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## Pandemic Grief Scale: A screening tool for dysfunctional grief due to a COVID-19 loss

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### ABSTRACT

Millions of people are grieving the loss of someone who died of COVID-19. However, there have been no screening tools developed to identify individuals who may be suffering from dysfunctional grief during the pandemic. Therefore, the objective of this study was to develop and evaluate the properties of the Pandemic Grief Scale (PGS), which is a brief mental health screener to identify probable cases of dysfunctional grief associated with a COVID-19 death. This 5-item scale, which was based on 831 adults who lost someone to COVID-19, demonstrated solid reliability ( $\alpha = 0.86$ ), factorial validity (PCA and CFA support), and construct validity with strong correlations with suicidal ideation and substance use coping. The PGS measures COVID-19 grief equivalently across demographic groups, and discriminates well between persons with and without dysfunctional grief using an optimized cut score of  $\geq 7$  (87% sensitivity and 71% specificity). An alarming 66% of the sample scored in the clinical range. The PGS also demonstrates incremental validity by explaining 18% additional variance in functional impairment due to a COVID-19 loss beyond measures of depression and generalized anxiety. These results support the PGS as an efficient and valid screening tool for clinical research and practice during a pandemic.

A novel coronavirus (SARS-CoV-2) that emerged from Wuhan, China in late 2019 quickly spread to almost every country in the world, becoming a global pandemic and public health emergency in less than four months. As of 1 November 2020, close to 46 million people have been diagnosed with the coronavirus disease (COVID-19) and it has claimed over 1 million lives worldwide (World Health Organization, 2020). This pandemic has upended the day-to-day life of people around the world who are enduring the impact of social isolation, taxed healthcare systems, and created economic, social, and political turmoil. Although there has been considerable attention given to mitigating the impact of the pandemic through behavioral (e.g., social distancing measures) and medical means (e.g., development of drugs and vaccines), the mental health needs of people grieving the loss of a loved one by COVID-19 have been relatively neglected.

The lack of scientific attention to those bereaved by COVID-19 losses is surprising given that the death of a loved one is ranked as one of the most stressful events in life (Hobson et al., 1998; Holmes & Rahe, 1967), is responsible for more than \$75 billion dollars of lost work productivity annually (Johnson, 2012),

and has serious consequences for behavioral (e.g., agitation, fatigue, and withdrawal), psychological (e.g., depression, loneliness, and suicidal ideation), and physical health (e.g., increased risks of heart attacks, illnesses, and mortality) (Stroebe et al., 2007). Moreover, research has established numerous evidence-based risk factors for clinically impairing prolonged and complicated grief reactions, such as social isolation of the mourner, unexpectedness of the death, challenges to a secure attachment relationship to the deceased, spiritual struggles in bereavement, inability of survivors to make sense of the loss, socioeconomic and educational disadvantage of the mourners, and a lack of institutional and informational support for families in the care facilities in which the deaths take place (Neimeyer & Burke, 2017). Significantly, every one of these factors characterizes the circumstances in which COVID-19 deaths occur. Social isolation protocols limit both available social support and meaningful engagement of family members in end of life care. Vulnerable patients can decline precipitously even with ventilation and other forms of medical support, as families experience helplessness and guilt in being unable to tend to their loved ones at the end of life.

Places of worship are shuttered during the pandemic as mourners may question divine beneficence and people's assumptive worlds are assaulted by unpredictable events beyond their capacity to predict and control. Marginalized communities are disproportionately represented in mortality statistics, and protocols for family engagement and education are abandoned by care facilities and hospitals seeking to protect from contagion both vulnerable patients and the stressed healthcare professionals who treat them (Menzies et al., 2020). Thus, the psychological, medical and economic toll of bereavement is likely to be particularly severe in the context of death resulting from the current and future pandemics.

In keeping with this reasoning, recent research suggests that grief due to a COVID-19 death is indeed more severe than that resulting from other forms of loss, such as death through natural causes (Eisma et al., 2021). This finding is particularly concerning given that acute grief reactions in the early months of mourning is a risk factor for a protracted course of grief (Boelen & Lenferink, 2020; Bonanno et al., 1995; Bonanno & Keltner, 1997). If statistical models apply to the current global situation, then it is estimated that over 9 million people have already been bereaved by a COVID-19 death (9 bereaved for every 1 COVID-19 loss; Verdery et al., 2020) and 118 thousand of them may suffer from pathological levels of grief (1.2 million deaths, New York Times, 9 November 2020; with a conservative 9.8% prevalence rate of prolonged grief disorder; Lundorff et al., 2017). Worryingly, the rates of both infection and death are at the time of this writing increasing exponentially in many nations, including the United States, suggesting that these figures will grow enormously in the months to come. Therefore, the purpose of this study was to develop and evaluate a brief screening tool that can be used to identify individuals suffering from dysfunctional levels of grief due to a COVID-19 death.

## Method

### Participants and Procedure

Online survey data from 831 adults that were collected on 3–5 November 2020, were used in this IRB approved study. The participants were recruited through Amazon MTurk in exchange for payment (\$0.50) and were eligible if they provided consent, had a significant person in their life die from COVID-19, and furnished complete information.

The study's sample consisted of 494 men and 337 women with a combined mean age of 38.32

( $SD=12.01$ ) years. Most of the participants were White ( $n=635$ ; 76.4%), followed by Black ( $n=120$ ; 14.4%), Hispanic ( $n=45$ ; 5.4%), Asian ( $n=25$ ; 3.0%), and Other ( $n=6$ ; 0.7%). Most of the deceased were extended family members ( $n=291$ ; 35.0%), followed by immediate family members ( $n=211$ ; 25.4%), acquaintances ( $n=127$ ; 15.3%), close friends ( $n=108$ ; 13.0%), romantic relationships ( $n=89$ ; 10.7%), and Other ( $n=5$ ; 0.6%). Participants were bereaved an average of approximately 3 months ( $M=2.82$ ;  $SD=1.43$ ), with 7.0% of the sample being bereaved for less than one month and 3.9% being bereaved for six months or more. Significantly, nearly 43% of participants had sought professional help for their grief, and nearly 37% had themselves tested positive for COVID-19.

## Measures

### Basic information

Participants were asked to report their age, gender, ethnicity, and COVID-19 diagnosis. Participants were also asked to report their relationship to a significant person in their life who had died from COVID-19, how long ago this person died, and if the participant received professional help for this loss.

### Psychological distress

Clinical symptoms of depression and generalized anxiety were measured using the *Patient Health Questionnaire-4* (PHQ-4; Kroenke et al., 2009). Participants indicated how frequently they experienced symptoms of depression (e.g., "feeling down, depressed, or hopeless.") and generalized anxiety (e.g., "feeling nervous, anxious, or on edge.") over the past two weeks, using a 4-point scale (0 = *not at all* to 3 = *nearly every day*). Using the recommended cut-score of  $\geq 3.00$  (Kroenke et al., 2009), 73.3% and 74.4% of the sample were classified as having clinical levels of depressive ( $\alpha=0.61$ ) and generalized anxiety ( $\alpha=0.66$ ) symptoms, respectively.

### Negative effects of the COVID-19 loss

Participants were asked to rate, using a 4-point time anchored scale that spans a two-week period (0 = *not at all* to 3 = *nearly every day*), how often they experienced negative thoughts and behaviors because of their COVID-19 loss using single-item scales. Passive suicidal ideation ( $M=1.44$ ;  $SD=1.08$ ) was measured by the item, "I wished I was already dead so I did not have to deal with this loss." Substance use coping ( $M=1.45$ ;  $SD=1.00$ ) was measured by the item, "I

**Table 1.** Pandemic Grief Scale (PGS).

Over the last 2 weeks, how often have you experienced the following thoughts, feelings, or behaviors related to your loss?		PGS			
		<i>Not at all</i>	<i>Several days</i>	<i>More than half the days</i>	<i>Nearly everyday</i>
1.	I wished to die in order to be with the deceased.	0	1	2	3
2.	I experienced confusion over my role in life or felt like my identity was diminished because of the loss.	0	1	2	3
3.	Nothing seemed to matter much to me because of this loss.	0	1	2	3
4.	I found it difficult to have positive memories about the deceased.	0	1	2	3
5.	I believed that without the deceased, life was either meaningless, empty, or could not go on.	0	1	2	3
Column Totals		_____ +	_____ +	_____ +	_____ +
					Total Score <input style="width: 30px; height: 20px;" type="text"/>

Note. The PGS is placed in the public domain to encourage its use in clinical assessment and research. No formal permission is therefore required for its reproduction and use by others, beyond appropriate citation of the present article.

used alcohol or other drugs to help me get through this loss.”

#### Functional impairment

An adapted version of Mundt et al. (2002) Work and Social Adjustment Scale (WSAS) was used to measure functional impairment due to a COVID-19 loss. Participants were asked to rate, using a 9-point severity scale (0 = *not at all* to 8 = *very severely*), how much impairment they experienced because of their COVID-19 loss (e.g., “Because of this loss, my ability to work is impaired. 0 means not at all impaired and 8 means very severely impaired to the point I can’t work.”). Based on a WSAS cut-score of  $\geq 21.00$  (Mundt et al., 2002), 64.5% of the sample were classified as functionally impaired due to a COVID-19 death ( $\alpha = 0.93$ ).

#### Pandemic Grief Scale

A large pool of 37 grief symptom items was written and used as the starting point for the development of the Pandemic Grief Scale (PGS). Sixteen of the items (e.g., “I felt a constant longing or yearning for the deceased.”), which were adapted from the Persistent Complex Bereavement Inventory (PCBI; Lee, 2015), reflect diagnostic symptoms of the DSM-5’s Persistent Complex Bereavement Disorder (PCBD; American Psychiatric Association, 2013). Twenty-one of the remaining items (e.g., “I felt too alone in my grief because of social isolation policies to control the pandemic.”) were items derived from the authors’ observations of people bereaved by COVID-19 losses. Using a 4-point time-anchored scale that spans a two-week period (0 = *not at all* to 3 = *nearly every day*), participants rated how frequently they experienced each grief symptom. Five items that were statistically

derived from the initial pool of grief items represent the Pandemic Grief Scale (see Table 1).

#### Analytic approach

A series of factor analytic methods were used to identify a reliable subset of items that best represent the latent construct of COVID-19 grief that can be used for mental health screening (Thompson, 2004). An internal replicability approach was employed by subjecting approximately one half of the study’s data to a principal component analysis (PCA) and the other half to a series of confirmatory factor analyses (CFAs) using bias-corrected bootstrap Maximum Likelihood estimations (2,000 samples). The PCA was used to identify the five most robust and representative symptoms of COVID-19 grief, while CFAs were used to test the replicability of the PCA results and examine the PGS’ measurement invariance across demographic groups. The entire data set was then used to examine the diagnostic viability, construct validity, and incremental validity of the PGS using a receiver operating characteristic (ROC) analysis, a correlation analysis, and a hierarchical multiple regression analysis, respectively. Statistical analyses were calculated using SPSS version 26.0, except for the confirmatory factor analyses (CFA), which were run using AMOS version 25.0.

The first five items with the strongest loadings on the first principal component were used for the PGS because they best captured the information conveyed across the 37 grief symptoms the participants experienced (i.e., the items account for the highest possible squared correlations among the item pool; Thompson, 2004). These items should also be psychometrically sound by yielding pattern/structure coefficients and

communality coefficients greater than 0.40 in order to be considered eligible for the PGS (Ford et al., 1986).

Criteria for determining CFA model fit and measurement invariance were based on conventional standards (Brown, 2006; Byrne, 2001). Specifically, adequate model fit for a CFA model was defined by a chi-square/df value  $< 2.00$ , a standardized root-mean-square residual (SRMR) value  $\leq 0.05$ , root-mean-square-error of approximation (RMSEA) value  $\leq 0.10$ , and comparative fit index (CFI) and Tucker Lewis index (TLI) values  $\geq 0.90$ . Measurement invariance was defined by both adequate model fit statistics and a non-significant value ( $p \geq .05$ ) on a chi-square difference test.

A receiver operating characteristic (ROC) analysis was used to examine the diagnostic accuracy of the PGS to identify bereaved adults who were functionally impaired by a COVID-19 loss. Drawing on the properties of well-established psychiatric screening tests (Spitzer et al., 2006; Weinstein et al., 1989), screening indicators of complicated grief (Djelantik et al., 2017; Guldin et al., 2011), and diagnostic testing considerations (Schisterman et al., 2005; Simundic, 2009), the following criteria were used to evaluate the fitness of the PGS for mental health screening: (1) area under the curve (AUC) value  $\geq 0.70$ , (2) a convex shaped ROC curve, and (3) an optimal cut-score with a sensitivity value  $\geq 80\%$ , specificity value  $\geq 70\%$ , and a Youden index  $\geq 50$ .

Zero-order correlations were used to examine the construct validity of the PGS. Because dysfunctional levels of grief have been shown to be associated with suicidal ideation and substance use coping (Lee, 2015), PGS scores were expected to show strong positive correlations with these negative outcomes. A hierarchical multiple regression analysis was used to examine the incremental validity of the PGS. Because grief constructs establish incremental validity when they can explain a unique proportion of the variance in adjustment outcomes beyond other forms of bereavement-related psychopathology (Bonanno, 2006), PGS scores were predicted to explain variance in functional impairment scores above depression and generalized anxiety scores.

## Results

### Data screening

A preliminary screening of the data suggested that the pool of 37 grief items was suitable for factor analysis (Tabachnick & Fidell, 2001). Specifically, the data did not have issues pertaining to sample size, missing data, nonnormality, multicollinearity, or singularity.

Moreover, the correlation matrices were deemed factorable (Bartlett's test of sphericity =  $p < .001$ ; Kaiser-Meyer-Olkin test = 0.98). Chi-square tests and independent samples *t*-tests revealed that the PCA sample ( $n = 414$ ) was not demographically different from the CFA sample ( $n = 417$ ).

### Principal component analysis

The initial pool of 37 grief items was subjected to a PCA with Varimax rotation. The results identified a three-component structure, with the first component accounting for 45.33% of total variance explained. The five strongest loadings on the first component were chosen for the PGS because they exceeded the criteria for psychometrically sound items (see Table 2). Specifically, pattern/structure coefficients ranged from 0.63 to 0.75, while communality coefficients ranged from 0.57 to 0.63. Collectively, these COVID-19 grief symptoms were highly reliable as a cluster ( $\alpha = 0.86$ ).

### Confirmatory factor analyses

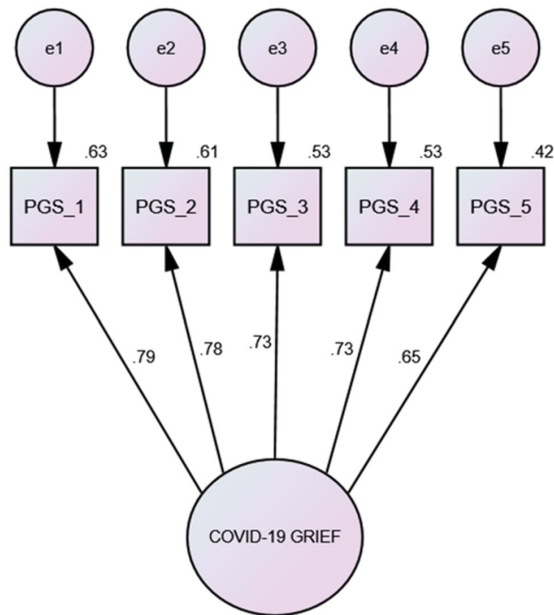
A CFA was run to test whether or not the five grief items identified in the previous PCA cohered into a unified, COVID-19 grief construct (see Figure 1). The results supported the PCA findings by demonstrating that the single-factor model [ $\chi^2(5) = 7.53, p = .18$ ] yielded excellent fit for all of indices [ $\chi^2/df$  ratio = 1.51; CFI = 1.00; TLI = 0.99; SRMR = 0.01; RMSEA = 0.04 (0.00, 0.08; 90% CI)] and yielded the same internal consistency coefficient as the PCA ( $\alpha = 0.86$ ).

Multigroup CFAs were run to examine if the COVID-19 grief construct was being measured the same way across the demographic variables of age (18–29 vs. 30 and older), gender (men vs. women), and race (Whites vs. non-Whites). The results demonstrated no age differences, which were evidenced by excellent model fit [ $\chi^2(10) = 13.83, p = .18$ ] for all of the indices [ $\chi^2/df$  ratio = 1.18; CFI = 1.00; TLI = 0.99; SRMR = 0.03; RMSEA = 0.03 (0.00, 0.07; 90%

**Table 2.** Properties of the PGS items from the Principal Components Analysis.

#	PGS Item	LD	$h^2$	AID	M	SD
1.	Death Wish	0.75	0.62	0.83	1.33	1.02
2.	Identify Confusion	0.70	0.61	0.83	1.54	.96
3.	Apathy	0.69	0.63	0.83	1.53	.98
4.	Difficulty Reminiscing	0.68	0.57	0.84	1.52	.98
5.	Meaninglessness	0.63	0.60	0.83	1.48	.98

Note.  $n = 414$ ; Cronbach's Alpha for PGS is 0.86; # PGS item number; LD = Pattern/Structure coefficient of the first component;  $h^2$  = Extracted Communality Coefficient; AID = Cronbach's Alpha for entire scale if item were deleted. M = Mean; SD = Standard Deviation.



**Figure 1.** Single-factor CFA model. *Note.* Model based on Bootstrap Maximum Likelihood (ML) estimations (2000 samples). All of the standardized coefficients are significant at the 0.05 level. PGS\_1 = Death Wish; PGS\_2 = Identity Confusion; PGS\_3 = Apathy; PGS\_4 = Difficulty Reminiscing; PGS\_5 = Meaninglessness.

CI]) and a non-significant increase in  $\chi^2$  value [ $\Delta\chi^2(5) = 6.96, p = 0.22, ns$ ] between the models. Similarly, the results demonstrated no gender differences, which were evidenced by excellent model fit [ $\chi^2(10) = 8.23, p = .61$ ] for all of the indices [ $\chi^2/df$  ratio = 0.83; CFI = 1.00; TLI = 0.99; SRMR = 0.01; RMSEA = 0.00 (0.00, 0.05; 90% CI)] and a non-significant increase in  $\chi^2$  value [ $\Delta\chi^2(5) = 3.97, p = .55, ns$ ] between the models. Finally, the results demonstrated no race differences, which were evidenced by excellent model fit [ $\chi^2(10) = 19.80, p = .03$ ] for all of the indices [ $\chi^2/df$  ratio = 1.98; CFI = 0.99; TLI = 0.98; SRMR = 0.02; RMSEA = 0.05 (0.01, 0.08; 90% CI)] and a non-significant increase in  $\chi^2$  value [ $\Delta\chi^2(5) = 0.57, p = .99, ns$ ] between the models. Thus, these results demonstrate that the PGS measures the COVID-19 grief construct the same way across age, gender, and race groups.

### T-Tests, ANOVAs, and Correlations

Differences in PGS total scores across background variables describing the participant and deceased were examined for exploratory purposes. The results revealed that men ( $M = 7.84; SD = 3.84$ ) had higher PGS scores than women ( $M = 6.81; SD = 3.89$ ),  $t(829)$

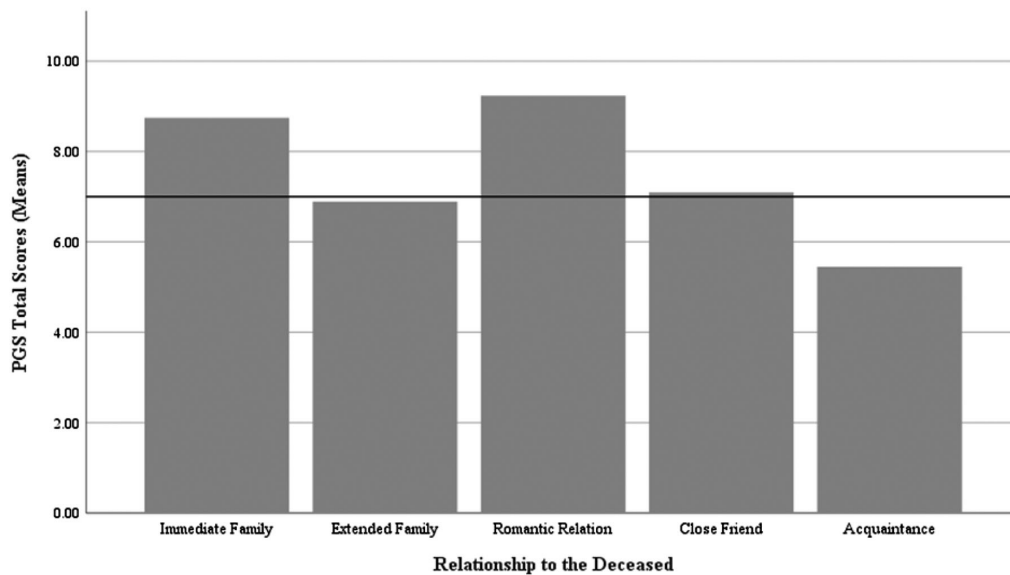
$= -3.78, p < .001$ . Blacks ( $M = 8.21; SD = 3.74$ ) had higher PGS scores than a combined group of Hispanics, Asians, and Others ( $M = 6.42; SD = 3.56$ ),  $F(2, 828) = 5.03, p < .01$ . However, no differences were found with Whites, who were intermediate in this comparison ( $M = 7.40; SD = 3.93$ ) nor with any other race comparison.

Participants who were diagnosed with COVID-19 ( $M = 9.30; SD = 2.91$ ) had higher PGS scores than participants who did not have COVID-19 ( $M = 6.29; SD = 3.98$ ),  $t(801.22) = 12.56, p < .001$ . Participants who received professional help for their COVID-19 loss ( $M = 8.82; SD = 3.17$ ) had higher PGS scores than participants who did not receive such services ( $M = 6.35; SD = 4.05$ ),  $t(828.75) = -9.85, p < .001$ . Zero-order correlations revealed that PGS scores were not associated with age ( $r = 0.05, p = .15, ns$ ) nor time since loss ( $r = 0.03, p = .38, ns$ ).

In terms of COVID-19 deaths (see Figure 2), the highest PGS scores were among those who lost romantic partners ( $M = 9.23; SD = 2.45$ ) and immediate family members ( $M = 8.74; SD = 3.17$ ). Although both of these losses were not statistically different from one another, they were higher than close friends ( $M = 7.09; SD = 3.31$ ), extended family ( $M = 6.89; SD = 4.24$ ), and acquaintances ( $M = 5.45; SD = 4.47$ ),  $F(4, 821) = 22.73, p < .001$ . There was no difference between close friends and extended family on PGS scores. Participants who lost acquaintances to COVID-19 had the lowest PGS scores compared to all of the other losses. It is important to note that the Other category was omitted from this analysis because it only had five participants (0.60%).

### Receiver operating characteristic analyses

Receiver operating characteristic (ROC) analyses were used to evaluate the diagnostic viability of the PGS as a screening tool, as well as to determine a cut score that best distinguishes individuals who experience clinically significant impairment because of a significant COVID-19 death (individuals who scored  $\geq 21$  on the WSAS) from those who were not impaired by this loss. The ROC graph displayed the convex pattern that is indicative of good discrimination ability (see Figure 3), while the area under the curve (AUC) demonstrated solid diagnostic accuracy for the PGS (AUC = 0.87,  $p < .001$ ). The results of the ROC analysis also revealed that a PGS score  $\geq 7$  optimally classified adults as having (87% sensitivity) or not having (71% specificity) dysfunctional levels of grief (Youden's index of 58) with a false positive rate of 29%.



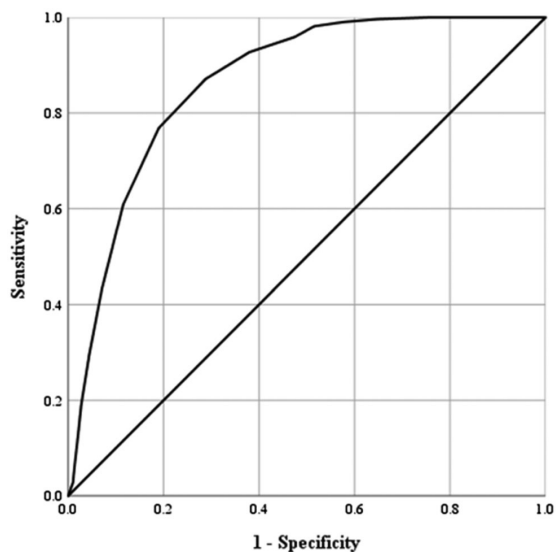
**Figure 2.** Mean scores on PGS across types of relationship to the deceased. *Note.* The horizontal line indicates the clinical cutoff score of 7 for dysfunctional grief on the PGS.

Although a lower PGS score of  $\geq 6$  will yield a high sensitivity rate of 93%, the specificity value of 62% and Youden's Index of 55 are much lower than values produced by the optimal cut-score of  $\geq 7$ . Thus, these results support the PGS as a diagnostically accurate mental health screening tool with strong classification features. Alarming, 66.4% of the sample ( $n = 552$ ) scored at or above this cut score for dysfunctional pandemic grief.

### **Correlation and hierarchical multiple regression analyses**

Zero-order correlations between PGS scores and negative outcomes associated with COVID-19 loss were used to examine the construct validity of this measure of COVID-19 grief. As expected and in support of the PGS's construct validity, PGS scores were strongly, positively correlated with passive suicidal ideation ( $r = 0.69, p < .001$ ) and the use of alcohol or drugs to cope with the COVID-19 loss ( $r = 0.65, p < .001$ ).

A hierarchical multiple regression analysis was then used to evaluate the incremental validity of the PGS. In the first step of the regression analysis, depression ( $\beta = 0.40, p < .001$ ) and generalized anxiety ( $\beta = 0.35, p < .001$ ), emerged as significant predictors of functional impairment due to the COVID-19 loss, adjusted  $R^2 = 0.45, F(2, 828) = 340.65, p < .001$ . In the second step, depression ( $\beta = 0.14, p < .001$ ) and generalized anxiety ( $\beta = 0.22, p < .001$ ) continued to be significant



**Figure 3.** ROC curve for Pandemic Grief Scale. *Note.* AUC = 0.87,  $p < .001$ .

predictors, while the PGS ( $\beta = 0.55, p < .001$ ) also emerged as a predictor of functional impairment due to COVID-19 loss, adjusted  $R^2 = 0.63, F(3, 827) = 478.47, p < .001$ . These regression results support the incremental validity of the PGS as it accounted for 18% additional variance in functional impairment over common measures of psychological distress. Thus, these results support the PGS as a clinically

useful measure of dysfunctional grief due to a COVID-19 death.

## Discussion

The purpose of this study was to develop and evaluate a brief screening tool that health professionals and researchers can use to identify probable cases of dysfunctional grief due to a COVID-19 death. To the best of our knowledge, the Pandemic Grief Scale (PGS) is the first published screening tool of pandemic-related grief to be developed on a large sample of adults who experienced a COVID-19 loss amidst a global public health crisis. The PGS, which is composed of 5 psychometrically sound items, was based on a principal component analysis of a pool of 37 grief symptoms that were derived from the DSM-5's PCBD criteria (American Psychiatric Association, 2013), as well as our observations of symptoms exhibited by people bereaved by COVID-19 deaths. The items of the PGS were shown to cohere into a highly reliable ( $\alpha = 0.86$ ) and structurally unified COVID-19 grief construct with excellent fit statistics. Moreover, the PGS was shown to measure dysfunctional grief symptoms in conceptually similar ways across age, gender, and race, demonstrating measurement invariance.

The PGS performed well as a mental health screener with a sensitivity rate of 87%, a specificity rate of 71%, and an AUC value of 0.87. In fact, the PGS has stronger diagnostic qualities than the General Health Questionnaire (GHQ), which is a measure extensively used in primary care settings to assess depression, anxiety, somatic concomitants, and social impairment (Weinstein et al., 1989). Specifically, the GHQ yields a sensitivity rate of 77%, specificity rate of 71%, and an AUC value of 0.73 (Weinstein et al., 1989). In comparison with other screening measures of complicated grief, the PGS also yields comparable diagnostic metrics. For example, Guldin et al. (2011) devised a screening tool for complicated grief that is composed of the Beck Depression Inventory and an additional item focused on life purpose. This tool reports a sensitivity rate of 78%, specificity rate of 75%, and an AUC value of 0.81. Djelantik et al. (2017) also created a screening tool for complicated grief, but they focused on symptoms of prolonged grief disorder. Their 4-item provisional screening tool for problematic grief trajectories yields a slightly lower sensitivity rate of 84% compared to the PGS, but a higher specificity rate of 80% and a higher AUC value of 0.91 compared to the PGS (Djelantik et al., 2017).

Other key psychometric findings worth highlighting are the construct validity and incremental validity analyses results. The PGS demonstrated strong construct validity through its positive correlations with suicidal ideation and substance use for coping with loss. These findings were consistent with previous research (Lee, 2015) that found positive correlations between persistent complex bereavement disorder symptoms and suicidal ideation ( $r = 0.61$ ) and substance use coping ( $r = 0.48$ ), but the PGS's correlations were considerably stronger in the current study ( $r$ s from 0.65 to 0.69). Arguably the most impressive quality of the PGS was the evidence for the measure's incremental validity. Previous research that examined the ability of persistent complex bereavement symptoms to explain impairment scores reported incremental validity scores that range from 9% to 11% (Lee, 2015, 2019). In the current study, the PGS explained 18% additional variance in functional impairment above and beyond measures of generalized anxiety and depression. The further finding that the participants who received professional help for their COVID-19 loss had higher PGS scores than their counterparts who did not also evidences the external validity of the scale by demonstrating that mourners whose scores reflect greater clinical elevations are in fact more likely to seek professional intervention. Collectively, these findings support the validity and clinical utility of the PGS.

In light of the apparent validity and reliability of the PGS as a measure of dysfunctional grief, it is striking that fully two thirds of the current sample of American adults bereaved by COVID-19 scored in the clinical range, with associated functional impairment in work and social adjustment. If this finding is replicated in future studies, it raises the specter of a second pandemic in the shadow of the first, one characterized by widespread intense and problematic grief that could pose profound long term challenges in adjustment among mourners already struggling with pervasive psychological, social and economic stressors resulting from the spreading infection and policies to mitigate it. Precisely as predicted by demographic research at the outset of the crisis, the "enormous loss of life in the United States" raises concern about "the collateral damage that this level of mortality would exact on American families.... It is important that the burden of bereavement and its mental and physical health consequences, is factored into discussion of the public health challenge facing all nations" (Verdery & Smith-Greenway, 2020; p. 2). The alarming finding regarding the prevalence of dysfunctional



grief in the current cohort of COVID-bereaved adults adds weight to this concern.

Exploratory analyses that examined differences in PGS scores across participant background and characteristics of the deceased also yielded interesting findings. For example, although women tend to be at a greater risk of developing grief and affective disorder than men (APA, 2013), the men in this study were found to have higher PGS scores than women. The explanation for this unanticipated gender difference remains elusive, but it might reflect the unique context of pandemic loss, which has been shown to challenge the assumptive world of taken-for-granted beliefs that the future is in some measure predictable, life is controllable, and the self is worthy, which in turn has been found to mediate the impact of pandemic stressors on mental health outcomes (Milman et al., 2020). If bereaved men were found to be particularly prone to disruption of such beliefs, this might help explain their being at greater risk for elevated pandemic grief. However, this and other possibilities await further research.

Blacks were also found to have higher PGS scores than other minority groups. This pattern makes sense when one considers the fact that COVID-19 infection and death rates are disproportionately elevated within Black communities compared to other groups in the U.S. (Yancy, 2020). Moreover, Blacks appear vigilant to this issue as they are more likely to watch coronavirus related news and discuss the coronavirus with others than any other racial group in America (Mitchell & Jurkowitz, 2020).

Participants who were diagnosed with COVID-19 were found to have higher PGS scores than those who were not diagnosed with the disease. Although speculative, this could be explained by their possible identification with the deceased based on their own frightening physical symptoms (e.g., difficulty breathing) and psychological distress (e.g., death anxiety) with COVID-19 disease (c.f. Menzies et al., 2020). Again, the explanation for the relation between personal diagnosis of COVID-19 and pandemic grief invites further investigation.

The items of the PGS are also worthy of discussion as each taps a unique feature of dysfunctional grief. For example, a death wish or suicidal thinking, which is the first item of the PGS and a diagnostic symptom of the DSM-5's persistent complex bereavement disorder (PCBD; APA, 2013), has long been associated with traumatic grief (Birtchnell, 1970; Prigerson et al., 1999). Concerns over suicidality have also been quite prevalent during the COVID-19 pandemic as stressors

associated with social distancing measures, economic instability, and social turmoil continue to threaten people's mental health and well-being (Fitzpatrick et al., 2020). Identity confusion, which is the second item of the PGS and another symptom of PCBD (APA, 2013), is also recognized as a major challenge in the grieving process for people who struggle to assimilate their loss into a coherent, post-loss life narrative (Neimeyer, 2019; Neimeyer & Burke, 2017). Indeed, recent research shows that those suffering from complicated grief provide fewer descriptors and categories of their self-concept than those with uncomplicated grief (Bellet et al., 2020). In the context of the pandemic the erosion of identity could be all the more likely as major sources of self-worth are undermined by the loss of work and social roles in the lives of many mourners.

Apathy, which is the third item of the PGS and not a symptom of PCBD (APA, 2013), could reflect the preoccupation with the loss that is a defining criterion of prolonged grief disorder (World Health Organization, 2019), leaving the bereaved with little motivation or energy to invest in other activities. It could also reflect an inability to oscillate adaptively between a loss and a restoration orientation in the Dual Process Model of coping with bereavement (Stroebe & Schut, 2020). The multiple secondary stressors of the pandemic may pose unique challenges for mourners, who are unable to access once restorative activities (e.g., travel, spending social time with friends) that could provide crucial respite from immersion in their loss, with apathetic resignation as the result.

Inability to access positive memories of the deceased is the fourth item of the PGS and another symptom of PCBD (APA, 2013). Difficulty reminiscing has also been identified in a study of 115 bereaved spouses, which found it to be uniquely associated with a prolonged grief pattern (Mancini et al., 2015). The researchers suggested that ruminative and distressing preoccupation with the deceased could inhibit their ability to access comforting memories (Mancini et al., 2015). The multitude of challenges surrounding COVID-19 deaths, such as isolation from the deceased, rapid occurrence of death, and the inability to say farewell or observe mourning practices (Menzies et al., 2020; Stroebe & Schut, 2020), could also preoccupy many mourners to the point that positive memories about the deceased are nearly impossible to generate. Rumination about the circumstances of the loss has been found to reduce the degree to which mourners can make sense of the experience, which in turn mediates

the impact of many risk factors on subsequent prolonged grief symptomatology (Milman et al., 2019).

Meaninglessness, which is the fifth item of the PGS and another symptom of PCBD (APA, 2013), has also been identified as a prognostic symptom of dysfunctional grief in longitudinal research. For example, the item, “I feel that life is empty or meaningless without the deceased” was found to be an early predictor of a problematic grief trajectory in a study of 166 bereaved adults (Djelantik et al., 2017). In contrast, the item, “Even while my relative was dying, I felt a sense of purpose in my life” was found to be a predictor of less complicated and prolonged grief six months into bereavement in a sample of 276 bereaved adults (Guldin et al., 2011). More broadly, numerous studies have documented the link between inability to find sense or significance in the loss and more intense grief symptomatology (Neimeyer, 2019). Relatedly, research on people living through the COVID-19 pandemic has also shown that failed attempts to make meaning of this infectious disease outbreak is associated with poor mental health outcomes (Milman et al., 2020; Trzebiński et al., 2020).

In summary, the PGS holds considerable promise as an efficient and valid measure of problematic grief in the context of bereavement resulting from COVID-19. However, it also could prove valuable in identifying risk of dysfunctional grief resulting from non-COVID losses in the course of the pandemic, as virtually all deaths occurring during this public health crisis are experienced in the same climate of infection-mitigation policies, regulations and general stressors that may adversely affect the mourners’ adaptation, whatever the cause of death (Menziez et al., 2020). The relevance of the scale to other natural and violent death losses suffered during the pandemic deserves further study, as do the specific circumstantial risk factors that most strongly predict poorer grief outcomes (e.g., inability to spend significant time with a dying loved one in the hospital or elder care facility, disruption of traditional funeral and memorial services, isolation from social support).

Despite the promise of this brief and valid screening tool for problematic grief in the context of the coronavirus pandemic, this research has two limitations worth noting. First, this study was constrained by its exclusive use of online survey methodology and convenience sampling. Future research would benefit from a probability sampling approach and incorporating structured clinical interviews and interviews with friends and family members of the participants in order to obtain a deeper and more comprehensive

evaluation of the participants’ grieving process. Second, this research was also limited by the use of single-item scales to measure suicidal ideation and substance use coping. Although single-item scales are efficient and often psychometrically comparable to multi-item instruments (Bergkvist & Rossiter, 2007), future research should nonetheless replicate this study using multi-item measures that provide a more complete and nuanced assessment of those constructs. Notwithstanding these limitations, our research reports important data that contribute to our understanding of the mental health consequences of the pandemic and also provides health professionals and researchers a brief mental health screener to efficiently identify those suffering from dysfunctional grief due to a COVID-19 loss.

### Disclosure statement

No potential conflict of interest was reported by the author(s).

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