could have prevented the death. Youth who believe that they could have prevented the death may view themselves as a burden on their family (e.g., “If I had been better behaved, Mom wouldn’t have been so stressed and had a heart attack”). Excessive avoidance of loss reminders may require substantial accommodation by caregivers, leading youth to perceive that their avoidance is burdensome to their caregivers. Thus, grief reactions may serve to increase both thwarted belongingness and perceived burdensomeness, which in turn can lead to greater suicide ideation among bereaved youth with elevated maladaptive grief reactions.

1.3 | The present study

The overarching aim of this cross-sectional study of bereaved adolescents was to build clinical theory capable of improving efforts to screen for, and therapeutically support, bereaved youth. In particular, we examined indirect effects between grief reactions as distal predictors, perceived burdensomeness, and thwarted belongingness as proximal predictors, and suicide ideation as a criterion. Our study objectives included (a) extending the IPTS to a sample of bereaved youth, and (b) exploring potential pathways through which grief reactions may exacerbate perceived burdensomeness and thwarted belongingness, thereby increasing suicide risk among bereaved youth. Extending and applying IPTS to bereaved youth, we hypothesized that perceived burdensomeness, thwarted belongingness, and their interaction would positively associate with suicide ideation (Hypothesis 1). We further hypothesized that grief reactions would positively associate with perceived burdensomeness, thwarted belongingness, and suicide ideation among bereaved youth (Hypothesis 3). As an initial step toward developing an integrative theory explaining observed links between youth bereavement and suicide-related behaviors, we hypothesized that grief reactions would distally associate with suicide ideation among bereaved youth via associations with proximal predictors, perceived burdensomeness and thwarted belongingness (Hypothesis 3).

2 | METHODS

2.1 | Participants

Participants were 58 bereaved adolescents, 12–17 years of age, and their parents/guardians seeking psychological services at a trauma and grief specialty outpatient clinic. Participants were recruited from a large

urban area in the United States via referrals from community agencies and schools in the clinic's catchment area, or via self-referral, from May 2016 to May 2017. Inclusion criteria were: ages 12–17 years and adolescent endorsement of bereavement. Adolescents (81.0% female) ranged in age from 12 to 17 years ($M = 14.21$, $SD = 1.65$). The ethnoracial distribution of the sample approximated that of the geographic catchment area in which the clinic is located. Parents reported adolescent's race/ethnicity as Hispanic (51.7%), Caucasian (22.4%), African American or Black (17.2%), or mixed/biracial (8.6%).

The majority of adolescents identified the death of a parent as their most difficult bereavement experience ($n = 11$, 19.0% mother; $n = 12$, 20.7% father; $n = 3$, 5.2% both parents), followed by death of grandparent or great-grandparent ($n = 13$, 22.4%), sibling ($n = 9$, 15.5%), and other (aunt, uncle, cousin, best friend, etc.; $n = 9$, 15.5%). The most common cause of death was a chronic illness such as cancer ($n = 21$, 36.2%); additional causes of death included murder ($n = 8$, 13.8%), sudden illness ($n = 6$, 10.3%), accident ($n = 5$, 8.6%), suicide ($n = 4$, 6.8%), drug overdose ($n = 4$, 6.8%), and unknown to the youth ($n = 9$, 15.5%). The focal death occurred when adolescents were, on average, 12.19 years of age ($SD = 3.27$), with an average duration since the death of 16.29 months ($SD = 19.49$, range = 1–84 months).

2.2 | Procedures

All procedures were reviewed and approved by the appropriate Institutional Review Board. Parents/guardians seeking psychological services for their children first contacted the clinic. A brief description of the clinic and services available was provided and, if clinic services were deemed appropriate, an initial assessment was scheduled. At the initial assessment, the research study was described and parent/guardian written consent and adolescent written assent was obtained. The initial assessments included adolescent and parent interviews conducted by trained clinical staff. Adolescents were remunerated for their participation.

2.3 | Measures

2.3.1 | Grief reactions

The PCBD (Layne, Kaplow, & Pynoos, 2014) Checklist is a 39-item measure of grief for youth ages 8–18 that assesses DSM-5 PCBD criteria. Items are rated on a 5-point Likert type scale ranging from 0 (not at all) to 4 (all the time). In prior research, the PCBD Checklist demonstrated strong internal consistency, clinical utility, and content, convergent, and discriminant validity (Kaplow, Layne, Oosterhoff, & Pynoos, 2018). Separate continuous sum scores for Criteria B and C were calculated, with higher values representing greater maladaptive grief reactions. In the present study, internal consistency coefficients were $\alpha = 0.83$ for Criterion B items and $\alpha = 0.94$ for Criterion C items.

2.4 | Thwarted belongingness and perceived burdensomeness

The Interpersonal Needs Questionnaire (INQ; Van Orden, Cukrowicz, Witte, & Joiner, 2012) is a 15-item measure of perceived burdensomeness (six items) and thwarted belongingness (nine items). Participants rate the extent to which each item describes how they have felt recently, using a 7-point Likert scale from 1 (*not at all true*) to 7 (*very true*). Sum scores for each subscale were calculated with higher values indicating greater perceived burdensomeness or thwarted belongingness. Prior research has supported the factor structure, internal consistency, and convergent validity of the subscales in adolescents (Hill et al., 2014; Van Orden et al., 2012). Internal consistency coefficients in the present sample were $\alpha = 0.93$ for perceived burdensomeness and $\alpha = 0.80$ for thwarted belongingness.

2.5 | Suicide ideation

The 15-item Suicidal Ideation Questionnaire-Junior (SIQ-JR; Reynolds, 1988) assesses a wide range of suicidal thoughts on a 7-point frequency scale ranging from 0 (*I never had this thought*) to 6 (*Almost every day*). The SIQ-JR

TABLE 1 Associations between demographics/bereavement characteristics and study variables

Demographic or bereavement characteristic	Outcomes	ANOVA results (correlation coefficient)
Sex	Perceived burdensomeness	$F(2,55) = 0.40, p = 0.67$
	Thwarted belongingness	$F(2,55) = 2.24, p = 0.17$
	Suicide ideation	$F(2,55) = 2.62, p = 0.08$
Race/ethnicity (Caucasian, Black/African American, and Hispanic)	Perceived burdensomeness	$F(3,54) = 0.09, p = 0.97$
	Thwarted belongingness	$F(3,54) = 0.80, p = 0.50$
	Suicide ideation	$F(3,54) = 1.04, p = 0.38$
Relationship with deceased (Parent, sibling, grandparent, friend, and other)	Perceived burdensomeness	$F(4,52) = 2.21, p = 0.08$
	Thwarted belongingness	$F(4,52) = 0.27, p = 0.89$
	Suicide ideation	$F(4,52) = 1.08, p = 0.37$
Age (at study)	Perceived burdensomeness	$r = 0.25, p = 0.06$
	Thwarted belongingness	$r = 0.37, p < 0.01$
	Suicide ideation	$r = 0.21, p = 0.11$
Age (at time of death)	Perceived burdensomeness	$r = -0.07, p = 0.60$
	Thwarted belongingness	$r = 0.14, p = 0.32$
	Suicide ideation	$r = -0.03, p = 0.83$

Note. ANOVA: analysis of variance.

has excellent test-retest reliability (Reynolds, 1988) and criterion-related validity (Reynolds & Mazza, 1999). Sum scores were calculated with higher values representing greater suicide ideation. Whereas total scores can range from 0 to 90, a score of ≥ 31 has been suggested as indicative of a significant level of suicide ideation (Reynolds, 1988). In the current sample, the SIQ-JR had an internal consistency of 0.94, with 19% ($n = 11$) reporting an SIQ-JR score in the elevated range (i.e., ≥ 31).

2.6 | Data analysis

All analyses were conducted using IBM SPSS version 24. There were no missing data. Leverage indices were evaluated for multivariate statistical outliers (such that a leverage index $\geq 4 \times$ the mean leverage was classified as a statistical outlier; Tabachnick, Fidell & Osterlind, 2001). This procedure identified no multivariate outliers. Potential covariates, including child age, age at the time of the death, gender, race/ethnicity, and relationship with the decedent, were evaluated via correlations and analysis of variances comparing covariates to perceived burdensomeness, thwarted belongingness, and suicide ideation scores. Results are provided in Table 1. Because thwarted belongingness correlated significantly with participant age ($r = 0.37, p < 0.01$), age was included as a covariate in hierarchical linear regression and indirect effects models. Data were analyzed using Pearson product-moment correlations, hierarchical linear regression (with centered predictors), and indirect effects models using the PROCESS macro for SPSS (Hayes, 2013). PROCESS estimates total, direct, and indirect (mediation) effects, allowing for the inclusion of covariates. PROCESS uses a nonparametric resampling procedure with $n = 10,000$ bootstraps resamples to derive point estimates and 95% bias-corrected and accelerated confidence intervals for the indirect effects. Indirect effects for which the confidence interval does not include zero were considered statistically significant. Notably, a statistically significant simple association between two variables is not a precondition for indirect effects (Hayes, 2013; Rucker, Preacher, Tormala, & Petty, 2011; Zhao, Lynch, & Chen, 2010). Power analyses indicated that a sample size of $n = 55$ was needed to detect small to medium effect sizes ($f^2 = 0.15$) at $\beta = 0.80$ and $\alpha = 0.05$ with three test predictors and one covariate, which is consistent with prior research examining the indirect and interactive effects of thwarted belongingness and perceived burdensomeness on suicide ideation (Hill et al., 2014).

TABLE 2 Means, standard deviations, and correlations between study variables

Study variables	Mean	(SD)	Possible range	1	2	3	4	5
1. PCBD Criterion B	15.84	(6.80)	0–28	–	–	–	–	–
2. PCBD Criterion C	32.30	(20.36)	0–88	0.81***	–	–	–	–
3. Perceived burdensomeness	15.07	(10.29)	6–42	–0.11	0.03	–	–	–
4. Thwarted belongingness	28.86	(11.28)	9–63	0.28*	0.50***	0.47***	–	–
5. Suicide ideation	18.66	(20.79)	0–90	0.22	0.43**	0.47***	0.60***	–

Note. PCBD: Persistent-Complex Bereavement Disorder.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

3 | RESULTS

Hypothesis 1. Perceived burdensomeness, thwarted belongingness, and suicide ideation

Means and standard deviations of study measures as well as their intercorrelations are presented in Table 2. Thwarted belongingness and perceived burdensomeness were significantly correlated with suicide ideation. A hierarchical regression model was used to test whether perceived burdensomeness, thwarted belongingness, and their interaction, were significantly associated with suicide ideation. Suicide ideation was specified as the dependent variable. In the first step, perceived burdensomeness and thwarted belongingness served as independent variables. Participant age was included as a covariate. In the second step, the interaction between perceived burdensomeness and thwarted belongingness was added.

Table 3 displays the unstandardized estimates, standard errors, and effect sizes for the model. The first step was statistically significant, accounting for 38.2% of the variance in suicide ideation. In Step 1, thwarted belongingness, but *not perceived burdensomeness*, was significantly associated with suicide ideation among bereaved youth. Step 2, which accounted for 54.7% of the variance in suicide ideation, was a significant improvement over Step 1, $\Delta F(1,53) = 20.57$, $p < 0.001$, $\Delta R^2 = 0.164$. In Step 2, the interaction between perceived burdensomeness and thwarted belongingness was significantly associated with suicide ideation.

To probe the form of the interaction between thwarted belongingness and perceived burdensomeness, a simple slopes analysis was performed that examined the association between thwarted belongingness and suicidal ideation at high and low values of the moderator (perceived burdensomeness). Figure 1 depicts the form of the interaction, with lines representing low (minimum possible score), moderate (the mean), and high (one SD above the mean) for perceived burdensomeness. (As one SD below the mean of perceived burdensomeness fell just outside

TABLE 3 Regression model of suicide ideation

Model	B	SE	t	p	95% CI
Step 1, $F(3,54) = 12.76$, $p < 0.001$, adj. $R^2 = 0.382$					
Age	–0.46	1.41	–0.32	0.75	–3.29, 2.38
Perceived burdensomeness	0.42	0.25	1.69	0.10	–0.08, 0.91
Thwarted belongingness	0.97	0.23	4.15	<0.001	0.50, 1.44
Step 2, $F(4,53) = 18.18$, $p < 0.001$, adj. $R^2 = 0.547$, $\Delta R^2 = 0.164$					
Age	0.43	1.23	0.35	0.73	–2.03, 2.89
Perceived burdensomeness	–2.16	0.61	–3.57	0.001	–3.38, –0.95
Thwarted belongingness	–0.20	0.33	–0.60	0.55	–0.85, 0.46
Perceived burdensomeness \times Thwarted belongingness	0.08	0.02	4.54	<0.001	0.05, 0.12

Note. CI: confidence interval; SE: standard error.

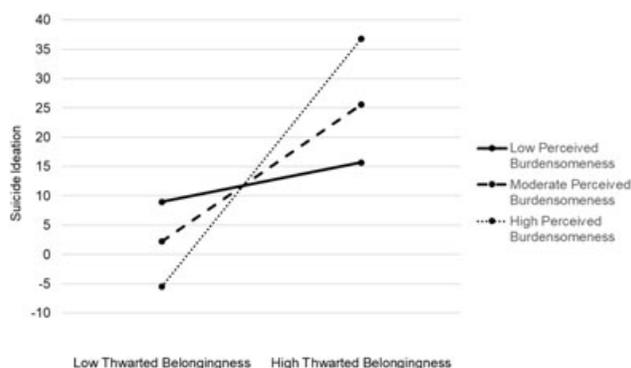


FIGURE 1 Simple slopes of the interaction between perceived burdensomeness and thwarted belongingness on suicide ideation. Note. The line for low-perceived burdensomeness represents the minimum score for perceived burdensomeness, as the one standard deviation below the mean fell outside the range of position value. Lines for moderate and high-perceived burdensomeness represent the mean and one standard deviation above the mean, respectively, low- and high-thwarted belongingness represent one standard statistically at moderate ($B = 1.03$, $SE = 0.20$, $t = 5.13$, $p < 0.001$, 95%CI, 0.63, 1.43) and high ($B = 1.87$, $SE = 0.28$, $t = 6.64$, $p < 0.001$, 95% CI, 1.30, 2.43) levels of perceived burdensomeness. CI: confidence interval

the range of possible values on this measure, the line for low-perceived burdensomeness was adjusted to represent the minimum possible score.) The conditional effect of thwarted belongingness on suicide ideation was not statistically significant at the minimum value of perceived burdensomeness ($B = 0.29$, $SE = 0.25$, $t = 1.17$, $p = 0.25$, 95% CI, -0.21, 0.79), but was statistically significant at the mean of perceived burdensomeness ($B = 1.03$, $SE = 0.20$, $t = 5.14$, $p < 0.001$, 95% CI, 0.63, 1.43) and one standard deviation above the mean ($B = 1.87$, $SE = 0.28$, $t = 6.64$, $p < 0.001$, 95% CI, 1.30, 2.43). As shown in Figure 1, adolescents reported the greatest level of suicide ideation when experiencing elevated levels of *both* thwarted belongingness and perceived burdensomeness.

Hypotheses 2 and 3. Grief Reactions, Thwarted Belongingness, Perceived Burdensomeness, and Suicide Ideation

Partially consistent with Hypothesis 3, PCBD Criterion C scores were significantly and positively correlated with suicide ideation, whereas PCBD Criterion B scores were not (see Table 2). Both PCBD Criteria B and C scores were significantly associated with thwarted belongingness, but contrary to 3, they were not significantly correlated with perceived burdensomeness.

Next, two indirect effects models were used to evaluate whether grief reactions were associated with suicide ideation via perceived burdensomeness and thwarted belongingness. In both models, grief reactions (PCBD Criterion B and C scores) were the independent variables, perceived burdensomeness, and thwarted belongingness were entered simultaneously as the intermediate variables, and suicide ideation was the dependent variable. Participant age was included as a covariate.

Figure 2 displays the unstandardized estimates, standard errors, and 95% bias-corrected and accelerated bootstrap confidence intervals for the first model. Consistent with Hypothesis 3, the indirect effect of PCBD Criterion B scores on suicide ideation via thwarted belongingness reached significance, such that a 1-point increase in PCBD Criterion B scores were associated with an estimated 0.62-point increase in suicide ideation. Contrary to Hypothesis 3, the indirect effect of PCBD Criterion B scores on suicide ideation via perceived burdensomeness was not statistically significant.

A test of the indirect effect of PCBD Criterion C scores on suicide ideation via thwarted belongingness also reached significance, such that a 1-point increase in PCBD Criterion C scores was associated with an estimated 0.30-point increase in suicide ideation. Also contrary to expectations, the indirect effect of PCBD Criterion C scores on suicide ideation via perceived burdensomeness was not statistically significant. Figure 3 displays

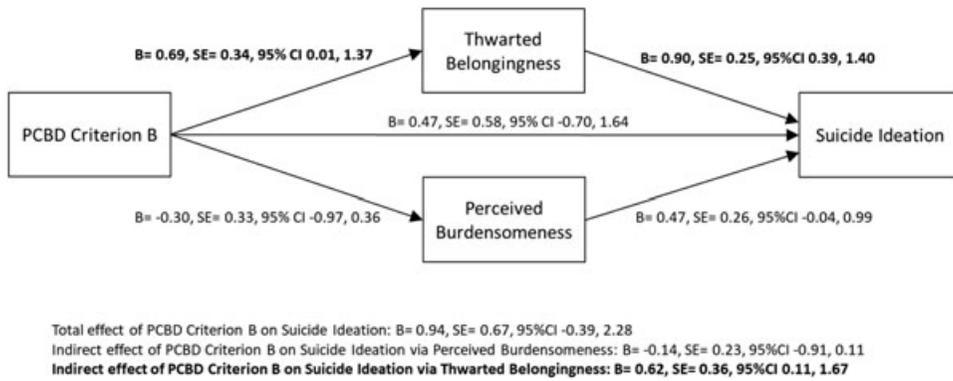


FIGURE 2 Indirect effects models of PCBD Criterion B scores on suicide ideation via thwarted belongingness and perceived burdensomeness. Note. 95% CIs are bias-corrected and accelerated 95% CIs using 10,000 bootstrap samples; bold text indicates significant effects; participant age was included as a covariate. CI: confidence interval; PCBD: Persistent-Complex Bereavement Disorder

unstandardized estimates, standard errors, and 95% bias-corrected and accelerated bootstrap confidence intervals for this model.

To examine potential bidirectional effects, two additional models were examined in which thwarted belongingness and perceived burdensomeness served as independent variables (respectively), grief reactions (PCBD Criterion B and Criterion C scores) served as intermediate variables, and suicide ideation as the dependent variable. No significant indirect effects were found.

4 | DISCUSSION

The aim of the present study was to build upon previously observed empirical associations between bereavement and adolescent suicide ideation by examining a theoretically-derived, cross-sectional indirect effects model comprised of grief reactions, perceived burdensomeness, thwarted belongingness, and suicide ideation. Consistent

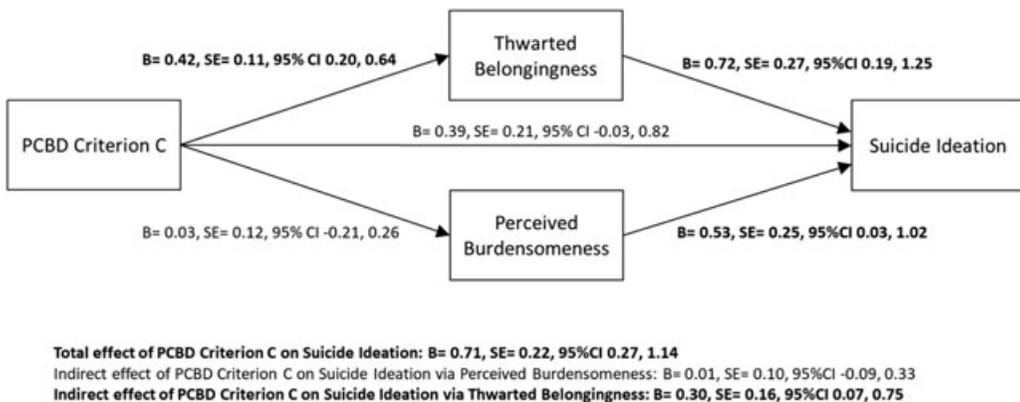


FIGURE 3 Indirect effects model of PCBD Criterion C Scores on Suicide Ideation via Thwarted Belongingness and Perceived Burdensomeness. Note. 95% CIs are bias-corrected and accelerated 95% CIs using 10,000 bootstrap samples; bold text indicates significant effects; participant age was included as a covariate. CI: confidence interval; PCBD: Persistent-Complex Bereavement Disorder

with Hypothesis 1, thwarted belongingness was positively associated with suicide ideation. Additionally, the perceived burdensomeness \times thwarted belongingness interaction was significantly associated with suicide ideation among bereaved youth, such that adolescents elevated on both perceived burdensomeness and thwarted belongingness reported the greatest suicide ideation. Regarding Hypothesis 3, PCBD Criterion C scores, which include distress in response to the death, avoidance of loss reminders, and disruptions in personal and social identity, were positively associated with suicide ideation. In contrast, PCBD Criterion B scores, which include separation distress, sorrow, and preoccupation with the deceased and cause of death, were not significantly associated with suicide ideation. Finally, with respect to Hypothesis 3, the indirect effect of grief reactions (both PCBD Criteria B and C) on suicide ideation via thwarted belongingness, but not perceived burdensomeness, reached significance. PCBD Criterion B and C scores were positively associated with thwarted belongingness which was, in turn, positively associated with suicide ideation. These preliminary findings indicate that risk screening protocols designed to identify suicide risk among bereaved youth may need to consider both grief reactions and thwarted belongingness.

4.1 | The interpersonal-psychology theory of suicide among bereaved youth

Perceived burdensomeness was not significantly associated with suicide ideation after controlling for the effect of thwarted belongingness among bereaved youth. This finding does not align with the existing empirical literature, in which associations between perceived burdensomeness and suicide ideation are well established, even after controlling for thwarted belongingness (for reviews, see Hill, & Pettit, 2014; Stewart et al., 2017). One possibility is that bereavement represents such a strong disruption to an adolescent's sense of belongingness (e.g., "I'm all alone in the world now") that the effect of perceived burdensomeness does not account for any unique variance in suicide ideation among this population. Further research is needed to replicate this unusual finding and to examine the situational and environmental contexts in which thwarted belongingness manifests among bereaved youth.

The interaction between perceived burdensomeness and thwarted belongingness was significantly associated with suicide ideation in this sample. This finding is consistent with a recent meta-analysis (Chu et al., 2017) as well as with IPTS generally (Joiner, 2005; Van Orden et al., 2010), though not all studies have found an interaction (Cero, Zuromski, Witte, Ribeiro, & Joiner, 2015; Christensen, Batterham, Soubelet, & Mackinnon, 2013; Hill et al., 2014). Our finding that suicide ideation was highest at high levels of thwarted belongingness and perceived burdensomeness points to the possibility that perceived burdensomeness may be detrimental amongst bereaved youth, particularly in the presence of elevated thwarted belongingness. Further, we may speculate that (potentially preexisting) perceived burdensomeness might amplify the negative consequences of thwarted belongingness. That is, youth who perceived themselves as a burden on the deceased, may subsequently perceive the loss as preventing future contribution, eliminating the possibility of repairing the burdensome relationship. In this way, perceived burdensomeness itself may not be associated with bereavement or grief, but if present may exacerbate the experience of thwarted belongingness, resulting in suicide ideation.

4.2 | Maladaptive grief reactions and suicide ideation

Inspection of bivariate correlations revealed that PCBD Criterion C scores were significantly correlated with suicide ideation, whereas PCBD Criterion B scores were not (but nevertheless in the anticipated direction). One possible explanation for this is the inclusion of disruptions in personal and social identity as a part of PCBD Criterion C; this aspect of grief that is existential in nature and may therefore be more closely linked with suicide ideation. Further, Criterion C scores (but not Criterion B scores) were associated with depressive symptoms in a previous study, and depressive symptoms are strongly correlated with suicide ideation (Claycomb et al., 2016). Previous research reported that 48.8% of bereaved youth met PCBD Criterion B, but only 19.1% of those same youth met PCBD Criterion C (Kaplow, Layne, & Pynoos, in press). In addition, recent research showed that

bereaved youth who met Criterion C reported significantly worse functioning in school, with peers, and with family than youth who did not meet Criterion C. However, relations between Criterion B and functional impairment was not found. Taken together, these findings suggest that PCBD Criterion C symptoms may be less common but more strongly indicative of a maladaptive grief response than PCBD Criterion B symptoms. Future theory-building and psychometric studies can explore and explicate potential differences between PCBD Criteria B and C symptoms.

Thwarted belongingness correlated significantly with grief reactions in this sample. This finding suggests that youth who react to bereavement with feelings of intense loneliness and being different from peers may perceive themselves as isolated or rejected. A sense of thwarted belongingness may thus be a risk marker of intense distress and social maladjustment in bereaved youth. In contrast, perceived burdensomeness did not correlate significantly with grief reactions. The indirect effect of maladaptive grief reactions on suicide ideation via thwarted belongingness also reached statistical significance. This finding provides preliminary support for the hypothesis that the association between grief and suicide ideation may reflect (at least in part) associations between grief reactions and thwarted belongingness.

4.3 | Clinical implications

Clinicians working with bereaved youth should take care to assess for suicide risk among grieving adolescents, as suicide ideation is especially prevalent in this population. The results of this study indicate that clinicians may also want to monitor bereaved youths' sense of thwarted belongingness, including their social engagement, interpersonal relationships, and perceived social support. Adolescents who acknowledge thwarted belongingness-related cognitions, such as self-perceived isolation or not having anyone to turn to, may benefit from active social supports and fostering of additional interpersonal relationships. In addition, mental health professionals working in schools may be well-positioned to notice changes in students' interpersonal functioning following bereavement. School counselors working with bereaved youth should pay particular attention to students' social support networks, including the potential incorporation of measures designed to assess perceived belongingness (Layne et al., 2009). Students who perceive themselves as both socially isolated, and a burden to their families and others, may be at especially elevated risk for suicide ideation. Signs of social withdrawal, such as dropping extracurricular activities or isolation during social periods (e.g., sitting alone at lunch) may serve as "red flags" for school personnel and may indicate that additional supports are needed. While additional research is needed to determine how best to reduce or prevent thwarted belongingness and associated suicide ideation among bereaved youth, these recommendations may provide a starting point for identifying those "at-risk" bereaved students.

Regarding treatment options for bereaved youth, psychosocial therapies that emphasize social support activation (to decrease thwarted belongingness), reducing maladaptive cognitions (to reduce perceived burdensomeness), and enhancing youth's sense of connection to the deceased, may be particularly beneficial. For example, Trauma and Grief Component Therapy for Adolescents (TGCTA) is a modularized, assessment-driven treatment of adolescents with histories of exposure to trauma, bereavement, and/or traumatic bereavement (Saltzman et al., 2017). TGCTA uses a flexible modularized approach that can be tailored to youth's individual needs and includes adaptive social support seeking to increase the availability of supportive relationships for bereaved youth. TGCTA outcomes include reductions in posttraumatic stress, depression, and maladaptive grief reactions, as well as enhanced school behavior and connectedness (Grassetti et al., 2015; Layne et al., 2008; Layne, Pynoos, Cardenas, Shafii & Shafii, 2001). Similarly, multidimensional grief therapy (MGT) is an assessment-driven psychosocial intervention for bereaved children and adolescents that is based on multidimensional grief theory (Kaplow, Layne, & Pynoos, in press). Primary intervention objectives of MGT focus on reducing maladaptive grieving, facilitating adaptive grieving, and promoting adaptive developmental progression. MGT includes a focus on finding healthy ways to maintain a connection to the deceased, enhancing parent-child communication, and strengthening caregivers' capacity to facilitate their child's adaptive grief, in effect leveraging youth's existing supportive relationships in a positive, adaptive manner (Kaplow, Layne, & Pynoos, in press).

4.4 | Limitations and future directions

Study strengths include the use of youth sample that was diverse in age, race and ethnicity, and characteristics of the loss, an innovative application of IPTS to a sample of parentally-bereaved youth, and a focus on basic theory-building. Limitations included a relatively small sample of clinic-referred youth seeking services for bereavement-related concerns, which also included a small number of youth with elevated suicide ideation. Whereas suicide ideation was elevated in this sample overall, only about 1 in 5 adolescents scored above the suggested SIQ-JR cutoff of 31. Thus, these results should be replicated in a larger sample of bereaved youth with variable suicide ideation, to ensure that results generalize to youth and were not driven by the small number of youth with highly elevated symptoms. Due to the small sample size, we were also unable to examine associations across various loss characteristics (e.g., type of death, relationship to the deceased). Thus, future research with larger samples should evaluate the role of these factors on suicide ideation among bereaved youth. Finally, further research is also needed to replicate these findings with a larger sample of bereaved youth who are not referred for counseling or psychological services.

The results were also cross-sectional, which precluded causal inference. The empirical literature supports the assumption that perceived burdensomeness and thwarted belongingness are proximally associated with suicide ideation (Hill et al., 2018). However, longitudinal research is needed to further examine the findings presented here. Longitudinal studies can more thoroughly test theorized mediating mechanisms, including ways in which particular grief reactions (e.g., separation distress, existential or identity-related crises, circumstance-related distress; see below) lead youth to feel isolated or alone, and could provide specific intervention targets for use in preventive interventions. Future longitudinal research should also consider potential bidirectional effects between thwarted belongingness and grief reactions over time, including the possibility that grief reactions contribute to thwarted belongingness, which in turn, leads to self-isolation and increases youths' risk for increased maladaptive grief reactions and depression. The role of traumatic bereavement and the consequent interplay between posttraumatic stress reactions and grief reactions can also be investigated (Layne et al., 2017).

Given a theoretical nature of the DSM-5 and its proposed diagnostic criteria for PCBD, future research may benefit from incorporating theoretical conceptions of childhood grief and bereavement. MGT is a developmentally-informed multidimensional conceptualization of grief (Kaplow et al., 2013; Layne, 2012; Layne et al., 2017), which proposes that bereavement can produce both adaptive and maladaptive grief reactions. These reactions manifest across three primary content domains, including separation distress, existential/identity distress, and circumstance-related distress. Future longitudinal studies can explore whether these maladaptive grief domains differentially relate to thwarted belongingness and suicide risk whereas highlighting potential foci for risk detection, prevention, and early intervention with bereaved youth.

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