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Risk factors of prolonged grief after the loss of a loved one

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1. INTRODUCTION

1.1. Theoretical concept of prolonged grief

Grief is one of the most painful experiences in a person's life (Holmes & Rahe, 1967), but also one of the most universal. Grief is a natural, mostly emotional reaction to a loved one's death, which can manifest in various behavioral, cognitive, and physiological forms (M. S. Stroebe et al., 2016). While grieving can be extremely painful, most bereaved individuals slowly readjust to a life without the deceased and gradually, over time, go back to pre-loss functioning levels (Bonanno et al., 2002; Maciejewski et al., 2007). However, around 10% of individuals struggle with adjusting to the loss, and the intensity of their grief-related distress does not decrease with time (Lundorff et al., 2017; Maciejewski et al., 2007).

These prolonged grief reactions were for the first time included in the 11th edition of the International Classification of Diseases (ICD-11) as prolonged grief disorder (World Health Organization, 2018). Prolonged grief disorder is defined by the symptoms of persistent or pervasive yearning or preoccupation with the deceased, accompanied by intense emotional pain (e.g., sadness, guilt, anger, difficulty accepting the loss, an inability to experience positive mood, emotional numbness, difficulty in engaging with social or other activities) (World Health Organization, 2018). These symptoms have to last at least 6 months after a loss and impair functioning in important areas of an individual's life (World Health Organization, 2018). Grief reactions and grieving period have to be considered in the context of a person's social, cultural, and religious background (World Health Organization, 2018).

Although the inclusion of prolonged grief disorder in the ICD-11 has been criticized by some experts (Wakefield, 2012), empirical studies suggest that prolonged grief reactions occur in about 10% of individuals after a significant loss (Lundorff et al., 2017) and are associated with severe long-term psychological, adjustment, and

functional difficulties (Bonanno et al., 2007; Prigerson et al., 2008). While most individuals experiencing grief adapt to the loss over time without additional psychological interventions, individuals with prolonged grief need psychological intervention to help them return to normal functioning (Bonanno & Lilienfeld, 2008; Currier, Neimeyer, et al., 2008; Wittouck et al., 2011). Research examining the risk factors and mechanisms of prolonged grief is needed to expand existing knowledge about this new disorder, as well as to develop and provide the most efficient psychological interventions.

1.2. Lithuanian sociocultural context of prolonged grief

This doctoral dissertation is one of the first studies to analyze prolonged grief in Lithuania. To our knowledge, the only previous study conducted in Lithuania in which prolonged grief reactions were measured was conducted by Geležėlytė (2019). However, prolonged grief reactions in the study were only measured among other factors without the comprehensive analysis of the prolonged grief reactions and their risk factors, and in the specific sample of people bereaved by suicide. One of the criteria for diagnosing prolonged grief disorder in the ICD-11 is the assessment of grief reactions in the individual's cultural context (World Health Organization, 2018). Therefore, it is important to assess the cultural traditions of grieving and mourning in Lithuania, as well as other cultural factors that might influence grieving reactions. Based on ethnographic studies, it can be stated that the mourning traditions in Lithuania do not differ significantly from the mourning traditions of other European Catholic countries (Garnevičiūtė, 2012; Račiūnaitė-Paužuolienė, 2014). However, several studies have been conducted in Lithuania which found that part of the population feels the negative psychological consequences of the Soviet regime, which may manifest as a psychological vulnerability (Gailienė, 2015; Gailienė & Kazlauskas, 2004; Gudaitė, 2014; Kazlauskas & Zelviene, 2016). There might be some psychological

vulnerability in the population that may lead to more difficult adjustment after losing a loved one. Although there does not seem to be any direct cultural factors that could significantly affect the prolonged grief reactions, there is still a need to further research the prolonged grief reactions in the Lithuanian sample. The aim of this doctoral dissertation is for the first time to extensively evaluate prolonged grief reactions and their risk factors in the Lithuanian sample. The analysis of prolonged grief reactions and their risk factors in the Lithuanian sample is important because it would allow comparison of prolonged grief reactions patterns in Lithuania with the ones found in other countries and would provide more empirical evidence about the cross-cultural nature of prolonged grief or would give an insight of the possible cultural differences.

1.3. Risk factors of prolonged grief

Intrapersonal psychological risk factors model of prolonged grief.

To date, there are several established theories explaining prolonged grief. Especially important in the field are attachment theory, the dual process model of grief, meaning reconstruction theory, cognitivebehavioral conceptualization of grief, and personality traits theory (Boelen et al., 2006; Bowlby, 1980; McCrae & Costa, 2003; Neimeyer, 2001; M. S. Stroebe & Schut, 1999). All of these theories present different main individual psychological risk factors creating or leading to vulnerability for prolonged grief. Research conducted within the framework of a specific theory provides empirical evidence for a particular theory or the risk factors and mechanisms identified by that theory. M. S. Stroebe et al. (2006) identified the problem that none of the current theories of grief and their described risk factors can fully explain the prolonged grief reactions and suggested studies of prolonged grief should move toward integrating different risk factors into one model. It is important to conduct studies in which risk factors are not studied in isolation from other factors, but should include risk

factors identified in different theories as well as important interpersonal, loss related, and other factors (M. S. Stroebe et al., 2006). The aim of this doctoral thesis is to combine the risk factors of prolonged grief identified in different theories and found in previous research, and to analyze them in one model to assess which of the risk factors have the strongest links with prolonged grief. Based on the literature and research of prolonged grief, the following main risk factors have been identified and included in this study.

Attitudes toward death. In the prolonged grief literature, quite a lot of attention has been focused on meaning reconstruction theory and the importance of death meaning integration in the personal worldview (Holland et al., 2006; Lichtenthal et al., 2013; Milman et al., 2019; Neimeyer, 2019; Rozalski et al., 2017). It is theorized that a person's worldview is important for the reconstruction of the meaning, as it can facilitate or complicate the integration of a loss (Bonanno et al., 2002; Currier et al., 2009; Mancini et al., 2011). However, there is surprisingly little research on how personal attitudes toward death, like fear of death and the acceptance of death as a neutral, natural process of life, are associated with prolonged grief reactions (Barr & Cacciatore, 2008; Bonanno et al., 2002; Boyraz et al., 2015). This study aims to evaluate how neutral acceptance of death and fear of death are associated with prolonged grief reactions.

Insecure attachment styles. Attachment theory is one of the most important and established theories explaining grief reactions (Bowlby, 1980; Fraley & Shaver, 1999; Shear & Shair, 2005). According to attachment theory, individuals with anxious attachment would be extremely emotional and preoccupied after a loss and would be at risk for prolonged grief (M. S. Stroebe et al., 2005). In contrast, individuals with an avoidant attachment would suppress and avoid their emotions, and would not show strong overt grief reactions (M. S. Stroebe et al., 2005). Research shows consistent evidence that insecure attachment is associated with prolonged grief reactions (Boelen & Klugkist, 2011; Huh et al., 2017; Jerga et al., 2011; Maccallum & Bryant, 2018). However, previous studies found that both of these insecure

attachment styles were associated with stronger grief reactions (Boelen & Klugkist, 2011; Boelen & van den Bout, 2010; Wijngaardsde Meij et al., 2007). Several studies found that prolonged grief symptoms had a higher association with avoidant attachment than with anxious attachment (Boelen & Klugkist, 2011; Huh et al., 2017; van der Houwen, Stroebe, Schut, et al., 2010). Although previous studies confirm the link between insecure attachment and prolonged grief, the empirical evidence of how both insecure attachment styles are associated with prolonged grief remains contradictory.

Neuroticism. Personality traits have often been addressed in prolonged grief research. Among personality traits, neuroticism stands out as a possible risk factor for grief complications. Neuroticism, also known as negative emotionality, is defined as a person's proneness to experience unpleasant and disturbing emotions, as well as high sensitivity to stress (McCrae & Costa, 2003). Neuroticism is strongly associated with various psychological vulnerability factors and is a risk factor for psychological disorders, such as anxiety disorders and depression (Kotov et al., 2010; Ormel, Jeronimus, et al., 2013). Indeed, it also has been found that neuroticism consistently emerged as a risk factor of prolonged grief in previous research (Goetter et al., 2019; Robinson & Marwit, 2006; van der Houwen, Stroebe, Schut, et al., 2010; Wijngaards-de Meij et al., 2007). Although neuroticism has been found to be associated with prolonged grief reactions, the mechanisms that explain this relationship are still not fully understood.

Emotion regulation difficulties. Several theories of prolonged grief mention difficulties regulating emotions as one of the possible mechanisms of the prolonged grief. Most research on emotion regulation has been conducted in the framework of cognitive-behavioral theory of grief (Boelen et al., 2006). Therefore, associations between specific emotion regulation strategies and prolonged grief have most often been analyzed (Eisma et al., 2015; Eisma & Stroebe, 2017, 2020; Lenferink et al., 2017; Morina, 2011). However, during the bereavement process, coping strategies evolve and fluctuate with time, so researching only specific universally

adaptive or maladaptive coping strategies might have limitations in prolonged grief research (Bonanno & Burton, 2013). In the dual coping model of grief (M. S. Stroebe & Schut, 1999, 2010), authors emphasize that the continued fluctuation between coping directed to confronting and processing of the loss, and avoidant coping to relieve the pain of the loss in order to attend to the ongoing demands of life, is the key mechanism for healthy adjustment. Disturbances in this oscillation is the main mechanism of prolonged grief (M. S. Stroebe et al., 2005). Broader emotion regulation difficulties might impair the effective fluctuation and implementation of different coping strategies, thereby leading to prolonged grief. However, associations between broader emotion regulation abilities and prolonged grief have been scarcely researched (Burton et al., 2012; Gupta & Bonanno, 2011; Knowles & O'Connor, 2015).

In this study, we are aiming to analyze the association between prolonged grief reactions and broader emotion regulation difficulties, defined by Gratz and Roemer (2004) as difficulties with awareness, understanding, and acceptance of one's emotions, difficulties to control impulsive behaviors and to behave in accordance with desired goals when experiencing negative emotions, and difficulties to use situationally appropriate emotion regulation strategies. These difficulties of emotion regulation have not been previously studied in the context of prolonged grief; therefore, this doctoral dissertation research would bring significant new empirical knowledge to the field of emotion regulation research in the context of prolonged grief, which has so far been dominated by studies of emotion regulation strategies.

Sociodemographic factors. Empirical studies of prolonged grief have shown that certain sociodemographic factors are associated with a higher risk of prolonged grief. Some studies have found that women experience stronger grieving reactions and are at higher risk for prolonged grief disorder (Burke & Neimeyer, 2013; Kersting et al., 2011; Morina et al., 2010). Also, a review of the empirical literature (Burke & Neimeyer, 2013) found that age was often a significant risk factor. It has also been found that lower education and lower income

may be risk factors for prolonged grief (Burke & Neimeyer, 2013; Kersting et al., 2011). Previous research shows ambiguous links between religion and prolonged grief (Brown et al., 2004; Hebert et al., 2007).

Loss related factors. There is strong empirical evidence that the circumstances of a loved one's death are critically important risk factors of prolonged grief. Burke and Neimeyer (2013) found in a literature review that in 39.0% of studies the cause of death was related to the intensity of grief. Some studies have also shown that unexpected, sudden death is associated with an increased risk of prolonged grief (Burke & Neimeyer, 2013; Lobb et al., 2010). The subjective closeness of the former relationship, losing a member of the nuclear family, and previous high dependence on the deceased spouse were also found to be important risk factors of prolonged grief (Burke & Neimeyer, 2013; Lobb et al., 2010).

Social support. Grief researchers often theorize about the importance of social support after a loss and associate resilience after a loss with the presence of a strong social network (Hibberd et al., 2010; Logan, Thornton, & Breen, 2018). However, studies have found mixed results (Boulware & Bui, 2016; Burke et al., 2010; Heeke et al., 2017; W. Stroebe et al., 2005; Wågø et al., 2017).

A dissertation study covering all of these factors could significantly contribute to a better and more integrated understanding of prolonged grief risk factors. The scheme of the model analyzing prolonged grief risk factors is shown in Figure 1.

1.4. The mediating role of emotion regulation difficulties between neuroticism, insecure attachment, and prolonged grief

This study also aims to answer whether emotional regulation difficulties may be a mechanism that explains the links between neuroticism and insecure attachment styles and prolonged grief reactions. Although there is empirical evidence that neuroticism and insecure attachment are risk factors of prolonged grief (Boelen & Klugkist, 2011; Maccallum & Bryant, 2018; Wijngaards-de Meij et al., 2007), the mechanisms by which these factors lead to prolonged grief are not fully understood. In the dual coping model of grief and attachment theory, insecure attachment is associated with difficulty regulating emotions (Shaver & Mikulincer, 2007; M. S. Stroebe et al., 2005). Neuroticism is also associated with less adaptive coping and emotion regulation (Ormel, Bastiaansen, et al., 2013). Some empirical studies also confirmed that neuroticism and insecure attachment are associated with difficulties in regulating emotions (Marganska et al., 2013; Paulus et al., 2016; Shaver & Mikulincer, 2007). Emotion regulation difficulties may be a common factor explaining the links between these intrapersonal factors and prolonged grief. Previous research has found that certain emotion regulation strategies have, in fact, at least partially mediated the association of neuroticism and insecure attachment with prolonged grief (Eisma et al., 2015; Morina, 2011; van der Houwen, Stroebe, Schut, et al., 2010). However, the potential mediating role of broader emotion regulation difficulties in explaining the link between neuroticism and insecure attachment to prolonged grief has not been explored to date.

1.5. Links between the risk of prolonged grief and depression

The loss of a loved one is associated not only with the risk of prolonged grief, but there is also an increased likelihood for other psychological disorders, especially depression (Onrust & Cuijpers, 2006). Studies have found that although these disorders have distinct structures (Boelen et al., 2010; Bonanno et al., 2007; Robinaugh et al., 2014), they often co-occur after the loss of a loved one (Bonanno et al., 2007; Neria et al., 2007). Although several studies have sought to single out which risk factors differentiate between the risk of

prolonged grief and depression, the results are not consistent (Boelen, 2013; Boelen, Reijntjes, Djelantik, et al., 2016; Boelen & van den Bout, 2010; Buqo et al., 2020; Morina, 2011). Knowledge of the two disorders' shared and specific risk factors would help to better understand the specificity of prolonged grief and to understand which risk factors are possibly related to the more general psychological vulnerability after the loss of a loved one. This dissertation study aims to assess what proportion of people at risk for prolonged grief are also at risk for depression and how risk factors of these two groups differ.

1.6. Aims and objective of doctoral dissertation

The aim of this study is to evaluate the prolonged grief reactions after the loss of a loved one and to identify the risk factors significantly associated with prolonged grief reactions.

Objectives of the study:

- 1. To evaluate prolonged grief reactions and the structure of prolonged grief disorder in the study sample.
 - 2. To identify risk factors predicting prolonged grief reactions.
- 3. To evaluate a mediation model in which emotion regulation difficulties mediate the associations between insecure attachment styles, neuroticism, and prolonged grief reactions.
- 4. To evaluate the overlap of the prolonged grief risk group with the risk group of depression and compare the risk factors of both groups.

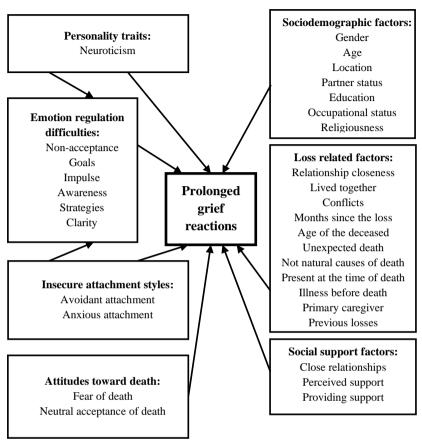


Figure 1. The prolonged grief risk factors model analyzed in the study

2. METHODS

2.1 Procedure and participants

The final sample consisted of 240 bereaved adults (85.2% women), age of the participants ranged from 19 to 92 years, with a mean of 42.43 (SD=17.58). Participants' demographic characteristics are presented in Table 1.

Table 1. *Participants' demographic characteristics* (N = 240)

Gender, n (%)		
Men	35 (14.8%)	
Women	202 (85.2%)	
Age, $M(SD)$	42.43 (17.58)	
Location		
Urban	208 (86.7%)	
Rural	32 (13.3%)	
Marital status		
Married/cohabitating	132 (55.9%)	
Single	45 (19.1%)	
Divorced	28 (11.9%)	
Widow/Widower	31 (13.1%)	
Education, n (%)		
University degree	164 (68.3%)	
Professional college	40 (16.7%)	
University student/unfinished university	18 (7.5%)	
High school	15 (6.3%)	
Less than high school	3 (1.3%)	
Religious	174 (72.5%)	

Information about participants' experienced loss circumstances is presented in Table 2. On average, participants have experienced the loss before 32.31 months (SD = 19.94; from 6 to 72 months). The majority of the participants (65.5%) have experienced a loss less than 37 months ago. About half of participants (55.8%) experienced the loss of a nuclear family member (parent, sibling, spouse, or child).

The study was approved by the Psychological Research Ethics Committee of Vilnius University. Data for the study were collected

between November 2018 and October 2019. The inclusion criteria were the following: 1) participant's age \geq 18 years, 2) a participant experienced the death of a close person, 3) the time passed since the death was between 6 and 72 months, and 4) a participant was fluent in Lithuanian. Participants were recruited through announcements online and by contacting and cooperating with community centers, seniors' clubs, elderly education programs, and retirement homes in order to reach the elderly who are less likely to use the internet. Participants could participate in the study either online or by answering a paperand-pencil survey. Informed consent was obtained from the participants before they took part in the study. In total, 283 people completed the survey. Out of those who completed the survey, 40 were excluded from further analysis because they did not meet the criterion of the time passed since the loss, and three were not included because the PG-13 questionnaire was not answered, or the survey was filled in unreliably.

Table 2. Participants' loss-related information (N = 240)

22 (9.2%)
10 (4.2%)
86 (36.1%)
65 (27.3%)
15 (6.3%)
20 (8.4%)
18 (7.6%)
2 (0.8%)
69 (29.1%)
32.31 (19.94)
66.42 (20.80)
205 (85.8%)
34 (14.2%)
139 (57.9%)
39 (16.3%)
161 (67.1%)

2.2 Measures

Sociodemographic and loss related information. Participants were asked questions on sociodemographic information and loss-related circumstances. The score of the closeness of the relationship was derived from the mean of two questions rated on a 7-point scale.

Social support. Participants were asked to answer questions about the number of close relationships, perceived received social support, and the feeling that they have to support other grieving loved ones (rated on a 7-point scale).

Prolonged grief reactions. To assess prolonged grief reactions, the Prolonged Grief Disorder-13 questionnaire was used (PG-13; Prigerson et al., 2009). The PG-13 comprises 11 items assessing separation distress, cognitive, behavioral, and emotional grief symptoms rated on a 5-point scale and two items assessing duration and impairment (answered with "ves" or "no"). The severity of prolonged grief reactions is assessed by adding up the scores of the 11 items, and the score can range from 11 to 55. In this study, participants that scored 33 and more (M + SD) were considered to be in the prolonged grief disorder risk group. Also, the diagnostic criteria for the disorder suggested by the authors of the questionnaire were used: (1) at least one symptom of separation distress had to be rated 4 or 5, (2) at least five items from cognitive, behavioral, or emotional symptoms had to be rated 4 or 5, (3) there was functioning impairment. The questionnaire had good internal consistency in the present study $(\alpha = 0.88).$

Depression risk group. To establish the risk of depression, WHO-5 Wellbeing Index was used (World Health Organization, 1998). WHO-5 comprises five items (rated on a 5-point scale) assessing psychological well-being. To establish the risk group, the criteria of score 28 and less was used (Topp et al., 2015). The questionnaire had good internal consistency in the study sample ($\alpha = 0.93$).

Attachment style. Attachment style was measured using the Experiences in Close Relationships-Relationship Structure

Questionnaire (ECR-RS; Fraley et al., 2011). The ECR-RS version assessing general attachment in close relationships was used. The questionnaire consists of nine items (rated on a 7-point scale); six items measure avoidant attachment, and three items measure anxiety. The score of each scale is calculated by taking the mean of the constituent items. The internal consistency for the scales of avoidance $(\alpha = 0.75)$ and anxiety $(\alpha = 0.82)$ was satisfactory in the study sample.

Neuroticism. Neuroticism was measured using the Neuroticism scale from the Big Five Inventory (BFI-N, John & Srivastava, 1999). The scale consists of eight items (rated on a 5-point scale). The BFI-N score is the mean of these eight items. The internal consistency for the BFI-N was satisfactory in this sample ($\alpha = 0.79$).

Emotion regulation difficulties. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) was used to measure emotion regulation difficulties. The DERS consists of six subscales measuring difficulties in six regulatory abilities: lack of emotional awareness (six items) and clarity (five items), non-acceptance of emotions (six items), difficulties engaging in goal-directed behavior when distressed (five items), impulse control difficulties (six items), and limited access to emotion regulation strategies (eight items). Items are rated on a 5-point Likert scale. The score for each subscale is the sum of the items, and the total DERS score is the sum of all subscales. The internal consistency of the scale in the study sample was good for both the total DERS scale ($\alpha = 0.94$) and the subscales ($\alpha = 0.79-0.89$).

Attitudes toward death. To assess attitudes toward death, we used the subscales of fear of death and neutral acceptance from the Death Attitude Profile-Revised (DAP-R, Wong et al., 1994). The scale consists of 12 items (rated on a 7-point scale). The fear of death subscale (seven items) measures negative thoughts and feelings about death. The neutral acceptance subscale (five items) measures the level of acceptance of death as a natural, integral part of life. The score for each subscale is the mean of responses in all subscale items. The internal consistency for the scales of fear of death ($\alpha = .77$) and neutral acceptance ($\alpha = .71$) was satisfactory in the present study.

2.3 Data analysis

Data were analyzed using IBM SPSS Statistics 23 and IBM Amos 23. The distribution of all variables showed an acceptable level of normality, as suggested by Kline (2011), skewness values were between -2 and 2, and kurtosis between -2 and 3. For missing data in the PG-13 questionnaire and the DERS, person-mean imputation was used (≤ 2 items missing for any subscale). For cases with some missing data in the BFI-N, ECR-RS, DAP-R (≤ 2 items missing for any subscale), the score was calculated by averaging the items that had been answered. In the correlation analyses, t-tests, regression, and mediation analyses, cases with missing data needed for each specific analysis were excluded listwise. Percentages were calculated excluding missing cases.

To analyze associations between prolonged grief reactions and risk factors, various analyses were used: t-test, ANOVA, Chi-square ($\chi 2$) criteria, Pearson correlations, hierarchical regression. Logistic regression was performed to analyze prognostic factors of depression risk group. The mediation analysis was conducted using path analysis. Following the recommendations in Preacher and Hayes (2008), mediation effects were tested with bootstrap confidence intervals of 95%, with the bootstrap sample set to 5000 estimates. Effects were considered insignificant when zero appeared in the confidence interval. To assess the model fit, the comparative fit index (CFI) and Tucker Lewis index (TLI) (both \geq .95 indicating a good fit), the root mean square error of approximation (RMSEA) (\leq .08 indicating acceptable fit), and the chi-square test were used (Kline, 2011).

3. RESULTS

3.1 Prolonged grief reactions in the sample

The means of prolonged grief reactions are presented in Table 3. Prolonged grief reactions in the sample ranged from 11 to 49.50, with a mean of 23.95. Prolonged grief reactions that had the highest scores in the sample were trouble accepting the loss and yearning for the deceased. Prolonged grief reactions being stunned, and avoidance of the reminders of the loss had the lowest scores.

Table 3. Descriptive statistics of prolonged grief reactions (N = 240)

Reactions (PG-13)	М	SD	Highest	Lowest	Factor
Reactions (1 G-13)	171	SD	score	score	loadings
Prolonged grief reactions	23.95	8.61	11	49.50	
1. Yearning	2.80	1.07	1	5	.74
2. Emotional pain	2.18	1.11	1	5	.81
3. Reminders avoidance	1.62	0.90	1	5	.53
4. Stunned	1.56	0.92	1	5	.68
5. Confused	2.19	1.24	1	5	.78
6. Trouble accepting	3.73	1.23	1	5	.67
7. Hard to trust	1.84	1.18	1	5	.56
8. Bitterness	2.16	1.35	1	5	.45
9. Difficulty moving on	1.82	1.19	1	5	.70
10. Numbness	2.13	1.19	1	5	.77
11.Meaningless	1.90	1.15	1	5	.80
	N	%			
12. Time criteria	106	44.2			
13. Functioning impairment	57	24.2			

Notes: PG-13 = Prolonged Grief Disorder-13 questionnaire

Principal component analysis was performed to examine the structure of the prolonged grief disorder reactions. The initial analysis provided two factors with an eigenvalue above one (5.23 and 1.23). However, based on the elbow curve in the scree plot and the fact that all reactions of prolonged grief were strongly correlated to the first

factor (.45 - .81), we concluded that the one-factor solution was the best fitting model. The results of the one-factor analysis showed that the data were suitable for the factor analysis: KMO = 0.87, and Bartlett's test of Sphericity p <.001. One factor explained 47.53% of the total variance. Factor loadings are presented in Table 3. All factor loadings were above .45, and most of the prolonged grief reactions had high loadings.

We also analyzed the risk group for prolonged grief disorder. Based on the threshold criterion for PG-13 scores (33 or more), 41 (17.1%) participants had high severity of prolonged grief reactions and were at risk for prolonged grief. Based on diagnostic criteria, 11 subjects (4.7%) had prolonged grief disorder.

3.2 Risk factors of prolonged grief

A comparison of prolonged grief reactions between groups with different demographic characteristics and loss related circumstances is shown in Table 4. Analysis of demographic factors revealed that prolonged grief reactions were significantly higher among participants that were women, did not have higher education, and were religious. Age had a weak but insignificant association with prolonged grief (r = .10, p = .130). Other factors such as location, marital and work status were not significant.

An analysis of loss related factors showed that participants who lost a member of their nuclear family or lived with a deceased loved one, had a significantly higher level of prolonged grief reactions. Also prolonged grief was significantly associated with the subjective closeness of the relationship with the deceased loved one (r = .42, p < .001), but not to the frequency of previous conflicts (r = .07, p = .261). Prolonged grief reactions were also statistically significantly higher among participants whose loved one's death was not due to natural causes, was unexpected, and not preceded by a serious illness. The intensity of prolonged grief reactions was negatively associated with the deceased's age (r = -.18, p = .007). Prolonged grief reactions were

not significantly associated with the months passed since the loss (r = .01, p = .913).

Table 4. Comparison of prolonged grief reactions between participants with different sociodemographic and loss related characteristics (N = 240)

Prolonged grief reactions							
	(PG-13)	t(df)	p				
	M(SD)						
Gender							
Men	21.00 (7.57)	t = -2.18 (235)	.031				
Women	24.41 (8.71)						
Education							
University	22.90 (8.06)	t = 2.68 (128.29)	.008				
Lower	26.23 (9.37)						
Religious							
Yes	24.79 (8.63)	t = -2.47 (238)	.014				
No	21.75 (8.22)						
Relationship							
Nuclear family	26.18 (9.09)	t = 4.85 (235.99)	< .001				
Other	21.09 (7.11)						
Lived together							
Yes	26.43 (9.00)	t = 2.84 (235)	.005				
No	22.99 (8.30)						
Cause of death							
Natural	23.26 (8.24)	t = -2.51 (41.59)	.016				
Other	27.60 (9.53)						
Unexpectedness							
Yes	26.26 (8.98)	t = 5.33 (236.94)	< .001				
No	20.77 (6.97)						
Present during death							
Yes	26.51 (8.58)	t = 2.03 (237)	.043				
No	23.46 (8.57)						
Illness before death							
Yes	22.92 (7.94)	t = 2.52 (132.25)	.013				
No	26.06 (9.56)						

Notes: PG-13 = Prolonged Grief Disorder-13 questionnaire

Table 5. Prolonged grief reactions associations with psychological well-being, attitudes toward death, insecure attachment styles, neuroticism, and emotion regulation difficulties (N = 240)

	1.	2.	3.	4.	5.	6.	7.	8.	8.1	8.2	8.3	8.4	8.5
1. Prolonged grief (PG-13)	-												
2. Well-being (PSO5)	47**	-											
3. Fear of death (DAP-R)	.15*	05	-										
4. Neutral acceptance (DAP-R)	15*	.13*	31**	-									
5. Avoidant attachment (ECR-RS)	.23**	26**	02	01	-								
6. Anxious attachment (ECR-RS)	.13*	23**	.16*	13	.08	-							
7. Neuroticism (BFI-N)	.35**	29**	.17*	17**	.10	.40**	-						
8. Emotion regulations difficulties (DERS)	.35**	37**	.16*	17**	.33**	.55**	.50**	-					
8.1 Non-acceptance (DERS)	.24**	26**	.16**	13*	.23**	.49**	.36**	.83**	-				
8.2 Goals (DERS)	.21**	28**	.18*	14*	.28**	.40**	.43**	.79**	.60**	-			
8.3 Impulses (DERS)	.29**	23**	.15*	15*	.17*	.47**	.50**	.85**	.65**	.70**	-		
8.4 Awareness (DERS)	.21**	21**	07	04	.41**	.09	.03	.40**	.16*	.09	.15*	-	
8.5 Strategies (DERS)	.38**	40**	.16*	15*	.22**	.55**	.48**	.89**	.71**	.67**	.71**	.21**	-
8.6 Clarity (DERS)	.22**	23**	.10	15*	.27**	.41**	.43**	.74**	.53**	.50**	.57**	.32**	.54**

Note: PG-13 = Prolonged Grief Disorder-13; BFI-N= Big Five Inventory-Neuroticism; ECR-RS = Experiences in Close Relationships-Relationship Structure Questionnaire; DERS = The Difficulties in Emotion Regulation Scale; DAP- R = the Death Attitude Profile-Revised; $*p \le .05, **p < .01$

Analysis of social support factors revealed that prolonged grief reactions were not significantly associated with the number of close relationships (r = -.08, p = .226), or perceived social support (r = .08, p = .228), but were associated with a feeling that participant himself needs to be a support for other grieving loved ones (r = .14, p = .030).

The correlations between the main study variables are shown in Table 5. Prolonged grief reactions were significantly associated with fear of death and neutral acceptance of death, avoidant and anxious attachment, neuroticism, emotion regulation difficulties, and all emotion regulation difficulties subscales.

A six-step hierarchical regression analysis was performed to assess how these significant factors predict prolonged grief reactions when controlling for their intercorrelations in one model. The results of the regression analysis are shown in Table 6. Socio-demographic factors were added in the first step; in the second step loss related factors were included in the regression; in the third regression step attitudes toward death were included; in the fourth step – insecure attachment styles; in the fifth – neuroticism; and in the sixth - emotion regulation difficulties.

In the final regression model, the variables that remained significant were gender, age, unexpected death, the subjective closeness of the relationship, avoidant attachment, neuroticism, and emotion regulation difficulties. The variables closeness of the relationship (β = .35), unexpected death (β = .24), neuroticism (β = .23), and emotion regulation difficulties (β = .21) had the greatest prognostic power in regression. The final regression model explained 56% of the variance of prolonged grief reactions. The largest part of the variance (29%) was explained by the second model, in which loss related factors were included.

Table 6. The hierarchical regression analysis of prolonged grief predictors (N = 222)

	Prolonged grief reactions (PG-13)								
	1	2	3	4	5	6			
	β	β	β	β	β	β			
Sociodemographic factors									
Gender ^a	.20**	.18**	.16**	.16**	.14**	.13**			
Age	.06	.06	.07	.08	.13*	.12*			
University degree	16 *	13*	14*	09	07	06			
Religiousness	.14*	.05	.04	.05	.03	.04			
Loss related factors									
Age of the deceased		.01	01	05	06	06			
Illness		.00	.02	.00	01	.00			
Unexpected		.31**	.30**	.26**	.26**	.24**			
Not natural causes		.10	.07	.09	.06	.07			
Present during death		.01	.02	01	.00	03			
Nuclear family		.15*	.13	.14*	.11	.11			
Relationship closeness		.32**	.33**	.36**	.33**	.35**			
Lived together		.09	.08	.09	.10	.10			
Support provider		01	03	.01	.02	.04			
Attitudes toward death									
Fear of death (DAP-R)			.14*	.12*	.09	.08			
Neutral acceptance (DAP-R)			08	07	04	03			
Insecure attachment styles									
Avoidant attachment(ECR-R	S)			.21**	.19**	.14**			
Anxious attachment (ECR-RS	S)			.18**	.07	01			
Personality traits									
Neuroticism (BFI -N)					.29**	.23**			
Emotion regulation									
Emotion regulations						.21**			
difficulties (DERS)									
R^2	.09	.37	.40	.48	.54	.56			
F	5.12**	9.46**	9.23**	10.92**	13.35**	13.64**			
df_1 , df_2	4, 217		15, 206	17, 204	18, 203	19, 202			
ΔR^2	.09**	.29**	.03**	.08**	.07**	.02**			
ΔF	5.12	10.50	5.20	14.56	29.06	9.13			
Δdf_1 , df_2	4, 217	9, 208	2, 206	2, 204	1, 203	1, 202			

Note: PG-13 = Prolonged Grief Disorder-13; BFI-N= Big Five Inventory-Neuroticism; ECR-RS = Experiences in Close Relationships-Relationship Structure Questionnaire; DERS = The Difficulties in Emotion Regulation Scale; DAP-R = the Death Attitude Profile-Revised; a = female; $^*p \le .05$, $^*p < .01$

3.3 Emotion regulation difficulties, neuroticism, insecure attachment and prolonged grief: mediation analysis

A mediation model was analyzed in which emotion regulation difficulties were a mediating factor of the associations between neuroticism and prolonged grief, and insecure attachment styles and prolonged grief. Control variables that were found to be significant predictors of prolonged grief were included in the model as well. The mediation model is shown in Figure 2. The figure does not show the correlations included in the model between: age and neuroticism, gender and neuroticism, anxious attachment and age, avoidant attachment and age, age and gender, age and unexpected death.

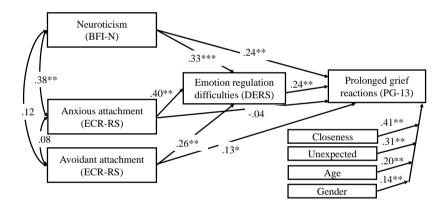


Figure 2. Path analysis model, in which emotion regulation difficulties mediate the associations between neuroticism, insecure attachment styles, and prolonged grief reactions. Relationship closeness, unexpected death, gender, and age are included as control variables. (N = 229)

Note: PG-13 = Prolonged Grief Disorder-13; BFI-N= Big Five Inventory-Neuroticism; ECR-RS = Experiences in Close Relationships-Relationship Structure Questionnaire; DERS = The Difficulties in Emotion Regulation Scale; not shown in the model correlations between control and independent variables $*p \le .05$, **p < .01

The mediation model had a good model fit: CFI = 1.00, TLI = 1.00, RMSEA = 0.01, χ^2 = 16.32, df = 16, p = .431. Table 7 shows the results

of the mediation analysis. All three independent variables — neuroticism, avoidant, and anxious attachment — were found to have a significant indirect effect on the intensity of prolonged grief mediated by emotion regulation difficulties. Emotion regulation difficulties partially mediated the associations between neuroticism (25.0% of the total effect) and avoidant attachment (31.6% of the total effect) and prolonged grief reactions.

Table 7. Total, direct, and indirect effects of neuroticism and anxious and avoidant attachment on prolonged grief symptoms mediated by emotion regulation difficulties (PG-13) (N=229)

		Total	Direct	Indirect	95% (CI
Independent variables	Mediator	effect	effect	effect	Min	Max
		β	β	β		
Neuroticism	Emotion	.32**	.24**	.08**	.032	.147
(BFI-N)	regulation					
Avoidant attachment	difficulties	.19**	.13*	.06**	.025	.114
(ECR-RS)	(DERS)					
Anxious attachment		.05	04	.10**	.040	.170
(ECR-RS)						

Note: PG-13 = Prolonged Grief Disorder-13; BFI-N= Big Five Inventory-Neuroticism; ECR-RS = Experiences in Close Relationships-Relationship Structure Questionnaire; DERS = The Difficulties in Emotion Regulation Scale; DAP-R = the Death Attitude Profile-Revised; Bias corrected bootstrap intervals are shown, effects are adjusted for gender, age, closeness of the relationship and unexpectedness of the death; $*p \le .05$, **p < .01

All control variables had significant correlations with prolonged grief reactions. Control variables age and gender (r = -.21, p = .002) and age and unexpected death (r = -.15, p = .019) were significantly correlated. Neuroticism and age were also significantly correlated (r = -.14, p = .033). Correlations between gender and neuroticism (r = .11, p = .071), age and avoidant attachment (r = .12, p = .061), and age and anxious attachment (r = -.12, p = .068) were not statistically significant.

In total, the mediation model explained 46.8% ($R^2 = .47$) of the variance of difficulties in emotion regulation and 49.0% ($R^2 = .49$) of the variance of prolonged grief reactions.

3.4 Associations between depression and prolonged grief

The study participants' psychological well-being ranged from 0 to 100, with a mean of 51.82 (SD=24.06). Psychological well-being was moderately negatively associated with the intensity of prolonged grief reactions (r=-.47, p<.001). A total of 48 participants (20%) were classified as at risk for clinical depression (threshold of WHO-5 Index 28 and below). It was found that about half (N=20, 48.8%) of participants that were in the risk group of prolonged grief also belonged to the risk group of depression, and 21 subjects were only in the risk group of prolonged grief. In the risk group of depression alone, there were 28 participants.

We aimed to compare the risk factors predicting risk of depression with the previously found risk factors of prolonged grief. Differences between the depression risk group (n = 48) and the comparison group (n = 191) were analyzed. The analysis revealed that there was no significant difference between the proportion of men (n = 10, 28.6%)and women (n = 37, 18.4%) belonging to the risk group of depression $(\chi^2(1, n = 236) = 1.93, p = .165)$. Subjects in the depression risk group were on average 10 years older (M = 50.96, SD = 21.27) than subjects in the comparison group (M = 40.17, SD = 15.81) (t (56.45) = 3.19, p)= .002). Significantly fewer subjects married or cohabitating (n = 18, 13.6%) were at risk of depression compared to subjects of other marital status (n = 28, 27.2%) (χ^2 (1, n = 239) = 6.75, p = .009). A significantly lower proportion of subjects having university education belonged to the risk group of depression (n = 26, 15.9%) compared to subjects with lower education (n = 22, 29.3%) (χ^2 (1, n = 235) = 5.83, p = .016). Also, a significantly smaller share of working participants (n = 24, 15.3%) belonged to the risk group of depression compared to subjects of other employment status (n = 24, 29.3%) $(\gamma^2 (1, n = 239) =$ 6.56, p = .010). None of the loss related factors and social support factors were significantly associated with belonging to the risk group for depression.

It was found that those belonging to the depression risk group had significantly higher avoidant attachment scores (M = 4.07, SD = 1.24) than the participants belonging to the comparison group (M = 3.57, SD = 1.17) (t(236) = 2.60, p = .010). Participants at risk of depression also had higher neuroticism scores (M = 3.43, SD = 0.82) than the comparison group (M = 3.16, SD = 0.77) (t(236) = 2.11, p = .036). Participants at risk of depression also had higher emotion regulation difficulties (M = 96.01, SD = 22.45) than the comparison group (M = 83.75, SD = 21.29) (t(237) = 3.53, p = .001). No differences were found in attitudes toward death and anxious attachment between two groups.

Factors significantly associated with the risk of depression were included in a logistic regression predicting the risk of depression (Table 8). It was found that only age and emotion regulation difficulties remained significant factors. The regression model correctly classified 83.3% of all cases, 98.4% of cases were correctly classified into the comparison group, but only 18.6% were correctly classified into the depression risk group. The model fit indicators were satisfactory Hosmer-Lemeshow $\chi^2 = 1.74$, df = 8, p = .988, Cox and Snell $R^2 = .14$, Nagelkerke $R^2 = .22$.

Table 8. Binary logistic regression analysis predicting belonging to the depression risk group (WHO-5) (N = 227)

	В	S.E.	Wald	Exp(B)	95% CI
					Min Max
Age	0.04	0.01	9.33	1.04**	1.01 1.06
University degree	-0.72	0.41	3.00	0.49	0.22 1.10
Married/Cohabitating	-0.31	0.39	0.62	0.74	0.34 1.58
Working	0.25	0.47	0.28	1.28	0.51 3.23
Avoidant attachment (ECR-RS)	0.18	0.17	1.20	1.20	0.87 1.66
Neuroticism (BFI-N)	0.34	0.28	1.48	1.40	0.81 2.41
Emotion regulation difficulties	0.03	0.01	5.63	1.03*	1.00 1.05
(DERS)					

Note: WHO-5= Well-being Index; BFI-N= Big Five Inventory-Neuroticism; ECR-RS = Experiences in Close Relationships-Relationship Structure Questionnaire; DERS = The Difficulties in Emotion Regulation Scale; $*p \le .05$, **p < .01

4. DISCUSSION

4.1 Prolonged grief reactions in the sample

The dissertation study was one of the first studies in Lithuania to analyze prolonged grief reactions. We found that prolonged grief reactions had a one-factor structure in our sample. This is consistent with the definition of prolonged grief disorder's authors (Prigerson et al., 2009) and the results obtained in other countries (Chiambretto et al., 2008; Coelho et al., 2017; Pohlkamp et al., 2018), showing that prolonged grief is a unidimensional construct. The most pronounced prolonged grief reactions in the sample were difficulty accepting the loss and yearning, while the least pronounced were being stunned and avoidance of the reminders of the loss. These results are similar to the findings in other countries (He et al., 2014; Pohlkamp et al., 2018; Prigerson et al., 2009). We also found that 41 participants (17.1%) were in the prolonged grief disorder risk group (score \geq 33). Considering that 14.6% of participants in our sample experienced the loss due to unnatural causes, the percentage of at-risk individuals is comparable to the prolonged grief prevalence found in samples following unnatural loss -49% and natural loss -9.8% (Djelantik et al., 2020; Lundorff et al., 2017). Based on the PG-13 diagnostic criteria, 11 participants (4.6%) in the study sample met the diagnostic criterion for prolonged grief disorder, however using the PG-13 diagnostic criteria is associated with the lowest prevalence rates (3.2%) (Lundorff et al., 2017). We can conclude that the patterns and factor structure of prolonged grief reactions found in our study are similar to those found in other European countries.

4.2 Risk factors of prolonged grief

Attitudes toward death. Based on meaning reconstruction theory (Neimeyer, 2019), we hypothesized that individuals with higher

neutral acceptance of death should more easily interpret the death of a loved one as a natural part of life and therefore more easily integrate the loss and adjust after it. On the other hand, strong negative feelings about death, fear of death could hinder the integration of the death of a loved one into their worldview and thus be a risk factor of prolonged grief. In the regression model, neutral acceptance of death did not remain a significant factor, and after including neuroticism and emotion regulation difficulties in the model, fear of death also became insignificant. Our study results did not confirm the associations found in the two previous studies between neutral acceptance of death and less intense grieving responses (Bonanno et al., 2002; Boyraz et al., 2015). It may be that neutral acceptance of death is a protective factor only under certain conditions. Previous studies have also found an association between fear of death and more intense grieving responses in samples that had experienced more traumatic losses (Tolstikova et al., 2005; Yu et al., 2016). It might be that fear of death has stronger associations with prolonged grief when a loved one's death is traumatic. The mentioned studies also did not measure other important psychological factors, like neuroticism, which has also been linked to higher fear of death (Neimeyer et al., 2004). In our final model, neuroticism proved to be a stronger predictor of prolonged grief reactions than fear of death, however fear of death might have stronger associations with prolonged grief after some type of losses, for example, when the death of a loved one is traumatic, unexpected or if a loved one died young.

Insecure attachment. In attachment theory, anxious attachment is linked to prolonged grief, while avoidant attachment is associated with the inhibition of grieving reactions (Fraley & Shaver, 1999). However, in our study, avoidant attachment was not only a significant factor but was also more strongly associated with prolonged grief than anxious attachment. Anxious attachment had only an indirect association with prolonged grief, which was explained by emotion regulation difficulties. Previous studies have yielded conflicting

results (Field & Sundin, 2001; Meier et al., 2013; Wayment & Vierthaler, 2002), but some studies similarly found that anxious attachment was not associated with prolonged grief or the link was weaker than between avoidant attachment and prolonged grief (Boelen & Klugkist, 2011; van der Houwen, Stroebe, Schut, et al., 2010). Like our study, these latter studies had included neuroticism as one of the factors studied in one model, which reduced the strength of the association between anxious attachment and prolonged grief reactions. The relationship between neuroticism and anxious attachment is a complex issue because these constructs are partially overlapping (Crawford et al., 2007; Noftle & Shaver, 2006). However, in our study and a few previous studies, the variance of prolonged grief reactions was empirically better explained by neuroticism than anxious attachment. However, neuroticism might have a stronger association with prolonged grief not only because it is a risk factor but also because there might be some conceptual overlap with prolonged grief symptoms (Ormel, Jeronimus, et al., 2013).

One explanation for our results could be the fact that our study assessed avoidant attachment in close relationships in general, but it is possible that the specific relationship with the deceased was not characterized by avoidant attachment. Maccallum & Bryant (2013) suggested that general avoidant attachment that did not occur with a deceased loved one may have a greater impact on the social environment and social coping used after the loss than on grief reactions. For example, the bereaved will have difficulty forming and deepening other close relationships and will not be able to withdraw from a lost attachment with the deceased (Maccallum & Bryant, 2013). It is possible that individuals with avoidant attachment experience difficulties in other close relationships, making it more difficult to adapt after loss. It is also possible that while the lost relationship was secure, the dominating avoidant attachment style would influence an individual's more maladaptive emotion regulation processes.

Emotion regulation difficulties as a mediating factor between insecure attachment and prolonged grief. Attachment theory

suggests (Shaver & Mikulincer, 2007; Shear & Shair, 2005) that the attachment system is closely related to emotion regulation and both styles of insecure attachment are associated with emotion regulation difficulties, although these difficulties may manifest differently (Mikulincer et al., 2003). In our study, the association between anxious attachment and prolonged grief was explained fully through difficulties in emotion regulation. In grief literature, anxious attachment is associated with a high sensitivity to negative information about oneself and a negative evaluation of one's ability to regulate emotions (Mikulincer et al., 2003). These characteristics coincide with the results we obtained that anxious attachment had the strongest associations with reported difficulties in using emotion regulation strategies and non-acceptance of their emotions. Emotion regulation difficulties explained one-third of the association between avoidant attachment and prolonged grief reactions (31.6%). The results that avoidant attachment had the strongest associations with difficulties in being aware of and understanding one's emotions are consistent with the theoretical description of avoidant attachment as a tendency to disassociate, suppress, and deny one's emotions (Mikulincer et al., 2003). It might be that while individuals with avoidant attachment try to suppress their grief reactions, their lack of awareness and understanding of their emotions, secondary negative feelings about strong grief emotions, deficits in using emotion regulation strategies effectively, on the contrary, lead to more negative feelings and prolonged grief reactions. We found that emotion regulation difficulties mediated the links between insecure attachment and prolonged grief, but this mediation for individuals with anxious and avoidant attachment could manifest itself through different emotion regulation difficulties.

Neuroticism. We found that neuroticism was the most important intrapersonal psychological prognostic factor for prolonged grief. Studies of prolonged grief have previously found a significant association between neuroticism and prolonged grief reactions

(Goetter et al., 2019; Robinson & Marwit, 2006; van der Houwen, Stroebe, Stroebe, et al., 2010; Wijngaards-de Meij et al., 2007). Neuroticism is explained as a physiological tendency to respond more sensitively to threatening information (Ormel, Bastiaansen, et al., 2013), but there is also a psychological explanation that individuals with high neuroticism have high attention sensitivity to negative information, tend to interpret neutral information as threatening, and remember negative information more often and easily (Eysenck, 2000; Matthews, 2004; Rusting, 1998). Therefore, it is possible that after the loss of a loved one, people with high neuroticism may not only feel stronger negative emotions that would inhibit adaptation but also might be highly sensitive to all reminders of the loss, give a more threatening interpretation to the death of a loved, remember more negative information, and interpret more negatively one's behavior in the lost relationship and, as a result, feel more guilt, shame or anger, and more intense prolonged grief reactions.

Emotion regulation difficulties as a mediating factor between neuroticism and prolonged grief. Neuroticism is also associated with the risk of psychopathology because of its association with emotion regulation difficulties (Ormel, Bastiaansen, et al., 2013). We found that emotion regulation difficulties explained 25.0% of the association between neuroticism and prolonged grief. Neuroticism was associated with all dimensions of emotion regulation difficulties except for awareness of one's emotions. It has previously been found that individuals with high neuroticism have even excessive monitoring of their emotional state (Matthews et al., 2000), so it is likely that individuals with neuroticism are well aware of their emotions. It has previously been found that individuals with neuroticism tend to use less effective emotion regulation strategies such as rumination and avoidance (Eisma et al., 2015; Muris et al., 2005; van der Houwen, Stroebe, Schut, et al., 2010). It is possible that found emotion regulation difficulties can lead individuals with neuroticism to be less flexible in applying different strategies according to the context and overuse strategies associated with maladjustment after a loss. Our

study results suggest that emotion regulation difficulties explain part of the link between neuroticism and prolonged grief reactions.

Emotion regulation difficulties. We aimed to analyze the association between emotion regulation difficulties, measured as a multidimensional construct composed of several different emotion regulation abilities, and prolonged grief reactions. We found that prolonged grief was associated with various emotion regulation difficulties. The results of our study are similar to those of several previous studies, where it has been found that individuals with prolonged grief had more difficulty regulating their emotional expression and used coping strategies less flexibly (Burton et al., 2012; Gupta & Bonanno, 2011; Knowles & O'Connor, 2015).

We analyzed the compounded effect of different emotion regulation difficulties; however, different emotion regulation dimensions could interfere with the grieving processes differently. Difficulties to apply emotion regulation strategies may have meant that, while experiencing strong grieving reactions, individuals had no way to at least temporarily withdraw from extremely strong emotions, and emotional experiences could become overwhelming. Difficulties to control impulses after a loss may have led to the avoidance of emotions associated with the loss and may have discouraged from engaging in external activities. Inability to accept emotions may have led individuals to feel strong secondary negative emotions such as sadness, fear, guilt, and shame because of their grief reactions. Awareness and clarity of emotions could affect how accurately a person could evaluate their reactions in the situational context and assess the need to regulate emotions. The ability to behave according to one's goals while experiencing negative emotions may also have affected an individual's ability to fluctuate between loss and restoration oriented processes. It is also possible that the emotion regulation difficulties we explored may have led to more frequent and non-adaptive use of emotion regulation strategies rumination and experience avoidance, which are associated with the risk of prolonged

grief (Eisma & Stroebe, 2020). This is one of the first studies to reveal that individuals with stronger prolonged grief reactions had more deficits in various emotional regulation abilities.

Sociodemographic risk factors. An analysis of the association between sociodemographic factors and the intensity of prolonged grief reactions revealed that being a woman and older age were significant risk factors. It is discussed in grief literature that there might be gender differences in grief styles (Doka & Martin, 2011), grieving trajectories (Lundorff et al., 2020), and expressions of grief (M. S. Stroebe et al., 2007). Still, the results of the empirical studies are contradictory, with gender differences observed in some studies, but not found in metaanalyses analyzing disorder prevalence (Burke & Neimeyer, 2013; Dielantik et al., 2020; Kersting et al., 2011; Lundorff et al., 2017, 2020; Morina et al., 2010). We found that older age significantly predicted the intensity of prolonged grief reactions, which is consistent with some of the other studies (Burke & Neimeyer, 2013). Factors that were not assessed in our study and could explain the link between older age and prolonged grief could be decreased cognitive ability, economic difficulties, greater loneliness, and health problems (Pérez et al., 2018). It is also possible that older individuals, more often than young ones, experience losses of the partner or a child, which are associated with harder adjustment.

Loss related factors. The closeness of the relationship with the deceased loved one and unexpected death were the most important prognostic risk factors for prolonged grief in our study. In grief literature is well known that these are crucial risk factors (Burke & Neimeyer, 2013; Djelantik et al., 2020; Lobb et al., 2010). The subjective closeness of the relationship represents the significance of the loss. The significance of the unexpected death has been explained by a few different links. The association between unexpected or violent death and prolonged grief has been found to be mediated by an inability to find meaning and integrate this type of death into personal meaning structure (Currier, Holland, et al., 2008; Lichtenthal et al.,

2013; Milman et al., 2017; Rozalski et al., 2017), and by a strong sense of helplessness and dissociation in the first days after the loss (Boelen, 2015). Another possible factor is that the unexpected or unnatural cause of death can lead to more regret, guilt, and rumination about the circumstances of death, all of which are also associated with the risk of prolonged grief (Eisma & Stroebe, 2020; Li et al., 2019).

Social support. Social support and having a network of strong relationships are often cited as important factors in post-loss adjustment (Hibberd et al., 2010; Logan, Thornton, Kane, et al., 2018). However, studies often do not find significant links between social support and prolonged grief (Heeke et al., 2017; Wågø et al., 2017). We found that the number of loved ones, perceived support, and providing support were not related to the intensity of prolonged grief reactions. Our study's results confirm the findings of previous studies that found no association between adjustment after a loss and social support. However, the dynamics of close relationships after a loss might be a complex issue that needs further research.

4.3 Links between the risk of prolonged grief and depression

We found that about half of the individuals at risk for prolonged grief disorder were also at risk for depression (48.8%). Our results are similar to those of previous studies (Bonanno et al., 2007; Neria et al., 2007). We found that only age and emotion regulation difficulties were significant predictors of the depression risk group. Older age significantly predicted the risk of both depression and prolonged grief. This suggests that age may be a common risk factor for more difficult adjustment and psychopathology after the loss of a loved one, although previous studies have found conflicting results (Boelen, Reijntjes, Djelantik, et al., 2016; Buqo et al., 2020). Emotion regulation difficulties were also a significant predictor of both disorders. Difficulties in emotion regulation have previously been associated

with an overall risk of psychopathology and mental disorders (Aldao et al., 2010; Gross & Jazaieri, 2014; Sheppes et al., 2015). Our study results confirm that emotion regulation difficulties are related to several types of psychopathology after the loss.

As for the differences between prolonged grief and depression risk factors in our study, it could be noted that the relationship with the deceased loved one and death circumstances were the most important factors in predicting prolonged grief, but these factors were not significant in predicting depression. This might be explained by the fact that prolonged grief is directly related to a loss, whereas the causes of depression may be broader and not necessarily directly related to the loss of a loved one. For example, a bereaved person might integrate the loss of a loved one but not be able to adapt to other psychosocial life changes following the loss. Previous studies have shown conflicting results about associations between depression after a loss and loss related circumstances (Boelen, Reijntjes, & Smid, 2016; Bugo et al., 2020; Hibberd et al., 2010; Wijngaards-de Meij et al., 2005). Risk factors for prolonged grief and depression often overlap, and the comorbidity of these disorders after a significant loss is known to be high, so a clear distinction between risk factors of these two disorders remains problematic.

4.4 Study limitations and further research guidelines

When interpreting and generalizing the results of our study, it is important to consider the limitations of our research and to outline guidelines for future studies. We designed our study and defined risk factors of prolonged grief based on the theoretical literature. However, our study was cross-sectional, and we cannot draw conclusions about the causal relationships of these factors. It is also challenging to assess the relationship between emotion regulation difficulties, neuroticism, and psychopathology, as strong grief reactions may have influenced how participants assessed their emotion regulation difficulties and

neuroticism levels. However, the study measured broader emotion regulation difficulties, which should be less influenced by the strength of the experienced emotions (Boden et al., 2014; Bonanno & Burton, 2013; Gratz & Roemer, 2004). There were also some limitations of the instruments used in the study. Measures for the relationship's subjective closeness with the deceased and social support were not established questionnaires, but questions formulated by the authors.

Also, our study sample had shortcomings in the distribution of sociodemographic characteristics - the majority of the participants were women, living in an urban area and with higher education. The majority of our participants experienced the death of a loved one due to natural causes, and about half of our participants experienced the death of parents or grandparents. Therefore, our study results might overrepresent these types of losses. What is more, only a subset of study participants had intensity of prolonged grief reactions that reached the level of prolonged grief disorder. However, many prolonged grief researchers agree that different intensity of grieving reactions should be seen as variations within a single continuum (Kliem et al., 2018; Maciejewski et al., 2016; Prigerson et al., 2009).

When interpreting the results of our study, it is important to consider the listed shortcomings of the study. The results we found should be confirmed in longitudinal studies and including more diverse samples. Even with the identified shortcomings, the results of the study remain a significant contribution to the field of the prolonged grief risk factors research.

4.5 General conclusions

This study is one of the first in Lithuania to examine prolonged grief reactions among bereaved individuals. The study results may be important in contributing to the international scientific debate on the intercultural nature of prolonged grief reactions.

In this study, the risk factors for prolonged grief were analyzed by combining important risk factors of prolonged grief defined by different theories into one model. The study results revealed that the closeness of the relationship and the unexpectedness of death are strong risk factors for prolonged grief. However, intrapersonal psychological factors - neuroticism, avoidant attachment, and emotion regulation difficulties were also important prolonged grief predictors. In our study, insecure attachment styles were weaker predictors of prolonged grief than other intrapersonal psychological factors. Anxious attachment was associated with prolonged grief only through an indirect relationship mediated by emotion regulation difficulties.

This was one of the first studies to examine broader emotion regulation difficulties in the context of prolonged grief. Emotion regulation difficulties were associated with prolonged grief reactions, and these difficulties at least partly mediated links between neuroticism, insecure attachment styles, and prolonged grief. These are important findings contributing to a better understanding of the role of emotion regulation in the context of prolonged grief. Neuroticism and attachment styles are considered rather stable in time and resistant to change, making them hard to target in psychological interventions (McCrae & Costa, 2003; Mikulincer & Shaver, 2007). The results of our study suggest that when providing psychological intervention for individuals with prolonged grief, it might be important to address their emotion regulation difficulties.

We found that nearly half of the individuals at risk for prolonged grief were also at risk for depression. The loss related factors and the relationship with the deceased were important risk factors of prolonged grief, but not depression. Results that individuals with prolonged grief are also at high risk for depression could also be important for the specialists providing psychological help.

CONCLUSIONS

- 1. The unidimensional structure of prolonged grief was confirmed in the study sample. At risk for prolonged grief disorder were 17.1% of study participants who had experienced the loss of a loved one in the last 6-72 months.
- 2. The relationship with the deceased loved one, and the unexpectedness of the loved one's death were the strongest predictors of prolonged grief reactions. Prolonged grief reactions were also predicted by the bereaved person's neuroticism, emotion regulation difficulties, and avoidant attachment. Female gender and older age also significantly predicted the intensity of prolonged grief reactions.
- 3. Emotion regulation difficulties partially mediated the association between neuroticism and prolonged grief reactions, and between avoidant attachment and prolonged grief reactions. Anxious attachment was associated with prolonged grief only through an indirect relationship mediated by emotion regulation difficulties.
- 4. About half (48.8%) of those at risk for prolonged grief disorder also had a significant risk of depression. Factors associated with a loved one's death were significant predictors of prolonged grief, but not depression.

LIST OF PUBLICATIONS

Peer-reviewed publications

Gegieckaite, G., & Kazlauskas, E. (2020). Do emotion regulation difficulties mediate the association between neuroticism, insecure attachment, and prolonged grief? *Death Studies*, 1–9. https://doi.org/10.1080/07481187.2020.1788667

Gegieckaite, G., & Kazlauskas, E. (2020). Fear of Death and Death Acceptance Among Bereaved Adults: Associations With Prolonged Grief. *OMEGA - Journal of Death and Dying*. https://doi.org/10.1177/0030222820921045

Printed peer-reviewed conference materials

Gegieckaitė, **G**., Kazlauskas, E. (2020) Loss related risk factors of prolonged grief symptoms. The Shared Heritage of European Psychiatry: The 28th European Congress of Psychiatry, Virtual Congress, July 4-7, 2020, European Psychiatry, 63(S1), S45–S282.

Gegieckaitė, G., Kazlauskas, E. (2019) Association between difficulties in emotion regulation and prolonged grief disorder symptoms in bereaved adults// No Health without Mental Health: 1st European Congress on Clinical Psychology and Psychological Treatment, Dresden, Germany, October 31 - November 2, 2019

Gegieckaitė, G. (2019) Užsitęsusio gedulo sutrikimo simptomų ir požiūrio į mirtį sąsajos [Associations between prolonged grief and attitudes toward death] // XVI-oji Jaunųjų mokslininkų psichologų konferencija, 2019 balandžio 26 d., Vilnius: pranešimų santraukų leidinys. Vilniaus universiteto leidykla, 2019

Gegieckaitė, G., Kazlauskas, E. (2019) Užsitęsusio gedulo sutrikimo simptomų ir santykių su artimaisiais sąsajos po artimojo netekties [Associations between prolonged grief and social support] // Lietuvos psichologų kongresas, 2019 gegužės 24 – 25 d., Vilniaus universitetas, Vilnius: kongreso pranešimų santraukos. Vilniaus universiteto leidykla, 2019.

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Goda Gegieckaitė has received a bachelor's degree in psychology and a master's degree in clinical psychology from Vilnius University. She continued her studies as a doctoral student in psychology at Vilnius University in 2016–2020. During her master's and doctoral studies, she worked on a number of research projects at the Center for Psychotraumatology at Vilnius University, together with colleagues published research results in international scientific journals, and also presented in scientific conferences nationally and internationally. Goda Gegieckaitė was also involved in organizing scientific conferences and was a chair of the Lithuanian Young Scientists of Psychology Conference (2018). During her doctoral studies, she was involved in clinical practice working as a clinical psychologist at the palliative care center.

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