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PSYCHOMETRIC PROPRIETIES OF THE ITALIAN VERSION OF THE PERSISTENT COMPLEX BEREAVEMENT INVENTORY

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Abstract: The study aims to evaluate the psychometric properties of the Italian version of the Persistent Complex Bereavement Inventory (PCBI) in a sample of 318 community – dwelling adults. We investigated the factor structure, convergent and nomological network validity of the PCBI, considering the associations with aspects theoretically related to PCBI and adult attachment style. Our confirmative factor analysis supported a three-factor model. However, the bifactor model suggested the scale structure is unidimensional. Moreover, the PCBI showed a positive and significant correlation with the Inventory of Complicated Grief scale, supporting its convergent validity. Considering the nomological network validity, PCBI was associated with the closeness to the deceased and the circumstance of death. The attachment style of bereaved individuals was characterized by Discomfort with Closeness and Preoccupation with Relationships. Our findings suggest that the Italian translation of the PCBI may represent a reliable instrument and support its convergent and nomological network validity.
Keywords: Persistent complex bereavement inventory; Psychometric proprieties; Factor structure; Convergent validity; Nomological network validity

INTRODUCTION:

Prolonged Grief Disorder (PGD) is a condition recently recognized as a diagnosis in the Diagnostic and Statistical Manual of Mental Disorders 5, Text Revision (DSM-5-TR, American Psychiatric Association, 2022). It has been described as grief reaction that becomes abnormally persistent and causes significant impairment in daily functioning (Treml et al., 2020). This condition has been operationalized in different ways in the scientific literature such as pathological, traumatic, complicated persistent or prolonged grief (Treml et al., 2020). These definitions are characterized by a pervasive longing or yearning for the deceased or/and a persistent preoccupation with the deceased and by having trouble accepting the death or intense emotional pain (Prigerson et al., 2008). These symptoms are initially considered physiological after experiencing a significant loss, although some people continue to experience enduring problems (Balk et al., 2010). About 7%-10% of subjects who have suffered the loss of a loved one report severe, persistent, and disabling grief, resulting from failure in the transition from acute grief to high integrated acute mourning (Carmassi et al., 2016). The mourning process stops, not evolving towards the resolution that usually takes place over a period of 6-12 months (Carmassi et al., 2016; M. K. Shear et al., 2013; Zisook & Shear, 2009). This leads to an extension of the normal mourning process, in which the symptoms of the acute phase are amplified, crystallized and dysfunctional (Bui et al., 2015; Carmassi et al., 2014; Hall et al., 2014; Lombardo et al., 2014; Shear, 2012) and have negative effects on physical and mental health, strongly influencing the quality of life (Lombardo et al., 2014) and the functioning of the individual in several relevant areas (Zhang et al., 2006; Zisook & Shear, 2009).
Furthermore, previous studies have explored the nomological network of this clinical condition. Specifically, it seems that grief experience can be related to some sociodemographic factors such as circumstances of the death (violent death, death for illness, and sudden death) (Breen & O'Connor, 2007; Lombardo et al., 2014), closeness to the deceased loved one (Breen & O'Connor, 2007; Lombardo et al., 2014) and to insecure attachment style (Russ et al., 2024; Lombardo et al., 2014). Regarding the relationship between pathological grief and the circumstances of the death, some authors have showed that losing someone by sudden or violent death (for

example, by accident, homicide or suicide) can increase the risk for the development of grief symptoms (Boelen, 2021; Currier et al., 2006, 2015; Djelantik et al., 2017, 2020; Kristensen et al., 2012; Prigerson et al., 1997; Thomas et al., 2014). In particular, the experience of traumatic loss seems to result in complications during the process of mourning, preventing the individual from processing the meaning of death and leading to the integration of memories and disturbing images associated with the loss of the deceased loved one (Neimeyer et al., 2006). Furthermore, the closeness to the deceased one is associated with the grief process: the degree of kinship is linked to different experiences, determining different loss response profiles and different intensity of the reaction to the death (Fernández-Alcántara & Zech, 2017; Lombardo et al., 2014; Breen & O'Connor, 2007). The loss of a relative should be more complex to integrate into one's own identity, thus encouraging intrusive thoughts related to death and to the deceased one (Maccallum & Bryant, 2013).

One of the primary paradigms for the understanding of adjustment to grief is the attachment theory (Shaver & Fraley, 2008; Stroebe et al., 2005). The loss of a loved one through death is an event that triggers the activation of the attachment system, generating emotional and behavioral responses that help relieve distress by seeking closeness with others (Shaver & Fraley, 2008). The attachment theory perspective on "normative" bereavement focuses on the premise that the loss of a loved one, that is, an activate predictable responses for most people such as complaints, anger, attachment figure, will hopelessness, intense sadness, loneliness and withdrawal (Bowlby, 1980). Over time, individuals slowly adjust to the loss by maintaining a symbolic relationship with their deceased loved one, rebuilding their sense of security, and re-engaging with a new reality (Bowlby, 1980). Furthermore, according to Bowlby (1980), high levels of attachment anxiety may predict chronic mourning, which is characterized by overwhelming anxiety and sadness, prolonged difficulty in re-engaging with adaptive functioning and forming new relationships, preoccupation with the deceased, and difficulty in accepting the loss.Later studies have suggested that individuals with secure attachment style are more likely to use effective coping strategies following the death of a loved one (Collins & Feeney, 2004). Considering attachment style in peer relationships, anxiously attached individuals tend to experience chronic activation of the attachment system, leading to hyper-accessibility of thoughts of the deceased loved one which may perpetuate excessive yearning (Collins & Feeney, 2004; Sekowski & Prigerson, 2022; Mancini & Bonanno, 2012). Attachment avoidance, on the other hand, is proposed to underlie delayed grief whereby attachment-related thoughts and emotions are suppressed and urges to seek support are inhibited (Mikulincer & Shaver, 2016). Individuals high in attachment avoidance are thought to respond to grief with a de-activation of their attachment system, leading to a loss of access to thoughts and images of lost loved ones (Mikulincer et al., 2002). Moreover, they use behavioral avoidance to reduce the contact with emotions, thoughts, places or other stimuli associated with their loss (Collins & Feeney, 2004; Sekowski & Prigerson, 2022). Attempts to suppress painful thoughts following a bereavement are likely to fail to reduce distress in the long term, and suppressed pain may resurface when cognitive or emotional demands increase (Berant et al., 2008). Furthermore, a recent metanalytic study supported the association between pathological grief and anxious and avoidant adult attachment styles (Russ et al., 2024). Moreover, some evidence supports that individuals with disorganized attachment style may exhibit inconsistent or conflicting reactions and poor adjustment to the loss of a loved one. For example, they are aware of the death of the loved one while a sense of disbelief towards the loss remains (Bahm et al., 2017).

Examining and accurately assessing dysfunctional grief represents a relevant issue since previous studies have shown that these symptoms are not better explained by other psychopathologies such as depression, posttraumatic stress, and anxiety (Boelen, 2013; Boelen & Prigerson, 2007; Bonanno et al., 2007; Golden & Dalgleish, 2010; Spuij et al., 2012). Moreover, pathological grief predicted adverse mental and physical health outcomes (Boelen & Prigerson, 2007) such as somatic complaints, medical conditions, harmful health behaviors, low quality of life or suicidal ideation (Lee, 2015). PGD is associated to increased tobacco and alcohol use and a marked increase in risks for serious medical conditions such as heart disease, hypertension, cancer, immunological deficiency (Carmassi et al., 2016). Moreover, an increasing number of studies have shown high rates of disability and medication use in subjects who have suffered the loss of a loved one, compared to those who do not have experienced this event, in addition to increased mortality rates (Dell'Osso et al., 2011). Assessing PGD is also crucial to identify those in need of treatment. In order to reach this goal, reliable and valid assessment instruments for PGD are needed and over the past years a variety of tools have been developed (Treml et al., 2020). Since the PGD's diagnostic criteria changed over time, several assessment instruments have been developed based on different conceptualizations of the construct and clinicians are faced with the task to choose the most appropriate one. For example, Lee (2015) developed The Persistent Complex Bereavement Inventory (PCBI), a 16 - item self – report questionnaire based on Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5, American Psychiatric Association, 2013) criteria of Persistent Complex Bereavement Disorder (PCBD) which was included in the "Conditions for Further Study" section. The PCBI "was developed to facilitate research into the construct of PCBD (Lee, 2015, p. 399). Using exploratory and confirmatory factor analyses, Lee (2015) identified three factors (social/identity disruption, core grief and reactive distress) for PCBI items. In particular, the core grief dimension (items 1 – 4) evaluates DSM-5 PCBD criterion B while reactive distress (items 5 – 10) and social/identity disruption (items 11 – 16) assess criterion C (Lee, 2015). PCBI subscales showed sound internal consistency and test-retest reliability and were associated with symptoms of prolonged grief disorder and distinct from symptoms of depression, post-traumatic stress disorder, and separation anxiety (Lee, 2015). Moreover, Lee (2015) findings supported PCBI construct validity, and they showed its ability to predict relevant outcomes. For example, it predicted concurrent levels of distress impairment, and the social/identity disruption predicted future negative religious coping, harmful health behaviors, hallucinations, somatic complaints, medical conditions, and suicidal

ideation (Lee, 2015). This instrument represents a useful, reliable and easy to administer screening scale. Moreover, although this remains a hypothesis that requires dedicated validation, it seems to also cover the PGD symptoms since the DSM-5-TR diagnostic criteria were simplified and PGD diagnosis require fewer symptom combinations to meet the criteria compared with the PCBD diagnosis.

Starting from these considerations, the present study aims to evaluate the psychometric properties of the Italian version of the PCBI in a sample of bereaved community – dwelling adults. In particular, we investigated the internal consistency and the factor structure of the PCBI in order to test if the theoretical model of the item assignment to the scales fitted the original structure (Lee, 2015) also in its Italian translation. Next, we evaluated the convergent validity of the PCBI. Finally, we assessed the nomological network validity of the PCBI considering the associations with aspects theoretically related to the construct (circumstances of death and closeness with the deceased) and adult attachment style.

METHOD

Procedure

All participants volunteered to take part in the study after responding to online advertisements. Data were collected through an online survey. Participants completed a battery of instruments presented in a fixed order, carefully alternating questionnaires assessing similar constructs to minimize fatigue and response biases. At the beginning of the survey, participants were presented with a written informed consent section, which included a detailed explanation of the study and an explicit request for consent: only those who provided written informed consent could proceed with the survey. This was followed by a section including demographic questions (e.g., age, gender, educational level, occupation), and then by the psychometric instruments used in the study. The data collection took approximately 45 minutes, and, upon completion, all responses were automatically recorded by the platform. None of the participants received an incentive for participating. The study was conducted in line with the Helsinki Declaration of 1964, and its later amendments. Institutional Review Board of San Raffaele hospital approval was obtained (reference: #TREATEFFPD). Data participants were explicitly assured that their responses would remain completely anonymous, and no identifying information was collected at any stage of the research. Moreover, to avoid missing data, we used a forced-choice format. Participants were included in the study if they were 18 years of age or older and provided informed consent and if they had experienced a bereavement in the past 12 months in line with DSM-5-TR criteria.

Participants

The sample was composed by 318 community-dwelling adults; 239 (75.2%) were women and 75 (23.6%) were men, 4 (1.3%) participants did not answer. Participants' mean age was 36.9 years, SD = 17.97. The sample largely consisted of female participants; these data were in line with previous research suggesting that women tend to be more prone than men to respond to online surveys (see for example, Becker, 2022; Becker et al., 2019; Slauson-Blevins & Johnson, 2016). With respect to educational level, 8 (2.5%) participants reported primary school certificate, 20 (8.3%) junior high school degree, 134 (42.1%) participants reported high school degree, 136 (42.8%) participants reported university degree, and 20 (6.3%) participants reported post graduate education. The work profile of the sample was as follows: 129 (40.6%) students, 58 (18.2%) office workers, 48 (15.1%) self-employed professionals, 25 (2.7%) laborers, 23 (7.2%) unemployed, 21 (6.6%) retirees, and 12 (3.8 %) managers. Regarding marital status, 182 (57.2%) participants were single, 116 (38.5%) were married or cohabiting and 10 (3.1%) were widower. The deceased individuals were 135 (42.5%) grandparents, 75 (23.6%) parents, 38 (11,9%) siblings, 19 (6%) friend/significant other, 17 (5,3%) other significant relationship, 9 (2.8%) son/daughter, 8 (2.5%) spouse; finally, 17 (5.3%) participants did not report the type of relationship to the deceased person.

Measures

The Persistent Complex Bereavement Inventory (PCBI, Lee, 2015). The PCBI is a self-report questionnaire developed to evaluate the PCBD according to DSM-5 criteria. This scale consists of 16 items scored on a 5-point Likert-type scale ranging from "Not at all" to "Severely nearly every day."

The internal consistency of the original version was adequate (Cronbach's $\alpha = 0.92$) and test re-test reliability was moderate (test-retest reliability ICC = .67). Factor analyses yielded three factors: (1) core grief, (2) reactive distress, and (3), social/identity disruption. In the present study we translated the original version of PCBI into Italian. Following Denissen and colleagues' (2008) suggestions, equivalence with the original meaning of the items was the guiding principle in the translation process. After obtaining official permission, the PCBI was translated into Italian by one of the authors. Then, two coauthors reviewed the translation independently. After reaching a consensus, another author translated the Italian version back into English. If the latest version differed from the English original, the first author, the second author, came to an agreement on the definitive Italian translation.

Inventory of Complicated Grief (ICG, Prigerson et al.,1995). The ICG was developed to assess symptoms of pathological grief. The ICG consists of 19 items rated on a five-point Likert scale ranging from "Never" to "Always". The original version of the scale showed sound psychometric properties: the Cronbach's α coefficient was .94 and test-retest reliability was .80 (Prigerson, et al., 1995). Also, the Italian version of ICG showed adequate internal consistency (Cronbach's α=.95). In the present study, the Cronbach's α coefficient of the ICG scale was .93 (average inter-item r = .42).

Attachment Style Questionnaire (ASQ, Feeney et al. 1994). The ASQ is a 40-item questionnaire developed to measure five dimensions of adult attachment and is composed of five scales: Confidence in Self and Others (8 items), Discomfort with Closeness (10 items), Relationships as Secondary (7 items), Need for

Approval (7 items), and Preoccupation with Relationships (8 items). Items were scored on a 6-point Likert-type scale ranging from "Totally disagree" to "Totally agree." For each subscale, the participant's total score is obtained by adding up the items that make up that scale. Discomfort with Closeness is a central theme to Hazan and Shaver's (1987) conceptualization of avoidant attachment, whereas Relationships as Secondary is consistent with Bartholomew's (1990) concept of dismissing attachment. Need for Approval reflects respondents' needs for acceptance and confirmation from others and characterizes Bartholomew's (1990) fearful and preoccupied groups. Preoccupation with Relationships, which involves an anxious and dependent approach to relationships, is a core feature of Hazan and Shaver's (1987) original conceptualization of anxious/ambivalent attachment. Finally, Confidence in Self and Others reflects a secure attachment orientation. Reliability and validity data have been provided for both English (Feeney et al., 1994) and Italian (Fossati et al., 2003) versions of the ASQ.

Circumstances of death. Single items were written to assess the circumstances of death. Participants were asked to report if the deceased person died for illness, sudden death or violent death.

Closeness to the deceased. A single item was written to evaluate the degree of closeness the participant felt toward the deceased ranging from 0 (Not at all) to 4 (Extremely). Closeness to the deceased was assessed by the question "How close were you to the deceased?".

Data Analysis

Inter-item correlations and Cronbach's coefficient alphas were used to evaluate the internal consistency reliability of the PCBI total score.

Following Booth and Hughes' (2014) suggestions, we used weighted least square mean and variance corrected (WLSMV) confirmatory factor analysis (CFA) to examine the a priori three-factor model of the PCBI items (Lee, 2015). In order to assess model fit, we calculated Root Mean Square Error of Approximation (RMSEA), Tucker–Lewis Index (TLI) and Comparative Fit Index (CFI) in addition to goodness-of-fit chi-square test.

Additionally, we conducted a WLSMV confirmatory bifactor analysis to determine whether the correlations among the PCBI items could be explained by a general factor representing shared variance across all items, along with a set of group factors where the variance beyond the general factor was shared among subsets of items assumed to be highly similar in content (Reise, 2012). The general factor represents the broad central construct that PCBI measures, whereas group factors represent more conceptually specific subdomain constructs.

To evaluate the effect of circumstances of death on PCBI score, we performed a one-way ANOVA followed by Games–Howell post-hoc test that does not assume population variances are equal or that sample sizes are equal. Pearson's correlation analysis was used to calculate the association between PCBI total score and closeness to the deceased, and the associations between PCBI total score and the ICG total score. Moreover, we performed Pearson's correlation analysis between PCBI total scores and ASQ in order to identify the predictors to be entered in the regression model. The nominal significance level (i.e., $p < 0.05$) was corrected according to the Bonferroni procedure for multiple comparisons. Finally, we performed a linear regression model entering the ASQ scales as predictors and the PCBI total score as dependent variable. Multicollinearity was tested using variance inflation factors (VIFs), with 2.5 or higher used as a cut-off for identifying multicollinearity that could negatively impact the regression models (Midi et al., 2010). To identify eventual first-order linear autocorrelations, Durbin-Watson values were computed: values between 1.5 and 2.5 were considered acceptable.

RESULTS

PCBI Descriptive Statistics and Internal Consistency Analyses

PCBI descriptive statistics, Cronbach's alpha value, item analyses are listed in Table 1.

TABLE 1 The Persistent Complex Bereavement Inventory: Cronbach's α and average inter-item correlation values, descriptive statistics, and item-total correlations corrected for part – whole overlap (N = 318).

PCBI items		*M*	*DS*	$r_{i\text{-}t}$
1.	Felt a constant longing or yearning for the deceased.	2.16	1.27	.69
2.	Felt intense sorrow and emotional pain because of the loss.	2.61	1.20	.67
3.	Preoccupied with the deceased.	1.53	1.35	.65
4.	Preoccupied with the circumstances of the death.	1.73	1.41	.62
5.	Found it extremely difficult to accept the death.	2.03	1.45	.78
6.	Experienced disbelief or emotional numbness over the loss.	1.96	1.40	.78
7.	Found it difficult to have positive memories about the deceased.	.74	1.15	.41
8.	Felt bitter or angry over the loss.	2.09	1.44	.72
9.	Had negative thoughts about yourself in relation to the deceased or the death (e.g., self-blame).	1.12	1.34	.59
10.	Avoided anything that reminded you of the loss.	.84	1.20	.45
11.	Wished to die in order to be with the deceased.	.40	.97	.58
12.	Found it difficult to trust others because of the loss.	.54	1.06	.63
13.	Felt alone or detached from others because of the loss.	1.17	1.32	.76
14.	Believed that without the deceased, life was either meaningless, empty, or could not go on.	.82	1.27	.74

15. Experienced confusion over your role in life or felt like your identity was diminished because of the loss.	1.12	1.33	.78
16. Experienced difficulty or reluctance to pursue interests or planning for the future because of the loss.	.95	1.30	.74
PCBI Total score	1.36	.91	
PCBI Cronbach's a (average inter-item r)	.93 (.47)		

Notes. PCBI: The Persistent Complex Bereavement Inventory; average inter-item r: average inter-item correlations; *ri-t*: item-total correlation corrected for part-whole overlap.

Confirmatory Factor Analysis

A single-factor model which tested one factor model of PCBI items showed poor model fit (WLSMV CFA $\chi^2(104) = 632.496$, $p < .001$, RMSEA = 0.13, 90% confidence interval = .117 to .136, CFI = .95, TLI = .94). The a-priori three-factor model of the PCBI items showed an improved fit but it was still not satisfactory: WLSMV CFA $\chi^2(101) = 377.700$, $p < .001$, RMSEA = 0.09, 90% confidence interval = .083 to .103, CFI = .98, TLI = .97. Finally, we considered a three-factor model with correlated errors. In particular, we allowed to correlate error terms according to Lee (2015) data. Specifically, Lee (2015) considered the items pairs that shared similar content and wording: item 1and 2, 3 and 4, 5 and 10, 7 and 8, 11 and 14 and 13 and 16. This modified three-factor model presented acceptable fit (WLSMV CFA $\chi^2(95) = 249.108$, $p < .001$, RMSEA = 0.07, 90% confidence interval = .061 to .082, CFI = .99, TLI = .98. All PCBI items showed substantial (i.e. greater than .30 in standardized value) and significant factor loadings on the factors to which they were assigned (Figure 1).

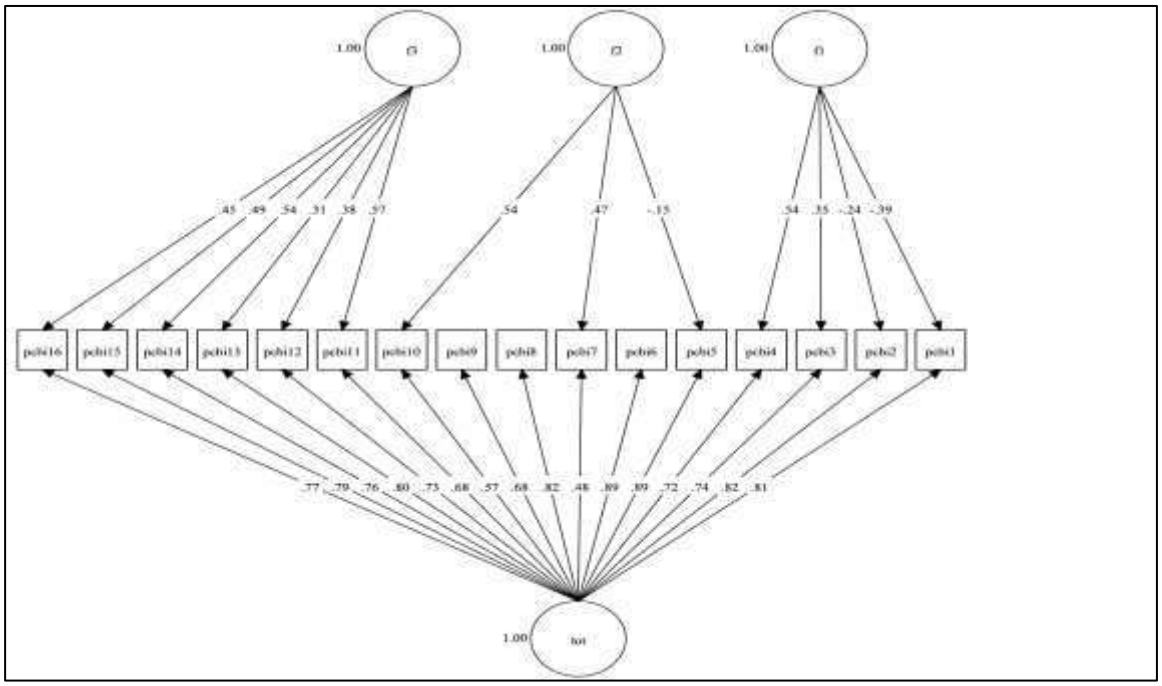

FIGURE 1 Modified three-factor confirmatory factor analysis model based on weighted least square mean and variance corrected (WLSMV) (N= 318).

Notes. F1: Core Grief; F2: Reactive Distress; F3: Social Identity Disruption. All parameters are standardized. All $p_s < .001$.

Bifactor Confermatory Model

The three factors were substantially and significantly correlated; the correlations coefficients were .99 between Factor 1 and Factor 2, .86 between Factor 2 and Factor 3 and .90 between Factor 1 and Factor 3, all $p_s < .001$, respectively (see Figure 1). Thus, we performed a bifactor model in which the PCBI items were assigned to three factors based on the a priori item-to-scale assignment. The bifactor model (see Figure 2) showed satisfactory goodness-of-fit indices: χ^2 (88) = 244.756, $p < .001$, RMSEA = .075, 90% confidence interval for RMSEA = .064 to .086, TLI = 0.98, CFI = .99, SRMSR = .043. With regard to the reliability of the general factor, the omega coefficient value for the general factor was .79; the general factor explained 79% of the common variance. The omega coefficients of the three specific factors, which estimate the proportion of reliable variance in the subscale that is independent of the general factor, were low: .007 for Core Grief, .024 for Reactive Distress and .269 for Social-Identity Disruption factors respectively.

Data concerning variances showed a very similar pattern: the general factor accounted for 79% of the common variance, the specific factors accounted for only 5%, 5% and 11% of the common variance for Core Grief/Reactive Distress/Social-Identity Disruption factors respectively.

Since the bifactor model showed a satisfactory fit, in the following analyses we relied on the PCBI total score.

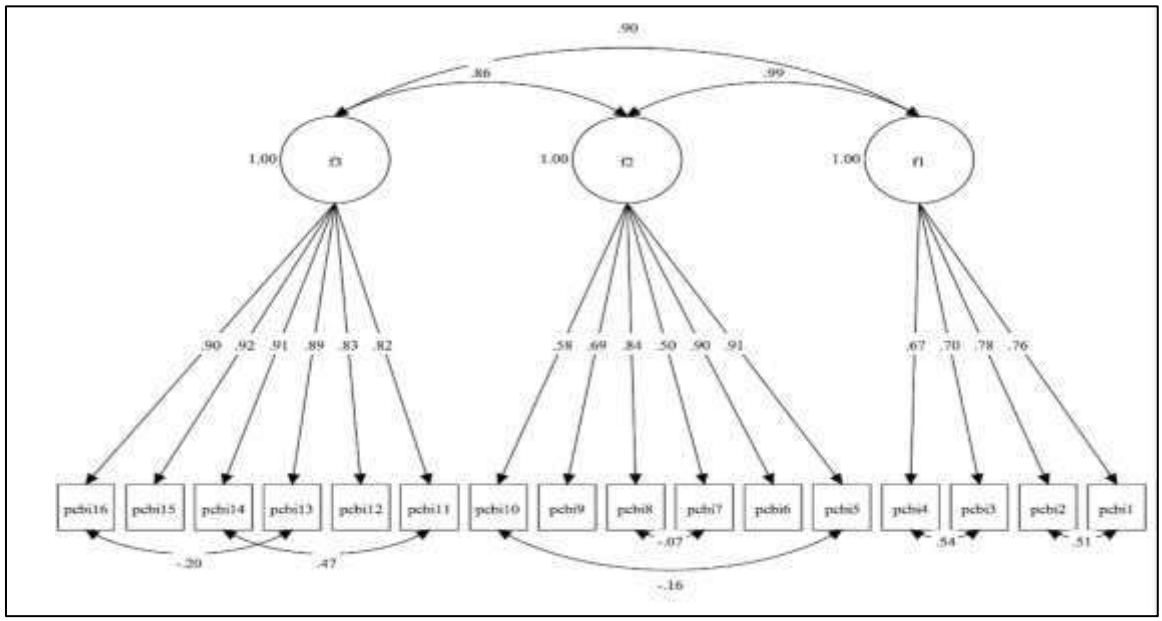

FIGURE 2 Bifactor model of Persistent Complex Bereavement Inventopry items (N= 318).
Notes. Items 6,8 and 9 of PCBI showed significant loading only on the general factor. F1: Core Grief factor; F2: Reactive Distress; F3: Social Identity Disruption. All parameters are standardized.

Associations with measures theoretically related to the construct of PCBI

The ANOVA analysis showed significantly different total PCBI scores among illness, sudden death and violent death: $F(2.317) = 4.934$, $p<.01$, $\eta^2 = .03$ In addition, post-hoc Games–Howell pairwise comparisons indicated that the mean total PCBI score was significantly higher for those who have suffered a loss for violent death than for those who have lost someone due to illness (M = 1.88, DS=1.08 for sudden death and M = 1.30, DS= .856 for illness, $p<.05$). No statistically significant differences emerged between death for illness and sudden death and between sudden death and violent death.
Moreover, the PCBI total score showed a positive and significant association with the closeness to the deceased: $r = .40$, $p< .001$.

Convergent Validity

The average score of the ICG scale was 20.69, SD = 15.79. Cronbach's α value for the ICG scale was .93.
The PCBI total score showed a large and significant correlation with the ICG scale score, $r = .84$, $p< .001$.

Associations between PCBI and ASQ

The descriptive statistics and internal consistency reliability of ASQ scales and the correlations between ASQ scales and PCBI total score were summarized in table 2. The PCBI total score showed significant and positive correlations with all ASQ insecure attachment scales. When we carried out a regression model that considered the ASQ scales as predictors and PCBI total score as dependent variable, Discomfort with Closeness ($\beta = .27$, $p < .001$) and Preoccupation with the Relationship ($\beta = .20$, $p < .01$) significantly predicted the PCBD symptoms. The model explained the 16% of the variance (adjusted $R^2 = .16$, $p <.001$); VIF values ranged from 1.52 (Discomfort with Closeness) to 1.98 (Need for Approval) indicating no collinearity problem. Also, all the Durbin-Watson values were between the two critical values of $1.5 < d < 2.5$, showing that there was no first order linear autocorrelation in our multiple linear regression data.

TABLE 2 Descriptive Statistics, Internal Consistency Reliability and Pearson Correlation Coefficient Values for Attachment Style Questionnaire, Age and The Persistent Complex Bereavement Inventory (N=318).

				Age	PCBI Total Score
ASQ Scales	*M*	*SD*	*α*	*Pearson r*	*Pearson r*
Confidence in Self and Others	29.22	6.93	.66	.11	-.17
Discomfort with Closeness	37.92	9.39	.69	-.12	.37*
Relationships as Secondary	14.87	5.90	.79	-.01	.24*
Need for Approval	20.40	7.96	.84	-.18*	.22*
Preoccupation with Relationships	27.84	9.97	.84	-.16*	.30*

Notes. ASQ: Attachment Style Questionnaire; PCBI: The Persistent Complex Bereavement Inventory. *α:* Cronbach's alpha. The nominal significance level ($p<0.05$) was corrected according to the Bonferroni procedure and set to $p<0.008$.

DISCUSSION

The present study aimed to evaluate the psychometric properties: of the Italian version of the PCBI. Confirming and extending previous findings (Lee, 2015), the PCBI seemed to be a reliable self-report instrument to assess dysfunctional grief in a sample of Italian community-dwelling adults.

Considering the internal consistency, the Cronbach's α value of PCBI total score was sound also in the Italian translation of the scale (i.e., .93) and in line with the value reported in Lee's study (2015) (i.e., 92). Moreover, in our sample, all PCBI items performed well in terms of item-total correlations (corrected for part-whole overlap). Confirmatory factor analyses supported the three-factor model with correlated errors of the PCBI (Lee, 2015). However, Lee (2015) found that when he respecified the three-factor model using correlated errors, the model was only within the adequate range of global fit and suggested that further research should clarify this issue. Unlike Lee's study, in our sample we found that the three factors were highly correlated; thus, we performed a confirmatory bifactor model. The bifactor model results showed that the general factor including a general bereavement factor and three specific factors presented the best fit to the data. The reliability of the latent PCBI factors showed that the general factor had strong reliability estimates while omega hierarchical coefficients for the three specific PCBI factors were very low, and they did not support individual interpretation of these subscales. Moreover, the results concerning variances showed a similar pattern: the specific factors did not make a strong contribution to the measurement of PGD. Taken together, our findings support using the PCBI total score rather than subscale scores. These results seem consistent with the DSM-5-TR conceptualization of PGD which does not include a division of symptoms into clusters.

Regarding the convergent validity of PCBI, in our study the PCBI total score showed a positive and significant correlation with the ICG score with a large effect size (Cohen, 1988). These findings, consistent with Lee's results (2015), support the convergent validity of the PCBI as a measure of grief symptoms with respect to the Italian version of a widely used self-report that assessed pathological grief (Carmassi et al., 2014; Prigerson et al., 1995). When we explored the nomological network of PCBI we found that in our sample, in line with previous studies (Breen & O'Connor, 2007; Stroebe et al., 2007), the experience of grief seems to be associated with several factors related to the construct of PGD. PCBI total score is associated with the closeness to the deceased and with the circumstance of death. Our findings suggest that individuals who have suffered a loss for violent death showed significantly higher PCBI mean scores than those who have lost someone due to illness. These results are consistent with Lee's (2015) data on the validity of PCBI and supported previous studies suggesting that the circumstances of the death contribute to the differences in the grieving process (Stroebe et al., 2007). In line with our data, some authors have showed that losing someone by sudden or violent death (for example, by accident, homicide or suicide) can increase the risk for the development of grief symptoms (Boelen, 2021; Djelantik et al., 2017, 2020; Kristensen et al., 2012; Prigerson et al., 1997; Thomas et al., 2014) and prevent the individual from processing the meaning of the death (Neimeyer et al., 2006). In addition, the closeness to the deceased can determine different loss response profiles and different intensity of the reaction to the death (Fernández-Alcántara & Zech, 2017; Lombardo et al., 2014; Breen & O'Connor, 2007). Considering the associations between pathological grief and adult attachment style, in the present study PCBI total score showed significant associations with all ASQ insecure attachment scales. Moreover, Discomfort with Closeness and Preoccupation with Relationships significantly predicted PCBI total score, suggesting that adult insecure attachment style may act as a potential vulnerability factor following a bereavement. Evaluating the relationship between insecure attachment and PGD represents a relevant issue to examine the nomological network validity of the PCBI since attachment theory is considered one of the primary paradigms for understanding adjustment to grief (Russ et al., 2024; Shaver & Fraley, 2008; Stroebe et al., 2005). Moreover, some authors have suggested considering the attachment theory in therapeutic interventions for PGD (Shear & Shair, 2005). Indeed, the loss of a loved one triggers the activation of the attachment system, giving rise to emotional and behavioral responses to relieve distress (Russ et al., 2024) and according to Bowlby (1980) insecure attachment can compromise the grief process. In particular, Bowlby (1980) proposed that individuals with insecure attachment style are more likely to experience pathological grief as this relational style interferes with the ability to adaptively seek social support. Individuals with an anxious attachment style tend to hyper-activate the attachment system, thus leading to hyper-accessibility of thoughts of the deceased person which may maintain the intense longing (Mancini & Bonanno, 2012). Individuals characterized by an avoidant attachment style may deal with the loss by deactivating the attachment system, forgoing support seeking (Mikulincer & Shaver, 2016) and losing access to thoughts and images of the deceased (Mikulincer et al., 2002). However, these strategies do not work in the long term and pain may reemerge (Berant et al., 2008), increasing the risk of developing grief symptoms. Moreover, in a recent systematic review, Russ and colleagues (2024) observed that higher levels of attachment anxiety and avoidance were consistently associated with symptoms of dysfunctional grief. Our data are in line with current literature on pathological grief and attachment showing that both adult avoidant attachment style and an anxious and dependent approach to relationships, a core feature of anxious/ambivalent attachment, predict higher levels of PGD symptoms, at least in a sample of Italian community – dwelling adults.

Our data may present relevant clinical implications for the assessment of grief symptoms. PCBI represents a reliable and useful screening instrument to identify potential individuals with pathological grief. It is important to highlight that PCBI does not provide a cut – off or a diagnostic algorithm to diagnose grief symptoms (Treml et al., 2020). A review by Treml and colleagues (2020) suggested to carry out additional testing after positive screening to evaluate a formal clinical diagnosis of PGD. As a whole, the results of the present study support the relevance of a standardized assessment of PGD to design a treatment tailored on the specific features of each bereaved individual.

These results should be considered in the light of several limitations. We recruited a convenience sample of community–dwelling adults who volunteered to participate in the study and it cannot be considered a representative sample of the Italian population. Moreover, our findings may not be generalizable to clinical samples. Most of the sample was composed by females and this limits the generalizability of our results. Further studies are needed to replicate our findings in more balanced sample although some evidence suggest that female gender increases the risk of pathological grief (Lombardo et al., 2014; Tomarken et al., 2008). Finally, we carried out a cross - sectional study that did not allow us to test any causal models. We relied only on self-report questionnaires; method effects may have spuriously biased our findings.

Even keeping these limitations in mind, our findings suggest that the Italian translation of the PCBI may represent a reliable instrument which is able to assess the symptoms of grief symptoms. Moreover, our results seem to support the convergent and nomological network validity of the Italian version of PCBI.

DECLARATION OF CONFLICTING INTERESTS

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon request.

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