

Identifying Bereavement-Related Markers of Mental and Behavioral Health Problems Among Clinic-Referred Adolescents

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Objective: This study examined bereavement-related risk markers (number of deaths, cause of death, and relationship to deceased) of mental and behavioral health problems (suicidal thoughts or behaviors, self-injury, depression, posttraumatic stress, and substance use) in a national sample of clinic-referred bereaved adolescents.

Method: Participants included 1281 bereaved youth aged 12–21 years ($M=15$, $SD=1.8$; 62.1% female), from the National Child Traumatic Stress Network Core Data Set.

Results: Generalized linear mixed-effects regression models controlling for demographics and other traumas revealed that youth bereaved by multiple deaths had higher posttraumatic stress scores than youth bereaved by a single death (Estimated difference $\pm SE=3.36 \pm 1.11$, $p=0.003$). Youth bereaved by suicide were more likely to

report experiencing suicidal thoughts or behaviors (AOR=1.68, $p=0.049$) and alcohol use (AOR=2.33, $p<0.001$) than youth bereaved by natural causes. Youth bereaved by homicide were at greater risk for substance use than youth bereaved by natural death (AOR=1.76, $p=0.02$). Compared to parentally bereaved youth, youth who lost a peer were more likely to use alcohol (AOR=2.32, $p=0.02$) or other substances (AOR=2.41, $p=0.01$); in contrast, parentally bereaved youth were more likely to experience depression compared to those who experienced the death of an adult relative or unrelated adult (range of AOR: 0.40 to 0.64, p -values <0.05).

Conclusion: These bereavement-related contextual factors can serve as early markers of mental and behavioral health problems among bereaved youth.

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Traumatic life events have been identified as markers of risk for a wide range of mental and behavioral health problems in adolescents, including anxiety, depression, posttraumatic stress, substance use, and suicide risk (1, 2). Notwithstanding the significant links found between adverse life events and youth mental and behavioral health problems, few studies have “unpacked” major life adversities to explore various experiences that may be differentially associated with these problem outcomes. There are three reasons why bereavement may be especially important to explore as a potential *risk marker* (a variable that is quantitatively associated with a specific outcome, but its direct alteration does not necessarily alter the likelihood of the outcome (3)) for adolescent mental and behavioral health problems. First, the death of a close person is one of the most *frequently* reported traumatic events in population-based adult (4) and youth samples (5). Second, bereavement is most likely to be identified as the most *distressing* life event above and beyond other

types of traumas (5). Third, *interpersonal losses*, including bereavement, are the most commonly identified environmental precipitants for adolescent suicidal behavior (6).

HIGHLIGHTS

- Few studies have examined bereavement-related risk markers of mental and behavioral health problems among treatment-seeking adolescents.
- Number of prior traumas, number of prior losses, experiencing a death due to suicide or homicide, and experiencing the death of a parent (as opposed to another relative or friend) were each associated with higher levels of mental and behavioral health problems among bereaved adolescents.
- Findings have implications for early identification of bereaved youth who may be in need of intervention.

There is a pressing need for developmentally informed conceptual frameworks and research designs that clarify how bereavement-related contextual factors can differ in their predictive potencies, operate through different pathways of influence, and contribute to different psychiatric sequelae (7). Although recent studies have examined the role of childhood bereavement in predicting psychiatric problems in adulthood (4, 8), no studies have yet explored bereavement-related contextual factors as potential early risk markers of mental and behavioral health problems among clinic-referred bereaved adolescents, above and beyond other forms of trauma.

CANDIDATE BEREAVEMENT-RELATED INDICATORS OF MENTAL AND BEHAVIORAL HEALTH PROBLEMS

The childhood bereavement field is currently in a nascent phase, as evidenced by its limited capacity to differentiate between adaptive versus maladaptive responses to loss and to identify reliable predictors of adaptive and maladaptive responses in bereaved children and adolescents (9). Nevertheless, recent evidence points to the value of exploring whether bereavement-related contextual variables could serve as early risk markers of mental and behavioral health problems among bereaved youth.

Number of Deaths

A series of retrospective studies of adults, referred to as the Adverse Childhood Experiences (ACEs) studies (10), consistently report dose-response relations between number of childhood adversities and mental, behavioral, and physical health problems in adulthood, including depression (11), alcohol-related disorders (12), anxiety (13), posttraumatic stress disorder (PTSD) (11), and suicide attempts (14). To date, no studies have explicitly investigated dose-response relations between total *number of deaths* experienced and mental and behavioral health problems in adolescents. A recent epidemiological study of adults found a dose-response relation between number of unexpected deaths experienced and number of lifetime psychiatric disorders (4). Layne et al. (15) extended these findings by identifying links between cumulative exposure to trauma and loss during childhood and high-risk behavior—including suicidal thoughts/behaviors—in a national sample of clinic-referred adolescents. Together, these findings raise the question of whether a similar dose-response relation exists between number of deaths experienced and mental and behavioral health problems among *bereaved* youth.

Circumstances of the Death

The few adult studies to evaluate cause of death in relation to mental health outcomes report significantly higher rates of psychological distress among adults bereaved by violent or sudden deaths than by foreseeable deaths (16). Recent studies of adults bereaved in childhood found a higher

likelihood of suicide risk among individuals bereaved by suicide than by accidental deaths or other causes (8). Among adolescents, bereavement by suicide or homicide may confer a higher risk for mental and behavioral health problems than bereavement by anticipated deaths due to such factors as the often-traumatogenic, stigmatized, and public nature of suicide- and homicide-related deaths (16); contagion effects (17); and in the case of suicide, shared familial and biological risks (16).

Relationship to the Deceased

With few exceptions (5), most studies of bereaved youth have focused on one type of loss (e.g., parental bereavement) and have not examined potential differences in response to the death as a function of relationship to the deceased. Using an epidemiological sample, Kaplow et al. (5) found that *parentally bereaved* youth were more likely to exhibit substance abuse and impaired functioning than youth bereaved by the death of a grandparent or other relative. However, a study of adults bereaved as children found a similar effect of suicide bereavement regardless of the degree of blood relation (16). Given the central importance of the parent-child relationship, parentally bereaved youth may be at greater risk for mental and behavioral health problems than youth bereaved by the deaths of other relatives or friends.

Collectively, these studies underscore the possible utility of examining bereavement-related contextual factors in relation to specific mental and behavioral health problems. In addition, few studies have controlled for exposure to other types of trauma despite evidence that bereavement commonly co-occurs with other trauma types (18), and that other forms of trauma independently increase risk for psychiatric symptoms (5).

STUDY AIMS

This study drew upon both previously identified predictors of adolescent mental health issues in the context of bereavement (5, 16) and recent theory-building studies of risk and resilience in bereaved youth (7, 9, 19) to evaluate whether bereavement-related contextual variables may be associated with mental and behavioral health problems in bereaved adolescents above and beyond the effects of other traumas. We examined potential associations between three variables (*number of deaths, cause of death, and relationship to the deceased*) and various mental and behavioral health problems (*suicidal thoughts or behaviors, non-suicidal self injury, depression symptoms, posttraumatic stress symptoms, alcohol use, and substance use*), while controlling for other forms of trauma, in a national clinic-referred sample of bereaved youth (20). We hypothesized that the likelihood of experiencing mental and behavioral health problems would increase as a function of total deaths (Hypothesis 1), exposure to suicide or homicide compared to

deaths due to natural causes (Hypothesis 2), and closeness to the deceased (defined as death of a parent compared to a friend or other relative; Hypothesis 3).

METHODS

Participants and Procedures

Participants included 1281 bereaved youth aged 12–21 years ($M=15$; $SD=1.8$), 62.1% female, from the National Child Traumatic Stress Network (NCTSN) Core Dataset (CDS; see Table 1). Caregivers and youth completed a variety of assessment measures during a clinical intake interview. As part of the intake process, clinicians conducted semi-structured clinical interviews to gather ratings on several NCTSN-developed forms (e.g., General and Trauma Detail Forms and Clinical Evaluation) that assessed children's mental and behavioral health difficulties and functioning as well as trauma exposure (e.g., loss, separation, and bereavement). Clinicians with Masters' degrees or higher were trained on the clinical protocol as well as the web-based quality improvement platform used for data collection, scoring, and reporting.

Measures

Demographics. Caregivers and youth completed a demographic information form that included age, gender, race, and ethnicity.

Clinical evaluation (CE). Clinicians rated the degree to which children met criteria for 13 psychiatric disorders, other trauma-related symptoms, and behavioral problems. Ratings were made on a 3-point scale consisting of 0 (not present), 1 (possibly present/subclinical), and 2 (definitely present).

Indicators of severity (IOS). Clinicians drew on information from youth, caregivers, and other collaterals to rate the severity during the past 30 days of suicidal thoughts or behaviors on a 3-point scale (0=not a problem, 1=somewhat/sometimes a problem, 2=very much/often a problem). All indicators were dichotomized (1 or 2=1; else 0). The data were then used as operational definitions of suicide risk indicators (see Composite Suicidality Indicator below).

Composite suicidality indicator. Percent agreement between an individual's paired suicidality measures was 87.5%, $\kappa=0.60$ (95% CI: 0.55, 0.66), providing evidence of moderate agreement between these two suicidality indicators. We thus constructed a dichotomous composite suicidality variable that captured both suicidal thoughts and behaviors (i.e., suicide attempts) as derived from the CE and IOS measures, respectively. The variable was coded as 1 if either CE or IOS was at least "probable" or "somewhat a problem" ($n=319$), 0 if the CE and IOS are

"not present" and "not a problem" ($n=895$). If one measure was zero and the other was missing ($n=52$) or both were missing ($n=15$), the composite score was set to missing.

Trauma history and bereavement. The *General Trauma and Trauma Details* forms of the CDS were derived in part from the *Trauma History Profile* portion of the UCLA PTSD Reaction Index for DSM-IV (20) and include a comprehensive list of 19 different trauma types plus an open-ended "other" item. This information was obtained from multiple informants, including the children themselves, caregivers, and other collaterals. Based on prior studies using the CDS (17), number of trauma types was categorized as follows: no other trauma types besides bereavement reported, one to four other trauma types (excluding bereavement), or greater than four other trauma types (excluding bereavement).

These forms include details regarding bereavement, such as total number of deaths, cause of death, and relationship to deceased. For the current study, number of deaths was coded dichotomously as having or not having experienced multiple deaths. Each cause of death was coded dichotomously, with death due to natural causes as the referent death compared to violent death, accidental death, or suicide.

UCLA PTSD Reaction Index for DSM-IV (PTSD-RI) (21, 22). The PTSD-RI is a self-report questionnaire designed to assess PTSD symptoms in school-aged children and adolescents. For this study, the frequency of symptom occurrence during the past month was rated on a five-point scale ranging from 0 (none of the time) to 4 (most of the time). The PTSD-RI has shown robust psychometric properties across multiple samples (22, 23). The current sample full-scale Cronbach's alpha was 0.94.

Data Analysis

We used descriptive statistics to summarize demographic and bereavement-related characteristics of the study sample. To investigate whether each mental or behavioral health problem would be associated with exposure to multiple deaths and/or type of death, we employed a generalized linear mixed-effects regression model with center-level random effects to account for correlations between youth observations within NCTSN centers. We included demographic characteristics and number of other traumas in the regression models. To evaluate whether relationship to the deceased was associated with any indicators of mental or behavioral health risk, we performed a subgroup analysis using the same regression model with a subgroup of youth who reported a single death. We also used the Cochran–Mantel–Haenszel test to examine potential links between relationship to the person who died and cause of death. We conducted all analyses using SAS 9.4 for Windows and adopted $p<0.05$ (two-tailed) as the significance threshold.

TABLE 1. Demographic characteristics overall and by group

	Overall N=1281	Death subgroup	
		Experienced death only 115 (8.98)	Death and other trauma 1166 (91.0)
Demographics			
Age (Year)			
12–<14	397 (31.0)	47 (40.9)	350 (30.0)
14–<17	696 (54.3)	55 (47.8)	641 (55.0)
17 and older	188 (14.7)	13 (11.3)	175 (15.0)
Mean (SD)	15.0 (1.8)	14.5 (1.6)	15.1 (1.8)
Gender			
Male	485 (37.9)	73 (63.5)	412 (35.3)
Female	796 (62.1)	42 (36.5)	754 (64.7)
Race/Ethnicity			
White	430 (33.6)	41 (35.7)	389 (33.4)
Black	317 (24.7)	36 (31.3)	281 (24.1)
Hispanic	419 (32.7)	27 (23.5)	392 (33.6)
Other	85 (6.64)	3 (2.61)	82 (7.03)
Missing/unknown	30 (2.34)	8 (6.96)	22 (1.89)
Trauma history			
Number of other traumas			
None	113 (8.82)	113 (98.3)	0 (0)
1–4	684 (53.4)	0 (0)	684 (58.7)
>4	482 (37.6)	0 (0)	482 (41.3)
Missing	2 (0.16)	2 (1.74)	0 (0)
Mean (SD)	3.9 (2.8)	0	4.3 (2.7)
Bereavement details			
People lost			
Parent	488 (38.1)	55 (47.8)	433 (37.1)
Other adult relative	634 (49.5)	36 (31.3)	598 (51.3)
Unrelated adult	127 (9.91)	5 (4.35)	122 (10.5)
Sibling	135 (10.5)	12 (10.4)	123 (10.5)
Other youth	277 (21.6)	22 (19.1)	255 (21.9)
Cause of death			
Natural causes	573 (44.7)	44 (38.3)	529 (45.4)
Violence	252 (19.7)	25 (21.7)	227 (19.5)
Accident	211 (16.5)	21 (18.3)	190 (16.3)
Suicide	93 (7.26)	10 (8.70)	83 (7.12)
Other/Missing	152 (11.9)	15 (13.0)	137 (11.8)

RESULTS

Table 1 provides demographic characteristics for the total sample. Most youth (91%) reported at least one additional traumatic event besides the death of a loved one (overall mean=4.3, median=4 total trauma types). Relationship to the deceased included non-parent adult relative (49.5%), parent (38.1%), non-sibling youth (21.6%), sibling (10.5%), and unrelated adult (9.9%). Regarding cause of death, 44.7% identified natural causes, 19.7% homicide, 16.5% accident, 7.26% suicide, and 11.9% were unknown or missing.

Demographic Characteristics and Suicide Risk Markers

Table 2 presents results from the adjusted regression analyses. Compared to youth aged 12–14, older youth (aged 15–17) were more likely to experience suicidal thoughts or behaviors, alcohol use, substance use, depression, and PTSD. Youth older than 17 were also significantly more likely to use alcohol or substances and to experience depression and PTSD compared to youth aged 12–14.

Compared to males, females were at higher risk for suicidal thoughts or behaviors, non-suicidal self-injury, depression, and PTSD. Compared to Black youth, White youth were more likely to experience suicidal thoughts or behaviors, non-suicidal self-injury, and alcohol use.

Hypothesis 1

A greater number of deaths will be associated with increased mental and behavioral health problems.

Hypothesis 1 received partial support, in that youth who experienced multiple deaths had significantly higher PTSD scores (*Estimated difference* \pm SE=3.36 \pm 1.11, $p=0.003$). However, total number of deaths experienced was not related to any other criterion.

Hypothesis 2

Compared to anticipated deaths, deaths due to homicide and suicide will be associated with increased mental and behavioral health problems.

TABLE 2. Regression analyses of mental and behavioral health problems

N=1281	Composite suicidality		Non-suicidal self-injury		Alcohol use	
	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p
Demographics						
Age						
12–14	REF		REF		REF	
15–17	1.46 (1.02–2.08)	0.039	0.85 (0.55–1.31)	0.46	4.92 (2.68–9.04)	<0.001
>17	1.55 (0.96–2.52)	0.08	0.99 (0.55–1.76)	0.96	7.60 (3.80–15.2)	<0.001
Female	1.88 (1.35–2.62)	<0.001	1.91 (1.25–2.92)	0.003	0.75 (0.49–1.14)	0.18
Race/Ethnicity						
White	REF		REF		REF	
Black	0.60 (0.38–0.95)	0.03	0.19 (0.10–0.37)	<0.001	0.30 (0.16–0.59)	<0.001
Hispanic	0.72 (0.45–1.14)	0.16	0.65 (0.39–1.10)	0.11	0.84 (0.48–1.46)	0.54
Other	0.81 (0.44–1.51)	0.52	0.62 (0.30–1.27)	0.19	0.91 (0.45–1.82)	0.79
Missing	0.85 (0.29–2.44)	0.76	1.13 (0.33–3.89)	0.85	1.19 (0.33–4.33)	0.79
Trauma history						
No. of other traumas						
None	REF		REF		REF	
1–4	1.43 (0.76–2.69)	0.26	2.70 (1.01–7.26)	0.05	3.00 (1.06–8.48)	0.04
>4	2.09 (1.08–4.04)	0.03	3.58 (1.30–9.86)	0.01	4.41 (1.53–12.7)	0.006
Bereavement details						
Multiple deaths						
	1.11 (0.78–1.59)	0.55	1.20 (0.78–1.83)	0.41	0.98 (0.63–1.52)	0.92
Cause of death						
Natural causes						
	REF		REF		REF	
Homicide	0.76 (0.51–1.13)	0.17	0.63 (0.37–1.06)	0.08	1.61 (0.98–2.65)	0.06
Accident	0.81 (0.54–1.22)	0.32	0.71 (0.43–1.16)	0.17	1.17 (0.71–1.93)	0.53
Suicide	1.68 (1.00–2.81)	0.049	0.96 (0.52–1.78)	0.91	2.33 (1.27–4.28)	<0.001
Substance use (CE)						
Depression						
PTSD RI						
	OR (95% CI)	p	OR (95% CI)	p	Estimate (SE)	p
Demographics						
Age						
12–14	REF		REF		REF	REF
14–17	4.00 (2.37–6.74)	<0.001	1.63 (1.19–2.23)	0.003	2.26 (1.03)	0.03
>17	7.57 (4.02–14.3)	<0.001	1.83 (1.13–2.95)	0.01	5.51 (1.48)	<0.001
Female	0.77 (0.52–1.14)	0.20	1.50 (1.11–2.03)	0.01	5.48 (0.97)	<0.001
Race/Ethnicity						
White	REF		REF		REF	REF
Black	0.59 (0.33–1.08)	0.09	0.94 (0.61–1.44)	0.77	0.83 (1.31)	0.53
Hispanic	0.85 (0.46–1.58)	0.61	1.19 (0.75–1.89)	0.45	0.61 (1.34)	0.65
Other	0.82 (0.36–1.87)	0.64	0.72 (0.40–1.31)	0.28	2.78 (1.97)	0.16
Missing/Unknown	0.55 (0.09–3.25)	0.51	1.14 (0.44–2.95)	0.79	–3.56 (3.35)	0.29
Trauma history						
No. of other traumas						
None	REF		REF		REF	REF
1–4	3.16 (1.18–8.51)	0.02	1.34 (0.82, 2.20)	0.25	1.77 (1.70)	0.30
>4	4.33 (1.56–12.0)	0.005	2.36 (1.35–4.13)	0.003	5.22 (1.83)	0.004
Bereavement details						
Multiple deaths						
	0.98 (0.63–1.51)	0.91	1.22 (0.85–1.75)	0.29	3.36 (1.11)	0.003
Cause of death						
Natural causes						
	REF		REF		REF	REF
Homicide	1.76 (1.10–2.83)	0.02	0.80 (0.56–1.16)	0.24	1.30 (1.16)	0.26
Accident	1.15 (0.70–1.90)	0.57	0.91 (0.61–1.35)	0.64	–1.05 (1.24)	0.40
Suicide	1.74 (0.91–3.32)	0.10	0.85 (0.49–1.47)	0.56	–1.59 (1.74)	0.36

Note: "Bolded" findings represent statistically significant results. Abbreviations: CE, clinical evaluation; PTSD, posttraumatic stress disorder.

Consistent with Hypothesis 2, compared to youth bereaved by natural causes, youth bereaved by suicide were significantly more likely to experience both suicidal thoughts or behaviors (AOR=1.68, p=0.049) and alcohol use (AOR=2.33, p<0.001); youth bereaved by homicide were at significantly greater risk for substance use (AOR=1.76, p=0.02).

Hypothesis 3

Greater closeness to the deceased will be associated with increased mental and behavioral health problems.

Because exposure to multiple deaths can obscure potential effects linked to different relationships to the deceased, we conducted a subgroup analysis of youth

bereaved by only one death ($n=964$). Partially supporting Hypothesis 3, compared to parentally bereaved youth, youth who lost a peer were more likely to use alcohol (AOR=2.32, $p=0.02$) or substances (AOR=2.41, $p=0.01$). Also consistent with Hypothesis 3, youth who lost a parent were more likely to experience depression compared to youth who lost another adult relative or an unrelated adult (AOR=0.64, $p=0.04$; AOR=0.40, $p=0.01$, respectively).

To rule out the possibility that significant associations between relationship to the deceased and mental/behavioral health risk are at least partially statistically explained by cause of death, we examined potential relations between cause of death and relationship to the deceased. Among youth bereaved by suicide, 44% experienced the death of a parent, whereas only 23% experienced the death of a peer. In contrast, among youth bereaved by an accident, 26% experienced the death of a parent, whereas 35% experienced the death of a peer.

DISCUSSION

This study builds upon prior research on childhood bereavement by examining bereavement-related contextual factors in relation to mental and behavioral health problems among treatment-seeking adolescents while accounting for demographics and other types of trauma. Our findings suggest that specific bereavement-related factors are differentially associated with certain mental and behavioral health problems. Identifying bereavement-related risk markers that co-occur with mental and behavioral health problems represents a first step toward improving case identification and, if replicated longitudinally, prevention.

Our study is consistent with other research in identifying important demographic differences in mental and behavioral health risk. Specifically, compared to younger youth, older youth (those above age 14) were more likely to endorse a number of mental and behavioral health issues including substance use (5), alcohol use (5), suicidal thoughts and behaviors (6), depression (24), and PTSD (25). Also consistent with previous literature, females were significantly more likely to exhibit non-suicidal self-injurious behaviors (26), depression (27), and PTSD (25).

Similar to other studies focusing on racial differences in suicidal ideation (28), the current study found that Black youth were *less* likely to be at risk for suicide than White youth. This finding could be attributable to cultural differences in coping with adversity. For example, studies have found that Black adolescents, compared to White adolescents, tend to cope with problems by seeking spiritual support (29), which often involves a focus on social connectedness, religious beliefs, and cultural proscriptions against suicide in particular (30). Studies also suggest that Black youth may have better access to additional protective factors, such as perceived family connectedness, emotional well-being, and higher levels of self-esteem (29).

In addition, the number of traumas experienced was significantly associated with all mental health outcomes. Specifically, youth who had experienced more than four traumatic events were consistently at greater risk for each of the mental and behavioral health problems examined. This is consistent with prior findings (1, 2), including ACEs studies, linking the accumulation of childhood traumas and other adversities with problematic outcomes (10).

Our findings partially supported our first hypothesis—that the likelihood of mental and behavioral health problems would increase as a function of total number of deaths, above and beyond the effects of other traumatic experiences. However, this finding emerged for PTSD only. These findings are again consistent with ACE study findings (10) of dose-response relations between number of childhood adversities (including losses) and PTSD in particular (11, 13).

We found partial support for our second hypothesis, in that suicide and homicide deaths, compared to natural causes, were differentially associated with distinct mental and behavioral health problems while controlling for other forms of trauma. Although few studies have explicitly examined associations between cause of death and post-death functioning among bereaved youth, a greater number of studies call attention to ways in which traumatogenic factors embedded within the circumstances of the death can evoke psychological distress and interfere with bereaved youths' ability to grieve adaptively (31). In addition, highly traumatizing or stigmatized deaths (e.g., suicide or homicide), may induce surviving caregivers to conceal the true cause of death to “protect” bereaved youth—a circumstance that can both impede caregiver grief facilitation, limit open, and honest communication between family members, and increase risk for persisting distress among children and adolescents (32).

Consistent with recent studies of adults bereaved as children (8), our findings indicate that youth bereaved by suicide were more likely to experience suicidal thoughts and/or behaviors themselves. Exposure to suicide death was the *only* bereavement-related variable associated with *suicidal thoughts or behaviors* among bereaved youth. Notably, not all youth bereaved by suicide in this sample were related to the deceased; approximately 23% of suicide-related deaths were peer deaths, suggesting that the link between suicide bereavement and suicide risk in youth cannot be explained by shared familial environment or biology alone. Instead, evidence points to other potential mechanisms such as contagion or imitation (17). For example, studies of adolescents who have either attempted or died by suicide tend to report prior suicide deaths occurring in close temporal proximity (33). The Interpersonal Theory of Suicide (34) suggests that both *perceived burdensomeness* and *thwarted belongingness* are likely to lead to increased suicidal ideation. A recent study showed that thwarted belongingness in particular mediated the relation between bereavement and suicide risk in adolescents (35), suggesting that youth bereaved by suicide may

feel especially isolated and alone following the death. It is also possible that for youth who lost a loved one due to suicide, increased suicidal thoughts or behaviors represent reenactments or fantasies as the individual attempts to understand and adjust to the loss. Similarly, depending on one's spiritual beliefs, some youth may wish to die as a means of reuniting with the deceased, as opposed to being driven primarily by a desire to hurt oneself or die (16).

Although the current study design did not permit examination of youth's grief reactions, it is reasonable to hypothesize that youth bereaved by violent or otherwise intentional deaths may experience higher levels of maladaptive grief reactions, as well as guilt, remorse, or anger, which may then lead to greater mental and behavioral health problems in youth (35) and adults (36). The current study found significantly increased risks for alcohol use among youth bereaved by suicide, and for substance use among youth bereaved by homicide. This indicates that there may be differential relations between cause of death and distinct behavioral health problems. Perceived stigma can also produce feelings of disenfranchised grief, raising the risk for mental and behavioral health problems among bereaved youth. The potential role of stigma was underscored by a recent longitudinal study, which found that the statistical association between bereavement by suicide and future suicide attempts became nonsignificant after accounting for perceived stigma (14).

Youth bereaved by suicide or homicide were no more likely than youth bereaved by natural deaths to experience higher levels of depression or PTSD. This finding contrasts with those from other studies linking *violent* deaths to higher levels of anxiety, depression, and PTSD in adolescents (37). However, recent work has demonstrated that youth who lose a loved one due to anticipated death also tend to exhibit high levels of PTSD (32). This may be due to the traumatogenic features inherent in anticipated deaths, such as witnessing the slow, painful, and/or progressive deterioration of a loved one, the causal potency of which can often be overlooked (31, 32).

Consistent with prior studies of bereaved youth, those who lost a parent experienced higher levels of depression than youth who lost an adult relative or an unrelated adult (5). Depressive symptoms are not only common after losing a close loved one; they can also mimic grief reactions. These reactions include *separation distress* (yearning for the person who died) and *existential/identify distress* (feeling empty or that life is meaningless, now that the person is gone), which are both common reactions to the death of a parent (9, 31). In contrast, youth who lost a peer were more likely to engage in alcohol use or substance use compared to those who experienced the death of a parent. The most common cause of death among peers was accidental death, which may involve reckless behavior and/or substance use. Thus, it is also possible that substance use problems may have preceded the experience of losing a peer if they were already engaging in these behaviors with

their peer group. Adolescents' grief reactions can take the form of engaging in behaviors associated with the lost relationship (including substance use) as a means of identifying with the deceased, preserving their memory, and carrying on their role, regardless of whether those behaviors are adaptive or maladaptive (9, 31).

Study Strengths and Limitations

To our knowledge, this is the first study to examine mental and behavioral health problems in a large, national sample of clinically referred bereaved youth, while controlling for the number of other forms of trauma. Study strengths include examining a wide range of mental and behavioral health outcomes, including suicide risk and accounting for additional traumatic experiences above and beyond bereavement. Study limitations include: First, we were unable to determine the age at which youth had experienced the death (s). Recent evidence suggests that youth who experience the death of a parent prior to age 6 are at significantly greater risk for future suicide (8), suggesting an important direction for future research. Second, analyses regarding relationship to the deceased were limited to a smaller sub-sample of youth bereaved by the death of only one person. Nevertheless, this sub-sample of youth did not differ from the larger sample on any variables of interest, suggesting that the findings likely apply to the larger sample. Future work can further explore whether risk for mental and behavioral health problems varies as a function of relationship to the deceased. Third, the study population was comprised of clinical-referred youth; thus, our findings may not generalize to community samples. Fourth, although the large sample size was a general strength of this study, some of the observed effects may require further replication to determine clinical significance, as diminishing effect sizes become statistically significant with larger samples.

Our findings underscore the value of "unpacking" adverse life experiences to identify incrementally useful markers of mental and behavioral health risk in treatment-seeking adolescents (3). Bereavement-related characteristics exhibited unique associations with mental and behavioral health problems, above and beyond other forms of trauma. Additional research is needed to better understand potential moderators and mediators that can help to explain these relations. Incorporating bereavement-related factors into assessment protocols carries the potential for improving early risk screening and prevention efforts among bereaved adolescents. Youth who endorse a greater number of prior losses, as well as those bereaved by homicide or suicide, may be at particularly high risk for mental and behavioral health problems. Further, if replicated longitudinally, our identification of differential relations between specific bereavement-related factors and distinct mental and behavioral health issues (e.g., bereavement due to suicide *predicts* suicidal thoughts or behaviors) may permit improved tailoring of intervention efforts to address distinct mental and behavioral health

outcomes. For example, interventions for bereaved youth that focus on processing the cause of death, as well as associated maladaptive cognitions or feelings (guilt and shame) may be especially helpful in preventing future suicidal ideation or attempts (38).

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