

“Turning Personal Tragedy Into Triumph”: A Systematic Review and Meta-Analysis of Studies on Posttraumatic Growth Among Suicide-Loss Survivors

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Objectives: Posttraumatic growth (PTG) is a significant positive change experienced by an individual following stressful or challenging life events in his or her life. PTG has been explored in various populations; however, only recently, the concept has been applied to suicide bereavement and postvention. This systematic review aims to explore whether PTG can ensue in the aftermath of a suicide loss and what are the sociodemographic and psychological correlates of PTG among suicide-loss survivors.

Method: A systematic review, adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines, identified 11 quantitative studies published between 2009 and 2019. The review was followed by an examination of the pooled effect size for the main correlates of PTG. **Results:** PTG following suicide loss was reported to be positively associated with time since loss, adaptive coping strategies, and help-seeking. Furthermore, perceived social support and self-disclosure mediated the relations between both PTG and attachment style and between PTG and belongingness. A meta-analysis provided evidence that these two factors have strong averaged pool effects for their correlations with PTG. **Conclusions:** The systematic review and meta-analysis found evidence of PTG following suicide loss and identified several psychosocial correlates of growth. Limitations of the reviewed studies, which included a lack of control groups and cross-sectional design, constrain the generalizability of the findings. Nonetheless, PTG is a relatively new area of research in postvention that carries substantial implications for the delivery of effective support to individuals coping with suicide loss.

Clinical Impact Statement

Posttraumatic growth (PTG) is a relatively new area of research in postvention that carries substantial implications for the delivery of effective support to individuals coping with suicide loss. In this review, we sought to offer a broad psychological consideration of PTG among individuals bereaved by suicide. The primary correlates of PTG were interpersonal factors such as self-disclosure and social support. A meta-analysis provided evidence that these factors have strong averaged pool effects for their correlations with PTG. Thus, from a clinical perspective, postvention efforts may be enhanced by facilitating interpersonal interaction skills, as they can enhance the prospect of PTG as well as diminish mental pain, stigma, and loneliness among suicide-bereaved individuals.

Keywords: suicide, posttraumatic growth, suicide-loss survivors, systematic review

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Close to 800,000 people worldwide die by suicide annually, leaving behind many friends and family members to cope with the traumatic loss (Andriessen, Rahman, et al., 2017; World Health

Organization, 2017). Feigelman et al. (2018) used General Social Survey data, finding that 51% of the U.S. population is acquainted with one or more persons who died by suicide. Furthermore, it has been estimated that for each suicide, up to 135 individuals of the general U.S. population are affected by one suicide death, with 25 of these being profoundly impacted and bereaved (Cerel et al., 2019). The latter individuals have been defined as *suicide-loss survivors*, characterized by moderate to extreme emotional distress deriving from the suicide event. These numbers highlight the importance of investigating and understanding the consequences of suicide for bereaved individuals.

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To date, the research literature on suicide bereavement has typically focused on the psychopathology associated with the loss, for example, in the context of U.S. or Australian samples (Kölves & De Leo, 2018; Maple et al., 2018). Suicide-loss survivors have been shown to experience higher levels of depression, anxiety, and suicidal ideation and attempts (Cerel et al., 2017; Levi-Belz & Gilo, 2020; Maple et al., 2018; Pitman et al., 2014) relative to the nonexposed population. Evidence has also suggested that suicide-loss survivors may be at higher risk than individuals bereaved by the nonsuicide sudden death of a close person for a variety of psychological problems, including complicated grief and suicidal behavior (Andriessen, Krysinaka, et al., 2017; Pitman et al., 2014). Importantly, although suicide-loss survivors do not typically meet DSM Criterion A for exposure to a traumatic event (unless they were the ones who discovered the deceased person after suicide), the suicide event can be seen as highly traumatic. This is reflected in the high levels of posttraumatic stress disorder (PTSD) symptoms characterizing these individuals (Mitchell & Terhorst, 2017).

Only in the past decade has a research track emerged exploring personal growth in the context of traumatic events (Calhoun & Tedeschi, 2004). However, this phenomenon of benefiting or growing psychologically from traumatic events has been long recognized throughout human history. A central theme of much philosophical inquiry in novels, dramas, and poems has included attempts to discover the meaning of human suffering (Tedeschi & Calhoun, 1995). In the 19th century, Nietzsche famously said, “That which does not kill us makes us stronger” (Nietzsche, 1889, p. 6), asserting the potential for personal growth after a traumatic event. In the 20th century, several clinicians and scientists propounded ways in which critical life crises offered possibilities for positive personal change (Caplan, 1964; Frankl, 1963; Maslow, 1970). Tedeschi and Calhoun (2004) pioneered the concept of posttraumatic growth (PTG), a construct of positive psychological change and psychological transformation (ensuing from a process of meaning-making) that occurs in the wake of struggling with a highly challenging, stressful, and traumatic event. Other authors have coined similar and somewhat overlapping terms such as *stress-related growth* (Park et al., 1996) or *personal growth* (Feigelman et al., 2009).

In a recent meta-analysis, Wu et al. (2019) found that the prevalence of moderate-to-high PTG among those suffering general traumatic events was 52.58%. Notably, PTG does not imply mere recovery from a stressor but recognizes the emergence of a level of adaptive functioning higher than that manifest prior to the stressor’s occurrence (Park, 1998). However, it is important to note that PTG and aversive psychological outcomes, such as PTSD, are potentially (and commonly) concurrent, meaning that the presence of PTSD or complicated grief does not preclude the possibility of PTG (Tedeschi & Calhoun, 2004).

The literature has amply documented personal challenges and traumatic experiences that have acted as facilitators of PTG, such as PTSD, life in captivity, cancer, HIV infection, and transportation accidents (e.g., Joseph & Linley, 2008; Lahav et al., 2016). In their systematic review, Waugh et al. (2018) emphasized that bereaved individuals had the capacity to experience elements of growth subsequent to their loss. Suicide of a loved one may also be experienced as a devastating and traumatic event. Thus, the opportunity to achieve PTG following exposure to suicide is very compelling, given the risk of adverse outcomes for suicide-loss

survivors. Recently, studies have emerged indicating the possibility of growth after the death of a close person by suicide. These studies offer some psychological understanding of the capacity to grow in the aftermath of a suicide and, more specifically, may help researchers and clinicians focus on dimensions and constructs that have been found to facilitate PTG among suicide-loss survivors. However, to the best of our knowledge, to date, no systematic review on PTG in suicide-loss survivors has been reported, and no review has proposed a general and broad model of correlates and facilitators of PTG among suicide-loss survivors.

In the current review and meta-analysis, we sought to address this gap in the literature and to facilitate more rigorous research in the field. Specifically, this review sought to investigate two key questions: (a) Can PTG occur in the aftermath of a suicide loss? and (b) What are the sociodemographic and psychological correlates of PTG among suicide-loss survivors? The findings of this systematic review can contribute to a comprehensive psychological model that focuses on the essential antecedents for achieving PTG among this group.

Method

Adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (Moher et al., 2009), this systematic review involved searches in five databases: Medline, PsycINFO, Embase, Emcare, and Cinahl. Medline was searched with a combination of MeSH and text words: (posttraumatic growth.mp OR posttraumatic growth.mp OR personal growth.mp OR stress-related growth.mp OR stress-related growth.mp) AND (Suicide/OR suicid*.mp OR suicide loss.mp OR suicide survivor*.mp OR suicide bereave*.mp OR suicide grief.mp). The remaining databases were searched with the same search string using subject headings and keywords. The search, limited to peer-reviewed journals, was conducted in December 2018, without restrictions of location, language, or year of publication.

Inclusion and Exclusion Criteria

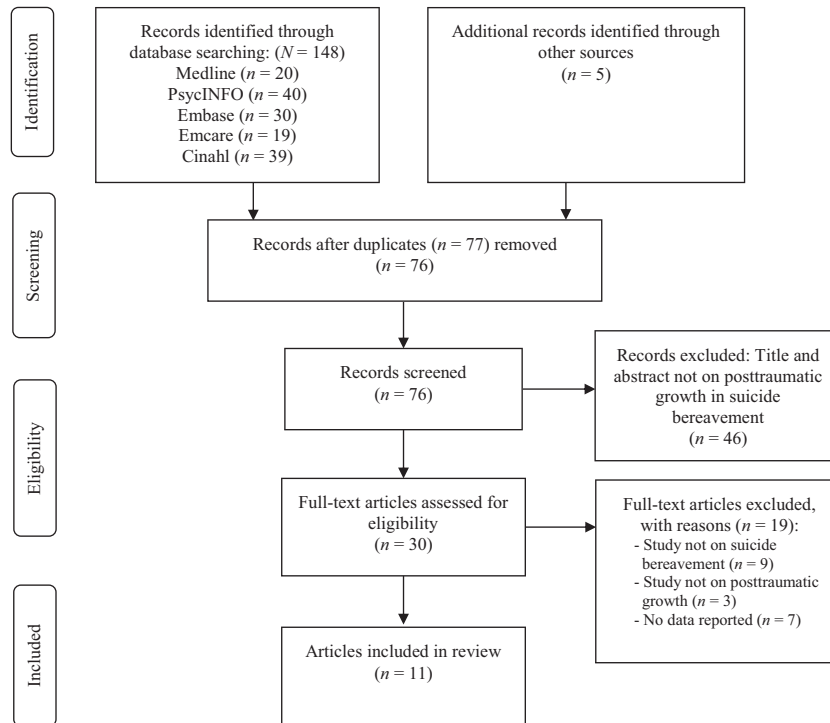
The following inclusion criteria for original studies were adopted for the current review: (a) The study population consisted of individuals bereaved through suicide, (b) the study used quantitative data, and (c) the study reported data on posttraumatic or stress-related growth in the study population.

Two researchers (KA, KK) individually selected the studies from the original searches and searched the selected studies’ references by their titles and abstracts to identify additional studies meeting the inclusion criteria. Any disagreement was settled through comparing notes and discussion. Figure 1 presents the search and selection process.

Data Extraction

Two researchers (KA, KA) independently extracted the following data from the selected papers: author(s), year, location (country), study design, sample size, participants’ age and sex distribution, participants’ time since onset of bereavement, participants’ relationship to the deceased, outcome measures, names of the instruments used, and primary findings of the study. Any disagreements were settled by discussion, involving the third author (YL-B) when needed.

Figure 1
Preferred Reporting Items for Systematic Reviews and Meta-Analyses
Flow Diagram



Quality Assessment

Two researchers (KA, KK) independently assessed the quality of the included studies (see [online supplemental Table S2](#)). Discussion and comparing notes with the third researcher (YL-B) settled any disagreement (six items). The studies were assessed with the Newcastle-Ottawa Quality Assessment Form (NOOAF) for Cohort Studies (Wells et al., 2014). The instrument comprises three components: Selection (four items), Comparability (one item), and Outcome (three items). The total quality of a study is categorized as good, fair, or poor, depending on the number of stars allocated to each category.

Meta-Analysis

We generally used fixed-effects models and performed all meta-analyses tests using Fisher's z , a normalized score of r , and sample sizes (Borenstein et al., 2010). Meta-analyses were conducted for the following measures that were used in more than one study and whose correlations with PTG were reported: time since suicide, personality factors, social support, and self-disclosure. All effect sizes are reported as correlation coefficients (r) with 95% confidence intervals. In ecological literature, $r \approx 0.1$ is generally considered a small effect, $r \approx 0.3$ a medium effect, and $r \approx 0.5$ a strong effect (Cohen, 1988; Møller & Jennions, 2002). We determined mean effect size, the associated 95% confidence interval, and the heterogeneity (Q value) across studies by using a data set that combined effect sizes within studies and thus had independent entries with no overlap in the sample of individuals. Effect sizes

were computed using the Comprehensive Meta-Analysis program (CMA, Version 2.2.064). Effect sizes were calculated by the study authors using the procedures applied in the CMA software. Publication bias was assessed through Begg's test and classic fail-safe. N and $p < .05$ were considered representatives of statistically significant publication bias (Begg & Mazumdar, 1994). Sensitivity analyses were undertaken to determine whether the results were influenced by any single study; the procedure involved systematically excluding each study and recalculating the significance of the results. CMA software (Biostat, Inc., Englewood, NJ) was used to detect the presence of potential publication bias. The Begg and Mazumdar rank correlation test suggested that the correlation can serve as a test for publication bias. The Begg test indicated that there was no evidence of publication bias for meta-analysis (Begg's p ranged .411 and .805).

Results

The systematic review identified 11 studies published between 2009 and 2018 (see [online supplemental Table S1](#)). Six of these studies were conducted in Israel and five in the United States. The identified studies included 10 employing cross-sectional designs and one employing a longitudinal design with an 18-month follow-up (Levi-Belz, 2019). Only three studies included control groups of individuals bereaved by an expected death or a sudden death such as by accident, heart failure (Levi-Belz, 2016, 2017), or military combat (Aronson et al., 2017). Where reported, the participants' mean age ranged between 36.2 and 52.9 years. Most participants (77–100%) were female. The studies involved mostly

bereaved nuclear family members, such as spouses/partners, parents, children, siblings, and other family members. In addition to family members, four studies also recruited best or close friends or individuals in other or unknown relationships with the decedent. Time since loss ranged from 1 year to more than 20 years.

Posttraumatic growth was measured using four inventories: the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996), the Posttraumatic Growth Inventory–Short Form (Cann et al., 2010), the Hogan Grief Reaction Checklist–Personal Growth (Hogan et al., 2001), and the Stress-Related Growth Scale (SRGS; Park et al., 1996).

Demographic Factors

Three studies examined PTG in the context of demographic factors of the bereaved. Feigelman et al. (2009); Levi-Belz (2015), and Moore et al. (2015) did not find gender differences with regard to PTG. Moreover, no significant differences related to educational level or marital status (Moore et al., 2015). Feigelman et al. (2009) reported that frequency of religious participation positively predicted PTG ($r = .26$, $\beta = .22$; $p < .00$), as did religion (Jewish participants reported higher PTG levels than did non-Jews; $r = .16$, $\beta = .11$, $p = .02$). Voting/civic involvement also positively predicted PTG ($r = .18$, $\beta = .11$, $p = .02$). Furthermore, PTG scores were found to increase with age ($r = .16$, $\beta = .06$, $p < .002$).

Loss-Related Factors

Loss-related factors were analyzed in the context of PTG. These included the grief experience, time since loss, and closeness to and type of relationship with the deceased. Three studies examined the relationship between PTG and grief. In a study by Feigelman et al. (2009) that included 462 parent survivors of their child's suicide, grief difficulties negatively correlated with PTG ($r = -.42$; $p < .0001$). However, Moore et al. (2015), using a convenience sample of 154 parents bereaved by the suicide death of their child within 2 years, found that prolonged grief did not predict PTG ($r = .05$, *ns*).

Levi-Belz (2017) assessed a sample of 58 suicide-loss survivors and compared them with 48 sudden-death and 53 natural-death bereaved individuals on several questionnaires tapping the two-track model of bereavement, grief, and growth-related characteristics. A negative association was reported between PTG and relational-active grief—acute and painful emotions and hardship in adjusting to the loss—in general ($\beta = -.28$, $p < .01$) and especially among suicide-loss survivors ($\beta = -.60$, $p < .02$), above and beyond the contribution of psychological distress and traumatic perception of loss (Levi-Belz, 2017). Only a single study examined PTG in relation to mental health. Feigelman et al. (2009) revealed a significant negative correlation between PTG and thoughts or plans about suicide in the past 12 months among suicide-loss survivors ($r = -.40$, $\beta = -.18$; $p < .001$).

Generally, the examined studies found a positive relationship between time since loss and PTG (Drapeau et al., 2018; Feigelman et al., 2009; Levi-Belz, 2015, 2016, 2017; Oexle et al., 2018). For example, Levi-Belz (2015) reported a correlation of $r = .36$ between time since loss and PTG, and Feigelman et al. (2009) revealed a correlation of $r = .29$ between these variables. Moreover, Levi-Belz (2015) found a significantly lower PTG among the bereaved who experienced a relatively recent suicide loss (less than 1

year or 1–2 years prior to measurement; $M = 3.23$, $SD = .73$ and $M = 3.50$, $SD = .63$, respectively) than among those whose suicide loss occurred within 3–5 and 6–8 years after suicide ($M = 3.93$, $SD = .83$ and $M = 3.84$, $SD = .81$, respectively). However, as time since loss lengthened (9 or more years after the suicide), PTG was shown to decrease ($M = 3.67$, $SD = .79$; $p = .027$).

As can be seen in Figure 2, relying on the study-specific estimates of the associations between the time since loss and PTG, we found that the mean effect size to be 0.18, 95% CI [0.12, 0.24], and differed significantly from a null effect ($z = 5.48$, $p < .001$). Note that this estimate was comparable to that obtained from the raw effect size data by using “study” as a random factor, implying that the information loss due to the averaging within studies was negligible. We found marginally significant heterogeneity in effect sizes across studies ($Q = 9.03$, $df = 4$, $p = .06$).

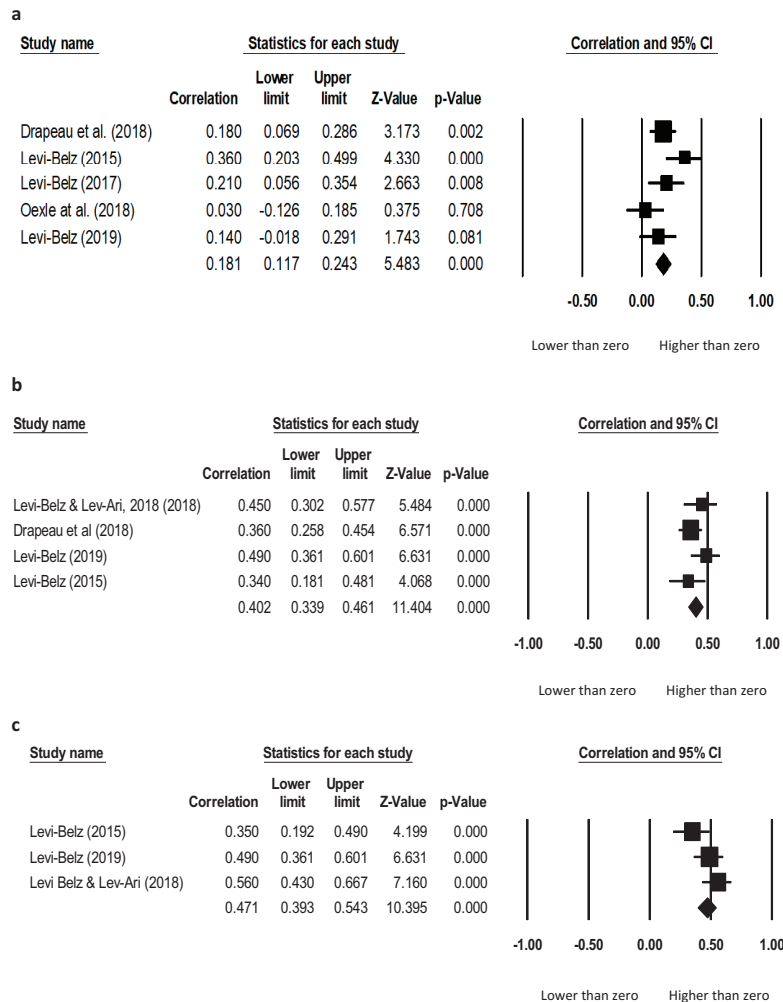
PTG correlated positively with the degree of closeness to the deceased ($\beta = .19$, $p < .03$; Levi-Belz, 2017; see also Drapeau et al., 2018), whereas higher levels of psychological relationships were correlated with higher PTG levels in general ($\beta = .19$, $p < .03$; Levi-Belz, 2017). Furthermore, unlike Drapeau et al. (2018); Levi-Belz (2015) found no differences in PTG levels among suicide-loss survivors in different relationships to the deceased (parent, sibling, child, or spouse).

Intrapersonal Factors

Some studies examined the relationship between PTG and several intrapersonal variables, such as resilience, coping, rumination, personality, optimism, and emotional experience. Moore et al. (2015) found that resilience significantly predicted total PTG ($\beta = -0.29$, $p < .05$) as well as two specific PTG subdomains: relating to others ($\beta = -0.35$, $p < .05$) and openness to new possibilities ($\beta = -0.30$, $p < .05$). In Drapeau et al.'s (2018) study, which comprised 307 adult suicide-loss survivors, problem-focused coping, such as planning, instrumental support, or religion, positively contributed to PTG ($\beta = .30$, $p < .01$). Furthermore, Drapeau et al. (2018) reported that time since loss did not moderate the relationship between PTG and any of the three self-reported coping styles: problem-focused coping, avoidant coping (such as denial or behavioral disengagement), and active emotional coping (such as venting or acceptance). Levi-Belz (2015, 2016) found that adaptive cognitive coping strategies (such as acceptance or positive reappraisal) positively correlated with and significantly contributed to PTG, beyond the contribution of covariates in hierarchical multiple regression models ($R^2_{\text{change}} = .17$). Additionally, in a cross-sectional study of 135 Israeli suicide-loss survivors, Levi-Belz (2015, 2016) found no significant associations between maladaptive cognitive coping strategies (such as self-blame or rumination) and PTG. In a related study (Moore et al., 2015), univariate analysis revealed that reflective rumination and brooding did not contribute significantly to PTG in a multivariate analysis.

Generally, PTG and *personality* characteristics appear to be unrelated, as measured by the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1989). In a multivariate analysis, Drapeau et al. (2018) did not find a significant contribution to PTG by any of the five NEO-FFI traits (Neuroticism, Openness to Experience, Extraversion, Agreeableness, and Conscientiousness). Moore et al.

Figure 2
Pooled Effect Sizes for Correlations: (a) Time Since Loss, (b) Social Support, and (c) Self-Disclosure



(2015) reported that two traits, Openness to Experience ($\beta = 0.21$, $p < .05$) and Neuroticism ($\beta = -0.31$, $p < .05$), significantly contributed to the new possibilities subdomain of PTG (notably, the relating to others subdomain was not associated with the measured personality traits). In their study, neither dispositional optimism nor (positive or negative) affect contributed to PTG in a multivariate analysis (Moore et al., 2015).

Relying on the study-specific estimates of the associations between personality traits and PTG, we found that the mean effect size for the association between Neuroticism, Extraversion, and Openness, on the one hand, and PTG, on the other hand, was significant. The effect for Neuroticism was -0.25 , 95% CI $[-0.33, -0.16]$, differing significantly from a null effect ($z = -5.38$, $p < .001$). The effect for Extraversion was $.25$, 95% CI $[.16, .33]$, differing significantly from a null effect ($z = 5.42$, $p < .001$). The effect for Openness was $.11$, 95% CI $[.01, .19]$, and differed significantly from a null effect ($z = 2.28$, $p < .028$). We found homogeneity in effect sizes of the correlations between Neuroticism and PTG across studies ($Q = .55$, $df = 1$, $p = .46$)

and between Openness and PTG across studies ($Q = .04$, $df = 1$, $p = .84$). However, we found heterogeneity in effect sizes of the correlations between Extraversion and PTG across studies ($Q = 11.35$, $df = 1$, $p = .001$).

Interpersonal Factors

Some studies examined the relationship between PTG and several interpersonal variables, such as self-disclosure, social support, help-seeking, suicide stigma and secrecy, interpersonal burdensomeness, lack of belonging, and attachment style. Levi-Belz (2015, 2016, 2019) examined the relationship between PTG and self-disclosure (i.e., an individual's inclination to share personal information with others), including information considered personally distressing (Kahn & Hessling, 2001). In a 2015 study, Levi-Belz found self-disclosure to be negatively correlated with PTG among suicide-loss survivors, beyond the contribution of time and cognitive strategies ($\beta = .11$; $R^2_{\text{change}} = .05$; $p < .05$). Moreover, individuals bereaved by suicide with a low self-disclosing incli-

nation reported lower PTG levels than did those bereaved by sudden or expected death. However, in Levi-Belz's (2016) study, which assessed 145 bereaved individuals (aged 18–73), 58 of them suicide-loss survivors, it was found that among individuals with a high self-disclosing inclination (Levi-Belz, 2016), no differences were found between PTG levels, $F(2, 127) = 5.36, p < .01, \eta^2 = .08$. A positive correlation was revealed between PTG and interpersonal activities (i.e., for both self-disclosure and social support; $p = .027$; Levi-Belz, 2015). In a longitudinal study of 156 suicide-loss survivors at two measurement points (separated by 18 months), using the structural equation modeling (SEM) technique, Levi-Belz (2019) found that self-disclosure and social support contributed to PTG after 18 months, beyond the basic trajectory of PTG ($\beta = .18$ and $.24$, respectively). Drapeau et al. (2018) reported social support contributing positively to PTG ($\beta = .19, p < .01$).

As seen in Figure 2, relying on the study-specific estimates of the associations between the social support and PTG, we found that the mean effect size was 0.40, 95% CI [0.34, 0.46], differing significantly from a null effect ($z = 11.40, p < .001$). Note that this estimate was similar to that one obtained from the raw effect size data by using "study" as a random factor, implying that the information loss due to the averaging within studies was negligible. We found homogeneity in effect sizes across studies ($Q = 3.71, df = 3, p = .29$). Same results were obtained from the study-specific estimates of the associations between the self-disclosure and PTG. The mean effect size was 0.47, 95% CI [0.39, 0.54], and differed significantly from a null effect ($z = 10.39, p < .001$). We found homogeneity in effect sizes across studies ($Q = 4.79, df = 2, p = .09$).

Several studies have yielded unequivocal findings regarding PTG and help-seeking from professional and peer sources. Drapeau et al. (2018) found that favorable attitudes toward seeking professional help contributed positively to PTG ($\beta = .13, p < .05$). In a study by Feigelman et al. (2009), PTG correlated negatively with help-seeking from professionals within 5 years after the loss ($r = -.20, p = .001$) and positively with attending support groups 5 years or longer after the loss ($r = .28, p < .001$). Oexle et al. (2018) used online survey data from 195 suicide-loss survivors and explored the relationship between PTG and perceived suicide stigma and secrecy about suicide loss. They found that perceived stigma was associated with lower levels of PTG ($\beta = -0.20, R^2 = .04, p < .05$), with secrecy mediating the association between these two variables ($\beta = .19, p < .01$), after controlling for gender, age, time since loss, closeness and relationship to the deceased, and preloss mental health status.

Two studies (Lev-Ari & Levi-Belz, 2018; Levi-Belz, 2019) explored the relationship between perceived burdensomeness (a perception of being a burden to others and society) and thwarted belongingness (alienation from others; Van Orden et al., 2010). A cross-sectional study of a community sample of 131 suicide-loss survivors found that thwarted belongingness negatively predicted PTG ($\beta = -0.43, p = .002$; Lev-Ari & Levi-Belz, 2018). In a longitudinal study of 156 suicide-loss survivors (Levi-Belz, 2019) using the SEM technique, PTG was negatively associated with thwarted belongingness at an 18-month follow-up ($\beta = -0.20, p < .001$), and both thwarted belongingness and perceived burdensomeness contributed indirectly to PTG at follow-up. The SEM analysis revealed that self-disclosure and social support mediated

the relationship between belongingness and PTG (Time 2), beyond the contribution of PTG at Time 1.

Regarding PTG in the context of attachment style, Levi-Belz and Lev-Ari (2019a) found the highest levels of PTG among individuals having a secure attachment style, lower PTG for anxious and disorganized attachment, and the lowest PTG levels for avoidant attachment, $F(3, 127) = 6.95, p < .001, \eta^2 = .14$. Self-disclosure and perceived social support mediated the relationship between PTG and attachment styles. In another study (Lev-Ari & Levi-Belz, 2018), secure attachment positively predicted PTG ($\beta = .21, p < .05$), and suicide-bereaved individuals with low avoidant or anxious attachment exhibited relatively high levels of PTG, regardless of the level of perceived burdensomeness. Nonetheless, higher perceived burdensomeness predicted lower PTG for highly avoidant or anxious individuals ($\beta = -.22$ and $-.42$, respectively).

Discussion

PTG does not occur as a direct result of trauma (Tedeschi & Calhoun, 2004). Instead, the processes that lead to PTG depend heavily on demographic, personal, interpersonal, and situational characteristics (Calhoun & Tedeschi, 2014). Thus, understanding the prevalence of PTG among suicide-loss survivors—as well as the specific factors, dynamics, and processes that underlie the trajectories of growth—is a worthy undertaking. Bearing in mind that suicide-loss survivors comprise an at-risk population for depression, complicated grief, and suicide (Andriessen et al., 2019; Levi-Belz & Lev-Ari, 2019b; Maple et al., 2018), it is paramount to improve our clinical understanding of the potential facilitators of positive changes, such as PTG, which may facilitate therapeutic interventions among suicide-loss survivors. Therefore, in this first review, we investigated the original research reports evaluating the links between various factors and PTG among suicide-loss survivors.

In general, the studies included in this systematic review suggest that growth is possible in the aftermath of a suicide of a close person. Most of the reviewed studies reported moderate levels of PTG among suicide-loss survivors and no differences between suicide-loss survivors and other bereaved groups (after a sudden or expected death). Furthermore, suicide-loss survivors' most frequently reported growth occurred in three domains: relating to others, spiritual change, and appreciation of life. These findings suggest a transformative potential in grief that can help people experience positive change, even after a devastating loss through suicide.

Notably, no differences were found in most of the demographic variables. However, the frequency of religious and spiritual involvement (Feigelman et al., 2009) was shown to relate to higher levels of PTG. This finding concurs with other studies showing that engagement in religion or spiritual practice is generally related to enhanced psychological well-being (Sawatzky et al., 2005). It appears that schemas and worldviews provided by religious and spiritual beliefs may aid in the meaning-making process, which has been linked to improved outcomes after suicide loss (Gerber et al., 2011).

Some studies have found a positive relationship between time since loss and PTG, suggesting that as the years go by, the possibility of growth after suicide loss is reinforced, a finding

supported by our meta-analyses. These results align with data from several studies (e.g., Krosch & Shakespeare-Finch, 2017; Morgan & Desmarais, 2017) on other types of traumatic events and bereavement. Time since loss has also been found to be related to grief characteristics, suggesting that posttraumatic growth and negative psychological adjustment after traumatic events (such as grief) can occur concurrently (Tedeschi & Calhoun, 2004). Feigelman et al. (2009) suggested that as time passes after a suicide loss, personal growth scores rise, and mental health problems begin to subside. Studies also found a negative relationship between grief reactions and PTG among non-suicide-bereaved populations (Cohen & Katz, 2015). Thus, it may be that as time passes, grief responses subside, freeing the bereaved person to adjust to the traumatic situation of suicide loss. However, when grief reactions are elevated, suicide-loss survivors could experience difficulties in resolving their situation, and emotions such as shame and guilt (Sveen & Walby, 2008) may diminish the prospect of growth. In other words, it can be suggested that for some suicide-loss survivors, the diminished grief over time can provide new opportunities, including the possibility of growth. Still, further research in this field is needed.

Several intrapersonal protective factors were found to be related to PTG among suicide-loss survivors. Specifically, participants characterized by resilience, positive adaptive strategies of coping with stress, and problem-focused coping experienced higher levels of growth following the suicide event. These findings are consistent with studies that found similar associations in other populations (Sears et al., 2003; Thornton & Perez, 2006). Thus, processing and restructuring the assumptive world after the suicide appear to facilitate PTG among suicide-loss survivors (Levi-Belz, 2015). The review's findings suggest that a constructive adaptive strategy—involving “planning” or contemplating what steps to take and how to handle the adverse event—may reflect the suicide-loss survivors' continual struggle with traumatic memories. When survivors begin to wonder about the future (e.g., “What will I do next?” “Who will I become now?”), it may help to provide healthier processes that can reshape personal schemas toward PTG and help individuals handle their grief, resulting in enhanced adjustment (Levi-Belz, 2016). Importantly, these results require confirmation from future longitudinal studies that will facilitate an examination of the various associations and allow for offering causative inferences.

Conversely, maladaptive coping strategies (e.g., self-blame or rumination) revealed no association with PTG among suicide-loss survivors. Previous studies have similarly failed to find significant relationships between maladaptive coping strategies and PTG (Garnefski et al., 2008; Hussain & Bhushan, 2011), with some even reporting unanticipated results (e.g., a positive correlation between catastrophizing and PTG; Hussain & Bhushan, 2011). It seems, then, that maladaptive strategies are not likely to transform the thinking patterns of suicide-loss survivors and thus do not provide the necessary thrust for growth.

The current review and meta-analyses findings highlight the contribution of interpersonal interaction in the growth processes among suicide-loss survivors. Interpersonal factors, such as self-disclosure and social support, were found to have relatively strong relationships with PTG, in both cross-sectional (Lev-Ari & Levi-Belz, 2018; Levi-Belz, 2015) and longitudinal studies (Levi-Belz, 2019). The SEM analysis in the longitudinal study (Levi-Belz,

2019) highlights that the interpersonal factors of self-disclosure and social support play important mediating roles in facilitating PTG among suicide-loss survivors. The authors concluded that fostering self-disclosure and obtaining support can help suicide-loss survivors achieve PTG following their traumatic loss. Our meta-analysis confirmed that self-disclosure and social support demonstrate a strong pooled effect for PTG, with mean effect sizes of .47 and .40, respectively. Beneficial interpersonal outcomes were revealed to be related to seeking help from professional and peer sources, including participation in support groups.

Interpersonal factors have a well-documented protective and positive influence on various kinds of traumas and distress (e.g., Gvion & Levi-Belz, 2018; Kahn & Garrison, 2009). In the context of growth, Tedeschi and Calhoun (2004) noted that interpersonal activities, such as disclosing feelings and interacting with others, are some of the basic personality characteristics that may affect the likelihood of a positive aftermath to traumatic events. Many studies have reported a beneficial effect of these variables on PTG in different populations (Neimeyer & Hogan, 2001; Neimeyer & Sands, 2017; Scrignaro et al., 2011). On the other hand, some scholars have highlighted that a lack of an individual's interpersonal resources, as manifested in an insecure attachment style (Levi-Belz et al., 2013) or an inability to disclose emotions and thoughts (Levi et al., 2008; Levi-Belz et al., 2014), can exacerbate the intolerable mental pain that may be presented in depression or suicidal behavior.

What accounts for the demonstrated positive relationships between interpersonal activities and PTG among suicide-loss survivors? Based on the reviewed studies and the meta-analyses, two primary explanations can be suggested. First, disclosure of emotional and personal information may help survivors craft a new narrative about what occurred (Levi-Belz et al., 2014). Talking and expressing personal thoughts and feelings are essential features of the grief work needed to confront the new situation (Freud, 1917; Pennebaker et al., 2001). Communicating personal feelings has been shown to have a healing effect among at-risk populations (Brown & Heimberg, 2001) and to play a critical role in facilitating constructive cognitive processes (Frattaroli, 2006). This line of thought is corroborated by the findings of Feigelman et al. (2018), which demonstrated that high levels of disclosure were significantly associated with diminished grief difficulties and a lessening of mental health disturbance following suicide or accidental death.

A second explanation of the key role of interpersonal factors is related to the experience that can emerge from sharing personal and intimate information with others. Suicide-loss survivors often face social stigma (Cvinar, 2005), and these negative perceptions can lead to social disconnection and detachment. Oexle et al. (2018) found perceived stigma to be associated with lower PTG levels (Oexle et al., 2018).

The combination of self-disclosure and social support may be integrated into a sense of belongingness, a fundamental psychological need (Baumeister & Leary, 1995). Belongingness makes a unique and positive contribution to coping with stressors (Choenarom et al., 2005) and serves as a protective factor against psychopathology and suicide (Van Orden et al., 2010). Given the significant interaction between interpersonal activities and time since suicide (Levi-Belz, 2015), it may be assumed that the contribution of self-disclosure and social support to PTG evolves over time. Similar patterns were found when examining the longitudinal

course of complicated grief among suicide-loss survivors (Levi-Belz & Lev-Ari, 2019b). The interpersonal component may have particular importance in the first year after the suicide, as this is the critical time to adjust to the new reality and to learn how to deal with the intrusive and painful feelings and thoughts (Brent et al., 2009). Having the ability to verbalize and share these feelings with friends, relatives, and other suicide-loss survivors may be invaluable for PTG and recovery. Consequently, community engagement can be an important part of the healing process for some survivors, which clinicians and close family members could encourage, particularly in the first year of bereavement.

Within the interpersonal framework, attachment style was found to be related to PTG among suicide-loss survivors (e.g., Levi-Belz & Lev-Ari, 2019a). Specifically, the SEM mediation technique used in the Lev-Ari and Levi-Belz (2018) study revealed that attachment styles relate to PTG through the mediation of self-disclosure, perceived social support, and belongingness. Suicide-loss survivors with secure attachment tended to self-disclose more and to perceive greater support from others than did suicide-loss survivors with insecure attachment, thus enhancing their chances of PTG. It appears, then, that the underlying assumptions about the world and the internal working model of securely attached suicide-loss survivors may contribute to their inclination to share personal, distressing information and to receive support from others. In turn, these interpersonal interactions can facilitate PTG. Overall, these findings are consistent with studies in which secure attachment has been shown to be related to higher levels of PTG in several bereaved populations (Arikan et al., 2016; Salo et al., 2005; Schmidt et al., 2012).

Limitations of the reviewed studies and of this systematic review should be noted. The studies concerning PTG among suicide-loss survivors are rather limited in number, and thus our meta-analyses were conducted with only few studies, hampering the option to draw a decisive conclusion from them. Moreover, the cross-sectional nature of most of the studies precludes determining the causality of the reported associations. Whereas this drawback was partly addressed in studies using SEM, future research should consider adopting a more rigorous longitudinal study design that can provide clearer indications as to the putative causal relationships between PTG and the various examined factors.

Another important limitation concerns the nature of the reviewed samples, most of which were volunteers from only two countries and cultures: the United States and Israel. This limitation reinforces the need for further studies to determine whether findings across other research centers would be similar to those reported to date. Also, representative samples of suicide-loss survivors from the community at large and from different cultures would contribute to a better understanding of the mechanisms of PTG in these populations. Whereas the use of diverse PTG scales has limited the comparability of studies, most of the reviewed studies used either the PTGI (Tedeschi & Calhoun, 1996) or the SRGS (Park, 1998), which are highly reliable measures and have been validated in previous studies.

Last, the use of self-report PTG questionnaires comprises a notable shortcoming regarding the potential disparity between the participants' actual state of growth and the subjective experience. Further research should seek to collect data derived from objective measures of growth and supplement them with the perceptions of

others. These broader measures can advance a more precise understanding of the nature of PTG among suicide-loss survivors.

It is important to note several major limitations of this systematic review in general. First, the review was based on only 11 studies, a rather small sample. Moreover, although some of the studies include SEM models, and one adopted a longitudinal design, all of them were rated poorly in terms of research quality, based on the NOOAF criteria. Related to that, in this review, our focus was primarily on significant reported results ($p < .05$). However, it is critical to note that these significant results are sample dependent to some extent, and future studies should consider including results with p values at or above .05 in order to provide a broader picture of the topic. Thus, this review's conclusions require confirmation from future studies to be conducted concerning PTG among suicide-loss survivors.

To ensure the minimum research quality of the presently reviewed studies, we included only peer-reviewed studies and excluded dissertations and gray literature, which could offer a greater likelihood of identifying negative research results. In a similar vein, we did not include qualitative studies, which could provide a more in-depth understanding of suicide-loss survivors' experiences. Thus, future reviews and meta-analyses should consider broadening their scope by including these research efforts to further elucidate the psychological experiences of suicide-bereaved individuals.

In conclusion, this systematic review found that posttraumatic growth can be manifested among individuals who are bereaved after suicide. The review identified factors that correlated with or facilitated PTG. A consistent association found in these studies was between PTG and interpersonal factors such as self-disclosure, social support, and attachment style. These results suggest that expressing death-related feelings and reactions to others may help facilitate intrapsychic processes. In turn, the experience of interpersonal support and belongingness may enhance and accelerate healthy processes of adjustment and PTG among suicide-loss survivors. From a clinical perspective, enhancing the individual's engagement in interpersonal interaction may be an important therapeutic target, as it can enhance the prospect of PTG and diminish mental pain, stigma, and loneliness.

In his classic book, *Man's Search for Meaning*, Victor Frankl (1963) emphasized the possibility of growth by noting that "even the helpless victim of a hopeless situation . . . may turn a personal tragedy into a triumph" (p. 146). Our systematic review and meta-analysis sought to delineate the mechanisms and dynamics underlying these growth processes characterizing the traumatized population of suicide-bereaved individuals. The review offers a broad and extensive psychological and socio-cultural observation of this phenomenon. We hope that our findings will inform services for survivors, as well as clinicians and researchers, to address more accurately the prospect of growth among suicide-loss survivors and to better understand how to pursue and facilitate this phenomenon. Our findings may contribute to developing a specific clinical protocol to induce PTG among suicide-bereaved individuals and to help them to turn their tragedy into a personal triumph.

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