

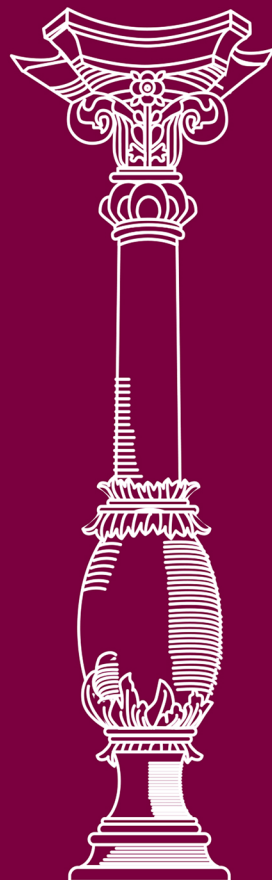


**Vilnius
University**

Links between negative life experiences, posttraumatic stress, and psychosocial functioning in adolescence

leva Daniūnaitė

DOCTORAL DISSERTATION
2022



Social sciences
Psychology **S 006**

VILNIUS UNIVERSITY

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ABBREVIATIONS

CATS: The Child and Adolescent Trauma Screen
CFA: Confirmatory Factor Analysis
CFI: Comparative Fit Index
COVID-19: Coronavirus disease of 2019
CPTSD: Complex posttraumatic stress disorder
DSM-5-TR: 5th edition of Diagnostic and Statistical Manual of Mental Disorders, Text Revision
DSO: Disturbances in self-organization
ICD-11: 11th edition of the International Statistical Classification of Diseases and Related Health Problems
ITQ-CA: The International Trauma Questionnaire – Child and Adolescent Version
LCA: Latent Class Analysis
PTSD: Posttraumatic stress disorder
RMSEA: The Root Mean Square Error of Approximation
RS-14: The Resilience Scale
SDQ: The Strengths and Difficulties Questionnaire
TLI: The Tucker–Lewis Index
WHO: The World Health Organization

CONTENTS

LIST OF PUBLISHED PAPERS	9
PREFACE	11
1. INTRODUCTION.....	13
1.1. Conceptual framework	13
1.2. The prevalence of traumatic experiences in childhood and adolescence	15
1.3. The psychological consequences of traumatic experiences in adolescence	19
1.3.1. Stress-related disorders	19
1.3.2. Psychosocial functioning	22
1.3.3. Theoretical perspectives.....	23
1.4. The COVID-19 pandemic and its effects on adolescents.....	26
1.5. Knowledge gap.....	27
1.6. Aims of the thesis.....	28
2. METHOD.....	29
2.1. Participants.....	29
2.2. Procedures.....	31
2.3. Measures	33
2.4. Data analyses.....	36
2.5. Research ethics.....	37
3. RESULTS	39
3.1. Findings from paper I.....	39
3.2. Findings from paper II.....	40
3.3. Findings from paper III.....	41
3.4. Findings from paper IV	41
4. DISCUSSION	43
4.1. Discussion of main findings	43
4.1.1. Prevalence and patterns of traumatic experiences	43
4.1.2. Psychosocial functioning related to abuse experiences.....	46
4.1.3. PTSD and CPTSD in adolescence.....	47
4.1.4. Psychosocial functioning amid the COVID-19 pandemic	49
4.2. Methodological considerations.....	51
4.3. Limitations	52
4.4. Future research directions.....	53
4.5. Insights for clinicians and policymakers	54
CONCLUSIONS.....	56
REFERENCES.....	57
SUMMARY IN LITHUANIAN	76
PUBLISHED PAPERS	85
PRESENTATIONS IN INTERNATIONAL CONFERENCES	137
ABOUT THE AUTHOR.....	138

LIST OF PUBLISHED PAPERS

This doctoral dissertation is based on the following papers:

1. Zelviene, P., **Daniunaite, I.**, Hafstad, G.S., Thoresen, S., Truskauskaite-Kuneviciene, I., & Kazlauskas, E. (2020). Patterns of abuse and effects on psychosocial functioning in Lithuanian adolescents: A latent class analysis approach. *Child Abuse and Neglect*, 108, 104684. doi:10.1016/j.chiabu.2020.104684.
2. Kazlauskas, E., Zelviene, P., **Daniunaite, I.**, Hyland, P., Kvedaraite, M., Shevlin, M., & Cloitre, M. (2020). The structure of ICD-11 PTSD and Complex PTSD in adolescents exposed to potentially traumatic experiences. *Journal of Affective Disorders*, 265, 169–174. doi:10.1016/j.jad.2020.01.061
3. **Daniunaite, I.**, Cloitre, M., Karatzias, T., Shevlin, M., Thoresen, S., Zelviene, P., & Kazlauskas, E. (2021). PTSD and complex PTSD in adolescence: discriminating factors in a population-based cross-sectional study. *European Journal of Psychotraumatology*, 12, 890937. doi:10.1080/20008198.2021.1890937
4. **Daniunaite, I.**, Truskauskaite-Kuneviciene, I., Thoresen, S., Zelviene, P., & Kazlauskas, E. (2021). Adolescents amid the COVID-19 pandemic: a prospective study of psychological functioning. *Child and Adolescent Psychiatry and Mental Health*, 15, 45. <https://doi.org/10.1186/s13034-021-00397-z>

PREFACE

The roots of the current research on traumatic experiences and their psychological effects grew out of the demand to evaluate the psychological impact of 20th-century wars and interpersonal violence. Significant progress in the field of psychotraumatology could be linked to the three large advocacy movements of the 60s and 70s in the past century: war veterans, women's rights, and child abuse. The current understanding of posttraumatic stress disorder (PTSD) was very much affected by the Vietnam veterans who had returned from the war, feeling neglected and humiliated by the U.S. Department of Veterans Affairs. Vietnam veterans demanded recognition and separate services associated with their war-related experiences.

The descriptions of responses to the interpersonal violence against women and children were much like those described by the millions of Vietnam veterans at the time. The women's movement focused on the sexual and physical assault against women, as highlighted in the consciousness-raising groups organized by the National Organization for Women. Laws in the U.S. were changed to recognize the incidents of abuse within the family as crimes (McFarlane & Kilpatrick, 2021). The understanding of children's rights and the scope of child abuse was growing. The pediatrician C. H. Kempe together with colleagues (1962), published the first paper on child abuse, "The battered child syndrome" (Kempe et al., 1962). Following the article, the interest in child abuse among medical professionals, researchers, and media highly increased (Myers, 2008). The first national study documenting the high prevalence of parent-child abuse was published in 1978 (Gelles, 1978).

Inspired by developments in the U.S., awareness about the impact of traumatic experiences on children and the need for child rights protection expanded into other countries worldwide, including Lithuania. During the following decades, a growing amount of studies documented that traumatic experiences in childhood are a highly prevalent psychosocial problem in various countries worldwide. To grasp the complete picture of childhood experiences that negatively affect the development and functioning in adulthood, the term adverse childhood experiences was introduced (Felitti et al., 1998; Zarse et al., 2019). The term includes multiple types of abuse, neglect, violence between parents or caregivers, severe household dysfunction such as alcohol and substance abuse, and peer, community, and collective violence (World Health Organization, 2018a).

Based on the available statistics on violence and results from the research on traumatic and adverse childhood experiences, the World Health

Organization (WHO) announced violence against children as a priority on the global health agenda (World Health Organization, 2002, 2014, 2016). In addressing the psychological burden and socioeconomic costs of violence against children, WHO calls for the implementation of effective child abuse prevention and intervention measures worldwide. As child maltreatment has moved away from the private sphere into a societal concern, the recent decades have seen an enormous research effort to investigate the prevalence and outcomes of childhood traumatic and other negative experiences.

This thesis was conceptualized and planned to explore the prevalence and potential consequences of traumatic and other negative experiences in adolescence. Due to the unexpected emergence of the global pandemic of the coronavirus disease in 2019, the thesis was expanded to cover the possible psychological effects of this pandemic.

1. INTRODUCTION

1.1. Conceptual framework

In trauma research, the traumatic experiences are described and included in the study methodology based on one of the diagnostic systems – The International Statistical Classification of Diseases and Related Health Problems (ICD) or the Diagnostic and Statistical Manual of Mental Disorders (DSM). Despite existing differences, both diagnostic systems refer to exposure to an extremely threatening or horrific event or series of events as stated in the 11th edition of ICD (ICD-11) (World Health Organization, 2018b) and to actual or threatened death, serious injury, or sexual violence as detailed in the revised 5th edition of DSM (DSM-5-TR) (American Psychiatric Association, 2022). Based on these definitions, traumatic experiences in childhood and adolescence can be understood as single or multiple traumatic events experienced directly or witnessed: traffic accidents, scary medical procedures, physical assault, sexual violence, natural disasters, and others. As ICD-11, the newest edition of ICD released by the WHO in 2018, will come into force in the coming years, this thesis is based on the ICD-11 conceptualization of traumatic events and trauma-related disorders. Though both diagnostic systems refer to the term *traumatic event*, some researchers prefer to use the term *potentially traumatic event* to underscore that only some individuals develop posttraumatic reactions. In this thesis, I use the term *potentially traumatic events* to emphasize that the events measured in this study may or may not have been associated with a subjective stress response.

The trauma research field overlaps with another line of studies on interpersonal violence, which analyze the prevalence and consequences of various forms of violence. Usually, these studies use the definition of violence provided by the WHO, which states that violence is the intentional use of physical force or power, threatened or actual, against oneself, another person, or a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation (World Health Organization, 2002). According to WHO, violence against children includes physical, sexual, psychological/emotional abuse, and neglect; also witnessing domestic violence, bullying, intimate partner violence, cyber violence, and commercial exploitation (World Health Organization, 2002, 2016). Violence against children in the context of a relationship of responsibility, trust or power is also called child maltreatment or child abuse (Meinck et al., 2016). The field of violence studies is still

evolving, and thus various researchers use different concepts of child abuse in their studies. In this thesis, I focus on physical and psychological abuse, neglect, and sexual violence. The definitions used in our study correspond to the definitions of WHO and Lithuanian legislation. The concepts of psychological and emotional abuse are used interchangeably in this thesis, as these terms often point to the same experiences (Leeb et al., 2008).

Though the two lines mentioned above of research on trauma and violence overlap and cover common experiences (e.g., physical abuse, sexual abuse, domestic violence), each also covers specific important experiences. Posttraumatic stress studies usually concentrate on threatening and horrific events or series of events that have the potential to elicit a traumatic stress response in exposed individuals (e.g., car accident, war, traumatic loss). Child maltreatment studies include experiences of deprivation and neglect – the experiences that are not time-limited events but rather long-term conditions that deviate from a safe and caring environment. As all the mentioned experiences can have highly detrimental consequences for the child's development (McLaughlin & Lambert, 2017), this thesis is based on both lines of research. In this thesis, the term *traumatic experiences* is used to cover both *potentially traumatic events* and *violence* experiences. The list of potentially traumatic events used in this thesis is presented in Paper II and analyzed forms of abuse are presented in Paper I.

In today's changing world, not only new forms of violence against children (e.g., online sexual abuse) have emerged, but also the likelihood of other global challenges, such as pandemics, has increased (Verguet & Jamison, 2017). The coronavirus disease came without many societies and systems being specifically prepared for it as a progressively emerging life threat (Gersons et al., 2020). There is a discussion of how the COVID-19 pandemic should be understood in terms of its nature and psychological impact on individuals and societies. Some scientists argue that the COVID-19 pandemic represents a potentially traumatic event that might lead to hospitalization or even death (Karatzias et al., 2020). Therefore, the pandemic potentially shares the characteristics of a disaster, such as the loss of safety, dependence on others, breakdown in infrastructure, and chaos (Gersons et al., 2020). Other authors state that the experiences related to the pandemic vary greatly and question if the COVID-19 pandemic meets the criteria of a life-threatening or severely stressful event according to DSM-5-TR and ICD-11 (Van Overmeire, 2020). The personal impact of the pandemic depends on many factors, but in general, the COVID-19-related stressors and countermeasures potentially affected all the members of society. Even from today's perspective, COVID-

19 is related to future uncertainty, but in the time of the research (2020), COVID-19 was still very novel and threatening. There was a big concern about how young people would cope with the countermeasures, home learning, risk of social isolation, and potential illness, death, job loss, and frustration in their families. At the time of this study, there was a great need to understand the impact of the pandemic on young people. Prospective studies were missing, and I had an opportunity to unravel the potential negative consequences of the pandemic in Lithuanian adolescents.

There is currently a lack of conceptual agreement in research that aims to uncover the prevalence and consequences of negative experiences in childhood. Some researchers mainly rely on the experiences that fall into the definition of potentially traumatic events (Cloitre et al., 2018; Sachser et al., 2017); others focus only on events that can be categorized as violence (Hillis et al., 2016; Nikolaidis et al., 2018). Moreover, some researchers study adverse childhood experiences (Bellis et al., 2014; Felitti et al., 1998), and others concentrate only on bullying (Himel & Werer, 2015; Olweus, 2013). This thesis alone cannot solve the lack of the agreement mentioned above. This thesis covers *traumatic experiences* (including *potentially traumatic events* and *violence experiences*), and COVID-19-related experiences. All these experiences are covered under one general term, *negative experiences*, which I use throughout this doctoral dissertation.

1.2. The prevalence of traumatic experiences in childhood and adolescence

Though the prevalence of traumatic experiences in childhood and adolescence may vary across various countries and cultures, the existing studies reveal a high prevalence of childhood traumatic experiences worldwide.

Studies of adult populations

Till recently, most of our knowledge on the prevalence of childhood traumatic experiences came from studies conducted in adult populations. The WHO, referring to the systemic meta-analysis of the adult sample studies worldwide, reports a 22.6% prevalence of childhood physical abuse, 36.3% emotional abuse, and 16.3% of neglect, with no significant differences between boys and girls (Stoltenborgh, Bakermans-Kranenburg, et al., 2013; Stoltenborgh, Bakermans-Kranenburg, et al., 2013; Stoltenborgh et al., 2012; World Health Organization, 2014). However, the prevalence rate of childhood

sexual abuse is significantly higher for girls (18%) than for boys (7.6%) (Stoltenborgh et al., 2011; World Health Organization, 2014).

The findings of the large-scale epidemiological study from various European countries in adult populations showed a 4% childhood abuse prevalence (Darves-Bornoz et al., 2008). More recent national studies in adult samples revealed a higher prevalence of childhood traumatic experiences. Physical assault in childhood was reported by 5% of Norwegians and 49% of Danes, neglect was reported by 10.4% of Irish and emotional abuse was reported by more than 11% of participants in Norwegian and Irish samples (Hyland et al., 2017, 2021; Thoresen et al., 2015). Childhood sexual abuse was reported more often by women and reached 15.4% in the Norwegian women subsample (Thoresen et al., 2015). However, the studies of adult populations may be subject to recall bias and inaccuracy in reporting childhood experiences (Finkelhor et al., 2011; McKinney et al., 2008). Thus studies exploring the experiences of young people are greatly needed.

Studies of children and adolescent populations

The systematic review on the prevalence of past-year violence against children stated that a minimum of 50% or more of children experienced violence globally (Hillis et al., 2016). The following paragraphs summarize the findings on the prevalence of different types of violence and other traumatic experiences.

In recent European adolescent studies, physical abuse was reported by 19 to 76% of adolescents in different countries, psychological abuse – by 16 to 83%, and neglect – by 6 to 48%, with a higher prevalence referred in Balkan and a lower in Scandinavian countries (Hafstad, Sætren, Myhre, Bergerud-Wichstrøm, & Augusti, 2020; Jernbro & Janson, 2016; Nikolaidis et al., 2018). The recent systemic review shows that physical abuse is more often reported by boys and psychological abuse – by girls (Moody et al., 2018).

Talking about sexual abuse, the research in child and adolescent samples reveals a higher prevalence for girls than for boys: between 8-31% for girls and 3-17% for boys of sexual abuse in worldwide studies (Barth et al., 2013; Moody et al., 2018), between 11-40% for girls and 3-23% for boys in European countries (Kloppen et al., 2016; Mohler-Kuo et al., 2014). Moreover, the risk for sexual abuse increased from early adolescence, and peers constituted the larger part of perpetrators in adolescence (Hafstad et al., 2020; Kloppen et al., 2016; Mohler-Kuo et al., 2014; Radford, Corral, Bradley, & Fisher, 2013). Moreover, sexual harassment via the internet was

the most frequent sexual abuse experience in some studies (Mohler-Kuo et al., 2014). Overall, the recent meta-analysis revealed that sexual abuse online had become a severe problem, showing that approximately one in five youth experienced unwanted online exposure to sexually explicit material, and one in nine youth experienced online sexual solicitation (Madigan et al., 2018).

In comparison, studies evaluating the prevalence of potentially traumatic events using PTSD-related checklists also reveal a high prevalence of such events in adolescent samples. The review of studies implemented worldwide stated that four of five adolescents met DSM criteria for exposure to a severe traumatic event (Nooner et al., 2012). In a recent study conducted in the United States, 68% of adolescents reported experiencing at least one potentially traumatic event in their lifetime. The most common traumatic events were: the death of a loved one, witnessing someone being injured or killed, and exposure to a major disaster (McChesney et al., 2015). A study implemented in four European countries, including Denmark, Iceland, the Faroe Islands, and Lithuania, revealed that 90% of the adolescents had been exposed to at least one potentially traumatic event in their lifetime. The most common events were the death of a family member, the threat of violence, and bullying (Elklit & Petersen, 2008).

Multiple traumatic experiences

A big part of the literature on childhood traumatic experiences used to be focused on the separate specific categories of traumatic experiences and their consequences. However, many children and adolescents experience more than one kind of traumatic experience. There is a large degree of overlap between traumatic experiences and a high risk of repeated traumatic experiences (Brown et al., 2019; Finkelhor et al., 2011; Jernbro et al., 2015; Radford et al., 2013; Stroem et al., 2019; van Berkel et al., 2020). The research shows that the mean number of traumatic experiences increases in adolescence compared to younger age, especially for outside family experiences (Connell et al., 2018; Finkelhor et al., 2009; Radford et al., 2013).

Usually, multiple types of traumatic experiences are experienced even in a single year (Finkelhor et al., 2007). Multiple traumatic experiences are referred to as cumulative trauma, usually operationalized as the total number of different types of experiences by an individual (Cloitre et al., 2009; Hodges, Godbout, Briere, Lanktree, Gilbert, & Kletzka, 2013). Finkelhor and colleagues proposed the terms *polyvictimization* and *polyvictims* to describe

the experience of youth reporting many categories of traumatic experiences in a single year (Finkelhor et al., 2007, 2009, 2011).

A few previous studies used the latent class analysis approach to better understand the complex nature and patterns of childhood traumatic experiences. Though studies used different lists of negative experiences, the groups of children with a high and a low number of negative experiences could be identified in all studies (Connell et al., 2018; Houston et al., 2011; Lew & Xian, 2019; McChesney et al., 2015; Nooner et al., 2010; Roberts et al., 2018; Shevlin & Elklit, 2008). In some of these studies, a moderate pattern was also identified (Connell et al., 2018; Roberts et al., 2018).

Prevalence of traumatic experiences in childhood in Lithuania

Until now, only little is known about the prevalence of traumatic experiences in childhood and adolescence in Lithuania. In an adult sample study, physical abuse in childhood was reported by 23% of participants (Kazlauskas & Zelviene, 2015). In the international study of Adverse Childhood Experiences (ACE), one or more adverse experiences were reported by 53% of a large sample of young Lithuanian adults (Bellis et al., 2014). In the 15-year-old adolescent sample study, around 80% of participants reported exposure to one or more potentially traumatic events, with 9% reporting exposure to physical, sexual abuse, and neglect, and 30% reporting threats of physical violence (Domanskaitė-Gota et al., 2009). In another study, 43% of participating younger-age adolescents reported physical or emotional abuse (Sebre et al., 2004). Finally, in a recent study, 26.2% of participating adolescents reported experiencing child abuse (Skabeikytė et al., 2019). To summarize, the results from Lithuanian studies vary but definitely confirm that child abuse is a prevalent psychosocial problem that needs to be analyzed thoroughly.

To summarize this chapter, the research shows that childhood traumatic experiences are highly prevalent. However, the results greatly differ depending on the sample and research methodology. Furthermore, most of the studies on childhood traumatic experiences were retrospective and were implemented in adult populations. There is a need for research on the prevalence of traumatic experiences already at a young age.

1.3. The psychological consequences of traumatic experiences in adolescence

There is considerable evidence from research that traumatic experiences at a young age significantly impact psychosocial development and long-term mental health (Bellis et al., 2014; Cicchetti, 2013, 2016; D'Andrea et al., 2012; Felitti et al., 1998; Gilbert et al., 2009; Roberts et al., 2018). The further introductory part of the dissertation discusses the stress-related disorders and psychosocial functioning difficulties related to adolescents' traumatic experiences in more detail.

1.3.1. Stress-related disorders

One of the most prevalent psychological consequences of traumatic experiences is stress-related disorders. Posttraumatic stress disorder (PTSD) is a well-documented psychological consequence of traumatic experiences in children and adults. The review of the studies revealed that the prevalence of PTSD among adolescents with traumatic experiences can range between 3% and 57%, with an average rate of 14% (Nooner et al., 2012).

For more than several decades, PTSD has been included in both major diagnostic systems used among mental health professionals and researchers worldwide – the DSM and the ICD. These diagnostic classifications undergo revisions as the field of research and clinical practice evolves. In the most recent revisions of DSM and ICD, definitions of stress- and trauma-related disorders diverged. The most recent revisions of the diagnostic systems, DSM-5-TR, and ICD-11, use different approaches to conceptualizing PTSD (Brewin, 2013; Danzi & La Greca, 2016; Elliott et al., 2020; Friedman, 2013). DSM-5-TR criteria for PTSD cover many clinical presentations and include 20 symptoms across four symptom clusters, intending to account for a wide variety of populations (American Psychiatric Association, 2022). ICD-11 organizes trauma-related symptoms into two distinct diagnostic categories. Updated criteria for ICD-11 PTSD focus on the core features and includes three symptom clusters: re-experiencing the traumatic event (intrusive memories, flashbacks, or nightmares), avoidance of thoughts and memories of a traumatic event, and a sense of threat (hypervigilance or an enhanced startle reaction). The novel diagnostic category of ICD-11 complex PTSD (CPTSD) includes all PTSD symptoms and additional symptoms of disturbances in self-organization (DSO): affect dysregulation, negative self-concept (beliefs about oneself as diminished, defeated, or worthless), and disturbances in relationships (World Health Organization, 2018b). Including

two traumatic stress sibling diagnoses into ICD-11 was intended to provide a more refined organization of the possible psychological outcomes of traumatic experiences and guide more tailored and effective treatment planning (Cloitre et al., 2020). However, an acute stress reaction is conceptualized as a normal reaction in ICD-11; therefore, it is not included in a chapter on stress-related disorders but is included in the chapter “Factors influencing health status and contact with services” (World Health Organization, 2018b).

The differences in the DSM and ICD diagnostic systems represent a significant challenge in identifying individuals with PTSD and providing suitable treatment (Bruckmann, Haselgruber, Sölva, & Lueger-Schuster, 2020; Hafstad, Thoresen, Maercker, & Dyb, 2017; Sachser & Goldbeck, 2016). Research on the consequences of diagnostic differences for youth is just starting. This thesis is based on the ICD-11 conceptualization of posttraumatic stress disorders, as this diagnostic classification is the most used worldwide, including in Lithuania and other European countries.

PTSD and CPTSD in adolescence

Findings from around the world have provided empirical support for the construct validity of ICD-11 PTSD and CPTSD using multiple methodologies, including latent class/profile analysis, confirmatory factor analysis (Brewin et al., 2017; Redican et al., 2021), and network analysis (Knefel et al., 2020). Most studies on the updated diagnosis of PTSD and CPTSD were conducted in adult populations. Only several studies assessed the validity of these constructs in children and adolescents to this date (Elliott et al., 2020; Haselgruber, Sölva, & Lueger-Schuster, 2020b, 2020a; Li et al., 2021; Sachser, Keller, & Goldbeck, 2017; Tian, Li, Wu, & Cheng, 2021). The existing studies show that distinct groups of adolescents with PTSD and CPTSD can be identified, but further studies are needed to elaborate on the manifestation of these disorders in young people. Our study was the first in the world to investigate the validity of ICD-11 PTSD and CPTSD using age-appropriate measures.

Factors related to PTSD and CPTSD in adolescence

It is essential to understand what factors are related to the higher risk of developing PTSD or CPTSD already at a young age. Studies on PTSD have explored multiple pre-trauma, peri-trauma, and post-trauma factors associated with the manifestation of the disorder. As CPTSD is a new diagnostic

category, only several studies have examined the correlates of CPTSD in children and adolescents.

Research shows that gender is an important factor for PTSD, and girls are at a greater risk of developing PTSD (Cater et al., 2014; Garza & Jovanovic, 2017; Landolt et al., 2013; Lewis et al., 2019; McLaughlin et al., 2013). Further, research showed that children and adolescents were more vulnerable to PTSD if they lived in families with lower socioeconomic backgrounds and education (Landolt et al., 2013; Lewis et al., 2019). Moreover, cumulative, interpersonal, and direct traumatic experiences were found to be related to a higher risk of PTSD (D'Andrea et al., 2012; Finkelhor et al., 2009; Landolt et al., 2013; McLaughlin et al., 2013; Price et al., 2013; Wamser-Nanney & Cherry, 2018). Subjective perception of threat and fear during the traumatic experience was significantly related to the higher risk of PTSD development (Trickey et al., 2012). Furthermore, the studies indicated the critical role of various post-trauma factors in the development of PTSD in children and adolescents: low social support, social withdrawal, comorbid psychological problems, poor family functioning, negative parenting behavior, lower self-efficacy, and avoidant coping styles (Guerra et al., 2018; Trickey et al., 2012; Williamson et al., 2017).

CPTSD development was first explored in adult samples and was found to be related to cumulative childhood traumatic experiences (Cloitre et al., 2019; Hyland et al., 2017). In particular, repeated childhood sexual or physical abuse (Cloitre et al., 2019; Hyland et al., 2017; Karatzias et al., 2017) was associated with CPTSD more strongly than with PTSD. Studies in adult samples also showed that CPTSD was related to multiple sociodemographic risk factors, such as belonging to a minority group, lower education, relationship status, and lower reported socioeconomic status (Perkonig et al., 2016). The gender effects on CPTSD were mixed, with most but not all studies indicating greater CPTSD risk for women than men (Brewin et al., 2017; Karatzias et al., 2017). Only a few studies have explored CPTSD correlates in youth until now. They reported that compared to PTSD, CPTSD was associated with higher rates of cumulative interpersonal violence (Sachser, Keller, et al., 2017) and domestic violence (Haselgruber et al., 2020b). Furthermore, compared to PTSD, CPTSD in children was associated with higher levels of comorbid psychopathology such as depression, anxiety, and behavior problems (Eilers et al., 2020; Haselgruber et al., 2020b; Perkonig et al., 2016; Sachser, Keller, et al., 2017). There is a great need to understand further which factors lead to CPTSD manifestation in children and adolescents.

1.3.2. Psychosocial functioning

Though disorders specifically associated with stress are the most widely studied psychological consequences of traumatic experiences, there is a range of other potential psychosocial consequences associated with traumatic experiences in childhood and adolescence.

Children and adolescents with traumatic experiences are at a significantly higher risk for internalizing problems than their peers. The research broadly documented the elevated risk for depression and anxiety disorders and also the elevated risk for self-injury and suicide attempts in traumatized youth (Gilbert et al., 2009; Hodges, Godbout, Briere, Lanktree, Gilbert, & Taylor, 2013; Jaffee, 2017; Lewis et al., 2019; Mills et al., 2013; Nilsson et al., 2017; Thompson & Tabone, 2010; Vachon et al., 2015; Vibhakar et al., 2019).

Besides internalizing problems, children and adolescents, after traumatic experiences, are at a higher risk for externalizing problems as well. The research revealed the elevated risk for attention-deficit hyperactivity disorder (ADHD), conduct disorder, oppositional defiant disorder, increased aggression, delinquency, antisocial behavior, problematic sexual behavior, and substance use in youth with traumatic experiences (Gilbert et al., 2009; Lewis et al., 2019; Mills et al., 2013; Shaffer et al., 2009; Thompson & Tabone, 2010; Vachon et al., 2015). Studies documented that early maltreatment and deprivation are linked to reductions in children's cognitive ability, learning and language skills (McLaughlin et al., 2017). Other research showed that maltreated children have lower educational achievements, school performance, and attendance (Gilbert et al., 2009; Perfect et al., 2016; Strøm et al., 2013).

The research also reported lower health-related quality of life (Jernbro et al., 2015; Weber et al., 2016) and higher physical health complaints (Rueness et al., 2020) among adolescents who reported traumatic experiences in comparison to their peers.

The risk for mental health and social problems following traumatic childhood experiences extends to adulthood. Adult survivors of childhood traumatic experiences are at higher risk for major depressive disorder, anxiety disorder, PTSD, psychosis, personality disorders, drug and alcohol abuse, violent and criminal behavior, and physical health problems (Danese et al., 2009; Felitti et al., 1998; Gilbert et al., 2009; Jaffee, 2017; Kessler et al., 2010; Melville, 2017; Norman et al., 2012; Thoresen et al., 2015; Varese et al., 2012). Furthermore, adults reporting childhood maltreatment had lower

education, lower-skilled job positions, or were unemployed (Gilbert et al., 2009; Witt et al., 2017).

1.3.3. Theoretical perspectives

As presented in the previous sections, there are many different psychological outcomes after traumatic experiences. From a developmental perspective, there are diverse pathways with multiple contributors to any particular manifestation of adaptive or maladaptive outcomes. The principles of equifinality and multifinality derived from general systems theory were integrated into the developmental psychopathology field to better understand the heterogeneity of developmental pathways (Bertalanffy, 1968; Cicchetti & Rogosch, 1996). The principle of multifinality specifies that diverse outcomes are likely to emerge from any original starting point. The concept of equifinality specifies that a common outcome will be attained from different starting points, implying diversity in the processes that eventuate in the shared outcome (Cicchetti & Rogosch, 1996, 1999). This thesis is based on these principles as the theoretical standing point in understanding the psychological consequences of traumatic experiences in adolescence. In psychotraumatology, the principle of multifinality implies that posttraumatic responses are not restricted to PTSD or CPTSD but can also include depression, anxiety, social relationship difficulties, behavior, learning, and other problems. Therefore, in this thesis, I will analyze a broad range of psychosocial functioning problems as the potential outcomes of negative experiences. The principle of equifinality suggests that very different traumatic experiences can lead to similar psychosocial problems, such as PTSD, CPTSD, or other mental health problems. Hence, in this thesis, I will explore traumatic experiences comprehensively.

Early traumatic experiences, especially child abuse and other violence in a family, potentially constitute the highest risk for a person's negative emotional, cognitive and social development, as the disturbed early adaptation constrains the subsequent adaptation (Cicchetti, 2016; Pollak, 2008). Early violent experiences in a family usually are related to threatening and unresponsive parental emotional functioning and behavior. As a consequence, child emotional regulation, emotion recognition, response to threats, and reward are disturbed (Cicchetti, 2016; Jaffee, 2017; Pollak, 2008).

In the face of the same traumatic experiences, some children function maladaptively, and others – adapt positively. Therefore the concept of resilience is important in understanding adaptation to a traumatic experience. Resilience is conceived as a dynamic developmental process encompassing

the attainment of positive adaptation despite exposure to significant threats, severe adversity, or trauma, which typically constitute major assaults on the processes underlying biological and psychological development (Cicchetti, 2016; Luthar et al., 2000; Masten, 2015; Southwick et al., 2014).

To summarize, the psychosocial consequences of traumatic experiences depend on many interrelated factors and processes. The following sections focus on theoretical conceptualizations of trauma-related disorders, specifically PTSD and CPTSD.

Theoretical models of PTSD

Historically, the first and most prominent PTSD theoretical models were developed to explain PTSD manifestation in adults (Brewin & Holmes, 2003; Foa et al., 1989; Horowitz, 1976; Janoff-Bulman, 1983). In this section, the psychological models of PTSD, which are relevant for PTSD development in childhood and adolescence, are shortly described. Although models of PTSD are usually categorized as biological, behavioral, cognitive, or social, most models incorporate several processes. The biological, behavioral, cognitive, and social processes interact in and after traumatic experiences in many ways. The complex interactions of multiple factors contribute to the development of PTSD and recovery (Bryant, 2021; Ford & Greene, 2017).

One of the most widely referred models of PTSD in young people is the cognitive-behavioral model, which originates from the cognitive/information processing and behavior/conditioning theories. In particular, the cognitive theory proposed by Ehlers and Clark (2000) was applied to child and adolescent PTSD understanding (Ehlers & Clark, 2000; Meiser-Stedman, 2002; Smith et al., 2010). According to this cognitive-behavioral model, two processes are central in developing and maintaining PTSD: disturbances in the memory processing of the traumatic experience; and negative appraisals and interpretations of the traumatic event and its sequelae that often become overgeneralized. Due to impaired processing and storing of the traumatic memories, the memories remain in sensory format and can easily be triggered, consequently evoking arousal and potentially leading to psychological distress. Moreover, if children can not find a rational explanation for their traumatic experience, they may develop inaccurate or dysfunctional beliefs about themselves and the world (Jensen et al., 2020). The dual process theory of PTSD proposes an explanation of how the survivor processes cognitive information (Brewin, 2014). This theory states that traumatic experiences lead to an imbalance between the two forms of information processing when

largely automatic and nonconscious perceptual processing dominates the narrative autobiographical episodic information processing.

Behavior theory is also helpful in explaining the PTSD symptoms of sense of threat, re-experiencing, and avoidance. Based on cognitive-behavioral theoretical conceptualization, PTSD can be understood as the result of the irrational fear that is a conditioned response triggered by previously neutral stimuli, which have become conditioned stimuli as a result of their association with the threat of the traumatic experience (Ford & Greene, 2017). Avoidance of trauma memories and reminders produces an immediate reduction in distress and therefore is reinforced over time (Jensen et al., 2020).

Theoretical conceptualization of CPTSD

The origins of the ICD-11 diagnosis of CPTSD lie in the first formulation of complex PTSD, proposed by J. Herman in 1992. Herman stated that repeated and multiple interpersonal trauma from which escape is difficult or impossible have a distinct effect on emotion regulation, self-identity, and relational capacities (Herman, 1992). Similar outcomes were noted if prolonged interpersonal violence occurred during childhood (sexual or physical abuse by caregivers) or adulthood (war imprisonment, domestic violence). The proposed diagnosis was not included in DSM-IV and DSM-5. However, researchers used DSM-IV diagnosis of Disorders of extreme stress not otherwise specified (DESNOS) to study the complexity of posttraumatic stress symptoms in research. The ICD-10 included the diagnosis “Enduring personality change after catastrophic experience” (EPCACE) as a personality-related late-onset of complex trauma disorder, but this diagnostic category was used rarely in clinical practice or research and was excluded in the transition to ICD-11 (Karatzias & Levendosky, 2019; Nestgaard Rød & Schmidt, 2021). Based on above mentioned diagnostic categories and scientific and clinical evidence, the CPTSD concept was introduced to ICD-11. As defined in ICD-11, CPTSD can occur at all ages and is a suitable diagnostic category for adults, adolescents, and children (World Health Organization, 2018b).

As CPTSD has only been recently officially recognized, the comprehensive theoretical conceptualizations of CPTSD are not yet available. The CPTSD symptom profile can partly be supported by the theoretical model of the conservation of resources (Hobfoll, 1989). According to this model, traumatic experiences negatively impact a person’s well-being and reduce the capacity to cope by threatening the necessary psychological resources of a

positive sense of self and the ability for emotion regulation and social connectedness (Cloitre et al., 2020).

To summarize this chapter, we can see that traumatic experiences in childhood and adolescence are related to various problems of psychosocial functioning: PTSD/CPTSD, internalizing and externalizing problems, and other difficulties of social adaptation. Different traumatic experiences can lead to the same psychological outcome, e.g. physical violence at home and a severe car accident can lead to PTSD. This can be explained by the principle of equifinality. Therefore the principle of multifinality can explain the heterogeneity among psychological reactions of individuals who survived the same traumatic experiences. There is a need for research to understand the psychological consequences of childhood traumatic experiences already at a young age. Therefore, in the context of revisions in ICD-11, research assessing the validity of CPTSD in children and adolescents and factors related to the development of this disorder is essential.

1.4. The COVID-19 pandemic and its effects on adolescents

The spread of coronavirus disease (COVID-19) and the accompanying countermeasures posed significant challenges to the well-being of adolescents.

Research showed that adolescents were worried about the COVID-19 crisis. They were very concerned about their schooling restrictions and peer relationships (Ellis et al., 2020; Magson et al., 2021). Additionally, adolescents reported the negative impact of the COVID-19 pandemic on their mental health, learning, friendships, and family relations (Liu et al., 2021). Furthermore, stress related to the COVID-19 spread and social distancing was associated with loneliness and depression in adolescents (Ellis et al., 2020; Loades et al., 2020; Orgilés et al., 2020).

The studies showed a high level of depression and anxiety in adolescents during different pandemic periods (Jusienė, Breidokienė, Sabaliauskas, Mieziene, & Emeljanovas, 2022; Li et al., 2021; Loades et al., 2020; Marques de Miranda, da Silva Athanasio, Sena Oliveira, & Simoes-E-Silva, 2020; McGuine et al., 2021; Qi et al., 2020; Zhou et al., 2020). The COVID-19 diagnosis or close contact with an infected person, low social support, and negative coping has been found to be related to higher levels of depression and anxiety (Li et al., 2021; Qi et al., 2020). Furthermore, the COVID-19 pandemic has resulted in higher concentration difficulties and restlessness in children and adolescents, as reported by parents (Orgilés et al., 2020).

The longitudinal studies showed an increase in depression and anxiety symptoms, also a decrease in mental well-being, and lower health-related quality of life from before to during the pandemic (De France et al., 2021; Magson et al., 2021; Ravens-Sieberer et al., 2021; Rogers et al., 2021; Thorisdottir et al., 2021). The high levels of depression and anxiety were associated with peak infection rates, and the decrease in symptoms paralleled the decline in rates of coronavirus spread (Hawes et al., 2021). However, not all studies indicated negative changes in mental health in young people due to the pandemic (Gertrud Sofie Hafstad, Sætren, Wentzel-Larsen, & Augusti, 2021).

To summarize, there is a lack of longitudinal research evaluating the potential changes in the psychosocial functioning of adolescents in relation to the course of the COVID-19 pandemic compared to pre-pandemic. At the time of our study, only a few longitudinal studies were available, and there was a great need to understand the pandemic's effects on adolescent functioning.

1.5. Knowledge gap

Considering what is already known about the psychological functioning in adolescents after negative experiences, a knowledge gap concerning the important aspects of the problem can be outlined. First, the results on the prevalence of childhood traumatic experiences greatly differ, and there is a lack of information about the prevalence of traumatic experiences in young people in European countries, especially Lithuania. Moreover, in the current research, there is a lack of knowledge about the psychological consequences of traumatic and other negative experiences on psychosocial functioning at a young age. Early recognition of traumatic experiences and understanding their consequences can help plan effective intervention strategies for young people. Related to this, it is very important to understand how the new diagnosis of CPTSD, included in ICD-11, occurs in traumatized adolescents and which factors can help to differentiate between PTSD and CPTSD manifestation in adolescents. Finally, the COVID-19 pandemic, which emerged unexpectedly, raised significant concerns about how it would affect young people. In 2020, there were almost no studies worldwide identifying the consequences of the pandemic in a prospective manner, and there was a great need for longitudinal research evaluating the potential changes in adolescents' psychosocial functioning. This thesis analyses all the above-mentioned important questions and proposes research-based conclusions about the psychological well-being of adolescents in difficult times.

1.6. Aims of the thesis

The current thesis aimed to gain knowledge of the prevalence of negative experiences and associated posttraumatic stress reactions and problems in psychosocial functioning in Lithuanian adolescents. The objectives of the dissertation were to estimate the prevalence of traumatic experiences and the patterns of experienced violence in adolescence; to evaluate the psychosocial functioning of abused adolescents; to identify posttraumatic and complex posttraumatic stress responses in traumatized adolescents, and to assess the potential psychosocial functioning changes related to the recent coronavirus (COVID-19) pandemic.

Four empirical studies form the basis for my thesis and address the following research questions.

The research questions

1. What are the prevalence rates of child abuse in Lithuania? (Paper I)
2. What are the patterns of child abuse experiences in adolescence? (Paper I)
3. How are various patterns of child abuse related to psychosocial functioning in adolescents? (Paper I)
4. What are the symptom profiles of PTSD and CPTSD in adolescents with traumatic experiences? (Paper II)
5. What is the factor structure of complex posttraumatic stress in adolescents? (Paper II)
6. What factors discriminate between PTSD and CPTSD diagnostic status in adolescence? (Paper III)
7. How the COVID-19 pandemic may have affected adolescent mental health and psychosocial functioning in Lithuania? (Paper IV)
8. Were emotional symptoms, hyperactivity, conduct problems, and peer problems higher at six months since the first national lockdown than before the COVID-19 pandemic? (Paper IV)
9. What were the specific patterns of change in psychosocial functioning in adolescents from before to six months into the COVID-19 pandemic? (Paper IV)

2. METHOD

This dissertation is based on the data from the first two waves of the ongoing longitudinal study Stress and Resilience in Adolescence (STAR-A). The STAR-A study is implemented by the Center for Psychotraumatology of the Institute of Psychology at Vilnius University in Lithuania. The author of this thesis significantly contributed to the development and implementation of the STAR-A study.

2.1. Participants

The main demographic characteristics of the sample are presented in Table 1.

Table 1. *Characteristics of study participants.*

Variable	Participants of Wave 1 (N = 1299)		Participants of Wave 2 (N = 331)	
	n	%	n	%
Gender				
Male	563	43.3	141	42.6
Female	736	56.7	190	57.4
Age				
Mean (SD)	14.24 (1.26)		15.35 (1.53)	
Range	12-16		13-18	
Family structure				
Two-parent	935	72.0	236	71.3
Other	364	28.0	95	29.7
University education of parents				
One/both parents	900	69.5	215	64.9
No	107	8.3	27	8.2
Don't know	292	22.2	89	26.9
Place of birth				
Lithuania	1282	98.7	327	98.8
Other	17	1.3	4	1.2
Nationality				
Lithuanian	1207	92.9	305	92.1
Other	61	4.7	12	3.7
Missing	31	2.4	14	4.2

Participants in Wave 1

The study was implemented with the cooperation of 15 public schools from 4 different regions in March-June 2019. Schools from various regions of different sizes and geographical locations across Lithuania were invited to cooperate in the implementation of the study. No incentives were offered to the schools. The goals and procedures of the study were discussed with all of the schools, which agreed to cooperate. Each school appointed a contact person responsible for communication with the research team.

Invitations to participate in the study were distributed to all 12 to 16-year-old adolescents and their parents in the schools included in the study. Written informed consent from at least one parent and the adolescent was obtained prior to data collection. In total, 56.8% of invited parents agreed that their child could participate in the study, 28.3% did not respond, and 14.9% declined the invitation. Potential bias related to the differences between the families which gave consent and declined could not be measured because information about the families which refused to participate was unavailable due to data protection law.

Adolescents were given the option to participate or decline participation in the study. All adolescents with obtained parental consent agreed to participate in the study after they were informed about the study's aims and procedures. No incentives were offered for participation to either parents or adolescents.

In total, 1299 adolescents participated in the study. The total sample included 56.6% girls ($n = 735$), with a mean age of 14.24 ($SD = 1.26$) years. The majority of participants were of Lithuanian nationality, 92.7% ($n = 1207$). More than two thirds (72.0%, $n = 935$) were from two-parent families, 25.1% ($n = 326$) were from single-parent families, and 2.9% ($n = 38$) reported living with other relatives or were in foster care. Financial difficulties in families were reported by 40.0% ($n = 519$) of adolescents; maternal unemployment was reported by 9.7% ($n = 126$); and paternal unemployment was reported by 4.8% ($n = 63$). Around one-third of the adolescents reported that at least one parent had a university degree (29.8%, $n = 386$), and 39.5% ($n = 513$) reported that both parents had a university degree.

The data from the first wave of the study was analyzed in the first three papers covered in this thesis (Paper I – Paper III). Paper I analyzes the data from all the participants, Paper II analyzes the data from 932 participants, who reported exposure to at least one potentially traumatic event, and Paper III analyzes the data from 205 participants who were at risk for posttraumatic stress disorder (PTSD) and complex posttraumatic stress disorder (CPTSD).

Participants in Wave 2

In 2020, the same schools were invited to participate in the second wave of the study. Data of this wave was collected in September-October 2020, around 18 months from the first wave and about 6 months since the first national lockdown in Lithuania amid the COVID-19 outbreak. During the data collection period, school closing was required at some level (OxCGRT, 2020). Depending on the COVID-19 situation, each school could choose the teaching strategy (live, distant, or hybrid), and people from outside were not allowed to enter the school premises. At the time of Wave 2, due to the COVID-19 pandemic, the organizational load was higher for schools than usual. Seven schools were able to participate at this study time point. All of the participants from these schools ($n = 449$) were invited to join Wave 2 of the study.

Most of the invited adolescents ($n = 336$, 74.8%) participated in the second wave of the study. The final sample of Wave 2 comprised 331 adolescents. Responses from five participants had to be removed from the analysis because their data from Wave 1 and Wave 2 could not be merged due to the lack of identification information provided by them. The sample included 57.4% girls ($n = 190$). The majority of participants were of Lithuanian nationality, 92.1% ($n = 305$). More than two-thirds of the sample (71.3%, $n = 236$) were from two-parent families.

The data from all the participants of the Wave 2 was analyzed in the fourth paper of this thesis (Paper IV).

2.2. Procedures

Procedures in Wave 1

The data in Wave 1 were collected in the school environment, using paper-pencil self-report measures from adolescents. Data were collected by the research team, consisting of clinical psychologists, including me, and clinical psychology masters program students. The researchers were available for the participants during all the data collection meetings. First, the researchers introduced themselves and the study to the participants by explaining the goals, procedures, and data protection measures. After this, the researchers distributed the printed questionnaires with randomly assigned IDs to all the participants. Then they monitored the process and were ready to answer the questions if participants had them. The data collectors were strictly instructed to ensure they did not see participants' responses. After filling in the questionnaires, adolescents returned them enclosed in sealed envelopes

without identifying information. More information about research ethics is presented in a separate section below.

Procedures in Wave 2

Wave 2 was implemented during the outbreak of the COVID-19 pandemic. The study procedures had to be adapted to the pandemic situation and existing countermeasures in the country. The data collection strategy was changed from a paper-pencil method to an online one. The data was collected through the platform designed for online surveys. The researchers, with the collaboration of schools, organized online meetings with adolescents to explain the procedures and answer the questions while filling out the survey. The adolescents were at school or home during data collection, depending on the COVID-19-related teaching strategy of the school or the coronavirus infection status in families.

2.3. Measures

This section describes the measures used in the studies included in this thesis. The summary of the study measures is presented in Table 2.

Table 2. *The Measures of the Study*

Measure		<i>Paper I</i>	<i>Paper II</i>	<i>Paper III</i>	<i>Paper IV</i>
1	Lifetime Abuse Exposure Questionnaire	✓			✓
2	Child and Adolescent Trauma Screen (CATS)		✓	✓	
3	The Strengths and Difficulties Questionnaire (SDQ)	✓			✓
4	The International Trauma Questionnaire – Child and Adolescent Version (ITQ-CA)		✓	✓	
5	Family functioning (4 questions)			✓	
6	Problems at school (2 questions)			✓	
7	Social Support (1 question)			✓	
8	The Resilience Scale (RS-14)				✓

Lifetime abuse exposure (Paper I and Paper IV)

Lifetime abuse exposure was measured using the questionnaire developed by the team at the Norwegian Center for Violence and Traumatic Stress Studies (NKVTS) (Hafstad & Augusti, 2019; Hafstad et al., 2020). The questions about psychological and physical abuse originally came from the Parent-Child Conflict Tactics Scales (CTSPC) (Straus et al., 1998). The questions about neglect and sexual abuse originated from the Swedish national study (Jernbro & Janson, 2016). The Lifetime abuse exposure questionnaire used in this study covers six types of abuse: neglect at home (6 items), psychological abuse at home (8 items), physical abuse from an adult at home (6 items), internet sexual abuse (5 items), sexual abuse from adults (6 items), sexual abuse from peers (6 items). All the abuse items are reported in Paper I. For neglect questions, the participants were asked to respond on a 5-point scale ranging from ‘never’ (0) to ‘very often/always’ (4). The individual was considered as exposed to neglect if (s)he responded to any neglect item with ‘sometimes’ (2), ‘often’ (3), or ‘very often always’ (4). For all other forms of abuse, the participants were asked to respond on a 4-point scale ranging from ‘never’ (0) to ‘often’ (3). The individual was considered as exposed to

psychological abuse if (s)he responded to any emotional abuse item with ‘sometimes’ (2) or ‘often’ (3), and physical/sexual abuse – if (s)he responded to any physical/sexual abuse item accordingly with an answer ‘once’ (1), ‘sometimes’ (2) or ‘often’ (3).

Lifetime potentially traumatic events (Paper II and Paper III)

Lifetime potentially traumatic events were measured using a potentially traumatic events checklist adopted from the Child and Adolescent Trauma Screen (CATS) (Sachser et al., 2017). The 14-item CATS checklist includes physical and sexual abuse, domestic violence, traumatic loss, stressful medical procedure, accident, and other potentially traumatic events. The complete list of potentially traumatic events is presented in Paper II. Participants were asked to indicate if they experienced any of the listed potentially traumatic events using a binary ‘yes/no’ response. Participants were considered exposed to traumatic events if they disclosed experiencing at least one of the events from the checklist. A total score of exposure to multiple potentially traumatic events was counted as a sum of all indicated traumatic events, ranging from 0 to 14.

Psychosocial functioning (Paper I and Paper IV)

The psychosocial functioning of adolescents was measured using the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). The SDQ comprises 25 items, divided into five scales with five items each. The SDQ scores are generated based on five dimensions of psychosocial functioning: emotional symptoms, conduct problems, hyperactivity, peer problems, and prosocial behavior. The participants were asked to respond to each item on a 3-point Likert scale. The SDQ has been previously validated in Lithuania and is widely used worldwide (Gintilienė et al., 2004; Goodman, 2001; Lesinskiene et al., 2018). In the Lithuanian SDQ validity study, Cronbach’s alpha of the self-report SDQ version was sufficient ($\alpha = 0.72$) (Gintilienė et al., 2004; Lesinskiene et al., 2018).

PTSD and complex PTSD (Paper II and Paper III)

PTSD and complex PTSD were evaluated using the Child and Adolescent version of the International Trauma Questionnaire (ITQ-CA), which is a revision of the adult version of ITQ (Cloitre et al., 2018; Kazlauskas et al., 2020). The structure and the scoring system of the ITQ-CA resemble the ITQ

adult version. The ITQ-CA includes 12 items indicating symptoms of PTSD and disturbances in self-organization (DSO): two symptoms for each PTSD cluster (re-experiencing, avoidance, sense of threat) and two symptoms for each DSO cluster (affective dysregulation, negative self-concept, disturbances in relationships). Participants were asked to indicate the extent each symptom bothered them during the past month using a five-point Likert scale from 0 ('Never') to 4 ('Almost always'). Five functional impairment items are listed following a set of PTSD symptoms and a set of DSO symptoms. Participants were asked to indicate if the symptoms disturbed their functioning using a binary 'yes/no' scale for each area, including friends, family, school, other important areas (hobbies or other relationships), and general happiness.

The ITQ-CA symptoms were scored as clinically significant if the response was ≥ 2 in each of the symptom items. For the diagnosis of PTSD, the presence of at least one symptom from each PTSD cluster and at least one indicator of functional impairment is required. For the diagnosis of CPTSD, the presence of at least one symptom from each PTSD and DSO cluster and at least one indicator of functional impairment related to both PTSD and DSO symptoms is required. If participants meet the criteria for CPTSD, PTSD diagnosis is excluded (Cloitre et al., 2018).

The internal reliability of the total ITQ-CA scores was good ($\alpha = 0.87$), as were the internal reliability estimates for the PTSD ($\alpha = 0.79$) and DSO ($\alpha = 0.86$) subscales scores (Daniunaite et al., 2021; Kazlauskas et al., 2020).

Social factors related to PTSD and CPTSD in adolescents (Paper III)

Family functioning. Family functioning was evaluated using four items, measuring difficulties in participants' parental family life: 1) financial difficulties, 2) alcohol abuse in the family, 3) mental illness in the family, and 4) constant conflicts in the family. The questions were adapted from the Norwegian National Study (Hafstad & Augusti, 2019). Financial difficulties in the family were assessed by asking participants to indicate if their family can buy what is needed by using a 4-point Likert scale, from 0 ('Totally agree') to 3 ('Totally disagree'). The answers were coded as 'no financial difficulties' if the respondent agreed with the item ('Totally agree' or 'Agree'), and 'financial difficulties' if the respondent did not agree ('Totally disagree' or 'Disagree'). Alcohol and mental health problems in the family were evaluated using the 'yes/no/don't know' scale. Answers 'yes' were coded as problem manifestation. The experience of conflicts in the family was

measured by asking respondents to indicate if they experienced constant conflicts over the last year using a binary ‘yes/no’ scale.

Problems at school. School functioning was measured using two items related to adolescents’ school life: 1) bullying at school and 2) learning difficulties at school. Respondents were asked to indicate if they experienced each of these difficulties during the last year using a binary yes/no scale.

Social support. A single question measured social support, ‘If you are having a serious issue that is difficult to talk about, whom would you talk to?’ with multiple response options for social support sources listed. The question was adapted from the Norwegian National Study (Hafstad & Augusti, 2019). Participants could choose one or more options from eight possible social resources provided: father, mother, another family member, friend, school nurse, teacher, other adults at school, other adults, or nobody. If a participant indicated at least one social support resource, it was coded as ‘social support’. If none of the social support sources were indicated, it was coded as ‘no social support’.

Psychological resilience (Paper IV)

The psychological resilience of adolescents was measured by The Resilience Scale (RS-14) (Wagnild, 2009). The RS-14 scale consists of 14 items evaluating the construct of psychological resilience. The participants were asked to respond to each item on a 7-point Likert scale. The Lithuanian version of the scale was used and validated in the adult and adolescent populations (Mažulytė et al., 2014; Zelviene et al., 2021). The RS-14 scale showed a high internal consistency (McDonald’s $\omega = 0.89$) (Zelviene et al., 2021).

2.4. Data analyses

Paper I. The prevalence of abuse was evaluated using descriptive statistics. The differences between the rates of abuse exposure for girls and boys were identified using the Chi-square test. Patterns of lifetime abuse exposure were identified using a two-step latent class analysis (LCA) approach.

Paper II. The validity of the PTSD and CPTSD constructs, based on ITQ-CA scores from adolescents, were tested using confirmatory factor analysis (CFA) and latent class analysis (LCA).

Paper III. The risk factors of PTSD and CPTSD were assessed using a multivariable binary logistic regression to provide the unique effects of each factor while controlling for other variables in the model.

Paper IV. The multivariate latent change modeling approach was used to examine the changes in the indicators of adolescent psychosocial functioning during the COVID-19 outbreak (Wave 2) compared to the pre-test (Wave 1). The latent class change approach was used to identify groups of participants with possibly different patterns of change in indicators of psychosocial functioning.

2.5. Research ethics

The study was approved by the Ethics Committee for Psychological Research at Vilnius University.

Several steps were taken to ensure the ethics of the research.

All 12-16-year-age adolescents in participating schools were invited to join the research giving the possibility to everyone to express their opinion. The study was presented to the adolescents directly by the research team, ensuring the opportunity to receive complete and honest information. The adolescents were asked to bring home consent forms dedicated to parents, which included detailed and clear information about the study's goals, procedures, and expected dissemination of results.

Written informed consent from at least one parent or legal guardian and an ascent from the adolescent was obtained prior to data collection. Adolescents were given the option to participate or decline participation in the study. All adolescents with obtained parental consent agreed to participate in the study after they were informed about the study's aims and procedures of the study. No incentives were offered for participation to either parents or adolescents. Both adolescents and parents were given the possibility to decline their participation at any stage of the study.

A unified data collection procedure was developed and implemented. During the data collection process, the researchers were available to adolescents and ready to answer their questions. The process was organized to ensure confidentiality: the research participants could not see each others' answers, the data collectors were strictly instructed to ensure they did not see the participants' responses, and no school staff was in the room where the research took place. The research team consisted of experienced clinical psychologists and trained master's students. The research team was supervised continuously during the data collection process.

For ethical considerations, the protection of the identity of study participants was ensured. All the participants were assigned random IDs. Data collection and coding were managed in a way that ensured the protection of participants' identities. None of the research team members or school staff could identify the respondent in the data collection and coding process. Only anonymized data was analyzed.

The well-being of research participants is another very important ethical question. Though according to the UN Child Rights Convention, children and adolescents have the right to express their opinion about the topics concerning their life, children also have the important right to be protected in all the actions they participate in, including research (United Nations, 1989). The World Medical Association, in its Declaration of Helsinki, emphasizes that the benefits of the study should outweigh the possible harm to the research participants (World Medical Association, 1964). Several previous research on the traumatic experiences of children and adolescents confirmed that most of the study participants felt positive or neutral about their participation, and only a small part reported distress (Fagerlund & Ellonen, 2016; Finkelhor et al., 2014; Kassam-Adams & Newman, 2005; Zajac et al., 2011). As for some participants, questions regarding traumatic experiences can be upsetting (Finkelhor et al., 2014; Zajac et al., 2011); our study was organized to ensure minimal potential emotional costs for adolescents. The process of data collection was carefully monitored.

Finally, all participants were informed about the psychological help possibilities at both waves of the study. The research team developed the leaflets with information about psychological support for each participating school individually, which included free and easily available options for support at the school, community, and national levels. The school specialists were well-informed about the study and were ready to support adolescents if they needed help.

3. RESULTS

The main findings from the four papers were as follows.

3.1. Findings from paper I

Prevalence and patterns of abuse

Around two-thirds of adolescents (71.1%) reported at least one type of abuse over their lifetime. Almost one in two adolescents reported psychological abuse (47.0%). Around one in three adolescents reported physical abuse (34.6%) and internet sexual abuse (31.8%). Around one in five adolescents reported neglect (22.7%), and a little less reported peer sexual abuse (17.1%). One in ten (9.9%) reported adult sexual abuse. The prevalence rates of neglect, psychological abuse, and adult sexual abuse were similar for boys and girls. However, more girls than boys experienced physical, internet sexual, and peer sexual abuse.

The first-step Latent Class Analysis (LCA) results indicated that for each type of abuse, two different groups of adolescents can be distinguished in the severity of experienced violence, such as less severe and more severe abuse. The second-step LCA results revealed that a four-class solution is most suitable when classifying adolescents based on their exposure to different types of abuse. The four patterns were labeled: *Less severe abuse*, *Peer sexual abuse*, *Adult sexual abuse*, and *Severe abuse*. Most adolescents reported a relatively lower level of psychological, physical, internet sexual abuse and neglect with no exposure to peer or adult sexual violence (*Less severe abuse*, 69.3%). The second most prevalent pattern is characterized by a high level of reported peer and internet sexual abuse and physical/psychological violence (*Peer sexual abuse*, 16.9%). The other pattern is characterized by highly reported adult sexual abuse combined with physical/psychological abuse (*Adult sexual abuse*, 6.7%). The last pattern includes adolescents being exposed to a high level of all types of abuse (*Severe abuse*, 7.1%).

Associations between abuse experience and psychosocial functioning

Compared to all abuse exposure groups, adolescents who did not report any abuse expressed higher levels of prosocial behavior and lower levels of hyperactivity/inattention, emotional symptoms, conduct, and peer relationship problems.

Hyperactivity was lower in the *Less-severe* abuse group compared to *Peer sexual abuse* group. Emotional symptoms were higher in the *Severe abuse group* than in all other abuse exposure groups. Also, emotional symptoms were higher in the peer sexual abuse group compared to the *Adult sexual abuse* group. Conduct problems were more significant in the *Peer sexual abuse* and *Severe abuse* groups than in the *Less-severe* abuse and *Adult sexual abuse* groups.

3.2. Findings from paper II

The structure of ICD-11 PTSD and complex PTSD in adolescents

In total, 71.9% of study participants reported exposure to at least one lifetime potentially traumatic event. The participants of the study reported a mean of 2.66 ($SD = 1.73$) lifetime traumatic events, ranging from one to 13 events. The most common potentially traumatic events were: severe accidents and injuries, witnessing physical violence in the community, and scary medical procedures. Boys reported experiencing more accidents, robbery with a threat, physical violence not in the family, witnessing physical violence in the community, physical attacks, and war experiences in comparison to girls. Girls reported higher exposure to the sudden or violent death of a close one, and a scary medical procedure.

Confirmatory factor analysis showed that the best-fitting measurement model for adolescent posttraumatic stress reactions using ITQ-CA included six correlated factors representing the three PTSD and three DSO symptom clusters.

The latent class analysis of posttraumatic stress symptoms in the sample of adolescents with traumatic event experience supported a four-class model. The four classes were labeled: *CPTSD*, *PTSD*, *DSO*, and *Low Symptom (Baseline)*. The largest class (34.1%) had a high probability of meeting the diagnostic criteria for all six symptom clusters (*CPTSD*). The next largest class (32.4%) had high probabilities of meeting the diagnostic criteria for the three PTSD clusters and low probabilities of meeting the diagnostic criteria for all DSO clusters (*PTSD*). A third class (12.6%) had elevated probabilities of meeting the diagnostic criteria for the three DSO clusters and low probabilities of meeting the diagnostic criteria for all PTSD clusters (*DSO*). The last class (20.9%) had a low probability of meeting the diagnostic criteria for all symptom clusters (*Baseline*). Multinomial binary logistic analysis using the *Baseline* class as a reference showed that belonging to a specific latent class was predicted by different traumatic events. *PTSD* was significantly

predicted by experiences of the death of the close one and physical attack. *CPTSD* was predicted by physical abuse in the family, witnessing physical abuse in the family, witnessing physical violence in the community, sudden or violent death of a close one, and scary medical procedures. *DSO* was predicted by the death of the close one.

3.3. Findings from paper III

Discriminating factors between PTSD and CPTSD in adolescents

There were no significant differences between the groups of adolescents with probable CPTSD and PTSD when comparing the sociodemographic characteristics, including gender, age, country of birth, nationality, education of parents, and family structure in our study.

The majority of adolescents in PTSD and CPTSD groups were exposed to multiple potentially traumatic events. The most commonly reported events were a serious accident or injury, stressful or scary medical procedures, and seeing someone in the community get slapped or punched. Significantly more participants in the PTSD, compared to the CPTSD group, reported single traumatic events. Significantly more participants in the CPTSD group, compared to the PTSD group, reported interpersonal traumatic events. No differences between the PTSD and CPTSD groups were found across various types of trauma experiences, except physical violence outside the family, which was more common in the CPTSD group.

Family and school problems occurred more frequently in adolescents with CPTSD than in adolescents with PTSD. Social support was significantly lower among the CPTSD group than in the PTSD group. Multivariable binary logistic regression analysis revealed that financial difficulties in the family, conflicts in the family, the experience of bullying at school, and lack of social support were all significant predictors of CPTSD vs. PTSD status.

3.4. Findings from paper IV

Changes in psychosocial functioning

Overall, comparing all five indicators of psychosocial functioning in adolescents, a significant but small increase in rates of hyperactivity/inattention and emotional symptoms, as well as a large significant increase in prosocial behavior from Wave 1 to Wave 2 with no change in conduct problems and peer relationship problems were found.

Patterns of change in psychological functioning

Three change profiles were identified in terms of differences in changes in psychosocial functioning indicator means over time. The three profiles were identified: *Strained*, *Peer-problems*, and *Social adaptation*. Most of the adolescents (70.7%) reported a significant but small increase in hyperactivity/inattention, emotional symptoms, conduct problems with stability in prosocial behavior, and peer relationship problems (*Strained*). Almost one in five adolescents (19.6%) reported a large increase in peer relationship problems with no significant change in other indicators of psychosocial functioning (*Peer-problems*). Almost one in ten adolescents (9.7%) reported a large increase in prosocial behavior and a large decrease in peer relationship problems with stability in other indicators. The peer-problems group was characterized by high scores on hyperactivity at both time points. The social adaptation group was characterized by high scores on peer problems at Wave 1.

4. DISCUSSION

This is the first large-scale study of negative life experiences in adolescents, which analyzed the prevalence of potentially traumatic events and abuse in Lithuanian adolescents. Moreover, this is the first study worldwide investigating the validity and factorial structure of ICD-11 PTSD and CPTSD using the International Trauma Questionnaire Child and Adolescent Version (ITQ-CA), in addition to the social factors related to CPTSD manifestation in adolescence. The longitudinal study design gave the opportunity to evaluate the potential changes in the psychosocial functioning of adolescents during the COVID-19 pandemic. Therefore, my thesis covers a broad spectrum of negative experiences and related psychosocial functioning problems in adolescence.

4.1. Discussion of main findings

4.1.1. Prevalence and patterns of traumatic experiences

Prevalence of traumatic experiences

Our studies revealed that the majority of the study participants reported exposure to at least one kind of traumatic experience. These results are similar to the findings of previous studies revealing a high prevalence of traumatic experiences in adolescent populations (Elklit & Petersen, 2008; Finkelhor et al., 2009; McChesney et al., 2015). The abuse prevalence in Lithuania seems higher compared to Scandinavian countries but lower than in the Balkan countries (Hafstad et al., 2020; Jernbro & Janson, 2016; Jud, 2018; Nikolaidis et al., 2018). As indicated by the seminal work by Janson and colleagues, these differences can possibly be linked to the awareness of child abuse in different societies (Durrant & Janson, 2005; Janson et al., 2010). Scandinavian countries have a long history of banning all forms of child abuse. Lithuania banned corporal punishment by law just at the beginning of 2017 and has been in the process of reconstructing the child protection system and changing the attitudes of Lithuanian society at the time of the start of our study. If legislation and awareness can be related to changes in child abuse prevalence, there is a possibility of reducing child abuse scope in Lithuania in the coming years. It would essentially be important to document the potential changes in prevalence and patterns of abuse in our country. And this can be achieved by repeating such prevalence studies as STAR-A in regular intervals.

Comparing the results of this study with the findings of the previous Lithuanian studies, we see some differences also. In comparison to Domanskaite-Gota et al. (2009) study, the general incidence of potentially traumatic events was similar. However, in comparison to Sebre et al. (2004), our study showed a higher incidence of physical and psychological abuse. In comparison to Skabeikytė et al. (2019), the reported incidence of total abuse was also higher in our study. The differences in child abuse prevalence can be related to methodological challenges. To evaluate the lifetime child abuse prevalence, we used a detailed age-appropriate questionnaire, and this can explain one of the reasons for the higher prevalence results in our study. Using the short list of negative childhood experiences could potentially result in under-reporting in one of the previous studies (Skabeikytė et al., 2019). While in another study by Sebre and colleagues (2004), a more detailed list of abuse experiences was used, but the study participants were younger than in ours. It is known from previous studies that the amount of traumatic experiences increases with age (Connell et al., 2018; Finkelhor et al., 2009; Radford et al., 2013).

Based on a detailed questionnaire regarding the specific types of abuse (Paper I), the analysis revealed a much higher level of sexual abuse prevalence than the analysis based on a shorter list of traumatic events (Paper II). This difference can be related to the respondents' limited understanding of the abuse concepts. Questions describing more specific abusive behaviors can be easier understood by young people, and possibly more accurate answers are provided (Copeland & McGinnis, 2021; Kilpatrick et al., 2003). Moreover, the more specific questions on sexual abuse experiences gave an opportunity to reveal the dangers of sexual abuse online and sexual abuse from peers with an even higher prevalence than the previous studies found (Madigan et al., 2018). Our study supports the recommendation to measure young people's experiences thoroughly, including broad and detailed lists of negative experiences (Finkelhor et al., 2009, 2011).

Most of the previous research found that physical abuse is more prevalent among boys (Moody et al., 2018); our results show that there can be differences depending on who the abuser is. In our study, boys reported more physical violence outside the family (Paper II), and girls reported more physical abuse in the family (Paper I).

Psychological abuse was the most prevalent violence experience in this study. Compared to the other types of traumatic experiences, psychological abuse and neglect are generally understudied (McLaughlin & Lambert, 2017). Previous research provided evidence that deprivation-related experiences can

be as detrimental as threat-related, more frequently studied traumatic experiences (Gilbert et al., 2009; Jernbro et al., 2015; Melville, 2017; Mills et al., 2013; Shaffer et al., 2009; Vachon et al., 2015).

Traffic incidents and scary medical procedures were among the most prevalent potentially traumatic events reported by adolescents. Previous research documented that such events can be related to negative effects on adolescent mental health, particularly PTSD (Dai et al., 2018; Marsac et al., 2014). Though chronic interpersonal traumatic experiences are considered the most potentially damaging (Cloitre et al., 2009), other separate potentially traumatic events must be considered when evaluating young people's mental health.

The screening instruments, such as the lists of potentially traumatic events (Paper II), can help to recognize people with at least one or multiple potentially traumatic events but cannot reveal the full picture of each reported event. Future research would benefit from including time, duration, and other features of traumatic experiences. Still, our results significantly contribute to the knowledge that many young people experience multiple traumatic experiences.

Patterns of child abuse experiences

Considering that children and adolescents often experience multiple forms of violence and cumulative trauma is related to more severe negative consequences (Finkelhor et al., 2009; Mills et al., 2013; Roberts et al., 2018; van Berkel et al., 2020), it was important to identify the patterns of abuse and related psychosocial functioning difficulties.

Our results indicated that two groups of adolescents could be identified for each type of abuse – adolescents who have experienced less and more severe abuse of a specific type. This finding contributes to the notion that more detailed questions can provide a more accurate understanding of a person's traumatic experience.

Furthermore, four different patterns of abuse experiences were identified in our study: *Less-severe abuse*, *Peer sexual abuse*, *Adult sexual abuse*, and *Severe abuse*. The most numerous pattern was *Less-severe abuse*, and these results are in line with the conclusions of several previous studies analyzing the patterns of adolescent traumatic experiences (McChesney et al., 2015; Roberts et al., 2018; Shevlin & Elklit, 2008). The identification of the other three groups of abused adolescents can be helpful for practitioners to better recognize severely abused young people. There is a group of adolescents who

suffer from all types of abuse severely (*Severe abuse*), and serious efforts need to be invested in identifying and supporting them. Moreover, there is a group of adolescents who reported adult sexual abuse but almost no other sexual abuse (*Adult sexual abuse*). In addition, there is another group of adolescents reporting sexual abuse online and from peers but not from adults (*Peer sexual abuse*). Different strategies to recognize and support these adolescents are needed. As some young people would benefit from the interventions targeting their social relationships, others would need prevention activities targeting social norms and building trust in reliable adults.

It is important for scientists and clinicians to understand how children's abuse experiences overlap to better recognize and prevent further victimization and effectively provide services for young people and their families.

4.1.2. Psychosocial functioning related to abuse experiences

The psychosocial functioning was analyzed in association with patterns of abuse experiences. As expected, the adolescents without abuse experience reported lower levels of all psychosocial functioning problems (emotional symptoms, hyperactivity, conduct problems, and peer problems) and a higher level of prosocial behavior compared to all groups of adolescents who experienced abuse (*Less severe*, *Adult sexual*, *Peer sexual*, *Severe abuse*). These results go in line with the findings of the previous studies, revealing the detrimental effects of all types of child abuse (Gilbert et al., 2009; Lewis et al., 2019; Roberts et al., 2018).

For the development of effective targeted interventions, it is highly important to understand how patterns of abuse experiences are associated with problems in adolescent psychosocial functioning and how detrimental each abuse pattern is. Comparing the levels of psychosocial functioning problems across the identified patterns of abuse, our study revealed several significant differences. Emotional symptoms were higher in an adolescent group with experience of *Severe abuse* compared to all other groups. Conduct problems were higher in the groups with experience of *Severe abuse* and *Peer sexual abuse* compared to *Less severe* and *Adult sexual abuse* groups. The level of hyperactivity was higher in the groups with experience of *Severe abuse* and *Peer sexual abuse* groups compared to *Less severe abuse* group. The results show that adolescents experiencing the most severe abuse are at the highest risk for psychosocial functioning problems. These findings contribute to the knowledge from some previous studies revealing similar effects (McChesney et al., 2015; Witt et al., 2016). The adolescent group, named *Peer sexual*

abuse, who reported severe sexual abuse from peers and online, was at high risk for hyperactivity and conduct problems as well. Some previous studies drew attention to the high prevalence of peer and online violence among youth (Karsberg et al., 2018; Madigan et al., 2018; Ranney et al., 2016). Our results emphasize the need for better recognition of these dangers and their consequences for young people in future studies.

To summarize, this study gives clear documentation that psychosocial problems related to child abuse are present already early in adolescence. This calls for early interventions for abused young people, particularly those exposed to severe abuse. Future studies should further investigate potential variations in mental health problems of abused children of different ages.

4.1.3. PTSD and CPTSD in adolescence

The results of our study provided support for ICD-11 PTSD and CPTSD conceptualization and reflection on potential discriminant factors between the two disorders in adolescence.

In confirmatory factor analysis (CFA), the first-order correlated six factor model of the six PTSD and DSO symptoms was selected as having the best fit. However, an alternative second-order two factor model with two correlated PTSD and DSO latent factors also had a good fit. The results are similar to the findings from the other adult and adolescent studies, revealing that these two models have the best fit (Brewin et al., 2017; Haselgruber et al., 2020b, 2020a; Li et al., 2021; Redican et al., 2021; Sachser, Keller, et al., 2017). Moreover, our study contributes to the notion that the first-order correlated six factor model could fit better for general populations, and the second-order two factor model fits better for clinical samples (Haselgruber et al., 2020a; Hyland et al., 2017; Li et al., 2021). The differences between best-fitting models can also be related to different reported potentially traumatic events and the different ages of the samples. Significant emotional changes and identity formation in adolescence can be related to specific associations between PTSD and DSO symptoms. Additional research is needed to further examine the symptom structure of ICD-11 CPTSD in the different general and clinical samples of children and adolescents.

Furthermore, LCA analysis supported the validity of ICD-11 PTSD and CPTSD symptom structure. Four distinct latent classes of *Low symptom*, *PTSD*, *CPTSD*, and *DSO*, were identified in line with other studies that used LCA for analysis of CPTSD symptom structure in adult and children populations (Brewin et al., 2017; Haselgruber et al., 2020b; Li et al., 2021; Tian et al., 2021). The largest class (34.1%) had a high probability of meeting

the diagnostic criteria for CPTSD, and a little smaller class (32.4%) had a high probability of meeting the criteria for PTSD. The results differ from the studies revealing that PTSD risk is more common than CPTSD risk in adolescent samples (Haselgruber et al., 2020b; Li et al., 2021; Tian et al., 2021) and go in line with the results of several studies, where CPTSD risk was more common in adolescent samples: general (Redican et al., 2022) and clinical (Sachser, Berliner, et al., 2017). In general, the majority of this study participants (79.1%) exposed to potentially traumatic events had a high probability of meeting the criteria for PTSD, CPTSD, and DSO symptoms, showing the great need for recognition and specialized help. We can raise the hypothesis that the high risk of trauma-related symptoms in adolescents could also be reflective of the low emotional well-being of Lithuanian children and adolescents in general (Unicef, 2013), the high load of historical trauma and its psychological consequences in Lithuanian society (Kazlauskas & Zelviene, 2015), and the high level of child abuse experiences in Lithuanian adolescents (Paper I).

Belonging to the CPTSD risk class was predicted by a higher amount of experienced potentially traumatic events and physical abuse experienced in family and community when the *Low symptom* class was used as a reference in the full sample of adolescents with experience of potentially traumatic event(s) (Paper II). These results go in line with the theoretical assumptions that cumulative and interpersonal traumatic experiences in childhood are related to more serious mental health problems (Brewin et al., 2017; Cloitre et al., 2020; Cloitre et al., 2009). Moreover, our findings confirm the conclusions of the previous adult sample studies (Cloitre et al., 2019; Karatzias et al., 2019).

Some previous studies found that PTSD and CPTSD in adolescents can be predicted by such factors as gender and type of potentially traumatic event (Li et al., 2021; Redican et al., 2022). Therefore, one of the study objectives was to analyze what factors discriminated the PTSD and CPTSD status when PTSD status was taken as a reference (Paper III). The number of reported potentially traumatic events did not differ between the two groups. However, exposure to interpersonal traumatic events was significantly associated with CPTSD in our study. These results contribute to the findings of the previous studies and confirm the essential role of interpersonal traumatic experiences in CPTSD development (Cloitre et al., 2020; Karatzias & Levendosky, 2019).

The results of the study indicated that social factors were important in discriminating between CPTSD versus PTSD status among traumatized adolescents (Paper III). Previous studies documented the critical role of social

factors in PTSD development (Trickey et al., 2012). In this study, CPTSD was associated with financial difficulties and conflicts in the home, bullying, and a lack of social support.

Social support is a key resource that is often disrupted or diminished when children are exposed to traumatic experiences (Ford & Greene, 2017). Depending on the situation, parents, as the resource of social support, can be lost, have mental health difficulties themselves, or be responsible for the committed violence. Previous research showed that children, who experience early maltreatment, are at a higher risk of experiencing social problems later, which can be an obstacle to receiving support when needed (Cicchetti, 2016; Shaffer et al., 2009). The potential interrelationship between CPTSD and social support in adolescence should be more thoroughly analyzed in future studies. Especially social support from peers needs to be elaborated, as peer relationships are an essential part of adolescent life.

Although our study indicated that social, family, and school problems might distinguish between PTSD and CPTSD diagnostic status in adolescents, these findings need replication in future studies, including a more thorough evaluation of the social factors.

4.1.4. Psychosocial functioning amid the COVID-19 pandemic

The COVID-19 pandemic affected countries and people differently, depending on the level of exposure, existing management policies, and healthcare resources, as well as individual resources to cope with pandemic-related stressors (Javakhishvili et al., 2022). According to the findings of the European ADJUST study, Lithuania was among the countries experiencing the highest level of adjustment disorder symptoms amid the pandemic (Lotzin et al., 2021). Though the beginning of the COVID-19 pandemic was related to increased levels of stress and worry in young and adult people's lives (Ellis et al., 2020), longitudinal studies are needed to understand the full scope of the mental health burden related to the pandemic.

In our two-wave longitudinal study, we investigated the changes in adolescents' psychosocial functioning amid the COVID-19 pandemic in contrast to pre-pandemic functioning, exploring mental health changes at 6-month after the onset of the first lockdown. In Lithuania, the COVID-19 countermeasures included the closure of schools, restrictions on face-to-face meetings, gatherings, and other essential areas of social life for adolescents. During wave 2 (autumn 2020), the schools were just partly reopened. Overall, we found a small but significant increase in hyperactivity, emotional symptoms, and prosocial behavior of adolescents, while the rates of conduct

problems and peer problems did not change significantly in the total sample of adolescents. Our findings go in line with the results of other longitudinal studies, which found higher levels of depression and anxiety among adolescents amid the pandemic (Breux et al., 2021; Li et al., 2021; Magson et al., 2021; Ravens-Sieberer et al., 2021; Rogers et al., 2021; Thorisdottir et al., 2021). Our results highlight that adolescents in the general population experienced psychosocial difficulties during the pandemic, which might constitute a risk for future mental health problems. The study, which measured the well-being of Lithuanian adolescents at a later time (spring 2021), already documented that almost 19% of adolescents had a risk of depression (Jusienė et al., 2022).

Analysis of specific patterns of change in adolescents' psychosocial functioning revealed three different change profiles of adolescents' psychosocial functioning during the COVID-19 outbreak compared to before the pandemic. The insights of the study can be helpful in generating prevention and intervention strategies for future pandemics or other highly stressful situations. Around 70% of the adolescents had a small but significant increase in hyperactivity, emotional symptoms, and conduct problems (*strained group*). These changes could be related to pandemic stress and life changes, loneliness, social isolation, longer screen time, and lack of motivation (Bleidokienė et al., 2021; Liu et al., 2021; Loades et al., 2020; Marques de Miranda et al., 2020; Orgilés et al., 2020; Sibley et al., 2021).

The results of our study revealed that almost 20% of adolescents experienced an increase in peer problems (*peer-problems group*) compared to before the pandemic. Previous studies show that increased peer problems can be associated with social restrictions, social isolation, less time with friends, and less perceived friend support (Loades et al., 2020; Rogers et al., 2021). This group of adolescents also had a high level of hyperactivity problems before the pandemic, which could explain their difficulties to adapt to changing situations and keeping in contact with peers.

Finally, almost 10% of adolescents reported a significant decrease in peer problems and an increase in prosocial behavior (*social adaptation group*). An increase in prosocial behavior during the COVID-19 pandemic and after other stressful events was already documented as a positive adaptation in previous studies (Larson & Moses, 2017; Van de Groep et al., 2020). Peer problems in this group were relatively high before the pandemic. Therefore, the reduction of peer problems might be associated with previous difficulties with peers in school, such as bullying.

To summarize, different groups of adolescents met different challenges in the context of pandemics, which have to be taken into consideration while planning support strategies for adolescents. In highly stressful times, the majority of adolescents could benefit from general prevention strategies, helping young people understand the happening changes and organize their daily life accordingly. The mental health difficulties can manifest and increase later. Therefore, emotional support should be available for young people, and monitoring of their well-being should be assured. The previous research showed that adolescents used different coping strategies, which helped them to survive the pandemic (Adler et al., 2021). Helping young people to reflect on their challenges and involving them in the decision-making process related to their well-being could help to reduce the risk of future mental health problems and promote adolescent prosocial behavior.

Peer relationships are an important part of adolescent life, and our research shows that a big part of adolescents experience difficulties in this field during stressful times. The results indicate that parents, teachers, and other school personnel should pay particular attention to the social relationships of adolescents, as peer relationships are a serious risk factor for the mental health of young people (Orben et al., 2020). As a potential source of social support and setting for effective prevention programs, schools could look for ways to foster positive communication and prosocial behavior in school and online.

The previous research documented that the parents' distress was an important factor in the children's well-being (Breidokienė et al., 2021; Janssen et al., 2020). Support for parents in managing their personal and parenting stress should be implemented as a crucial prevention measure.

4.2. Methodological considerations

There are several methodological questions to be addressed while discussing the results of this thesis. The generalizability of the results to the general population refers to representativeness and response rate questions. Participant recruitment procedures could have influenced the representativeness of the findings. Only about half of the invited parents provided informed consent for their child's participation in the study, and this could limit the possibility of the most vulnerable adolescents' involvement. Moreover, adolescents with severe mental health or school issues could have missed classes on the data collection days. Comparing the characteristics of the study sample and the Lithuanian adolescent population characteristics, the majority of the adolescents come from Lithuanian background families. However, in the study sample, the girls comprised a slightly bigger part of the

participants (56.7%), while there are more adolescent boys of this age in the Lithuanian population. This could have affected the results on the prevalence of traumatic experiences and psychosocial functioning difficulties. Moreover, only around 25% of Wave 1 participants participated in Wave 2. This could have affected the results of adolescent psychosocial functioning within the first year of the start of the pandemic.

The following methodological question concerns the measures used in the study. The main instruments for evaluating potentially traumatic events (CATS), post-traumatic stress disorder reactions (ITQ-CA), and difficulties in psychosocial functioning (SDQ) are screening tools designed to identify particular potential problems. These instruments are specifically developed for children and adolescents. They are widely used instruments in the world with suitable psychometric characteristics. However, they do not provide the full picture of the studied problems. Still, they give an opportunity to compare the results among the different studies and give reliable guidelines for organizing future research or clinical evaluation.

The following methodological considerations are related to the informants of the study. The cognitive capabilities of adolescents are still developing, and research questions have to be formulated respectively. Adolescents may not have sufficient maturity or information to answer the questions regarding the specific negative experiences, their parent's mental health, and their family's socioeconomic situation. Finally, because of their young age, the adolescents are vulnerable research participants, and their well-being during the data collection has to be protected. How the research ethics was ensured during the research implementation was described in Chapter 2.5.

4.3. Limitations

The current study has many strengths, including a large sample of adolescents from the general population and a longitudinal design reported in one of the papers. Still, several limitations related to the study design and data analysis must be mentioned. First, three of the four studies were of the cross-sectional design, which precludes causal inferences. Though the aim was to measure the negative experiences over a lifetime, we could not measure the dynamics of the studied experiences and trajectories of psychological functioning change in these studies. In the fourth study, the longitudinal design with two waves was used. Still, it is not possible to attribute the detected changes specifically to the effects of the pandemic because of the long period between the measurement points in which many life changes can happen. Moreover, from today's perspective, the fourth study was

implemented during the COVID-19 outbreak after the first lockdown, and the later course of the pandemic could have affected adolescents even more.

This thesis is based on a self-report questionnaire study, with the limitations and strengths of this design. Including multiple informants' perspectives on the adolescent's negative experiences, social situation, and psychosocial functioning could be beneficial for objectivity. Also, diagnostic interviews could provide more clinically accurate information on psychological functioning, especially PTSD and CPTSD, but such diagnostic interviews are still under development. The study was implemented in the schools, and the design had to be adapted to the schools' schedules, which limited the scope of the measures used in the study. In future studies, it would be helpful to include more precise questions on the duration and chronicity of the negative experiences and the social factors related to social support, family, and school functioning.

Finally, the studies were implemented in one high-income European country with a relatively homogenous sample. It cannot be ensured that the results are generalizable to countries with more heterogeneous populations and different socio-economic situations. Also, the new instruments for the measurement of ICD-11 PTSD and CPTSD were used, and their cultural applicability is still under evaluation.

4.4. Future research directions

Continuous and periodical research on the prevalence of negative experiences in childhood and adolescence is needed. Optimally, the repeated measurements in several countries would enable cross-cultural comparisons and detect changes over time. Similar studies are already conducted in other research areas (e.g., the European Social Survey). As child abuse is highly prevalent, occurs at an early age, and is associated with long-lasting health problems, it must be considered a major societal challenge. This study has contributed to the documentation of this problem in Lithuania. Such longitudinal research would enable to monitor the societal changes and help governments adjust their actions accordingly.

Further longitudinal studies are needed to identify the sequential development of negative childhood experiences and to assess developmental trajectories related to their patterns. The longitudinal assessment of psychosocial functioning and posttraumatic stress reactions will help to analyze the underlying mechanisms and to develop age-appropriate prevention measures and psychosocial interventions for mental health problems in adolescence and young adulthood. As child development and

stress response system is embedded in the gene-environment interaction, research integrating the effects of genes, environment, and developmental perspective would be welcome.

Future research that carefully assesses the prevalence of the full range of disorders related to negative life experiences among youth is needed to develop appropriate mental health resources. Studies in different countries, using population and clinical samples of different ages with exposure to potentially traumatic events of a different type, severity, duration, and frequency, are essential to further explore the validity of ICD-11 stress-related disorders in young people. Moreover, exploring related functional impairment and symptom levels would help review and potentially revise the developmentally appropriate thresholds for a diagnostic status of the stress-related disorders.

Our longitudinal study gave insights into how specifically and differently young people can respond to highly stressful situations such as pandemics. Further longitudinal studies are needed to confirm and explore the effects of the pandemic in other populations and settings.

4.5. Insights for clinicians and policymakers

The high prevalence of negative life experiences and the related psychosocial functioning difficulties in childhood and adolescence calls for effective prevention. According to WHO, the strategies of child abuse prevention in the countries should be focused on the enforcement of preventing laws, strengthening needed norms and values, creating safe environments, supporting parents and caregivers, strengthening the income of families, responding to child abuse, and accessible education (World Health Organization, 2016). In Lithuania, the needed laws were adopted, and the norms about parenting are slowly changing. However, there is no national child abuse prevention strategy in the country. There are prevention programs and initiatives targeting bullying and online violence, but peer sexual abuse and dating violence are still neglected in Lithuania. Therefore, the results of the study show that there are many adolescents with unrecognized abuse histories, and many families need urgent help.

The results of our study underscore the need to uncover violence and other traumatic experiences in young Lithuanian people. Including the screening of negative experiences in the clinical evaluation of young people would help ensure timely interventions. Moreover, in the cases of traumatic experiences, it is highly recommended to include the assessment of the risk for trauma-related reactions, specifically PTSD and CPTSD. The national health and

social systems must prepare to integrate the updated ICD-11 understanding of traumatic disorders into practice and develop the needed trauma-informed services for children and adolescents.

The clinical interventions should tackle PTSD and DSO symptoms, as our results show that PTSD and DSO symptoms are related. The treatment should be provided to efficiently and effectively resolve the full range of symptoms. While planning the interventions for children and adolescents, social factors should be included. Family and educational setting-based prevention and intervention programs can be of great value.

Finally, our study paves the way for better preparation for the next pandemic or similar highly stressful situations in the future. Based on our results, we can foresee a need to identify adolescents who experience psychosocial difficulties. In addition, some adolescents seem to profit from the pandemic situation, and these young people may need assistance in the transfer back to educational institutions.

CONCLUSIONS

1. The majority of study participants reported exposure to negative life experiences in their lifetime: at least one potentially traumatic event was reported by 72%, and child abuse was reported by 71% of adolescents.
2. Four different patterns of abuse were identified in the study: *Less severe abuse* (including 69% of abused adolescents), *Peer sexual abuse* (17%), *Adult sexual abuse* (7%), and *Severe abuse* (7%). The pattern of *Severe abuse* experiences was associated with the highest risk for psychosocial functioning problems in adolescents. The pattern characterized by *Peer sexual abuse* was associated with a higher level of hyperactivity and conduct problems.
3. Exposure to potentially traumatic events was associated with a high risk of posttraumatic stress and complex posttraumatic stress disorders in adolescence. The study revealed the importance of social factors in predicting posttraumatic stress responses by showing the associations between family, school environment problems, lack of social support, and the risk of complex posttraumatic stress disorder in adolescents.
4. The study provided substantial empirical evidence for the validity of ICD-11 complex posttraumatic stress disorder in adolescence: the symptom structure and latent classes of complex posttraumatic stress disorder were comparable to the findings from the adult general population studies.
5. Longitudinal study findings revealed that the COVID-19 pandemic was associated with the deterioration of the mental health of the majority of adolescents who participated in our research. During the first year of the pandemic, 70.7% of study participants experienced a significant increase in psychosocial functioning problems, 19.6% – a large increase in peer problems only, and 9.7% – an increase in prosocial behavior and a decrease in peer problems.

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SUMMARY IN LITHUANIAN

NEIGIAMŲ GYVENIMO PATIRČIŲ IR POTRAUMINIO STRESO BEI PSICHOSOCIALINIO FUNKCIONAVIMO PAAUGLYSTĖJE SĄSAJOS

IVADAS

Šioje daktaro disertacijoje pristatomi didelės apimties Lietuvos paauglių neigiamų gyvenimo patirčių, potrauminio streso ir psichosocialinio funkcionavimo mokslinio tyrimo rezultatai. Disertacijos įvadinėje dalyje aptariamos pagrindinės tematikos sąvokos ir teoriniai modeliai. Šios srities moksliniuose tyrimuose yra naudojamos įvairios sąvokos apibūdinančios vaikystės neigiamas patirtis. Kai kurie tyrėjai analizuoja potencialiai trauminių įvykių, kiti – smurto, patyčių ar nepalankių patirčių paplitimą ir psichologines pasekmes. Disertacijoje kaip pagrindinė pasirinkta *neigiamų gyvenimo patirčių* sąvoka, kuri apima traumines patirtis (potencialiai trauminius įvykius ir smurtą) ir su COVID-19 susijusias patirtis. Disertacijoje trauminių patirčių ir potrauminio streso reakcijų samprata remiasi naujausia Tarptautinės ligų klasifikacijos versija TLK-11, kurioje pateikta atnaujinta potrauminio streso sutrikimo diagnozė (PTSS) ir nauja kompleksinio potrauminio streso sutrikimo (KPTSS) diagnozė.

Pagrindinis teorinis modelis, kuris pasirinktas disertacijoje, įvairias neigiamų vaikystės patirčių psichologines pasekmes paaiškina remiantis daugiafinališkumo ir vienfinališkumo principais (Cicchetti & Rogosch, 1996). Daugiafinališkumo principas numato, kad tos pačios neigiamos patirtys gali turėti įvairias skirtingas psichologines pasekmes. Vienfinališkumo principas numato, kad skirtingos neigiamos patirtys gali turėti tas pačias psichologines pasekmes. Remiantis šiais principais, disertacijoje nuodugniai analizuojamos įvairios neigiamos gyvenimo patirtys ir įvairios jų psichologinės pasekmės paauglystėje.

Disertacijos mokslinis naujumas

Nors ankstesni moksliniai tyrimai rodo, kad neigiamos vaikystės patirtys yra dažnos ir reikšmingai susijusios su įvairiais psichologiniais sunkumais suaugus, vis dar trūksta žinių apie paauglių neigiamas patirtis ir su jomis susijusį psichosocialinį funkcionavimą. Pirma, ankstesni duomenys apie vaikystės trauminių patirčių paplitimą yra labai skirtingi, trūksta vaikų ir

paauglių imčių tyrimų Europoje, ir ypač Lietuvoje. Taip pat, trūksta mokslinių žinių apie psichologines trauminių ir kitų neigiamų patirčių pasekmes jauname amžiuje. Be to, svarbu suprasti, kaip nauja Komplexinio potrauminio streso diagnozė, įtraukta į TLK-11, pasireiškia paauglių imtyje ir kokie veiksniai gali padėti prognozuoti PTSS ir KPTSS paauglystėje. Galiausiai, netikėtai iškilusi COVID-19 pandemija sukėlė rimtą susirūpinimą dėl galimo neigiamo poveikio jaunų žmonių psichinei sveikatai, o tai vertinančių longitudinalinių mokslinių tyrimų itin trūksta.

Mokslinės publikacijos, kurių pagrindu parengta disertacija

1. Zelviene, P., **Daniunaite, I.**, Hafstad, G.S., Thoresen, S., Truskauskaitė-Kuneviciene, I., & Kazlauskas, E. (2020). Patterns of abuse and effects on psychosocial functioning in Lithuanian adolescents: A latent class analysis approach. *Child Abuse and Neglect*, 108, 104684. doi:10.1016/j.chiabu.2020.104684.
2. Kazlauskas, E., Zelviene, P., **Daniunaite, I.**, Hyland, P., Kvedaraite, M., Shevlin, M., & Cloitre, M. (2020). The structure of ICD-11 PTSD and Complex PTSD in adolescents exposed to potentially traumatic experiences. *Journal of Affective Disorders*, 265, 169–174. doi:10.1016/j.jad.2020.01.061
3. **Daniunaite, I.**, Cloitre, M., Karatzias, T., Shevlin, M., Thoresen, S., Zelviene, P., & Kazlauskas, E. (2021). PTSD and complex PTSD in adolescence: discriminating factors in a population-based cross-sectional study. *European Journal of Psychotraumatology*, 12, 890937. doi:10.1080/20008198.2021.1890937
4. **Daniunaite, I.**, Truskauskaitė-Kuneviciene, I., Thoresen, S., Zelviene, P., & Kazlauskas, E. (2021). Adolescents amid the COVID-19 pandemic: a prospective study of psychological functioning. *Child and Adolescent Psychiatry and Mental Health*, 15, 45. <https://doi.org/10.1186/s13034-021-00397-z>

Disertacijos tikslas ir uždaviniai

Šios disertacijos tikslas buvo atskleisti neigiamų patirčių paplitimą ir susijusias potrauminio streso reakcijas ir psichosocialinio funkcionavimo problemas Lietuvos paauglių imtyje. Disertacijoje keliama šie pagrindiniai keturi uždaviniai: (1) įvertinti trauminių patirčių paplitimą ir smurto patirčių profilius paauglių imtyje; (2) įvertinti smurtą patyrusių paauglių

psichosocialinį funkcionavimą; (3) nustatyti PTSS ir KPTSS reakcijas potencialiai trauminius įvykius patyrusių paauglių imtyje; (4) įvertinti galimus paauglių psichosocialinio funkcionavimo pokyčius, susijusius su COVID-19 pandemija.

Disertacija parengta keturių tarptautinių mokslo publikacijų pagrindu. Publikacijose siekiama atsakyti į toliau pateikiamus klausimus.

Disertacijos tyrimo klausimai

1. Koks yra smurto prieš vaikus paplitimas Lietuvoje? (Publikacija I)
2. Kokie yra paauglių patirto smurto profiliai? (Publikacija I)
3. Kaip paauglių patirto smurto profiliai siejasi su psichosocialinio funkcionavimo sunkumais? (Publikacija I)
4. Kokia yra kompleksinio potrauminio streso faktoringė struktūra bendrosios populiacijos paauglių imtyje? (Publikacija II)
5. Kokie yra paauglių PTSS ir KPTSS simptomų profiliai? (Publikacija II)
6. Kokie veiksniai prognozuoja PTSS ir KPTSS sutrikimų pasireiškimą paauglystėje? (Publikacija III)
7. Kaip COVID-19 pandemija galėjo paveikti Lietuvos paauglių psichinę sveikatą ir psichosocialinį funkcionavimą? (Publikacija IV)
8. Ar emociniai simptomai, hiperaktyvumas, elgesio problemos ir problemos su bendraamžiais buvo stipriau išreikštos praėjus 6 mėnesiams nuo pirmojo karantino lyginant su laikotarpiu prieš COVID-19 pandemiją? (Publikacija IV)
9. Kokie buvo specifiniai paauglių psichosocialinio funkcionavimo pokyčių profiliai lyginant psichosocialinį funkcionavimą ikipandeminiu laikotarpiu ir šeštą COVID-19 pandemijos mėnesį? (Publikacija IV)

METODIKA

Disertacija parengta, remiantis Vilniaus universiteto Psichologijos instituto Psichotraumatologijos centro vykdomo longitudinio tyrimo “Stresas ir atsparumas paauglystėje” (STAR-A) pirmų dviejų etapų duomenimis. Disertacijos autorė reikšmingai prisidėjo planuojant ir įgyvendinant STAR-A tyrimą. Tyrimui buvo gautas Vilniaus universiteto Psichologinių tyrimų etikos komiteto leidimas.

1 etapas

Šis tyrimo etapas buvo įgyvendintas 2019 m. kovo-birželio mėn. bendradarbiaujant su 15 Lietuvos mokyklų iš 4 skirtingų regionų. Iš viso, tyrime dalyvavo 1299 paaugliai, nuo 12 iki 16 metų amžiaus ($M = 14,24$; $SD = 1,26$). Tyrime dalyvavo tik tie paaugliai, kurie patys bei jų tėvai / globėjai raštu patvirtino informuotą sutikimą dėl dalyvavimo tyrime. Tyrimas vykdytas popieriaus-pieštuko metodu mokyklos aplinkoje. Tyrėjų komandą sudarė patyrę klinikiniai psichologai ir apmokyti magistro programos studentai. Tyrimo metu buvo užtikrinta tyrimo dalyvių tapatybės apsauga, kiekvienam tyrimo dalyviui buvo priskirtas atsitiktinis kodas, tyrėjai laikėsi vieningos konfidencialumą užtikrinančios tyrimo procedūros. Pasibaigus tyrimui, visi jo dalyviai buvo informuoti apie psichologinės pagalbos galimybes. Paaugliams, tėvams ir mokykloms nebuvo teikiami jokie finansiniai / daiktiniai paskatinimai už dalyvavimą tyrime. Šiame etape surinkti duomenys analizuojami pirmose trijose disertaciją sudarančiose mokslo publikacijose (Publikacijos I-III).

2 etapas

Šio etapo duomenys buvo surinkti 2020 m. rugsėjo-spalio mėn., praėjus maždaug 18 mėn. nuo pirmojo etapo ir 6 mėn. nuo pirmojo karantino, paskelbto Lietuvoje dėl COVID-19 pandemijos. Atsižvelgiant į situaciją, tyrimas buvo vykdomas nuotoliniu būdu, naudojant tyrimams skirtą internetinę platformą. Šiame etape dalyvavo septynios iš pirmajame etape dalyvavusių mokyklų. Šio etapo tyrimo imtį sudaro 331 paauglys ($M = 15,35$; $SD = 1,53$). Šiame etape surinkti duomenys analizuojami ketvirtoje disertacijos publikacijoje (Publikacija IV).

Paauglių smurto patyrimui vertinti buvo naudotas klausimynas, sudarytas Norvegijos smurto ir trauminio streso tyrimų centro mokslininkų (Hafstad & Augusti, 2019; Hafstad et al., 2020). Potencialiai trauminių įvykių patyrimas vertintas naudojant Trauminių įvykių klausimyną (CATS, *angl.* Child and Adolescent Trauma Screen) (Sachser et al., 2017). PTSS ir KPTSS vertinimui naudota Tarptautinio traumos klausimyno – vaikų ir paauglių versija (ITQ-CA, *angl.* International Trauma Questionnaire – Child and Adolescent Version) (Cloitre et al., 2018, Kazlauskas et al., 2020). Paauglių psichosocialiniam funkcionavimui vertinti naudotas Galių ir sunkumų klausimynas (SDQ, *angl.* Strengths and Difficulties Questionnaire) (Goodman, 1997). Paauglio šeimos funkcionavimas buvo vertinamas keturiais klausimais (finansinė padėtis, alkoholio vartojimas, psichikos ligos, konfliktai šeimoje), funkcionavimas mokykloje – dviem klausimais (patyčios, mokymosi sunkumai). Socialinė parama vertinta vienu klausimu su galimybe pasirinkti keletą atsakymo variantų: „Įsivaizduok, kad turi problemą, apie kurią yra nelengva kalbėti ir kuri tave liūdina. Su kuo pasikalbėtum?“. Psichologinis paauglių atsparumas vertintas naudojant Psichologinio atsparumo skalę (RS-14, *angl.* Resilience Scale) (Wagnild, 2009).

Tyrimo duomenų analizei naudota aprašomoji statistika, Chi-kvadrato testas, logistinė regresija, latentinių klasių analizė, latentinių klasių pokyčių analizė, patvirtinamoji faktorių analizė.

REZULTATAI

Smurto patirčių paplitimas, profiliai ir sąsajos su psichosocialiniu funkcionavimu paauglystėje (Publikacija I)

Maždaug du trečdaliai tyrime dalyvavusių paauglių (71,1%) nurodė patyrę bent vienos rūšies smurtą per savo gyvenimą. Psichologinio smurto patyrimą nurodė 47,0%, fizinio smurto – 34,6%, seksualinio smurto internete – 31,8%, nepriežiūros – 22,7%, seksualinio smurto iš bendraamžių – 17,1%, seksualinio smurto iš suaugusiųjų – 9,9% tyrime dalyvavusių paauglių.

Latentinių klasių analizė pirmame analizės etape atskleidė, kad galima išskirti dvi grupes kiekvienos rūšies smurtą patyrusių paauglių – stipresnį ir ne tokį stiprų smurtą patyrusių paauglių grupes. Antro žingsnio latentinių klasių analizė atskleidė keturis smurto patirčių profilius paauglystėje: *Mažiau stiprus smurtas* (angl. *Less severe abuse*), *Bendraamžių seksualinis smurtas* (angl. *Peer sexual abuse*), *Suaugusių seksualinis smurtas* (angl. *Adult sexual abuse*), *Stiprus smurtas* (angl. *Severe abuse*).

Paauglių, nepriklausomai nuo jų patirto smurto profilio, hiperaktyvumas, emociniai simptomai, elgesio problemos ir problemos su bendraamžiais buvo labiau išreikštos nei smurto nepatyrusių paauglių. Nustatyti šie psichosocialinio funkcionavimo skirtumai tarp skirtingus smurto patirčių profilius turinčių paauglių grupių: *Bendraamžių seksualinį smurtą* patyrusių hiperaktyvumas buvo stipriau išreikštas nei patyrusių *Mažiau stiprų smurtą*; *Stiprų smurtą* patyrusių paauglių emociniai simptomai buvo stipriau išreikšti nei visų kitų grupių; *Bendraamžių seksualinį smurtą* patyrusių paauglių emociniai simptomai buvo stipresni lyginant su *Suaugusių seksualinį smurtą* patyrusių; *Bendraamžių seksualinį smurtą* ir *Stiprų smurtą* patyrusių paauglių elgesio problemos buvo stipriau išreikštos nei *Mažiau stiprų smurtą* ir *Suaugusių seksualinį smurtą* patyrusių paauglių.

PTSS ir KPTSS struktūra paauglių imtyje (Publikacija II)

Dauguma tyrimo dalyvių (71,9%) nurodė per gyvenimą patyrę bent vieną potencialiai traumuojančią įvykį. Paauglių patirtų įvykių skaičius svyravo nuo 1 iki 13, vidutinis buvo 2,66 ($SD = 1,73$). Dažniausiai nurodyti potencialiai traumuojančios įvykiai: nelaimingas atsitikimas, fizinis smurtas patirtas ne šeimoje, bauginanti medicininė procedūra.

Patvirtinamoji faktorių analizė parodė, kad naudojant ITQ-CA, paauglių potrauminio streso reakcijoms labiausiai tinka šešių koreliuojančių faktorių

modelis, apimantis tris potrauminio streso sutrikimo (PTSS) ir tris sutrikusios asmenybės organizacijos simptomų (AOS) grupes.

Latentinių klasių analizė patvirtino keturių klasių modelį paauglių, patyrusių potencialiai trauminius įvykius, potrauminio streso simptomams: *KPTSS* (angl. *CPTSD*), *PTSS* (*PTSS*, angl. *PTSD*), *AOS* (angl. *DSO*) ir *Žemų simptomų* (angl. *Baseline*). Didžiausią grupę (34,1%) sudarė paaugliai patenkantys į *KPTSS* rizikos grupę, kadangi visos šešios jų simptomų grupės atitiko diagnostinius *KPTSS* kriterijus. Kitą didelę grupę (32,4%) sudarė paaugliai, kurių potrauminio streso simptomai atitiko diagnostinius kriterijus, tačiau *AOS* – ne (*PTSS*). Trečią grupę (12,6%) sudarė paaugliai, kurių simptomai atitiko *AOS* diagnostinius kriterijus, tačiau *PTSS* – ne (*AOS*). Paskutinę grupę (20,9%) sudarė paaugliai, kurių visi simptomai buvo žemai išreikšti (*Žemų simptomų*).

PTSS ir KPTSS diferencijuojantys veiksniai (Publikacija III)

Atrinkus paauglių, turinčių padidintą *PTSS* ir *KPTSS* riziką, grupes, nustatyta, kad grupės pagal įvairius sociodemografinius veiksnius tarpusavy nesiskyrė. *PTSS* ir *KPTSS* rizikos grupės taip pat nesiskyrė ir pagal vidutinį patirtų potencialiai trauminių įvykių skaičių. Tačiau, nors dauguma paauglių abeiose grupėse nurodė patyrę daugiau nei vieną potencialiai trauminį įvykį, *PTSS* rizikos grupėje buvo statistiškai reikšmingai daugiau paauglių patyrusių vieną įvykį nei *KPTSS* grupėje. *KPTSS* rizikos grupėje statistiškai reikšmingai daugiau paauglių nurodė patyrę tarpasmeninių trauminių įvykių lyginant su *PTSS* grupe.

Su šeimos ir mokyklos situacija susiję sunkumai dažniau pasireiškė paauglių, patekusių į *KPTSS* grupę lyginant su *PTSS* rizikos grupe. Be to, *KPTSS* rizikos grupės paauglių gaunama socialinė parama buvo žemesnė nei *PTSS* grupės. Logistinės regresijos analizė atskleidė, kad šeimos finansiniai sunkumai, konfliktai šeimoje, patyčios mokykloje ir socialinės paramos trūkumas statistiškai reikšmingai prognozavo *KPTSS* riziką.

Psichosocialinio funkcionavimo pokyčiai COVID-19 pandemijos laikotarpiu (Publikacija IV)

Vertinant paauglių psichosocialinio funkcionavimo pokyčius nuo 2019 m. kovo-birželio mėn. (1 tyrimo etapas, ikipandeminis laikotarpis) iki 2020 m. rugsėjo-spalio mėn. (2 tyrimo etapas, pirmi pandemijos metai, 6 mėnesiai nuo pirmojo karantino pradžios), nustatytas statistiškai reikšmingas nedidelis

hiperaktyvumo ir emocinių simptomų bei socialaus elgesio lygio padidėjimas, kai elgesio problemų ir problemų su bendraamžiais lygis nepasikeitė.

Naudojant latentinių klasių pokyčių analizę buvo nustatyti šie trys tyrime dalyvavusių paauglių psichosocialinio funkcionavimo pokyčių profiliai: *Itampa* (angl. *Strained*), *Problemos su bendraamžiais* (angl. *Peer-problems*), *Socialinė adaptacija* (angl. *Social adaptation*). Daugumos paauglių (70,7%) hiperaktyvumo, emocinių ir elgesio problemų lygis nedaug, bet statistiškai reikšmingai padidėjo prasidėjus pandemijai, kai kiti psichosocialinio funkcionavimo rodikliai nepakito (*Itampa*). Maždaug vieno iš penkių paauglių (19,6%) problemų su bendraamžiais lygis statistiškai reikšmingai padidėjo, o kiti rodikliai nepakito (*Problemos su bendraamžiais*). Maždaug dešimtadalio paauglių (9,7%) socialus elgesys statistiškai reikšmingai padidėjo, o problemų su bendraamžiais sumažėjo, kai kiti indikatoriai nesikeitė (*Socialinė adaptacija*).

IŠVADOS

1. Dauguma tyrimo dalyvių nurodė patyrę neigiamų patirčių per visą gyvenimą: bent vieną potencialiai trauminį įvykį nurodė 72% dalyvių, smurto patyrimą – 71%.
2. Tyrime buvo nustatyti keturi skirtingi smurto patirčių profiliai: *Mažiau stiprus smurtas* (69% visų smurtą patyrusių), *Bendraamžių seksualinis smurtas* (17%), *Suaugusių seksualinis smurtas* (7%), *Stiprus smurtas* (7%). Patirto *Stipraus smurto* profilis buvo susijęs su didžiausia psichosocialinio funkcionavimo sunkumų rizika paauglystėje. *Bendraamžių seksualinio smurto* profilis buvo susijęs su aukštesniu hiperaktyvumo ir elgesio problemų lygiu.
3. Potencialiai trauminių įvykių patyrimas buvo susijęs su aukšta potrauminio streso ir kompleksinio potrauminio streso sutrikimų rizika paauglystėje. Tyrimas atskleidė socialinių veiksnių svarbą prognozuojant potrauminio streso reakcijas, buvo nustatytos sąsajos tarp šeimos, mokyklos sunkumų, socialinės paramos trūkumo ir kompleksinio potrauminio streso paauglystėje.
4. Tyrimo rezultatai patvirtino TLK-11 kompleksinio potrauminio streso sutrikimo validumą paauglystėje: nustatyta kompleksinio potrauminio streso sutrikimo simptomų struktūra ir latentinės klasės buvo panašios į anksčiau nustatytas suaugusiųjų imtyse.
5. Longitudinis tyrimas atskleidė, kad COVID-19 pandemija buvo susijusi su daugumos tyrime dalyvavusių paauglių psichinės sveikatos pablogėjimu. Per pirmus metus nuo pandemijos pradžios 70,7% tyrimo dalyvių patyrė statistiškai reikšmingai daugiau psichosocialinio funkcionavimo problemų, 19,6% – žymiai daugiau problemų su bendraamžiais, 9,7% – daugiau socialaus elgesio ir mažiau problemų su bendraamžiais.

PUBLISHED PAPERS

I.

Patterns of abuse and effects on psychosocial functioning in
Lithuanian adolescents: A latent class analysis approach

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Patterns of abuse and effects on psychosocial functioning in Lithuanian adolescents: A latent class analysis approach

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ABSTRACT

Background: There is considerable evidence that child abuse and neglect has a significant impact on social relationships and mental health across the lifespan.

Objective: We aimed to estimate the prevalence of child abuse in Lithuanian adolescents, to identify patterns of abuse experiences using a latent class analysis approach, and to assess psychosocial functioning associated with these patterns of abuse.

Participants and setting: The study was based on a sample of 1299 adolescents from the Lithuanian general population aged 12–16 ($M = 14.24$, $SD = 1.26$) years.

Methods: Lifetime abuse exposure measures included neglect, emotional abuse, physical abuse, online sexual violence, sexual abuse from adult, and sexual abuse from peers. Psychosocial functioning was measured with the Strength and Difficulties Questionnaire (SDQ). Patterns of abuse were identified by a two-step latent class analysis (LCA).

Results: Around two-thirds of adolescents (71 %) reported at least one type of abuse over their lifetime. The results of the LCA indicated that for each type of abuse two different groups of adolescents can be distinguished in terms of the severity of abuse, and four classes 'less-severe', 'peer sexual', 'adult sexual', and 'severe abuse' were identified. Psychosocial functioning varied significantly between the four classes with higher psychosocial functioning problems associated with high severity and sexual abuse.

Conclusions: The study revealed a high child abuse prevalence in Lithuania. The results show that the psychosocial functioning of adolescents is associated with severity and types of abuse experiences.

1. Introduction

Child maltreatment is of high priority in the global health agenda (World Health Organization, 2016). The World Health Organization (WHO) provides a definition of child maltreatment, which involves physical, sexual, emotional/psychological violence against children and neglect, including violent punishment of children (World Health Organization, 2016). This broader definition is often used in research and policy of child abuse globally, but particularly in Europe, as well as in Lithuania in which the present study

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was conducted.

Childhood abuse and neglect are highly detrimental to young people and are considered as one of the most traumatizing experiences during the lifetime (Cicchetti, 2013). There is considerable evidence from research that child abuse and neglect has a significant impact on child psychosocial development and mental health (Cicchetti, 2013; Gilbert et al., 2009; Roberts, English, Thompson, & White, 2018). Experience of abuse and neglect in childhood is related to lower academic results, difficulties in completing school, mental and physical health problems, a higher level of aggression, crime, violence, suicidal behavior, lower quality of life and social functioning, marginalization from work in adulthood (Afifi & MacMillan, 2011; Lauterbach & Armour, 2016; Lewis et al., 2019; Thompson & Tabone, 2010; Vachon, Krueger, Rogosch, & Cicchetti, 2015). Diverse consequences of child maltreatment increase the risk of chronic mental or/and physical health outcomes across the lifespan (Melville, 2017; Weber, Jud, & Landolt, 2016). On the societal level, consequences include increased health care costs, social welfare usage, productivity loss, and economic burden (Cicchetti, 2013).

Most studies of childhood abuse are, however, conducted in adult samples. Recall bias may threaten the accuracy of reporting abuse experiences in such studies (McKinney, Harris, & Caetano, 2008), additionally, it remains unclear at what developmental stage the psychosocial consequences of abuse develop. Studies on young people are necessary to identify at what age mental health symptoms and psychosocial difficulties develop (Finkelhor, Ormrod, & Turner, 2009). Sound knowledge on child abuse prevalence is vital for planning, scaling and implementing strategies that aim to reduce the prevalence of child abuse and its consequences.

The prevalence and consequences of child abuse may vary between different countries and cultures. The majority of large-scale studies focused on child abuse and its consequences have been conducted in the United States (Finkelhor et al., 2009; Moody, Cannings-John, Hood, Kemp, & Robling, 2018). The considerable evidence on trajectories of child maltreatment and its long-term psychological effects comes from the research studies LONGSCAN consortium (Lauterbach & Armour, 2016; Proctor et al., 2012; Runyan et al., 1998). In recent years the extent of national studies on child abuse prevalence is growing – studies have been conducted in Canada, Germany, Switzerland, Norway, Sweden, and other countries (e.g., Hafstad & Augusti, 2019; Jernbro, Tindberg, Lucas, & Janson, 2015; Jud, 2018). Though epidemiological study findings from various European countries in adult populations showed 4% of childhood abuse prevalence (Darves-Bornoz et al., 2008), childhood abuse and its effects are still understudied in the European context. Moreover, there is a lack of studies of childhood abuse prevalence and its effects in the Baltic countries, a region which includes the three countries – Lithuania, Latvia, and Estonia (Kazlauskas & Zelviene, 2016).

To our knowledge, only several studies focused on child abuse and neglect in Lithuania with only two studies conducted in adolescent samples. A recent study found a 23 % prevalence of childhood abuse reported retrospectively among adults (Kazlauskas & Zelviene, 2015). Furthermore, the Adverse Childhood Experiences (ACE) study in the adult sample across the eight Central and Eastern European countries, including Lithuania, found 53 % exposure to at least one ACE in Lithuania among young adults (Bellis et al., 2014). The analysis of the 15-year-old adolescent sample ($N = 183$) from Lithuania showed that 9% of them reported exposure to physical, sexual abuse or severe neglect, also 30 % reported threats of physical violence (Domanskaitė-Gota, Elklit, & Christiansen, 2009). Results from Lithuania were also reflected in a cross-cultural study which compared findings from 10 to 14 years adolescents from Latvia, Lithuania, Macedonia, and Moldova (Sebre et al., 2004) and found 43 % prevalence of physical and emotional abuse in Lithuanian sample ($N = 302$).

Considering the great burden of child abuse on society and lack of studies of abuse prevalence and its effects in Lithuania, the current study explores childhood abuse and associated psychosocial functioning in a large sample of adolescents from the general population. Our aim was threefold. First, we aimed to estimate the prevalence rates of child abuse in Lithuania. Second, we identified patterns of child abuse experiences using a latent class analytic approach. Third, we assessed mental health and psychosocial functioning associated with the identified latent classes.

2. Method

2.1. Participants and procedures

The data from the first wave of the currently ongoing longitudinal study *Stress and Resilience in Adolescence* (STAR-A) was used for this study. The study is coordinated by the Center for Psychotraumatology of Vilnius University in Lithuania, and the design of the study was developed in cooperation with the Norwegian Center for Violence and Traumatic Stress Studies (NKVTS). The STAR-A study was approved by the Ethics Committee for Psychological Research at Vilnius University.

In total, 1,299 adolescents participated in the study. The data was collected in 15 public schools from four different regions in Lithuania and data was collected between March and June 2019 using self-report printed measures. We aimed to invite all the adolescents aged 12–16 from the selected schools to participate in the study. Written informed consent from at least one parent, and assent from the adolescent was obtained prior to data collection. Overall, around half of the parents agreed to participate in the study (56.8 %), 28.3 % did not respond, and 14.9 % declined the invitation. Adolescents were given the option to participate or decline participation in the study. However, all adolescents with obtained parental consent agreed to participate in the study after they were informed about the study aims and procedures of the study. No incentives were offered for participation to either parents or adolescents.

Data were collected in schools by a research team that was trained and supervised during the data collection process. For ethical considerations, we wanted to ensure the protection of the identity of study participants. Therefore, all questionnaires were coded and the research team members or school staff could not identify study participant responses. Adolescents filled in printed questionnaires with randomly assigned ID and returned enclosed into sealed envelopes without identifying information. Data collectors were strictly

instructed to ensure they did not see responses of participants during data collection. We distributed printed leaflets to all participants with information about counseling services at their school and in their local community. More information on the procedures of the STAR-A study has been published previously (Kazlauskas et al., 2020).

The demographic characteristics of the sample are presented in Table 1. The total sample of 1299 adolescents included 56.6 % girls ($n = 735$), with a mean age of 14.24 ($SD = 1.26$) years. The majority of participants were of Lithuanian nationality 92.7 % ($n = 1207$). More than two thirds (72.0 %, $n = 935$) were from two-parent families, 25.1 % ($n = 326$) were from single-parent families, and 2.9 % ($n = 38$) reported living with other relatives or were in foster care. Financial difficulties in families were reported by 40.0 % ($n = 519$) of the sample; maternal unemployment was reported by 9.7 % ($n = 126$); and paternal unemployment was reported by 4.8 % ($n = 63$). Around one-third of the adolescents reported that at least one parent had a university degree (29.8 %, $n = 386$), and 39.5 % ($n = 513$) reported that both parents had a university degree (see Table 1).

2.2. Measures

2.2.1. Abuse exposure

Life-time abuse exposure was measured using the questionnaire developed by the NKVTS (Hafstad and Augusti, 2019; Hafstad

Table 1
Sample characteristics ($N = 1299$).

Variables	<i>N</i>	%
Gender		
Male	563	43.3
Female	736	56.7
Age		
<i>M (SD)</i>	14.24 (1.26)	
Age group		
12	176	13.5
13	204	15.7
14	244	18.8
15	488	37.6
16	187	14.4
Place of Birth		
Lithuania	1282	98.7
Other country	17	1.3
Language at home ^a		
Lithuanian	1207	95.2
Lithuanian and other	48	3.8
Other	13	1.0
Family type		
Both parents	935	72.0
Single parent	326	25.1
Other	38	2.9
Financial difficulties ^a		
None	777	60.0
Some	519	40.0
Mother working ^a		
Yes	1155	89.1
No	126	9.7
Not known	15	1.2
Father working ^a		
Yes	1154	89.2
No	63	4.9
Not known	77	5.9
University/college education of parents ^a		
Both	513	39.6
One	387	29.9
No	107	8.3
Not known	287	22.2

Note. ^a cases with missing data (range: 0.2–2.4 %).

et al., 2020). The questionnaire consisted of 37 questions covering six types of abuse: neglect at home (6 items), emotional abuse at home (8 items), physical abuse from an adult at home (6 items), online sexual abuse (5 items), sexual abuse from adults (6 items), sexual abuse from peers (6 items). All single items are displayed in Table 2. The response format for neglect questions was a 5-point scale ranging from “never” (0) to “very often/ always” (4). We considered an individual as exposed to neglect if (s)he responded to any neglect item with “sometimes” (2), “often” (3) or “very often/ always” (4). Concerning the items on all other forms of abuse, the participants were asked to respond on a 4-point scale ranging from “never” (0) to “often” (3). The participant was considered as exposed to emotional abuse, if (s)he responded to any emotional abuse item with “sometimes” (2) or “often” (3), and physical/ sexual abuse – if (s)he responded to any physical/ sexual abuse item accordingly with an answer “once” (1), “sometimes” (2) or “often” (3).

2.2.2. Emotional and behavioral problems

The Strengths and Difficulties Questionnaire (SDQ) was used to measure emotional and behavioral problems (Goodman, 1997). The SDQ comprises 25 items, divided into five scales of five items in each. Scores are generated for five psychosocial functioning dimensions: problems are reflected by the scales of emotional symptoms, conduct problems, hyperactivity, and peer problems; positive psychosocial functioning is reflected in the scale of prosocial behavior. The SDQ has been previously validated in Lithuania (Gintiliene

Table 2

Life-time exposure to different types of abuse ($N = 1299$).

Items of abuse	Total, % (N)	Girls, % (N)	Boys, % (N)	$\chi^2(p)$
A. Neglect	22.7 (295)	22.1 (163)	23.4 (132)	0.31 (.580)
1 Food deficiency	1.2 (15)	1.0 (7)	1.4 (8)	0.62 (.432)
2 Wearing dirty clothes	4.9 (64)	3.3 (24)	7.1 (40)	10.06 (.002)
3 Lack of care due to parental substance use	2.7 (35)	2.4 (18)	3.0 (17)	0.40 (.527)
4 No doctor visit	2.9 (38)	2.6 (19)	3.4 (19)	0.71 (.400)
5 Feeling worthless at home	13.2 (172)	13.6 (100)	12.8 (72)	0.18 (.674)
6 Feeling unloved at home	9.7 (126)	11.1 (82)	7.8 (44)	4.03 (.045)
B. Psychological abuse	47.0 (610)	48.8 (359)	44.6 (251)	2.25 (.133)
1 Shouting	44.4 (577)	46.3 (341)	41.9 (236)	2.52 (.113)
2 Bullying	8.8 (114)	11.0 (81)	5.9 (33)	10.54 (.001)
3 Calling stupid or worthless	11.5 (149)	12.2 (90)	10.5 (59)	0.96 (.327)
4 Threatening to leave or send away	6.2 (80)	6.1 (45)	6.2 (35)	0.01 (.939)
5 Threatening to hit or hurt	7.6 (99)	8.2 (60)	6.9 (39)	0.68 (.410)
6 Left outside the house	1.4 (18)	0.5 (4)	2.5 (14)	8.81 (.003)
7 Locked in the basement	0.3 (4)	0.0 (0)	0.7 (4)	5.25 (.022)
8 Threatening to harm pet	1.9 (25)	2.3 (17)	1.4 (8)	1.34 (.248)
C. Physical abuse	34.6 (450)	37.2 (274)	32.3 (176)	5.02 (.025)
1 Stretching the hair, scratching, pinching	12.7 (165)	14.8 (109)	9.9 (56)	6.80 (.009)
2 Shaking or pushing	14.0 (182)	14.8 (109)	13.0 (73)	0.90 (.343)
3 Hitting with hand	27.8 (361)	31.3 (230)	23.3 (131)	10.13 (.001)
4 Hitting with fist or hard object	7.4 (96)	6.7 (49)	8.3 (47)	1.33 (.248)
5 Kicking	3.2 (41)	2.6 (19)	3.9 (22)	1.84 (.176)
6 Beating	1.8 (23)	1.8 (13)	1.8 (10)	0.00 (.989)
D. Internet sexual abuse	31.8 (413)	38.2 (281)	23.4 (132)	31.93 (.000)
1 Sex chat online	12.5 (163)	14.1 (104)	10.5 (59)	3.88 (.049)
2 Showing intimate body pictures	21.1 (274)	23.9 (176)	17.4 (98)	8.11 (.004)
3 Asking to send naked photos	21.5 (279)	32.1 (236)	7.6 (43)	112.86 (.000)
4 Persuading to send naked photos	2.2 (29)	3.0 (22)	1.2 (7)	4.55 (.035)
5 Posted child's naked pictures on social media	1.1 (14)	1.2 (9)	0.9 (5)	0.34 (.563)
E. Adult sexual abuse	9.9 (128)	8.6 (63)	11.5 (65)	3.20 (.074)
1 Forced kissing	7.4 (96)	5.2 (38)	10.3 (58)	12.31 (.000)
2 Exposed to adult's intimate body parts	2.0 (26)	2.6 (19)	1.2 (7)	2.91 (.088)
3 Persuaded child to show intimate body parts	0.8 (10)	1.1 (8)	0.4 (2)	2.24 (.135)
4 Persuaded child to touch intimate body parts	0.6 (8)	0.4 (3)	0.9 (5)	1.20 (.273)
5 Touched child's intimate body parts	1.3 (17)	1.5 (11)	1.1 (6)	0.45 (.500)
6 Intercourse	0.4 (5)	0.4 (3)	0.4 (2)	0.02 (.880)
F. Peer sexual abuse	17.1 (222)	19.4 (143)	14.0 (79)	6.54 (.011)
1 Forced kissing	11.3 (147)	12.6 (93)	9.6 (54)	2.95 (.084)
2 Exposed to peer's intimate body parts	5.9 (77)	5.4 (40)	6.6 (37)	0.74 (.390)
3 Persuaded child to show intimate body parts	2.2 (28)	2.6 (19)	1.6 (9)	1.46 (.227)
4 Persuaded child to touch intimate body parts	1.5 (20)	1.2 (9)	2.0 (11)	1.12 (.289)
5 Touched child's intimate body parts	6.5 (85)	8.6 (63)	3.9 (22)	11.29 (.001)
6 Intercourse	1.3 (17)	0.8 (6)	2.0 (11)	3.20 (.074)
Any of the above	71.1 (924)	73.0 (537)	68.7 (387)	2.77 (.096)

Table 3
Model Fit Indices of Latent Class Analyses for each type of abuse (N = 924).

Solution	Loglikelihood	AIC	BIC	Entropy	LMR-A p-value
Neglect					
1 class	−2529.85	5083.70	5127.94	–	–
2 classes	−2372.77	4783.54	4853.59	0.999	0.000
3 classes	−2194.35	4440.70	4536.56	1.000	0.403
Psychological abuse					
1 class	−4271.54	8575.08	8645.69	–	–
2 classes	−3729.71	7509.41	7619.75	1.000	0.767
3 classes	−3114.97	6297.95	6448.01	1.000	0.985
Physical abuse					
1 class	−2470.86	4965.71	5015.02	–	–
2 classes	−1956.92	3951.84	4029.912	0.999	0.040
3 classes	−1535.08	3122.16	3229.00	0.997	0.769
Internet sexual abuse					
1 class	−1784.17	3588.34	3628.57	–	–
2 classes	−1465.13	2962.25	3026.63	1.000	0.981
3 classes	−1123.25	2290.50	2379.02	1.000	0.092
Adult sexual abuse					
1 class	−563.87	1151.73	1185.96	–	–
2 classes	−339.53	717.06	771.25	1.000	0.511
3 classes	−253.29	558.58	632.73	1.000	0.832
Peer sexual abuse					
1 class	−1144.92	2313.86	2354.69	–	–
2 classes	−903.02	1844.05	1908.70	0.999	0.096
3 classes	−678.11	1408.21	1496.68	1.000	0.912
Second-order LCA					
1 class	−3844.91	7713.81	7771.75	–	–
2 classes	−2575.87	5189.75	5281.49	1.000	0.658
3 classes	−2283.23	4618.45	4744.00	1.000	0.223
4 classes	−1666.23	3398.46	3557.81	1.000	0.398
5 classes	−1358.78	2797.55	2990.70	1.000	0.620

Note. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; LMR-A = Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMR-A). Best fitting solution is in bold.

et al., 2004; Lesinskiene et al., 2018). The SDQ is widely used globally and has shown acceptable reliability and validity across many cultures (Goodman, 2001).

2.3. Data analysis

To reveal the prevalence rates of abuse, we used the descriptive statistics as well as the Chi-square test to identify the possible exposure to abuse differences for boys and girls. To classify adolescents in accordance with their lifetime exposure to abuse, we used a two-step Latent Class Analysis (LCA) approach (Muthén & Muthén, 2000). In a first step, we classified the participants based on the type of abuse and, therefore, we conducted the item-level LCA for neglect, psychological abuse, physical abuse, internet sexual abuse, adult sexual abuse, and peer sexual abuse separately. The first-step analysis resulted in the classification of adolescents in terms of severity of each type of abuse, where less severe abuse was labeled as 1 and more severe as 2. We then used this classification for the second step LCA to identify the patterns of lifetime exposure to all types of abuse in adolescence, by including all types of abuse in a LCA analysis. The second step LCA resulted in distinguishing the subgroups of adolescents with different dominating abuse experiences. We used several criteria to decide on a number of latent classes (Muthén & Muthén, 2000). First, Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) statistic for a solution with k classes should be lower than for a solution with k - 1 classes. Second, a statistically significant p-value of the adjusted Lo-Mandel-Rubin test, which compares improvement in fit between neighboring class solutions, determined improvement in fit through the inclusion of an additional class. Third, we evaluated the substantive meaningfulness of the latent classes (Muthén, 2004). Hence, if a solution with k classes do not have differential substantive meaning, the more parsimonious solution with k - 1 classes was chosen. Additionally, in all analyses, we used the Entropy score, with the values equal or above .70 indicative of accurate classification. When running the first step LCA, in each analysis we included only the participants who were exposed to the corresponding type of abuse. Namely, for neglect or psychological abuse, the participants were included in the abuse exposure group if they experienced at least one form of abuse at least 'sometimes'; for physical and three

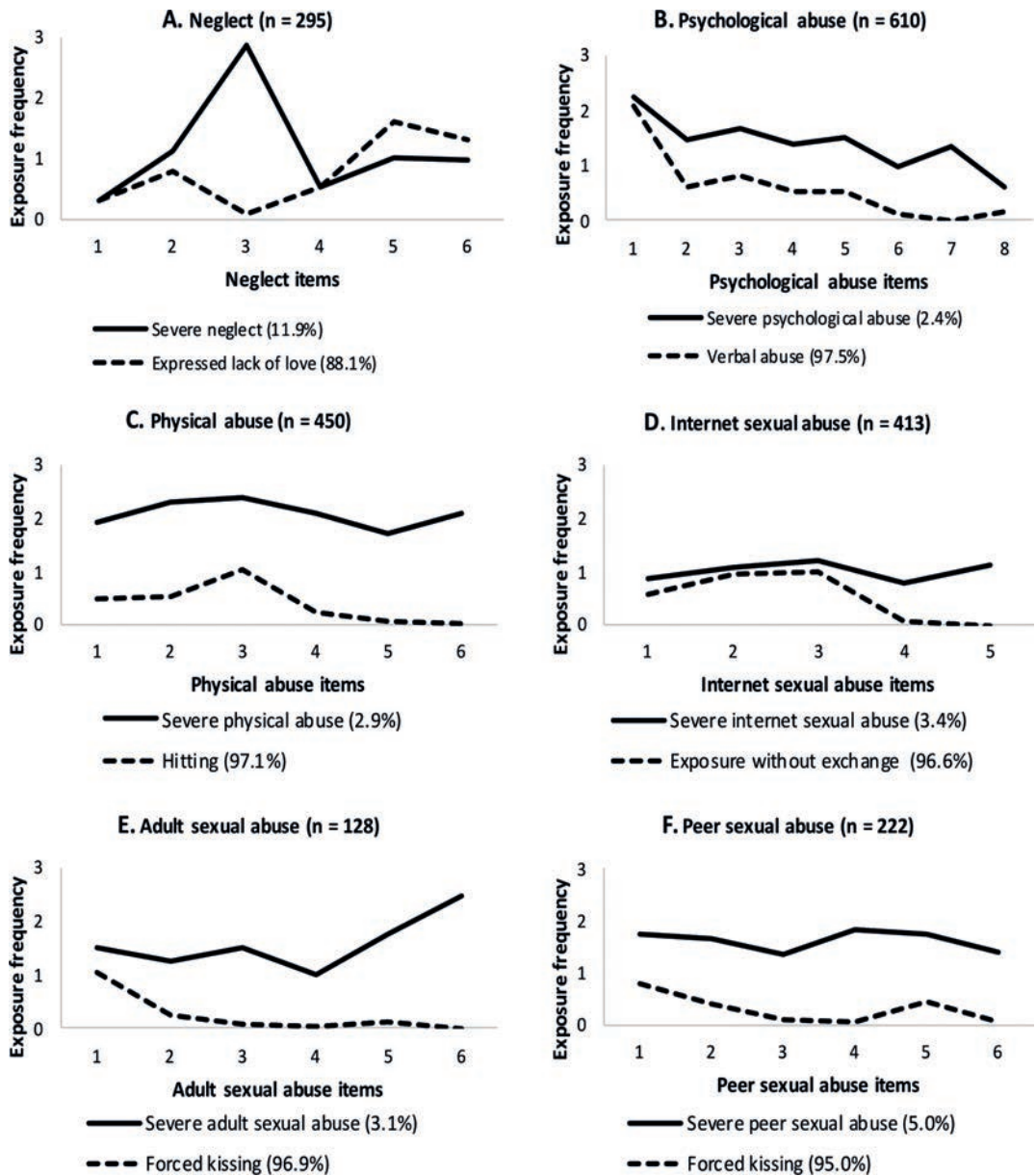


Fig. 1. Latent classes of exposure to different types of abuse.

Note. The items in each type of abuse are presented in a same sequence as provided in Table 2.

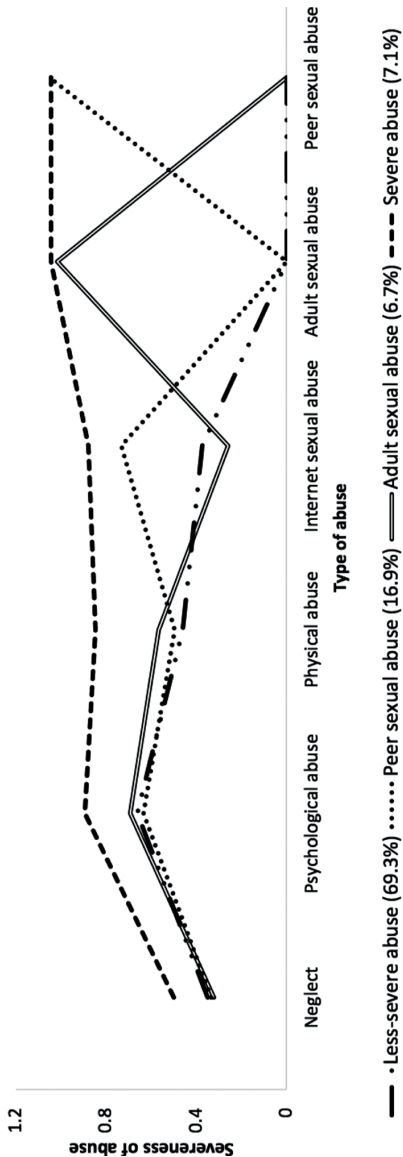


Fig. 2. Patterns of exposure to abuse in a study sample (n = 924).

types of sexual abuse, the participants were included in abuse exposure group if they were exposed to any form of abuse within each type at least 'once'. When running the second step LCA, we included only the participants who were exposed to at least one type of abuse.

All psychosocial functioning variables were normally distributed, as the coefficients of skewness and kurtosis were within the range of ± 2 (Gravetter & Wallnau, 2014). To reveal the level of psychosocial functioning for each distinguished pattern of abuse, we conducted the series of path analyses with independent variable of abuse exposure pattern group (coded as 1) versus reference group (coded as 0) and five dependent variables, representing the dimensions of psychosocial functioning, namely, prosocial behavior, hyperactivity/inattention, emotional symptoms, conduct problems, and peer relationship problems. The sum scores of the dimensions of psychosocial functioning were used in the analysis. In all models, we also controlled for age and gender effects on and allowed correlations between dependent variables. When comparing abuse exposure pattern groups, we first used the 'no exposure to abuse' group as a reference group for four abuse exposure groups; after that we compared the abuse exposure groups with on another. The statistical analyses were conducted with Mplus 8.2. (Muthén & Muthén, 1998–2017; Muthén and Muthén, 2017; Muthén & Muthén, 1998–2017).

3. Results

3.1. Prevalence and patterns of abuse

3.1.1. Prevalence of abuse

The prevalence rates of each item of the six different types of abuse in the total sample as well as for girls and boys separately are presented in Table 2. Psychological abuse was the most frequently reported category of abuse (47.0 %), but neglect was also quite prevalent (22.7 %). For example, about one in ten adolescents felt worthless (13.2 %) or unloved (9.7 %) at home. It is worth noticing that adolescents reported that an adult at home had hit them with a hand (27.8 %) or with the fist or a hard object (7.4 %). Internet sexual abuse was also frequently reported, particularly a pressure to showing intimate body pictures (21.1 %), and being asked to send naked photos (21.5 %). One in ten (9.9 %) reported adult sexual abuse, while peer sexual abuse was reported by almost one in five (17.1 %) adolescents. The prevalence rates of overall abuse, neglect, psychological violence, and adult sexual abuse seemed to be quite similar for boys and girls. However, more girls than boys were exposed to physical violence, internet sexual abuse as well as peer sexual abuse.

3.1.2. Abuse severity

The results of the first-step Latent Class Analysis (LCA) indicated that for each type of abuse, two different groups of adolescents can be distinguished, as the two classes solution was most meaningful and most acceptable in all analyses (see Table 3). The LCA results revealed that for each type of abuse, the participants can be classified in terms of the severity of violence with up to 12 % of adolescents being affected by at least one type of severe abuse (see Fig. 1). For neglect (see Fig. 1A), the severe abuse subgroup is characterized by the exposure to lack of care due to the parental substance use with relatively lower levels of other forms of neglect; the rest of the neglect exposure group reported higher levels of lack of support and love. Most of the adolescents in the Psychological abuse exposure group (see Fig. 1B) could be characterized by exposure to unpleasant shouting with low levels of other manifestations of psychological violence; the severe psychological abuse subgroup reported being exposed to nearly all forms of psychological violence. Similarly, in the Physical abuse exposure group (see Fig. 1C), severe abuse can be characterized by the exposure to all forms of physical violence; when most of physically abused adolescents reported being hit once with relatively low levels of other forms of physical violence. The distinction between severe and less severe Internet sexual abuse (see Fig. 1D) can be characterized by sharing vs. not sharing naked images of the child, in addition to the exposure to other forms of internet sexual abuse. The severe Adult sexual abuse (see Fig. 1E) was characterized by sexual intercourse with the child with also high levels of exposure other forms of sexual violence; when most of the adolescents in the exposure to Adult sexual abuse reported being exposed to forced kissing with low levels on other forms of sexual violence. For Peer sexual abuse (see Fig. 1F), in the severe abuse subgroup, adolescents were exposed to all measured items of sexual violence; when the less severe abuse is characterized mainly by forced kissing with relatively lower levels on responses to other forms of sexual violence.

3.1.3. Patterns of abuse

The results of second-step LCA revealed that a four classes solution is most suitable when classifying adolescents based on their exposure to different types of abuse (see Table 3, second-order LCA). The patterns of abuse are presented in Fig. 2. We found that most of the adolescents who were exposed to any type of violence reported relatively lower levels of psychological or physical abuse and some exposure to neglect or internet sexual abuse with no exposure to peer or adult sexual violence. We labeled this pattern as *Less-severe abuse*. The second most prevalent pattern is characterized by expressed *Peer sexual abuse* in combination with internet sexual abuse and some physical/psychological violence. The other pattern reflects expressed *Adult sexual abuse* in combination with physical/psychological violence. Finally, over 7.1 % of adolescents were exposed to the pattern of abuse which is distinguishable by exposure to all types of violence and was labeled as *Severe abuse*.

3.2. Association of abuse with psychosocial functioning

3.2.1. Preliminary analysis

Descriptive statistics for the dimensions of psychosocial functioning as well as correlations among these dimensions in the total sample are presented in Table 4. We found higher rates of prosocial behavior and emotional symptoms for girls, compared to boys. Boys reported higher rates of conduct problems, compared to girls. In the sample of Lithuanian adolescents, hyperactivity/inattention, emotional symptoms, conduct problems, and peer relationship problems were positively correlated. Prosocial behavior was negatively correlated with all other dimensions of psychosocial functioning, except with emotional problems.

3.2.2. Levels of psychosocial functioning across the identified patterns of abuse

Membership in the identified LCA abuse pattern groups was clearly related to a high level of emotional and conduct problems and low levels of prosocial behavior. The results of path analysis revealed that, after controlling for age and gender effects, we found statistically significant differences between the abuse pattern groups on dependent variables (see Table 5).

In particular, we found that *No abuse* group, in comparison to all other abuse exposure groups, reported higher levels of prosocial behavior ($\beta_{\text{less-severe}} = -.13, p < .001$; $\beta_{\text{peer sexual}} = -.09, p = .039$; $\beta_{\text{adult sexual}} = -.11, p = .026$; $\beta_{\text{severe}} = -.17, p = .03$), lower levels of hyperactivity/inattention ($\beta_{\text{less-severe}} = .20$; $\beta_{\text{peer sexual}} = .29$; $\beta_{\text{adult sexual}} = .19$; $\beta_{\text{severe}} = .23$, all significant at $p < .001$), emotional symptoms ($\beta_{\text{less-severe}} = .24$; $\beta_{\text{peer sexual}} = .30$; $\beta_{\text{adult sexual}} = .18$; $\beta_{\text{severe}} = .42$, all significant at $p < .001$), conduct problems ($\beta_{\text{less-severe}} = .22$; $\beta_{\text{peer sexual}} = .36$; $\beta_{\text{adult sexual}} = .21$; $\beta_{\text{severe}} = .34$, all significant at $p < .001$) as well as peer relationship problems ($\beta_{\text{less-severe}} = .17$; $\beta_{\text{peer sexual}} = .17$; $\beta_{\text{adult sexual}} = .19$; $\beta_{\text{severe}} = .22$, all significant at $p < .001$). We also found that hyperactivity was lower in a *Less-severe abuse* group, compared to *Peer sexual abuse* ($\beta = .09, p = .016$), and *Severe abuse* ($\beta = .09, p < .001$) groups. Additionally, the results revealed higher levels of emotional symptoms in the *Severe abuse* group, compared to all other violence exposure groups ($\beta_{\text{less-severe}} = .19$; $\beta_{\text{peer sexual}} = .22$; $\beta_{\text{adult sexual}} = .29$, all significant at $p < .001$) as well as higher levels of emotional symptoms in the *peer sexual abuse* group, compared to the *Adult sexual abuse* group ($\beta = .19, p < .001$). Also, conduct problems were found to be higher in the *Peer sexual abuse* and *Severe abuse* groups, compared to the *Less-severe abuse* ($\beta_{\text{peer sexual}} = .15, p < .001$; $\beta_{\text{severe}} = .14, p = .001$) and *Adult sexual abuse* ($\beta_{\text{peer sexual}} = .14, p = .001$; $\beta_{\text{severe}} = .19, p = .028$) groups. In all models, girls reported higher levels of prosocial behavior (β range: from $-.36$ to $-.16, p < .05$) and emotional symptoms (β range: from $-.48$ to $-.26, p < .05$), compared to boys.

4. Discussion

This study is the first to investigate the prevalence and consequences of child abuse on mental health and psychosocial functioning in a young and large sample of adolescents in Lithuania. Our results are disquieting. Seven out of ten adolescents reported exposure to at least one type of violence over their lifetime. Almost half of the study sample experienced psychological abuse, one in three adolescents were exposed to physical abuse, one in five experienced neglect. Almost one-third of the sample was exposed to internet sexual abuse, more than one in six experienced peer sexual abuse, and almost one-tenth adolescents were sexually abused by adults.

4.1. Prevalence of abuse

Although previous studies have documented a high level of child abuse globally (Moody et al., 2018), the prevalence of child abuse in Lithuania seems to be on the upper end, or higher, than that observed in many other countries (Hafstad & Augusti, 2019; Jernbro et al., 2015; Jud, 2018). When comparing with a Norwegian study using the same methods and the same age groups, we find a much higher prevalence of physical abuse (one in three in Lithuania compared to one in five in Norway) and psychological abuse (almost one in two in Lithuania compared to one in five in Norway (Hafstad & Augusti, 2019). Differences in attitudes to child abuse between Lithuania and the Scandinavian countries may potentially explain the higher prevalence in Lithuania. Lithuania banned corporal punishment by law only at the beginning of 2017 and Lithuanian society is perhaps still in the process of redefining and understanding what constitutes good and acceptable parenting. Furthermore, considering the findings of retrospective design studies of adult populations, previously conducted in Lithuania and other European countries (Bellis et al., 2014; Darves-Bornoz et al., 2008; Kazlauskas & Zelviene, 2015), our results show a higher prevalence of childhood abuse. It is also possible that adult samples retrospective child abuse studies are affected by recall bias (McKinney et al., 2008) and our study findings could be more accurate as we reached out to

Table 4
Psychosocial functioning in a study sample.

	Girls (n = 736)	Boys (n = 563)	Total sample (N = 1299)	r			
	M (SD)	M (SD)		1.	2.	3.	4.
1. Prosocial behavior	7.74 (1.83)	6.52 (2.10)	10.90 (0.11)***	7.21 (2.05)	-.61/-.02	1	
2. Hyperactivity/inattention	3.62 (2.13)	3.75 (2.04)	-1.14 (0.12)	3.68 (2.09)	.38/-.35	-.14***	1
3. Emotional symptoms	3.64 (2.49)	2.06 (1.98)	12.71 (1.58)***	2.96 (2.41)	.76/-.10	.03	.31***
4. Conduct problems	2.46 (1.46)	2.65 (1.48)	-2.28 (0.08)*	2.54 (1.47)	.71/.52	-.19***	.38***
5. Peer relationship problems	2.19 (1.74)	2.24 (1.73)	-0.55 (0.10)	2.21 (1.74)	.90/.53	-.21***	.17***
						.35***	.15***

Note. M = mean, SD = standard deviation, SE = standard error, γ_1 = skewness, γ_2 = kurtosis, * $p < .05$, *** $p < .001$.

Table 5Estimated means of psychosocial functioning in the abuse pattern groups in a total sample ($N = 1299$).

	No abuse, M (σ^2) $n = 375$	Less-severe abuse, M (σ^2) $n = 640$	Peer sexual abuse, M (σ^2) $n = 156$	Adult sexual abuse, M (σ^2) $n = 62$	Severe abuse, M (σ^2) $n = 66$
Prosocial behavior	7.56 ^a (3.51)	7.07 ^b (4.22)	7.34 ^b (4.07)	6.74 ^b (4.92)	6.74 ^b (5.89)
Hyperactivity / inattention	3.00 ^a (3.63)	3.84 ^b (4.45)	4.29 ^c (4.86)	4.13 ^{bc} (3.95)	4.21 ^c (3.08)
Emotional symptoms	1.95 ^a (3.78)	3.18 ^{bc} (5.50)	3.72 ^b (7.03)	2.82 ^c (5.00)	4.84 ^d (7.16)
Conduct problems	2.01 ^a (1.48)	2.61 ^b (2.00)	3.11 ^c (2.82)	2.77 ^b (2.08)	3.29 ^c (3.21)
Peer relationship problems	1.76 ^a (2.44)	2.36 ^b (3.06)	2.32 ^b (3.04)	2.63 ^b (3.15)	2.75 ^b (3.85)

Note. σ^2 = variance; ^{a,b,c,d} indicates statistically significant at $p < .05$ differences between abuse exposure groups if letters differ.

adolescents at a younger age. Our study supports the need for child abuse studies by asking children and adolescents about their experiences, which might provide more accurate accounts on the prevalence of abuse if asked properly and carefully, including more detailed lists of abuse types which also covers internet abuse.

4.2. Patterns of abuse and association with psychosocial functioning

Our second aim was to identify different patterns of exposure to abuse. There is considerable evidence that children and adolescents often experience multiple forms of maltreatment and violence (Finkelhor et al., 2009; Gilbert et al., 2009; Jernbro et al., 2015; Roberts et al., 2018; van Berkel, Prevoo, Linting, Pannebakker, & Alink, 2020). It is important for scientists and clinicians to understand how children's victimization overlap to better recognize and prevent further victimization, also to provide effective services for children and families. In this study, we concentrated on adolescents' experience at home – neglect, emotional abuse and physical abuse by adults, as abuse, experienced from the closest people is possibly the most damaging (Cicchetti, 2013). Also, we included three different kinds of sexual abuse, including online sexual abuse. There is a growing extent of internet use and unwanted online sexual exposure and solicitation (Madigan et al., 2018).

Similar to other previous large-sample studies we found that LCA is a useful approach in identifying meaningful groups based on the endorsement of different types of abuse experienced by adolescents (Brown, Rienks, McCrae, & Watamura, 2019; Noonan et al., 2010; Shevlin & Elklit, 2008). In contrast to previous studies, we used a two-step LCA analysis which provided us with a possibility to identify adolescent groups based both on severity and types of abuse. Overall, we found that four different abuse patterns could be observed in the sample, namely, *Less-severe abuse*, *Peer sexual abuse*, *Adult sexual abuse*, and *Severe abuse*. Over two-thirds of adolescents who were exposed to any type of violence over their lifetime are attributable to *Less-severe abuse* groups with comparatively low levels of exposure to psychological, physical, and internet sexual violence. About one in twenty adolescents who participated in the study were exposed to *Severe abuse* and this group reported high levels of experiences of neglect and all the studied types of abuse, including sexual and physical abuse.

Finally, our third aim was to estimate the level of psychosocial functioning associated with the identified patterns of abuse. In the *No abuse* group, we found lower levels of hyperactivity/inattention, emotional symptoms, conduct problems, and peer relationship problems, compared to all abuse pattern groups. The *Severe abuse* group reported higher levels of hyperactivity/inattention, compared to *Less-severe abuse* group, higher levels of conduct problems, compared to *Less-severe* and *Adult sexual abuse* groups, and higher levels of emotional problems, compared to all other abuse exposure groups. Also, *Peer sexual abuse* group reported higher levels of hyperactivity/inattention, compared to *Less-severe abuse* group, higher levels of emotional symptoms, compared to *Adult sexual abuse* group, and higher levels of conduct problems, compared to both *Less-severe* and *Adult sexual abuse* groups. In all other cases, the abuse pattern groups reported similarly impaired levels of psychosocial functioning in contrast to adolescents with no abuse histories revealing the negative impact of childhood abuse on psychosocial functioning and mental health among adolescents. The results of our study are in line with the previous studies, showing that multiple and more severe abuse is related to higher levels of mental and social problems in adolescents (Gilbert et al., 2009; Hafstad & Augusti, 2019; Jernbro et al., 2015; Roberts et al., 2018). This study gives a clear documentation that psychosocial problems related to child abuse are present already early in adolescence. This calls for early interventions for abused kids, particularly those who are exposed to severe abuse. Future studies should further investigate potential variation in symptom expression according to age and developmental stage in abused children and adolescents.

4.3. Limitations

There are some limitations concerning the study design and data analysis that need to be addressed. First of all, the cross-sectional design of the study precludes causal inferences. Though we aimed to measure the abuse history across the lifetime, we were not able to measure the dynamics of the abuse and psychological functioning of the study participants. Also, this is a self-report questionnaire study, with the limitations and strengths of this design. Furthermore, while we managed to collect data from a large sample of adolescents, only about half of the invited parents provided informed consent for participation in the study. Participant recruitment procedures could have influenced the study and representativeness of our findings.

4.4. Conclusions

Overall, this is the large sample study with very specific questions about various types of abuse and neglect which provides insights on the rates of prevalence of abuse among adolescents. Moreover, the study demonstrated the negative role of childhood abuse on various emotional problems and impaired psychosocial functioning is associated with reported abuse. While these studies are challenging from the ethical perspective and we as researchers were facing intense debates with ethical committees and educators before the start of the study, the study was approved by the ethical committee, and high response rates from parents and adolescents indicate that they are willing to contribute to estimations of the prevalence and impact of abuse and neglect.

Further longitudinal studies are needed to assess different developmental trajectories associated with patterns of abuse to estimate resilience and vulnerability factors and ensure evidence-based prevention and intervention strategies for children who experience abuse. The study informs policymakers and clinicians about the high prevalence of child abuse and neglect among adolescents in Lithuanian, one of the European countries. Our study also reveals modern challenges in the child abuse and neglect field by revealing that online sexual abuse can have a severe and profound effect on children, and interventions targeted towards internet security and safe use of social media are needed. The findings of a large sample of adolescents are useful in the development of child protection services and the implementation of wide-scale abuse prevention strategies in Lithuania, and other countries in the region.

Declaration of Competing Interest

The authors have no conflicts of interest to declare.

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II.

The structure of ICD-11 PTSD and Complex PTSD in adolescents exposed to potentially traumatic experiences

Kazlauskas, E., Zelviene, P., Daniunaite, I., Hyland, P., Kvedaraite, M., Shevlin, M. & Cloitre, M. (2020). The structure of ICD-11 PTSD and Complex PTSD in adolescents exposed to potentially traumatic experiences. *Journal of Affective Disorders*, 265(15), 169-174. <https://doi.org/10.1016/j.jad.2020.01.061>

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Abstract

Background: The recently released 11th edition of International Classification of Diseases (ICD-11) included new definitions of disorders specifically associated with stress. Complex post-traumatic stress disorder (CPTSD) was included in ICD-11 as a new trauma-related disorder which could develop following prolonged or reoccurring traumatic experiences. Research on ICD-11 PTSD and CPTSD validity and epidemiology has, so far, mostly been conducted in adult population. This is the first study to explore the construct validity of the Child and Adolescent version of International Trauma Questionnaire (ITQ-CA) as a measure of ICD-11 CPTSD symptoms.

Methods: The study was based on a sample of 932 adolescents from the general population aged 12–16 ($M = 14.25$, $SD = 1.27$) years exposed to various traumatic experiences. We used confirmatory factor analysis (CFA) and latent class analysis (LCA) to test validity of the ITQ-CA scores from adolescents.

Results: The best fitting measurement model included six correlated factors representing the three PTSD and three DSO symptom clusters. LCA analysis revealed four classes whose symptom profiles were reflective of ‘CPTSD’, ‘PTSD’, ‘DSO only’, and ‘Baseline’.

Conclusions: Findings of the study provide support for the construct validity of the ICD-11 models PTSD and CPTSD among adolescents.

1. Introduction

The recently released 11th edition of International Classification of Diseases (ICD-11) included a chapter ‘06: Disorders Specifically Associated with Stress’ (World Health Organization, 2018). Complex post-traumatic stress disorder (CPTSD) was included in ICD-11 as a new trauma-related disorder which could develop following prolonged or reoccurring traumatic experiences (Brewin, 2019). CPTSD, according to the ICD-11, can be diagnosed if a person is trauma-exposed, meets all diagnostic criteria for PTSD (i.e., symptoms of (1) re-experiencing, (2) avoidance, and (3) sense of threat, and functional impairment associated with these symptoms), and has additional symptoms of disorganized self-organization (DSO) from three symptom clusters; (4) affective dysregulation; (5) negative self-concept and (6) disturbances in relationships, plus impairment in functioning associated with these DSO symptoms (World Health Organization, 2018).

Findings from around the world have provided empirical support for the construct validity of ICD-11 PTSD and CPTSD using multiple methodologies

including latent class analysis, confirmatory factor analysis (Brewin et al., 2017), and network analysis (Knefel et al., 2019). Research on the epidemiology and construct validity of ICD-11 PTSD and CPTSD has, so far, primarily been conducted with adult populations (e.g., Ben-Ezra et al., 2018; Cloitre et al., 2019; Ho et al., 2019; Hyland et al., 2017; Kazlauskas et al., 2018; Shevlin et al., 2017). These studies have used the International Trauma Questionnaire (ITQ) (Cloitre et al., 2018; Karatzias et al., 2017) to measure symptoms of PTSD/CPTSD, as per the ICD-11 guidelines. Notably, very few studies have assessed the validity of these constructs among children and adolescents.

A recent study in Germany used archival data from 155 children and adolescents and found evidence of separate groups of children and adolescents whose symptoms were consistent with the distinction between PTSD and CPTSD (Sachser et al., 2017). More recently, Haselgruber et al. (2020) analyzed data from 136 Austrian foster adolescents who completed the adult version of the ITQ. Consistent with Sachser et al.'s results, distinct groups of adolescents with PTSD and CPTSD symptoms were identified (Sachser et al., 2017). Additionally, and in line with much of the adult literature (Brewin et al., 2017), the latent structure of the ITQ was best explained by two second-order factors (PTSD and DSO) explaining covariation between six first-order factors (Re-experiencing, Avoidance, Threat, Affective Dysregulation, Negative Self-Concept, and Disturbed Relationships). To facilitate additional research with children and adolescents, a Child and Adolescent version of International Trauma Questionnaire (ITQ-CA) has been developed (Cloitre et al., 2018).

This is the first study to explore the factor structure of the ITQ-CA in a sample of adolescents from the general population. We used confirmatory factor analysis (CFA) to test four alternative models of the latent structure of the ITQ-CA based on findings from previous studies with the ITQ. We hypothesized that the latent structure of the ITQ-CA would be best explained by one of the two models that are consistently supported in the adult ITQ literature: either a correlated six factor model or a two factor higher-order model, both of which capture the distinction between PTSD and DSO symptoms. Second, we hypothesized consistent with the ICD-11 PTSD and CPTSD studies that distinct groups of adolescents would be identified with symptom profiles consistent with the distinction between PTSD and CPTSD.

2. Method

2.1. Participants and procedures

Data for this study was from the first wave of the longitudinal study Stress and Resilience in Adolescence (STAR-A) conducted by the Center for Psychotraumatology at Vilnius University in Lithuania. The STAR-A study was approved by the Ethics Committee for Psychological Research at Vilnius University. The data were collected using self-report measures from adolescents in 15 randomly selected public schools from four different regions across the country in Lithuania between March and June, 2019. In total, 1299 adolescents participated in the study.

Invitations to participate in the study were distributed to all 12 to 16-year-old adolescents and their parents from the selected schools. Written informed consent from at least one parent and the adolescent was obtained prior to data collection. In total, 56.8% of invited parents agreed to participate, 28.3% did not respond, and 14.9% declined the invitation. Adolescents were given options for participating in the study or declining. None of the adolescents with parental consent for enrolment in the study refused to participate. No incentives were offered for participation.

Data were collected by two experienced clinical psychologists with the assistance of six clinical psychology master program students who were trained and supervised during the data collection process. Data collection and coding were managed in a way that ensured the protection of participants' identity. None of the research team members or school staff could identify the respondent. Adolescents returned enclosed questionnaires into sealed envelopes without identifying information after filling in printed questionnaires marked with randomly assigned ID's. Data collectors were strictly instructed to ensure they did not see responses of participants' during data collection. All participants received printed leaflets with information about counseling services at their school and in their local community.

Participants were selected for data analysis if they met the inclusion criteria for this study: (1) aged 12–16 years, (2) reported exposure to at least one traumatic event, and (3) completed the ITQ-CA. In total, 934 adolescents (71.9%) reported exposure to at least one lifetime potentially traumatic event. Two of these participants were excluded because of missing data on all the ITQ-CA items.

The final sample of 932 adolescents include 56.8% girls ($n = 529$), with a mean age of 14.25 ($SD = 1.27$) years. The majority of participants were born in Lithuania (98.4%, $n = 917$) and were of Lithuanian nationality 93.1% ($n = 869$). Around two thirds (69.4%, $n = 647$) were from two-parent families, 29.5% ($n = 275$) were from single-parent families and 1.1% ($n = 10$) reported living with other relatives or were in foster care. Financial difficulties in

families were reported by 42.6% ($n = 396$) of the sample; maternal unemployment was reported by 9.4% ($n = 88$); and paternal unemployment was reported by 5.0% ($n = 47$). Around one-third of the adolescents reported that at least one parent had a university degree (32.2%, $n = 300$), and 37.7% ($n = 351$) reported that both parents had a university degree.

2.2. Measures

International Trauma Questionnaire. The ITQ-CA (Cloitre et al., 2018) is a revision of the adult version of ITQ (Cloitre et al., 2018) in consultation with experts in child and adolescent trauma assessment. The ITQ-CA resembles the ITQ adult version in that it includes the same number of items, and the scoring scheme is the same. However, the formulation of the ITQ-CA items differs from the ITQ adult version in order to make items comprehensible to children and adolescents.

The ITQ-CA items were translated into Lithuanian and then back-translated into English and reviewed by the authors of the original measure. The ITQ-CA includes 12 symptom indicators. The three PTSD symptom clusters are assessed with six items as follows: (1) re-experiencing (Re) (2 items), (2) avoidance (Av) (2 items), and (3) sense of threat (SoT) (2 items). The three symptom clusters of self-organization (DSO) are measured with 6 items: affective dysregulation (AD) (2 items), negative self-concept (NSC) (2 items), and disturbances in relationships (DR) (2 items). Items of the ITQ-CA are presented in Table 1. All items are answered using a five-point Likert scale from 0 ('Never') to 4 ('Almost always') how much have they been bothered by each of the symptoms during the past month. Functional impairment items were listed twice following the PTSD symptoms, and the DSO symptoms, and participants were asked to indicate on a binary yes/no scale if both sets of symptoms were associated with problems in any of these areas (1) friends, (2) family, (3) school, (4) other important areas, such as hobbies, and (5) general happiness. The internal reliability of the total ITQ-CA scores was good ($\alpha = 0.87$), as were the internal reliability estimates for the PTSD ($\alpha = 0.79$) and DSO ($\alpha = 0.86$) subscale scores.

Lifetime trauma exposure. Lifetime traumatic exposure was assessed using the 14-item traumatic events checklist from the Child and Adolescent Trauma Screen (CATS) (Sachser et al., 2017). The checklist assesses exposure to events such as physical or sexual violence, exposure to death or injury, sudden or violent death of a close one, etc. (see Table 2). Participants were considered exposed to traumatic events if they disclosed experiencing at least one of the events from the checklist. A summed total score of exposure to multiple

traumatic life events was calculated with potential scores ranging from 0 to 14.

2.3. Data analysis

The CFA and LCA models were conducted using Mplus 8.2, and IBM SPSS Statistics 25 was used for all other data analyses.

We tested four models using CFA. Model 1 is a one-factor model where the 12 items in the ITQ-CA loaded onto a CPTSD latent factor. Model 2 is a correlated six factor model (Re, Av, SoT, AD, NSC, DR). Model 3 is a second-order model in which the covariation between the six first-order factors from Model 2 is explained by one second-order factor of CPTSD. Model 4 is a correlated two factor second-order model where a second-order PTSD factor accounts for the covariation between the Re, Av, and SoT factors and a second-order DSO factor accounts for the covariation between the AD, NSC, and DR factors (see Fig. 1).

These CFA models were estimated using the robust weighted least square mean and variance adjusted estimator (WLSMV). Model fit assessed using the chi-square test, the root-mean-square error of approximation (RMSEA), the comparative fit index (CFI), Tucker Lewis index (TLI), and the standardized root mean square residual (SRMR) indices. RMSEA and SRMR values of 0.08 and below, CFI and TLI values above 0.90, and a non-significant chi-square result indicate acceptable model fit (Kline, 2011). To determine the optimal fitting model, we relied on changes in the RMSEA value (ΔRMSEA), where a $\Delta\text{RMSEA} \geq 0.015$ is considered evidence of a meaningful difference in the fit of the respective models (Chen, 2007).

For the purposes of the LCA, we created six binary variables reflecting whether or not the ‘diagnostic criteria’ were met for the symptom clusters (Re, Av, SoT, AD, NSC, DR). We used the same diagnostic algorithm that is used for the ITQ (i.e., one symptom scored 2 or greater from each cluster). Five models were tested with 2–6 classes, and model selection was based on the results of the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the bootstrap likelihood ratio test (BLRT), and the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-A) (Nylund et al., 2007). The model with the lowest AIC and BIC value is regarded as the optimal class solution. For LMR-A and BLRT, a non-significant value ($p > .05$) indicates that a model with one less class should be accepted. Furthermore, we tested the validity of the LCA classes by examining the associations between each class and levels of trauma exposure.

Table 1. *Standardized Factor Loadings and Standard Errors for the First-order Six Factor Model (Model 2)*

First-order latent factors		Re	Av	SoT	AD	NSC	DR
ITQ-CA items		Factor loadings (standard error)					
1. Bad dreams reminding me of what happened (Re1)		.78 (.02)					
2. Pictures in my head of what happened. Feels like it is happening right now (Re2)		.82 (.02)					
3. Trying not to think about what happened. Or to not have feelings about it (Av1)			.57 (.04)				
4. Staying away from anything that reminds me of what happened (people, places, things, situations, talks) (Av2)			.74 (.04)				
5. Being overly careful (checking to see who is around me) (SoT1)				.45 (.03)			
6. Being jumpy (SoT2)				.91 (.03)			
7. Having trouble calming down when I am upset (angry, scared or sad) (AD1)					.71 (.02)		
8. Not being able to have any feelings or feeling empty inside (AD2)					.69 (.02)		
9. Feeling like a failure (NSC1)						.81 (.02)	
10. Thinking I am not a good person (NSC2)						.69 (.02)	
11. Not feeling close to other people (DR1)							.80 (.02)
12. Having a hard time staying close to other people (DR2)							.80 (.02)
First-order latent factors		Correlations (standard error)					
1. Re-experiencing (Re)		-					
2. Avoidance (Av)		.57 (.04)	-				
3. Sense of threat (SoT)		.65 (.04)	.50 (.05)	-			
4. Affective dysregulation (AD)		.71 (.03)	.48 (.05)	.84 (.04)	-		
5. Negative self-concept (NSC)		.56 (.03)	.30 (.05)	.73 (.03)	.92 (.03)	-	
6. Disturbances in relationships (DR)		.49 (.04)	.31 (.05)	.65 (.03)	.75 (.03)	.84 (.03)	-

Note. All factor loadings and correlations are statistically significant ($p < .001$).

Table 2. *Exposure to potentially traumatic events in adolescent sample.*

Trauma exposure	Total (<i>N</i> = 932)	Female (<i>n</i> = 529)	Male (<i>n</i> = 403)	Gender differences	
				χ^2 (<i>df</i> = 1)	<i>p</i>
1. Natural disaster	102 (10.9%)	52 (9.8%)	50 (12.4%)	1.56	.212
2. Serious accident or injury	536 (57.5%)	289 (54.6%)	247 (61.3%)	4.15	.042
3. Robbery with threat	41 (4.4%)	12 (2.3%)	29 (7.2%)	13.07	<.001
4. Physical abuse in family	180 (19.4%)	113 (21.4%)	67 (16.7%)	3.28	.070
5. Physical abuse not in family	241 (25.9%)	103 (19.5%)	138 (34.4%)	26.36	<.001
6. Witnessing physical abuse in family	162 (17.4%)	101 (19.1%)	61 (15.2%)	2.44	.118
7. Witnessing physical abuse in community	434 (46.6%)	221 (41.8%)	213 (52.9%)	11.28	<.001
8. Sexual abuse, someone older touching you private parts when they shouldn't	37 (4.0%)	24 (4.6%)	13 (3.2%)	1.04	.308
9. Sexual assault, someone forcing or pressuring to have sex, when you couldn't say no	21 (2.3%)	14 (2.6%)	7 (1.7%)	0.86	.354
10. Sudden or violent death of a close one	231 (24.8%)	157 (29.7%)	74 (18.4%)	15.71	<.001
11. Physical attack	23 (2.5%)	5 (0.9%)	18 (4.5%)	11.78	.001
12. Witnessing physical attack	80 (8.6%)	47 (8.9%)	33 (8.2%)	0.14	.707
13. Scary medical procedure	373 (40.1%)	239 (45.3%)	134 (33.3%)	13.74	<.001
14. War experiences	18 (1.9%)	3 (0.6%)	15 (3.7%)	12.03	.001

3. Results

3.1. Trauma exposure

Participants reported a mean of 2.66 ($SD = 1.73$) lifetime traumatic experiences, ranging from one to 13 events. Exposure to one traumatic event was reported by 33.2% ($n = 309$), 2–3 traumatic experiences were reported by 39.9% ($n = 372$), 4–5 traumatic experiences were experienced by 20.1% ($n = 178$), and ≥ 6 experiences were reported by 6.9% ($n = 64$) of participants. Rates of exposure to each traumatic event, along with sex differences, are presented in Table 2. The most common traumatic experiences were: accidents and injuries (57.5%), witnessing physical violence in the community (46.6%), and scary medical procedure (40.1%). We found significant gender effects on the eight traumatic experiences (see Table 2). Boys reported experiencing more serious car accidents, robbery with a threat, physical abuse not in family, witnessing physical abuse in the community, physical attack and war experiences in comparison to girls. However, female participants reported higher exposure of two traumatic experiences in comparison to boys: sudden or violent death of a close one, and a scary medical procedure.

3.2. CFA results

The CFA results are presented in Table 3. Model 1 had a poor fit and was thus rejected. Model 3 had an acceptable fit based on the CFI and SRMR values, but low fit on TLI and RMSEA and was also rejected. Models 2 and 4 both demonstrated acceptable fit based on the RMSEA, SRMR, CFI and TLI values. Although the chi-square statistic was statistically significant this should not lead to CFA model rejection in our study, as the power of the chi-square is positively related to sample size and tends to reject models based on large sample sizes (Tanaka, 1987). Model 2 (the correlated six factor model) had the lowest RMSEA and SRMR values, and the highest CFI and TLI values (see Table 3). However, the $\Delta RMSEA$ value from Model 2 to Model 4, was less than 0.015 suggesting that the difference in fit is likely not substantial or meaningful. Nonetheless, based on the slightly superior fit statistics and theoretical consistency, Model 2 was deemed to be the best fitting model. Factor loadings and factor correlations from Model 2 are presented in Table 1. All factor loadings and correlations among the latent factors were significant at $p < .001$. Correlations among factors ranged from 0.30 to 0.92 (See Table 1).

Figure 1. Factor models of ICD-11 PTSD and CPTSD tested in the study using confirmatory factor analysis

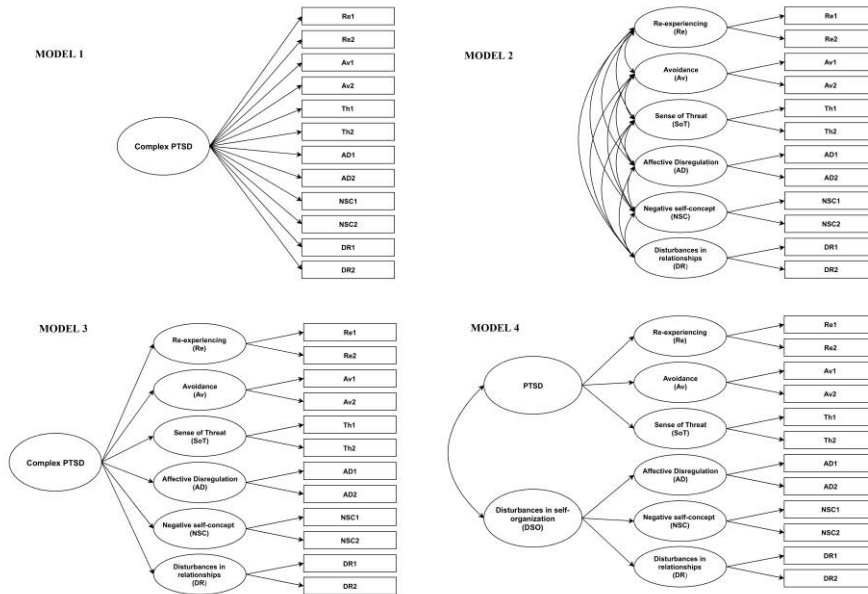


Table 3. Model Fit of Confirmatory Factor Analysis Models

Model	CFI	TLI	RMSEA (90% CI)	SRMR	$\chi^2 (df), p$
Model 1	0.791	0.745	0.133 (0.126–0.141)	0.079	945.81 (54), <0.001
Model 2	0.953	0.920	0.074 (0.066–0.084)	0.042	240.68 (39), <0.001
Model 3	0.922	0.893	0.086 (0.078–0.094)	0.060	379.20 (48), <0.001
Model 4	0.934	0.907	0.080 (0.072–0.089)	0.051	330.52 (47), <0.001

Note. CFI = Comparative Fit index; TLI = Tucker-Lewis index; RMSEA = Root Mean Square Error of Approximation and 90% confidence interval; SRMR = Standardized Root Mean Square Residual.

3.3. Latent class analysis of ICD-11 PTSD and CPTSD

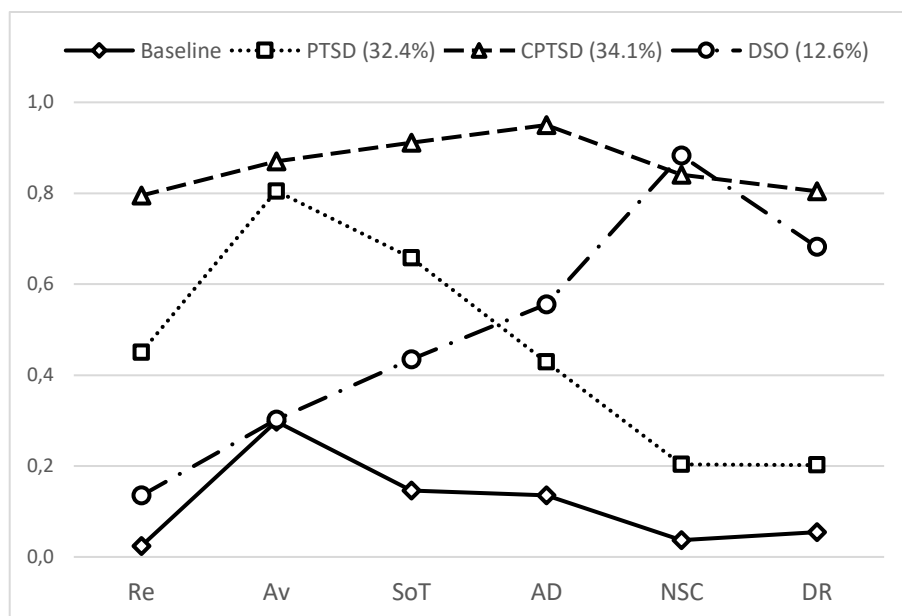
The LCA model fit statistics are presented in Table 4. The AIC, BIC, LMR-A, BLRT values supported a four-class model. The class structure is presented in Fig. 2. The largest class (34.1%) had high probabilities of meeting the diagnostic criteria for the six symptom clusters and was therefore labeled the ‘CPTSD class’. The next largest class (32.4%) had elevated probabilities of meeting the diagnostic criteria for the three PTSD clusters and low probabilities of meeting the diagnostic criteria for the three DSO clusters and was therefore labeled the ‘PTSD class’. A third class (12.6%) had elevated probabilities of meeting the diagnostic criteria for the three DSO clusters and low probabilities of meeting the diagnostic criteria for the three PTSD clusters and was therefore labeled the ‘DSO class’. Finally, the fourth class (20.9%) had low probabilities of meeting the diagnostic criteria for all symptom clusters and was therefore labeled the ‘Baseline’ class.

Table 4. *Model Fit Indices of Latent Class Analyses*

Model	Loglikelihood	AIC	BIC	Entropy	BLRT <i>p</i> -value	LMR-A <i>p</i> -value
2 classes	-3405.660	6837.320	6900.205	.705	<0.001	<0.001
3 classes	-3369.411	6778.823	6875.569	.747	<0.001	<0.001
4 classes	-3336.814	6727.628	6858.236	.642	<0.001	<0.001
5 classes	-3332.640	6733.280	6897.749	.696	1.000	0.222
6 classes	-3328.769	6739.538	6937.869	.660	0.667	0.334

Note. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; BLRT = Bootstrap Likelihood Ratio Test; LMR-A = Lo-Mendell-Rubin Adjusted Likelihood Ratio Test (LMR-A)

Figure 2. Latent classes of ICD-11 PTSD and CPTSD in adolescent sample



Multinomial binary logistic analysis using ‘Baseline’ class as reference category was applied for all traumatic experiences exposure as predictors for each of the LCA classes. ‘PTSD class’ was predicted by the two traumatic experiences: death of the close one (OR [95% CI] = 1.90 [1.17–3.08], $p = .010$), and physical attack (OR [95% CI] = 0.08 [0.01–0.52], $p = .008$). Five traumatic experiences were significant predictors of ‘Complex PTSD’ class: physical abuse in family (OR [95% CI] = 1.87 [1.04–3.36], $p = .037$), witnessing physical abuse in family (OR [95% CI] = 2.37 [1.20–4.66], $p = .013$), witnessing physical abuse in community (OR [95% CI] = 1.61 [1.06–2.46], $p = .027$), sudden or violent death of a close one (OR [95% CI] = 1.89 [1.14–3.12], $p = .013$), scary medical procedure (OR [95% CI] = 1.97 [1.31–2.96], $p = .001$). One traumatic experience, death of the close one, was a significant predictor of the ‘DSO class’ (OR [95% CI] = 1.91 [1.05–3.49], $p = .034$).

4. Discussion

To our knowledge, this was the first study to validate ICD-11 PTSD and CPTSD factorial structure in an adolescent population using the International Trauma Questionnaire Child and Adolescent version (ITQ-CA). Our study confirmed findings from the ICD-11 PTSD and CPTSD adult samples factor

structure studies (Brewin et al., 2017) indicating a similar factor structure of PTSD and CPTSD among adolescents exposed to potentially traumatic events.

The two CFA PTSD and CPTSD symptom structure models (Model 2 and Model 4) had the best fit in our study. We selected the first-order correlated six factor model of the six PTSD and DSO symptoms as having the best fit. However, alternative second-order two factor model with correlated PTSD and DSO latent factors also had a good fit. This second-order model was selected as having the best fit in the recent study in Austria, which also tested ICD-11 PTSD and CPTSD factor structure (Haselgruber et al., 2020) using the adult version of ITQ. Although the first-order correlated six factor model in the same study had a better fit based on RMSEA and CFI/TLI indexes (Haselgruber et al., 2020). While findings provide initial support for ICD-11 PTSD and CPTSD symptoms, it is possible that symptom structure among adolescents could be somehow different from adults. Adolescents are in the developmental stage marked with identity changes, and it is possible that DSO symptoms of NSC, DR or AD symptoms have different associations with core PTSD symptoms of Re, Av, and SoT.

Furthermore, LCA analysis supported the validity of ICD-11 PTSD and CPTSD symptom structure. We could identify distinct latent classes of low symptom, PTSD, CPTSD and DSO in line with previous studies that used LCA for analysis of CPTSD symptom structure (Brewin et al., 2017). CPTSD class in line with theoretical assumptions was predicted with more traumatic experiences in this study. Moreover, CPTSD class was predicted by physical abuse related traumatic experiences which could be associated with prolonged traumatization among children. CPTSD was not predicted by sexual abuse in contrast to previous studies (e.g., Kazlauskas et al., 2018). However, as this was not a clinical sample, but general population sample prevalence of sexual abuse was too low to have enough statistical power to predict CPTSD. Of note, the sudden death of a loved one was predictive of the DSO cluster. The association may be reflective of the presence of other disorders which share some of the same symptoms (e.g., the negative self-concept associated with depression) or disruption in the key developmental domains that DSO represents (i.e., emotion regulation, self-concept, and relational capacities) due to loss of important figures in the child's social environment.

5. Limitations

There are several limitations associated with this study that needs to be discussed. This was a cross-sectional study and thus we could not analyze either trajectories of symptom change, nor effects of time since trauma exposure on posttraumatic stress disorders symptoms. As our main measure of PTSD and CPTSD in the study was self-report, we relied on self-report of participants. However, diagnostic interviews for ICD-11 PTSD and CPTSD although in development are not yet available. The study was conducted in a non-clinical sample, and further studies in clinical samples could provide additional information on validity and symptom structure of ICD-11 PTSD and CPTSD among adolescents.

Credit authorship contribution statement

Evaldas Kazlauskas: Supervision, Formal analysis, Writing - original draft. Paulina Zelviene: Investigation, Supervision, Data curation. Ieva Daniunaite: Supervision, Data curation. Philip Hyland: Formal analysis. Monika Kvedaraite: Data curation, Formal analysis. Mark Shevlin: Formal analysis. Marylene Cloitre: Supervision, Writing - review & editing.

Declaration of Competing Interest

The authors report no conflicts of interest in this work.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jad.2020.01.061.

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III.

PTSD and complex PTSD in adolescence: discriminating factors in a population-based cross-sectional study

Daniunaite, I., Cloitre, M., Karatzias, T., Shevlin, M., Thoresen, S., Zelviene, P., & Kazlauskas, E. (2021). PTSD and complex PTSD in adolescence: discriminating factors in a population-based cross-sectional study. *European Journal of Psychotraumatology*, 12, 890937. doi:10.1080/20008198.2021.1890937

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PTSD and complex PTSD in adolescence: discriminating factors in a population-based cross-sectional study

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ABSTRACT

Background: Chronic and repeated trauma are well-established risk factors for complex posttraumatic stress disorder (CPTSD) in adult samples. Less is known about how trauma history and other factors contribute to the development of CPTSD in adolescence.

Objective: The aim of this study was to assess the potential contribution of trauma history and social factors to CPTSD in adolescents.

Method: In a cross-sectional community study of 1299 adolescents aged 12–16 years, PTSD ($n = 97$) and CPTSD ($n = 108$) was assessed with the Child and Adolescent version of the International Trauma Questionnaire (ITQ-CA). Trauma exposure, family functioning, school problems, and social support as potential discriminating factors between the PTSD and CPTSD groups were investigated.

Results: Cumulative trauma exposure did not discriminate between PTSD and CPTSD in this sample. CPTSD was associated with family problems (such as financial difficulties and conflicts in the home), school problems (bullying and learning difficulties), and lack of social support.

Conclusions: Our study indicates that factors other than cumulative trauma are important for the development of CPTSD in adolescence. Interventions targeting adolescent's social environment both at home and at school may be beneficial.

TEPT y TEPT complejo en la adolescencia: factores discriminantes en un estudio transversal de base poblacional

Antecedentes: Los traumatismos crónicos y repetidos son factores de riesgo bien establecidos para el trastorno de estrés postraumático complejo (CPTSD) en muestras de adultos. Se sabe menos acerca de cómo la historia del trauma y otros factores contribuyen al desarrollo de TEPT-C en la adolescencia.

Objetivo: El objetivo de este estudio fue evaluar la potencial contribución de la historia de trauma y los factores sociales al TEPT-C en adolescentes.

Método: En un estudio comunitario transversal de 1299 adolescentes de 12 a 16 años, se evaluó el PTSD ($n = 97$) y CPTSD ($n = 108$) con la versión para Niños y Adolescentes del Cuestionario Internacional de Trauma (ITQ-CA por sus siglas en inglés). Se investigaron la exposición al trauma, el funcionamiento familiar, los problemas escolares y el apoyo social como posibles factores de discriminación entre los grupos de TEPT y TEPT-C.

Resultados: La exposición acumulada al trauma no discriminó entre TEPT y TEPT-C en esta muestra. El TEPT-C se asoció con problemas familiares (como dificultades financieras y conflictos en el hogar), problemas escolares (acoso escolar {bullying} y dificultades de aprendizaje) y apoyo social.

Conclusiones: Nuestro estudio indica que otros factores además del trauma acumulativo son importantes para el desarrollo de TEPT-C en la adolescencia. Las intervenciones dirigidas al entorno social de los adolescentes tanto en el hogar como en la escuela pueden resultar beneficiosas.

青少年中的PTSD和复杂性PTSD:基于群体的横断面研究中的区分因素

背景: 慢性和反复创伤是成人样本中复杂性创伤后应激障碍 (CPTSD) 的公认危险因素。关于创伤史和其他因素如何导致青春早期CPTSD的发展知之甚少。

目的: 本研究旨在评估青少年创伤史和社会因素对CPTSD的潜在贡献。

方法: 在一项针对1299名12至16岁青少年的横断面社区研究中, 使用儿童和青少年版国际创伤问卷 (ITQ-CA) 对PTSD组 ($n = 97$) 和CPTSD组 ($n = 108$) 进行了评估。考查了创伤暴露, 家庭功能, 学校问题和社会支持作为PTSD组和CPTSD组之间的潜在区分因素。

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关键词

创伤; PTSD; 复杂性PTSD; 青少年; ICD-11; 立陶宛

HIGHLIGHTS

- Social factors, such as family problems, school problems, and lack of social support are important predictors of complex posttraumatic stress in adolescence following traumatic events.

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 Supplemental data for this article can be accessed [here](#).

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结果: 此样本中, 累积创伤暴露没有区分PTSD和CPTSD。CPTSD与家庭问题 (例如经济困难和家庭冲突), 学校问题 (欺凌和学习困难) 以及社会支持相关。

结论: 我们的研究表明, 除累积创伤外的其他因素对于青少年CPTSD的发展也很重要。针对家庭和学校的青少年社交环境进行干预可能有益。

1. Introduction

The *International Classification of Diseases* 11th version (ICD-11) includes an updated diagnosis of post-traumatic stress disorder (PTSD) and a new diagnosis of complex PTSD (CPTSD; World Health Organization, 2018a). Three core clusters of symptoms constitute PTSD including re-experiencing of the traumatic event, avoidance, and sense of threat. CPTSD includes three additional symptom clusters commonly referred to disturbances in self-organization (DSO) and these include affect dysregulation, negative self-concept, and disturbances in relationships. While the type of trauma is not a prerequisite for being diagnosed with CPTSD or PTSD, CPTSD is more likely associated with multiple and chronic types of trauma, including those commonly experienced during childhood such as sexual or physical abuse (Brewin et al., 2017; Cloitre, 2020; Karatzias et al., 2017). Our study is based on the ICD-11 conceptualization of PTSD, which showed excellent fit among adolescents in recent studies (Elliott et al., 2020; Haselgruber, Sölva, & Lueger-Schuster, 2020b, 2020a; Kazlauskas et al., 2020).

Recent findings in adult samples have indicated that cumulative childhood trauma (Cloitre et al., 2019; Hyland et al., 2017), particularly childhood sexual or physical abuse (Cloitre et al., 2019; Hyland et al., 2017; Karatzias et al., 2017) is more strongly related to CPTSD than PTSD. Repeated or chronic trauma is a risk factor, especially if related to the situations where escape is difficult or not possible such as in child sexual or physical abuse within the family (Brewin et al., 2017; Cloitre et al., 2020). While trauma history impacts the differential risk for and development of CPTSD compared to PTSD, a number of additional risk factors have been identified for each disorder. Studies in adult samples showed that CPTSD is related to sociodemographic variables such as belonging to a minority group, lower education, relationship status and lower reported socioeconomic status (SES) (Perkonig et al., 2016). The results for gender effects on CPTSD are mixed (Brewin et al., 2017) with most but not all studies indicating that females have a greater risk for both PTSD and CPTSD compared to men (Cloitre et al., 2019; Karatzias et al., 2019).

The majority of CPTSD studies have been conducted in adult samples, and to date, only three studies have explored rates of CPTSD and its correlates in children and adolescents. They have reported

that compared to PTSD, CPTSD was associated with higher rates of cumulative interpersonal violence (Sachser, Keller, & Goldbeck, 2017), domestic violence (Haselgruber et al., 2020b), and physical abuse outside the family (Kazlauskas et al., 2020). Furthermore, compared to PTSD, CPTSD in children was associated with higher levels of comorbid psychopathology such as depression, anxiety, and behaviour problems (Eilers et al., 2020; Haselgruber et al., 2020b; Sachser et al., 2017).

CPTSD symptoms have been shown to be associated with a substantial psychological burden. For CPTSD prevention and effective treatment purposes, there is a need to identify factors other than trauma exposure that may contribute to CPTSD development in adolescence. Previous research shows that family attitudes or behaviour can help children successfully cope with adverse experiences or contribute to worse mental health outcomes (Carbone, Holzer, & Vaughn, 2019; Guerra, Farkas, & Moncada, 2018; Miller-Graff & Howell, 2015; Pinto et al., 2017). Factors related to school play an important role in the development of personality (Verhoeven, Poorthuis, & Volman, 2019). Understanding the role of social factors in the development and maintenance of CPTSD can inform prospective interventions targeting significant aspects of adolescent life. Therefore, the purpose of this study was to identify factors that discriminated between PTSD and CPTSD diagnostic status in adolescence. We hypothesized that CPTSD relative to PTSD would be characterized by a more severe trauma history as well as more social and family difficulties.

2. Method

2.1. Participants and procedure

Data for this study was extracted from the first wave of the ongoing longitudinal study *Stress and Resilience in Adolescence (STAR-A)*. The STAR-A study was implemented by the Center for Psychotraumatology at Vilnius University in Lithuania. Information on the procedures of the STAR-A study and analysis of PTSD and CPTSD profiles in an adolescent sample has been published previously (Kazlauskas et al., 2020). The study was approved by the Institutional Ethics Committee for Psychological Research.

The data was collected in 15 general schools from different regions across Lithuania, in March – June 2019.

All 12–16-year-old adolescents in the selected schools were informed about the study and were invited to participate. Before the start of data collection, the written informed assent was obtained from adolescents, participating in the study, and written informed consent at least from one parent of all adolescents. The study was designed to ensure the protection of participants' identities. Randomly generated IDs were assigned to all the participants of the study. Information about psychological counselling services was distributed to all study participants in the format of printed leaflets. The inclusion criteria for this study were: endorsing at least one traumatic event listed in the Child and Adolescent Trauma Screen (CATS) which was used in conjunction with the Child and Adolescent version of the International Trauma Questionnaire (ITQ-CA).

In total, 1299 adolescents participated in the study and filled the self-report printed measures. Of these, 934 adolescents (71.9%) reported exposure to at least one potentially traumatic event during their lifetime. Data from two participants were excluded from the later analysis because of missing data on all ITQ-CA items. From 932 participants reporting trauma experience, 205 (22.0%) met the criteria for a diagnosis of either ICD-11 PTSD (97, 47.3%) or CPTSD (108, 52.7%). This subgroup with PTSD and CPTSD was used for the study investigation. The sample included in the analysis was 205 adolescents, mean age 14.4 ($SD = 1.2$) years, 69.8% girls ($n = 143$). The majority of participants were born in Lithuania (98.5%, $n = 202$) and were of Lithuanian nationality (91.2%, $n = 187$). More than two-thirds of the sample (73.2%, $n = 150$) were from two-parent families. All demographic characteristics and comparison between PTSD and CPTSD groups are presented in Table 1 (see Table 1).

2.2. Measures

2.2.1. Lifetime trauma exposure

Lifetime trauma exposure was measured using a potentially traumatic events checklist adopted from the Child and Adolescent Trauma Screen (CATS: Sachser et al., 2017). The 14-item CATS trauma checklist includes the experience of physical and sexual abuse, domestic violence, traumatic loss, stressful medical procedure, accident, etc. (see Table 2 for the list of all items). Participants were asked to indicate if they experienced any of the listed traumatic experiences using a binary 'yes/no' response. An accumulative lifetime trauma exposure was a sum of all indicated traumatic experiences ranging from 0 to 14. In this study, all participants experienced at least one traumatic event, and the range was 1–11.

2.2.2. PTSD and complex PTSD

Child and Adolescent version of the International Trauma Questionnaire (ITQ-CA) was used to

measure ICD-11 PTSD and CPTSD in adolescents (Kazlauskas et al., 2020). The structure of ITQ-CA resembles the ITQ adult version. The ITQ-CA includes 12 items indicating symptoms of PTSD and disturbances in self-organization (DSO): two symptoms for each PTSD cluster (re-experiencing, avoidance, sense of threat) and two symptoms for each DSO cluster (affective dysregulation, negative self-concept, disturbances in relationships). Respondents were asked to indicate the extent each symptom bothered them during the past month using a five-point Likert scale from 0 ('Never') to 4 ('Almost always'). Furthermore, five functional impairment items are listed following a set of PTSD symptoms and a set of DSO symptoms. Respondents indicate if the symptoms disturbed their functioning using a binary yes/no scale for each of these areas including friends, family, school, other important areas (hobbies or other relationships), and general happiness.

For the diagnosis of PTSD and CPTSD, we used the same scoring scheme as for the ITQ adult version in the study. The symptom was scored as clinically significant if it was ≥ 2 in each of the symptom items. The presence of at least one symptom from each PTSD cluster and at least one indicator of functional impairment was required for a PTSD diagnosis. The presence of at least one symptom from each PTSD and DSO cluster and at least one indicator of functional impairment, related to both PTSD and DSO symptoms, is required for a CPTSD diagnosis. If participants met the criteria for CPTSD, PTSD diagnosis was excluded. The factor validity of the Lithuanian version of the ITQ-CA was supported in the previous study (Kazlauskas et al., 2020). The internal reliability of the ITQ-CA was sufficient for the total ITQ-CA scale ($\alpha = .87$), PTSD symptoms ($\alpha = .79$), and DSO symptoms ($\alpha = .86$) in the total sample (Kazlauskas et al., 2020). Descriptive statistics of the ITQ-CA scores and bivariate correlations are presented in Supplementary materials (Tables S1 and S2).

2.2.3. Family functioning

Family functioning was measured using four items, measuring difficulties in participants' parental family life: 1) financial difficulties, 2) alcohol abuse in the family, 3) mental illness in the family, and 4) constant conflicts in the family. Financial difficulties in the family were assessed by asking participants to indicate if their family can buy what is needed by using a 4 point Likert scale, from 0 ('Totally agree') to 3 ('Totally disagree'). The answers were coded as 'no financial difficulties' if the respondent agreed with the item ('Totally agree' or 'Agree'), and 'financial difficulties' if the respondent did not agree ('Totally disagree' or 'Disagree'). Alcohol and mental

Table 1. Characteristics of study participants.

Variable	Total sample (<i>N</i> = 205) <i>n</i> (%)	PTSD (<i>n</i> = 97) <i>n</i> (%)	CPTSD (<i>n</i> = 108) <i>n</i> (%)	Significance statistics	<i>p</i>
Gender					
Male	62 (30.2)	30 (30.9)	32 (29.6)	$\chi^2(1) = 0.02$	.880
Female	143 (69.8)	67 (69.1)	76 (70.4)		
Age					
Mean (<i>SD</i>)	14.40 (1.21)	14.34 (1.31)	14.45 (1.34)	$t(188.501) = -0.67$	.507
Range	12–16	12–16	12–16		
Family structure					
Two-parent	150 (73.2)	71 (73.2)	79 (73.1)	$\chi^2(1) = 0.00$	1.000
Other	55 (26.8)	26 (26.8)	29 (26.9)		
University education of parents					
No	20 (9.8)	8 (8.3)	12 (11.1)	$\chi^2(2) = 0.45$	.799
One/both of parents	148 (72.5)	71 (74.0)	77 (71.3)		
Don't know	36 (17.6)	17 (17.7)	19 (17.6)		
Place of birth					
Lithuania	202 (98.5)	96 (99.0)	106 (98.1)	<i>F</i>	1.000
Other	3 (1.5)	1 (1.0)	2 (1.9)		
Nationality					
Lithuanian	187 (91.2)	90 (92.8)	97 (89.8)	$\chi^2(1) = 0.82$	.665
Other	14 (6.8)	5 (5.2)	9 (8.3)		

Note: *F* = Fisher's Exact Test.

health problems in the family were evaluated using the yes/no/don't know scale. Answers 'yes' were coded as problem manifestation. To measure the experience of conflicts in the family respondents were asked to indicate if they experienced constant conflicts over the last year using a binary yes/no scale.

2.2.4. Problems at school

School functioning was measured by two questions, related to adolescent's school life: 1) bullying at school, and 2) learning difficulties at school. Respondents were asked to indicate if they experienced each of these difficulties during the last year using a binary yes/no scale.

2.2.5. Social support

Social support was measured by a single question 'If you are having a serious issue which is difficult to talk about, whom would you talk to?' with multiple response options for social support sources listed. Participants could choose one or more options from eight possible social resources provided: father, mother, another family member, friend, school nurse, teacher, or other adults at school, other adults, nobody. If a participant indicated at least one resource of social support, it was coded as 'social support', if none of the social support sources were indicated it was coded as 'no social support'.

2.3. Data analysis

The Statistical Package for the Social Sciences IBM SPSS version 25.0 was used for the analyses of data. All binary data in the dataset was coded as '0' for 'No' responses, and '1' for 'Yes' responses. The risk factors

of PTSD and CPTSD were assessed using a multivariable binary logistic regression, to provide the unique effects of each factor while controlling for other variables in the model.

3. Results

3.1. Characteristics of the sample

There were no significant differences between the CPTSD and PTSD groups in sociodemographic characteristics including gender, age, country of birth, nationality, education of parents, and family structure (two-parent vs. single-parent/foster care, coded as other) (Table 1).

3.2. Trauma exposure

The average number of traumatic experiences in total was 3.58 (*SD* = 2.04); in the PTSD group 3.35 (*SD* = 2.19) and 3.78 (*SD* = 1.89) in the CPTSD ($t(203) = -1.50, p = .135$). Significantly more participants in the PTSD, compared to the CPTSD group, reported single traumatic experiences ($\chi^2(1, n = 41) = 4.55, p = .033$), although the proportion of participants with single trauma was low. The majority in both groups were exposed to multiple traumatic experiences (see Table 2).

The most commonly reported experiences were a serious accident or injury 62.4% (*n* = 128), stressful or scary medical procedures 55.1% (*n* = 113), and seeing someone in the community get slapped or punched 52.7% (*n* = 108). Physical abuse, witnessing domestic violence and traumatic loss were also prevalent in the sample ranging from 29.8% to 36.8%. Analysis of differences in trauma exposure across various types of

Table 2. Prevalence of lifetime traumatic experiences.

Trauma exposure	Total (<i>N</i> = 205)	PTSD (<i>n</i> = 97)	CPTSD (<i>n</i> = 108)	Significance statistics	
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	$\chi^2(1)$	<i>p</i>
1 Serious natural disaster like a flood, tornado, hurricane, earthquake, or fire	32 (15.6)	15 (15.5)	17 (15.7)	0.00	1.000
2 Serious accident or injury like a car/bike crash, dog bite, sports injury	128 (62.4)	63 (64.9)	65 (60.2)	0.31	.576
3 Robbed by threat, force or weapon	17 (8.3)	8 (8.2)	9 (8.3)	0.00	1.000
4 Slapped, punched, or beat up in your family	62 (30.2)	23 (23.7)	39 (36.1)	3.16	.075
5 Slapped, punched, or beat up by someone not in your family	75 (36.8)	28 (28.9)	47 (43.9)	4.34	.037
6 Seeing someone in your family get slapped, punched or beat up	61 (29.8)	30 (30.9)	31 (28.7)	0.04	.846
7 Seeing someone in the community get slapped, punched	108 (52.7)	48 (49.5)	60 (55.6)	0.53	.466
8 Someone older touching your private parts when they shouldn't	20 (9.8)	8 (8.2)	12 (11.1)	0.21	.650
9 Someone forcing or pressuring sex, or when you couldn't say no	9 (4.4)	5 (5.2)	4 (3.7)	<i>F</i>	.738
10 Someone close to you dying suddenly or violently	64 (31.2)	29 (29.9)	35 (32.4)	0.06	.813
11 Attacked, stabbed, shot at or hurt badly	8 (3.9)	4 (4.1)	4 (3.7)	<i>F</i>	1.000
12 Seeing someone attacked, stabbed, shot at, hurt badly or killed	31 (15.1)	12 (12.4)	19 (17.6)	0.72	.397
13 Stressful or scary medical procedure	113 (55.1)	50 (51.5)	63 (58.3)	0.70	.404
14 Being around war	5 (2.5)	2 (2.1)	3 (2.8)	<i>F</i>	1.000
Interpersonal trauma	160 (78)	68 (70.1)	92 (85.2)	5.93	.015
Cumulative trauma					
1	41 (20)	26 (26.8)	15 (13.9)	4.55	.033
2–3	67 (32.7)	30 (30.9)	37 (34.3)	0.13	.720
4–5	61 (29.8)	24 (24.7)	37 (34.3)	1.79	.182
≥6	36 (17.6)	17 (17.5)	19 (17.6)	0.00	1.000
Mean (SD)	3.58 (2.04)	3.35 (2.19)	3.78 (1.89)	<i>t</i> (203) = −1.50	.135

Note: *F* = Fisher's Exact Test.

experiences revealed no differences between the PTSD and CPTSD groups, except for physical abuse outside the family ($\chi^2(1, n = 75) = 4.34, p = .037$) which was significantly higher for the CPTSD group. Significantly more participants in the CPTSD group, compared to the PTSD group reported interpersonal trauma ($\chi^2(1, n = 160) = 5.93, p = .015$) (see Table 2).

3.3. Social problems in PTSD and CPTSD groups

All family and school problems occurred more frequently in adolescents with CPTSD, compared to adolescents with PTSD (see Table 3). The majority of adolescents with CPTSD reported being bullied at school and family conflicts at home. Moreover, social support was significantly lower among the CPTSD group in comparison to the PTSD group.

3.4. Factors associated with complex PTSD vs. PTSD

Multivariable binary logistic regression analysis was used to identify whether sociodemographic characteristics, trauma exposure, and social factors differentiated between CPTSD and PTSD status. Multivariable binary logistic regression analysis ($R^2_{\text{Nagelkerke}} = 0.295$) revealed that financial difficulties in family ($OR = 4.36, p = .047$), conflicts in family ($OR = 3.14, p = .001$), experience of bullying at school ($OR = 2.53, p = .007$) and lack of social support from others ($OR = 0.26, p = .025$) were all significant predictors of CPTSD vs. PTSD status (see Table 4). Alcohol abuse and mental illness at home as well as

learning difficulties at school did not predict CPTSD status in the multivariable adjusted logistic analysis.

4. Discussion

This is the first study to explore social factors associated with CPTSD and PTSD diagnostic status in an adolescent sample. It was found that significantly more participants with PTSD than CPTSD reported single traumatic experiences. While more participants in the PTSD group reported single trauma, the majority in both groups reported multiple traumas, and the number of reported traumatic events did not differ between the two groups. These findings differ from results from previous study among trauma exposed children where total cumulative trauma were greater and more strongly related among those with CPTSD than PTSD (Haselgruber et al., 2020b). However, exposure to interpersonal trauma was significantly associated with CPTSD in our study in line with the previous research (Sachser et al., 2017). Differences in outcomes in the studies may be the result of differences in the type of sample (community versus clinical). The two previous CPTSD studies assessed clinical samples who had experienced predominantly chronic interpersonal traumas and sexual traumas, thus cumulative rates may reflect the accumulation of these potentially more toxic types of experiences. In addition, information about the perpetrators of sexual or physical abuse/violence (care-takers versus others) was not collected in a similar way across studies, making it difficult to compare outcomes. Investigations of the impact of different kinds of trauma on diagnostic status in both the

Table 3. Social factors related to PTSD and CPTSD in adolescents' sample.

Variable	Total sample (<i>N</i> = 205)	PTSD (<i>n</i> = 97)	CPTSD (<i>n</i> = 108)	Significance statistics	<i>p</i>
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)		
Financial difficulties in family					
No	189 (92.2)	94 (96.9)	95 (88.0)	$\chi^2(1) = 4.51$	.034
Yes	16 (7.8)	3 (3.1)	13 (12.0)		
Alcohol abuse in family					
No	148 (72.2)	79 (81.4)	69 (63.9)	$\chi^2(1) = 6.96$	.008
Yes	57 (27.8)	18 (18.6)	39 (36.1)		
Mental illness in family					
No	181 (88.3)	91 (93.8)	90 (83.3)	$\chi^2(1) = 4.46$	.035
Yes	24 (11.7)	6 (6.2)	18 (16.7)		
Constant conflicts in family					
No	111 (54.7)	68 (70.1)	43 (40.6)	$\chi^2(1) = 16.66$	<.001
Yes	92 (45.3)	29 (29.9)	63 (59.4)		
Bullying at school					
No	97 (47.5)	57 (58.8)	40 (37.4)	$\chi^2(1) = 8.49$	.004
Yes	107 (52.5)	40 (37.4)	67 (62.7)		
Learning difficulties at school					
No	41 (20.2)	28 (29.2)	13 (12.1)	$\chi^2(1) = 8.07$	.005
Yes	162 (79.8)	68 (70.8)	94 (87.9)		
Social support					
No	23 (11.3)	5 (5.2)	18 (16.7)	$\chi^2(1) = 5.57$	.018
Yes	181 (88.7)	91 (94.8)	90 (83.3)		

Table 4. Multivariable binary logistic analysis of factors associated with likelihood of complex PTSD.

Variables	CPTSD vs PTSD (<i>n</i> = 202)	
	OR (95% CI)	<i>p</i>
1 Gender	1.29 (0.63–2.63)	.487
2 Age	1.14 (0.87–1.50)	.328
3 Family type	1.12 (0.53–2.33)	.785
4 Financial difficulties in family	4.36 (1.02–18.63)	.047
5 Alcohol abuse in family	1.73 (0.78–3.83)	.177
6 Mental illness in family	2.63 (0.83–8.32)	.099
7 Constant conflicts in family	3.14 (1.59–6.20)	.001
8 Bullying at school	2.53 (1.29–4.94)	.007
9 Learning difficulties at school	2.24 (0.97–5.16)	.060
10 Social support	0.26 (0.08–0.84)	.025
11 Cumulative trauma	0.95 (0.81–1.14)	.519

Note: OR = odds ratio, CI = confidence intervals.

adult and child literature would benefit from uniformity in use of measures and definitions.

Our study addressed important social factors, such as difficulties in family or school as well as lack of social support. Results indicated that these factors were particularly associated with CPTSD as opposed to PTSD status among traumatized adolescents. CPTSD in adolescents was significantly related to financial difficulties, constant conflicts and mental illness in the family, and learning problems at school. Lack of social support significantly discriminated CPTSD and PTSD status in this study, which confirms the results of a recent study in adults (Simon, Roberts, Lewis, van Gelderen, & Bisson, 2019). Although our study indicates that social and family problems may distinguish between PTSD and CPTSD diagnostic status in adolescents, these findings need replication in future studies. Adolescents may not have sufficient information or maturity to answer the questions regarding the mental health of their parents or socioeconomic status of the family. The role of social factors can depend on

various aspects of the problem – severity, duration, developmental age, when the problem started, or if the problem relates to one or both parents. It is important that future research explores these issues more thoroughly, for example, by linking self-report data to information from parents/teachers, or official health registries.

The experience of bullying was missing from the CATS checklist and it was added as a separate stressful life event, which is highly prevalent in Lithuania (World Health Organization, 2018b). In the present study, we investigated factors that differentiated between CPTSD and PTSD and found that bullying was associated with the heavier symptom load represented in CPTSD. Previous studies have shown that bullying is related to PTSD and other mental health problems (Idsoe, Dyregrov, & Idsoe, 2012; Nielsen, Tangen, Idsoe, Matthiesen, & Magerøy, 2015; Plexousakis, Kourkoutas, Giovazolias, Chatira, & Nikolopoulos, 2019). The inclusion of bullying as a traumatic experience and its association with CPTSD and PTSD has been recently argued in the literature (Hyland et al., 2020; Ström, Aakvaag, Birkeland, Felix, & Thoresen, 2018).

We aimed to investigate factors differentiating between PTSD versus CPTSD status in adolescents. Future studies are needed to extend this analysis. The studies on factors related to the severity of PTSD and CPTSD symptoms, quality of life, and level of functioning in adolescence and adulthood would help prevention and intervention fields. Moreover, the study was based on the ICD-11 conceptualization of PTSD. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) uses a different approach to the conceptualization of PTSD (American Psychiatric Association, 2013). Studies, analysing the effect of overlap and difference of PTSD/CPTSD algorithms in ICD-11 and DSM-5 classification systems on adolescent mental

health evaluation is another important milestone for the future (Bruckmann, Haselgruber, Sölva, & Lueger-Schuster, 2020).

4.1. Limitations

Several limitations should be highlighted. The cross-sectional nature of this study limits the possibilities to explore the causal pathways involved in the association between family situation, school bullying, social relationships and mental health problems in adolescents. Further longitudinal studies are required to explore the long-term effects of trauma on a child and adolescent development trajectories and how social factors affect the development of PTSD and CPTSD symptoms over time. Another limitation of this work is the use of self-rated scales although it is important to highlight that diagnostic interviews for ICD-11 PTSD and Complex PTSD in adolescents are still under development.

Although data were collected on specific traumatic events, more specific data concerning the duration and chronicity of traumatic experience would have been useful. The social factors related to PTSD and CPTSD development were evaluated using separate single items and should be interpreted only as rough indicators of the phenomena. It is difficult to evaluate such complex indicators as the mental health of parents in self-report adolescents' studies. The factors related to family functioning and school functioning were self-disclosed whereas adolescents may vary with regard to how they perceive conflicts or socioeconomic status in the family. The use of dedicated measures of social support, family and school functioning would provide a more accurate evaluation of the role of these factors on PTSD and CPTSD status.

Despite these limitations, this study employed a large sample of adolescents from the general population. The young age of participants assures that participants are less prone to memory bias which is an issue in adult retrospective childhood abuse and neglect studies.

5. Conclusions

The findings from this study provide new insights into the role of social factors in ICD-11 PTSD and CPTSD in adolescents. These findings confirm the importance of social and environmental factors in CPTSD status, especially the negative role of the dysfunctional family and school problems. Future longitudinal research could identify the sequential development of childhood trauma and its relationship with social difficulties and mental health in adolescents. There is a need to develop appropriate intervention and preventative strategies to tackle CPTSD in adolescents. Our findings suggest that addressing family and school difficulties may be helpful for traumatized children and adolescents who suffer from CPTSD.

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Data availability

Data supporting the findings is not openly available due to ethical reasons. The participants of the study were adolescents. The informed consent for participation in the study was received from all adolescents and parents. The agreement to share the study data was not obtained.

Disclosure statement

No potential conflict of interest was reported by the authors.

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IV.

Adolescents amid the COVID-19 pandemic: a prospective study of psychological functioning

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RESEARCH ARTICLE

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Adolescents amid the COVID-19 pandemic: a prospective study of psychological functioning

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Abstract

Background: The spread of coronavirus disease (COVID-19) and the accompanying countermeasures can significantly impact the wellbeing of adolescents. There is a lack of longitudinal studies that can shed light on potential social, emotional, and behavioral development in adolescents. We aimed to identify potential changes in adolescent psychosocial functioning from pre-pandemic to peri-pandemic assessment, and secondly, to identify specific patterns of change.

Methods: This longitudinal study was based on a Lithuanian community sample of 331 adolescents aged 12–16 at T1 ($M = 13.87$, $SD = 1.59$). T1 data collected before the pandemic (March–June, 2019) was compared with T2 data collected during the COVID-19 outbreak (October 2020). Psychosocial functioning was assessed by The Strengths and Difficulties Questionnaire (SDQ). Multivariate latent change modeling and latent class change approaches were used to identify patterns of change.

Results: We found a small but significant increase in hyperactivity/inattention, emotional symptoms, but also prosocial behavior from before to during the pandemic, even adjusting for resilience, lifetime abuse experience, and socio-demographic situation. Three change profiles were identified in the latent change analysis: (1) a majority (70.7%) experienced a significant increase in psychosocial problems; (2) a smaller sub-group (19.6%) with increased peer problems only; (3) a small group (9.7%) showing no negative change and an increase in prosocial behavior.

Conclusions: The study found a significant negative impact of the COVID-19 pandemic on mental health in the majority of adolescents, as well as indications of positive social development in a small group. These findings highlight the importance of identifying and supporting adolescents in the time of the pandemic more effectively. Accumulating knowledge about human responses to the coronavirus, particularly in young people, is pivotal to societal preparedness for future pandemics.

Keywords: COVID-19, Adolescents, Psychosocial functioning, Lithuania

Introduction

Pandemic diseases may cause major societal disruption and pose great challenges to human adaptation. In recent decades, the likelihood of pandemics has likely increased

due to more mobility, urbanization, and other factors [1]. The spread of coronavirus disease (COVID-19) and the accompanying countermeasures can significantly impact the wellbeing of adolescents. Some groups of adolescents might be at a greater risk for serious mental health problems. Previous psychological burden, abuse history, living in a family with low income or low education, belonging to an ethnic minority group are important risk factors for the wellbeing of adolescents during the pandemic [2–6].

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In addition, restricted means to psychosocial and social assistance can impact psychosocial functioning [3, 4].

Previous studies showed that adolescents worry about the COVID-19 crisis and are very concerned about their schooling restrictions and peer relationships [7, 8]. Additionally, adolescents reported the negative impact of the COVID-19 pandemic on mental health, learning, friendships, and family relations [6]. Stress, related to the COVID-19 spread and social distancing, was found to be associated with loneliness and depression [7, 9, 10]. Recent studies showed a high level of depression and anxiety in adolescents in different pandemic periods [9, 11–15]. The COVID-19 diagnosis or close contact with an infected person, low social support, and negative coping has been found to relate to higher levels of depression and anxiety [14, 16]. Furthermore, the COVID-19 pandemic seems to have resulted in higher levels of concentration difficulties and restlessness in children and adolescents, as reported by parents [10].

The vast majority of these studies so far have been cross-sectional. A few longitudinal studies show an increase in depression and anxiety symptoms, also the decrease of mental well-being and lower health-related quality of life from before to during the pandemic [8, 17–20]. The highest level of depression and anxiety were associated with peak infection rates, and the decrease of symptoms paralleled the decline in rates of coronavirus [21]. A recent study showed that adolescent mental health trajectories had been altered in the face of COVID-19 [19]. However, not all studies indicate negative changes in mental health in young people due to the pandemic [22]. Thus, we have a very limited understanding of stability and change in adolescent mental health in the context of the COVID-19 pandemic.

The current study aimed to achieve a better understanding of how the COVID-19 pandemic may have affected adolescent mental health and psychosocial functioning in Lithuania. Previous longitudinal research has demonstrated that in terms of adolescent development, Lithuanians are similar to adolescents from other WEIRD (Western, educated, industrialized, rich, and democratic) countries [23]. The COVID-19-related lockdown in the country resulted in closing schools and distant learning, with school lessons being held online for most of the year 2020. Therefore, the contact with teachers and peers was limited to online communication. Additionally, most parents were working from home. This situation introduced new routines when parents and their children spent extensive time at home while also being busy with their tasks. On the one hand, the adolescents experienced a lack of support from other significant adults and peers. On the other hand, handling the study process became one of the additional burdens for parents. These changes

might have introduced exposure to new underexplored communication obligations to both parents and their adolescent children. Regarding the lockdown restrictions, the situation in Lithuania in 2020 was similar to other European countries. We assume that due to rapid changes, stress levels have risen and could have affected adolescents' mental health. Therefore, we first tested if emotional problems, hyperactivity/inattention, behavior problems, and peer problems were higher at 6-months since the first national lockdown during, as compared to before the pandemic. Based on the findings of the previous studies, we hypothesized that adolescent difficulties in emotional and behavioral functioning, problems with peers, and hyperactivity/inattention would be higher than before the pandemic. Second, we sought to identify specific patterns of change. There is substantial evidence that child abuse significantly affects children's and adolescents' psychosocial functioning [24–28]. Also, many studies confirmed that psychological resilience mitigates the negative child abuse effect on psychosocial functioning [24, 29–34]. Therefore, we controlled for child abuse experience and psychological resilience in our latent class change analysis in this study.

Method

Participants and procedure

This study is based on the data from the first two waves of the ongoing longitudinal study Stress and Resilience in Adolescence (STAR-A). The STAR-A study is implemented by the Center of Psychotraumatology at Vilnius University in Lithuania. The study was approved by the Ethics Committee for Psychological Research in Vilnius University. Information on the procedures of the STAR-A study has been published previously [28, 35].

The current analysis focused on a subsample of 331 adolescents aged 12–16 at the time of the first wave of research, March–May 2019. Data were obtained at two time points: baseline/pre-test (T1, wave 1) and in 18 months at 6 months since the first national lockdown in Lithuania amid the COVID-19 outbreak (T2, wave 2). The T2 data was collected from September 24 to October 21, 2020. During this period, school closing was required at some level [36]. Depending on the COVID-19 situation in the municipality or community, each school could choose the teaching strategy—live, distant, or hybrid. People from outside were not allowed to enter the school premises. Gatherings were restricted to 10 and fewer people [36]. By the start of the data collection on September 24, 2020, there were 9586 identified COVID-19 cases in Lithuania in total, including 116 deaths with a trend of increasing cases and deaths until the end of 2020 [37].

The data for this study were collected in 7 general schools from different regions across Lithuania. Data

in the first wave was collected using the paper–pencil method. Data in the second wave was collected online through the platform designed for online surveys. The procedures for the T2 data collection were adapted to the pandemic situation (the second wave of the COVID-19) and valid restrictions in the country. According to the previous adolescent studies, web-based surveys can be applied without the risk of disadvantages compared to paper–pencil assessments [38].

Before starting data collection in 2019, written assent from adolescents and written informed consent from legal guardians were obtained. The protection of study participants' identities was ensured; randomly generated IDs were assigned for the participants in T1. Information about psychological help possibilities was provided to all study participants in T1 and T2.

In cooperation with schools, 449 students were invited to participate in T2. Most of the adolescents (336, 74.8%) completed the self-report online questionnaire. Responses from five adolescents had to be removed from the analysis because their T1 and T2 data could not be merged due to the lack of identification information provided by the study participant. The final study sample comprised of 331 adolescents, mean age at T1 13.87 ($SD = 1.59$) years, 57.4% girls ($n = 190$). The majority of participants were born in Lithuania (98.8%, $n = 327$) and were of Lithuanian nationality 92.1% ($n = 305$). More than two-thirds of the sample (71.3%, $n = 236$) were from two-parent families. In terms of demographic characteristics, our study sample was not representative but highly comparable with the general population of adolescents [39]. All demographic characteristics of study participants in T2 are presented in Table 1.

Measures

Psychosocial functioning

Psychosocial functioning of adolescents was measured in T1 and T2 using the Strengths and Difficulties Questionnaire (SDQ) [40]. The SDQ includes 25 items, comprising five scales with five items in each. The response format is a 3-point Likert scale. Five psychosocial functioning dimensions are evaluated: emotional symptoms, conduct problems, hyperactivity, peer problems, and prosocial behavior. The SDQ has been previously validated in Lithuania [41, 42]. The SDQ is widely used globally and has shown acceptable reliability and validity across many cultures [43].

Resilience

The psychological resilience of adolescents at T1 was measured by The Resilience Scale (RS-14) [44]. The RS-14 scale includes 14 items measuring the construct of psychological resilience. The response format is a 7-point

Table 1 Characteristics of study participants at T1 (N = 331)

Variable	n	%
Gender		
Male	141	42.6
Female	190	57.4
Age		
Mean (SD)	13.87 (1.59)	
Range	12–16	
Family structure		
Two-parent	236	71.3
Other	95	29.7
University education of parents		
One/both of parents	215	64.9
None	27	8.2
Don't know	89	26.9
Place of birth		
Lithuania	327	98.8
Other	4	0.2
Nationality		
Lithuanian	305	92.1
Other	12	3.7
Missing	14	4.2

Likert scale. The Lithuanian version of the scale was used and validated in the adult and adolescent populations previously [45, 46].

Lifetime abuse exposure

Lifetime abuse exposure was measured in T1 using the questionnaire developed by the Norwegian Center for Violence and Traumatic Stress Studies (NKVTS). The questionnaire included 37 questions covering six types of abuse: neglect at home (6 items), emotional abuse at home (8 items), physical abuse from an adult at home (6 items), online sexual abuse (5 items), sexual abuse from adults (6 items), sexual abuse from peers (6 items). All single items were reported previously [28]. The response format for neglect questions was a 5-point scale ranging from “never” (0) to “very often/always” (4). The participant was considered as exposed to neglect if (s) he responded to any neglect item with “sometimes” (2), “often” (3), or “very often/always” (4). Concerning the items on all other forms of abuse, the participants were asked to respond on a 4-point scale ranging from “never” (0) to “often” (3). The participant was considered as exposed to emotional abuse if (s)he responded to any emotional abuse item with “sometimes” (2) or “often” (3), and physical/sexual abuse—if (s)he responded to any physical/sexual abuse item accordingly with an answer “once” (1), “sometimes” (2) or “often” (3). Finally, the

participant was considered as exposed to lifetime abuse, if (s)he has experienced one or more types of abuse.

Data analysis

To examine the changes in the indicators of adolescent psychosocial functioning at the COVID-19 outbreak (T2), in comparison to pre-test (T1), we used the multivariate latent change modeling approach that provides robust estimates of change over time [47]. In latent change models with two measurement points, the intercept represents the adjusted mean level of the measure at T1, and the slope represents the change from T1 to T2. In the current study, we conducted the latent change model of five parallel processes: change in prosocial behavior, hyperactivity/inattention, emotional symptoms, conduct problems, and peer relationship problems. When running the model, we accounted for possible effects of gender, age, the level of resilience at T1, and the lifetime abuse exposure (exposed vs. not exposed measured at T1) on indicators of psychosocial functioning and included them as control variables by regressing on all intercepts and slopes. To have the latent change model identified, first, we fixed the residuals to zero; second, we fixed non-significant effects of control variables to zero one by one until we obtained the final model with the links of at least marginal significance ($p < 0.10$) only. In addition, to identify whether the change processes in indicators of psychosocial functioning were linked with each other and whether the initial levels of prosocial behavior, hyperactivity/inattention, emotional symptoms, conduct problems, and peer relationship problems were associated with the changes, we correlated all intercepts and slopes. The model fit in latent change analysis was evaluated by using the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA), following the goodness of fit recommendation provided by Kline [48]. Namely, CFI/TLI values higher than 0.90 indicated an acceptable fit, and values higher than 0.95 represented a very good fit; RMSEA values below 0.08 indicated an acceptable fit, and values less than 0.05 suggested a good fit.

After running the multivariate latent change model, we sought to identify groups of participants with possibly different patterns of change in indicators of psychosocial functioning by using the latent class change approach [49]. We classified the study participants based on the change in all five indicators (i.e., prosocial behavior, hyperactivity/inattention, emotional symptoms, conduct problems, and peer relationship problems) with also including the control variables used in latent change analysis. We used several criteria to decide on the number of latent classes. First, the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC)

statistics for a solution with k classes should be lower than for a solution with $k-1$ classes. Second, a statistically significant p value of the parametric bootstrapped likelihood ratio test, which compares improvement in fit between neighboring class solutions after the inclusion of an additional class. Third, Entropy scores above 0.70 with relatively higher values indicative of more accurate classification. When reporting the change in indicators of psychosocial functioning, the bias-corrected effect sizes [50] were reported. The magnitude of the effect expressed in d was interpreted according to Cohen [51], that is, 0.20 = small effect, 0.50 = medium effect, and 0.80 = large effect. The analyses were conducted with Mplus 8.2. [52].

Results

Means and standard deviations of the study variables at T1 and T2, and correlations among them, are presented in Table 2. The correlations between values of each five indicators of socioemotional functioning at T1 and T2 were significant and moderate to high (0.46–0.63). Prosocial behavior at T1 was significantly negatively associated with hyperactivity/inattention, conduct, and peer problems at T1. Prosocial behavior at T2 was significantly and negatively associated with concurrent hyperactivity/inattention and conduct problems, but significantly and positively with concurrent emotional difficulties.

Change in mental health indicators

The multivariate latent change analysis yielded an excellent model fit [$\chi^2(26) = 26.95$, $p = 0.412$, CFI/TLI = 0.999/0.997, RMSEA (0% CI) = 0.010 (0.000, 0.045), SRMR = 0.029]. Overall, we found a significant but small increase in rates of hyperactivity/inattention ($M_{\text{slope}} = 0.45$, $p < 0.001$) and emotional symptoms ($M_{\text{slope}} = 0.41$, $p < 0.001$), as well as large increase in prosocial behavior ($M_{\text{slope}} = 1.32$, $p = 0.034$) from T1 to T2 with no change in conduct problems ($M_{\text{slope}} = -0.02$, $p = 0.852$), and peer relationship problems ($M_{\text{slope}} = 0.07$, $p = 0.495$). For all indicators of psychosocial functioning, we found significant negative links ($p < 0.001$) between intercepts and slopes, indicating that lower baseline rates of prosocial behavior ($r = -0.39$), hyperactivity/inattention ($r = -0.41$), emotional symptoms ($r = -0.39$), conduct problems ($r = -0.48$), and peer relationship problems ($r = -0.52$) were associated with bigger increase in these indicators. The trajectories of change in the indicators of psychosocial functioning in a full study sample are presented in Fig. 1.

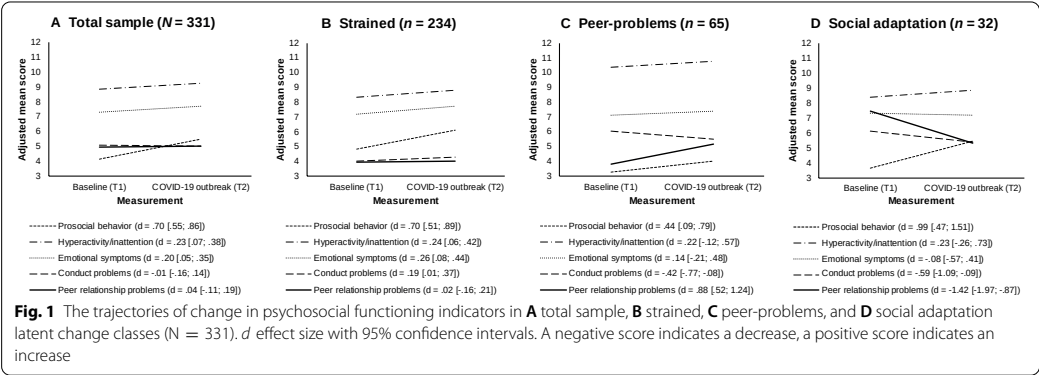
We found significant gender effects on intercepts of prosocial behavior ($\beta_{\text{intercept}} = -0.31$, $p < 0.001$) and emotional symptoms ($\beta_{\text{intercept}} = -0.25$, $p < 0.001$), indicating higher baseline rates of these indicators in girls, compared to boys. Also, the results showed

Table 2 Correlations among study variables at the baseline (T1) and COVID-19 outbreak (T2)

	M (SD)	Y1/Y2	1	2	3	4	5	6	7	8	9	10
1 Prosocial behavior T1	7.14 (2.00)	-0.55/-0.16	1									
2 Hyperactivity/inattention T1	3.39 (2.07)	0.43/-0.27	-0.247***	1								
3 Emotional symptoms T1	2.86 (2.29)	0.72/-0.17	0.039	0.308***	1							
4 Conduct problems T1	2.53 (1.53)	0.75/0.52	-0.209***	0.400***	0.183**	1						
5 Peer relationship problems T1	2.27 (1.84)	0.97/0.63	-0.250***	0.148*	0.335***	0.207***	1					
6 Resilience T1	56.11 (10.18)	-0.44/0.08	0.301***	-0.334***	-0.0418***	-0.216***	-0.290***	1				
7 Prosocial behavior T2	6.94 (2.12)	-0.66/0.30	0.528***	-0.152**	-0.002	-0.092	-0.196***	0.095	1			
8 Hyperactivity/inattention T2	3.84 (2.24)	0.36/-0.22	-0.109*	0.568***	0.205***	0.295***	0.020	-0.243***	-0.107	1		
9 Emotional symptoms T2	3.27 (2.47)	0.51/-0.61	0.045	0.209***	0.626***	0.120*	0.169**	-0.312***	0.117*	0.290***	1	
10 Conduct problems T2	2.49 (1.57)	0.75/0.43	-0.115*	0.287***	0.168**	0.488***	0.167**	-0.124*	-0.152**	0.355***	0.200***	1
11 Peer relationship problems T2	2.33 (1.77)	0.62/-0.14	-0.236***	0.162*	0.295***	0.081	0.463***	-0.241***	-0.274***	0.087	0.370***	0.213***

M mean; SD standard deviation; Y1 skewness; Y2 kurtosis

*. $p < 0.05$; **. $p < 0.01$; ***. $p < 0.001$



significant negative age effects on intercepts of hyperactivity/inattention ($\beta_{\text{intercept}} = -0.10, p = 0.019$) and conduct problems ($\beta_{\text{intercept}} = -0.12, p = 0.011$), indicating the higher rates of these indicators at the baseline being associated with younger age. A higher resilience level at T1 was found to be positively linked with the intercept of prosocial behavior ($\beta_{\text{intercept}} = 0.32, p < 0.001$) and negatively linked to the intercepts of hyperactivity/inattention ($\beta_{\text{intercept}} = -0.31, p < 0.001$), emotional symptoms ($\beta_{\text{intercept}} = -0.35, p < 0.001$), conduct problems ($\beta_{\text{intercept}} = -0.15, p = 0.002$), indicating that higher resilience was associated with better psychosocial functioning at baseline. Also, we found significant abuse exposure effects on intercepts of emotional symptoms ($\beta_{\text{intercept}} = 0.12, p = 0.002$), indicating higher levels of internalizing problems at the baseline in the abuse exposure group, compared to the non-exposure group. Finally, we found that the slope of prosocial behavior was significantly negatively linked with resilience ($\beta_{\text{slope}} = -0.18, p < 0.001$) and positively linked with abuse exposure ($\beta_{\text{slope}} = 0.09, p = 0.045$), indicating that the bigger increase in prosocial behavior was observed in adolescents with lower baseline rates of resilience as well as in

the abuse exposure group, compared to the non-exposure group.

Patterns of change in psychosocial functioning

The latent class change analysis indicated that the three classes solution fitted the data best (see Table 3). Three identified change profiles were found to be clearly distinguishable in terms of differences in changes of psychosocial functioning indicator means over time. Most adolescents (70.7%) reported a significant but small increase in hyperactivity/inattention ($M_{\text{slope}} = 0.45, p = 0.005$), emotional symptoms ($M_{\text{slope}} = 0.53, p < 0.001$), and conduct problems ($M_{\text{slope}} = 0.26, p = 0.040$) with a stability in prosocial behavior ($M_{\text{slope}} = 1.26, p = 0.051$) and peer relationship problems ($M_{\text{slope}} = 0.04, p = 0.754$); we labeled this pattern as strained. Almost one in five adolescents (19.6%) reported large increase in Peer relationship problems ($M_{\text{slope}} = 1.36, p < 0.001$) with no significant change in other indicators of psychosocial functioning: prosocial behavior ($M_{\text{slope}} = 0.78, p = 0.259$); hyperactivity/inattention ($M_{\text{slope}} = 0.43, p = 0.369$), emotional symptoms ($M_{\text{slope}} = 0.29, p = 0.411$), and conduct problems ($M_{\text{slope}} = -0.56, p = 0.085$); we labeled this pattern as peer-problems.

Table 3 Model fit indices of latent class change analyses

Solution	Loglikelihood	AIC	BIC	Entropy	BLRT p -value	Smallest class count (%)
1 class	-6333.05	12,824.10	13,124.47	-	-	-
2 classes	-6333.05	12,846.10	13,188.29	<0.001	1.000	50.00
3 classes	-6275.53	12,753.07	13,137.08	0.859	0.000	9.67
4 classes	-6260.74	12,745.48	13,171.32	0.811	0.030	11.78

The best fitting solution is in bold

AIC Akaike Information Criterion; BIC Bayesian Information Criterion; BLRT Parametric Bootstrapped Likelihood Ratio

Finally, almost one in ten adolescents (9.7%) reported a large increase in prosocial behavior ($M_{\text{slope}} = 1.81$, $p = 0.014$) and a large decrease in peer relationship problems ($M_{\text{slope}} = -12.19$, $p < 0.001$) with a stability in hyperactivity/inattention ($M_{\text{slope}} = 0.45$, $p = 0.356$), emotional symptoms ($M_{\text{slope}} = -0.16$, $p = 0.741$), and conduct problems ($M_{\text{slope}} = -0.79$, $p = 0.059$); we labeled this pattern as social adaptation. The trajectories of change in the indicators of psychosocial functioning in three classes are presented in Fig. 1B, C, D. The peer-problems group was characterized by high scores on hyperactivity at both time points. The social adaptation group was characterized by high scores on peer problems at T1.

Discussion

In this two-wave longitudinal study, we investigated the changes in adolescents' psychosocial functioning amid the COVID-19 pandemic in contrast to pre-pandemic functioning, exploring mental health changes at 6-month since the onset of the first lockdown. In Lithuania, the COVID-19 countermeasures included the closure of schools and restrictions on other essential areas of social life for adolescents in the country. At T2, the schools were just partly reopened. Overall, we found a small but significant increase in hyperactivity/inattention, emotional symptoms, and prosocial behavior. At the same time, the rates of conduct problems and peer problems did not change significantly in the total sample. Our findings align with the results of several previous longitudinal studies, which found higher levels of depression and anxiety among adolescents amid the pandemic [2, 6, 8, 17, 18, 20]. However, not all previous studies indicated the negative changes in adolescents' mental health related to the pandemic [22]. In line with the previous studies [53–55], emotional problems and prosocial behavior at the baseline were higher in girls than boys. As lower baseline rates of emotional problems were associated with a bigger increase, boys may have suffered a bigger increase in emotional problems amid the pandemic. Overall, our results highlight that adolescents in the general population experience psychosocial difficulties during the pandemic, which might constitute a risk for future mental health problems.

Analysis of specific patterns of change in adolescents' psychosocial functioning revealed three different change profiles of adolescents' psychosocial functioning compared to before the pandemic. This analysis gives us insights into specific challenges different groups of adolescents can meet during this or future pandemics. Based on this analysis, scientists and practitioners can plan different specific prevention and intervention strategies. Around two-thirds of the sample had a small but

significant increase in hyperactivity/inattention, emotional symptoms, and conduct problems (strained group). These changes can be related to pandemic stress and life changes, loneliness, social isolation, distant learning-related concentration difficulties, or lack of motivation [5, 9, 10, 12, 56]. General prevention strategies, helping to organize the learning environment and daily tasks, emotional support and stress management strategies, can be helpful for the majority of adolescents and young people. These could include the online adaptation of prevention and socio-emotional skills training programs, discussions, groups activities, and social gatherings online.

According to our results, one in five adolescents experienced an increased peer problems (peer-problems group) compared to before the pandemic. The previous studies show that increased peer problems can be associated with social restrictions, social isolation, less time with friends, and less perceived friend support [9, 17]. The analysis showed that this subgroup had a high level of hyperactivity or attention problems before the pandemic. Adolescents with hyperactivity and attention problems can have more difficulties adapting to the changing conditions and keeping social contacts online. Peer relationship and hyperactivity/inattention problems are serious risk factors for later mental health disorders [2, 57]. The results indicate that parents, teachers, and other school personnel should pay particular attention to the social relationships in this group and foster positive ways of online communication. The previous studies show that the core elements of adolescent friendships persist in online communication [58]. Further research is, however, necessary to replicate this finding in other contexts and samples.

Finally, our study shows that almost one in ten adolescents reported a significant decrease in peer relationship problems and an increase in prosocial behavior (social adaptation group) with the stability in other indicators compared to before the pandemic. This group of adolescents, who experienced a relatively high level of peer problems before the pandemic, showed a substantial decrease in peer problems during the pandemic. An increase of prosocial behavior in the COVID-19 pandemic context and after other stressful events was already documented in the previous studies and can be recognized as a positive adaptation [59, 60]. Reduction of peer problems might be associated with the previous difficulties with peers in school, such as bullying. We speculate that these adolescents might have difficulties when they return to school, and need to be recognized and supported by professionals. The results show that such stressful situations as pandemics and lockdown can release prosocial communication opportunities for some adolescents. School staff can use these findings by

promoting volunteering and positive interactions in creative ways.

The changes in adolescents' psychosocial functioning can be associated with the circumstances related to the pandemics—school closures, restrictions on after-school activities, social contacts with relatives and friends. The study results provide insights for prevention and intervention strategies for the pandemic and post-pandemic period, also preparation for possible future disasters and stressors. General prevention strategies for psychosocial difficulties and specific strategies helping adolescents creating safe contacts and maintain friendships are needed in such periods as lockdowns and school closures. Still, some adolescents can be struggling more with daily communication with peers when they come back to direct learning. Future longitudinal research to follow the trajectories of adolescents' functioning after the pandemic is needed.

Limitations

The current study has many strengths, including the longitudinal design, high response rate, and inclusion of the pre-pandemic measures to estimate changes in psychosocial functioning during the COVID-19 pandemic. Still, several limitations are to be mentioned. Despite the longitudinal data collection on psychosocial functioning, it is not possible to attribute the detected changes specifically to the effects of the COVID-19 pandemic on mental health. The time between the two measures of 18 months is a relatively long period in an adolescent's life, and many changes in family and peer life can happen during such time. Moreover, the data were based on self-report and more objective assessments of psychosocial functioning, and reports from parents and teachers could address this limitation in future studies. Finally, the data were collected in one European country with a relatively homogeneous sample in a high-income country. It cannot be ensured that the results are generalizable to all the countries, especially having different COVID-19 rates and variable government response measures across countries, more heterogeneous, and migrant populations.

Conclusions

This study contributes to the existing literature by showing a decline in the psychosocial functioning of adolescents as a potential consequence of the pandemic. Our findings highlight the importance of prevention and intervention measures to help adolescents cope with psychosocial challenges related to pandemics or similar highly stressful situations in the future. Changes in psychosocial functioning can serve as an antecedent of later mental health problems. Peer relations in the context of social restrictions and after returning to school require

special attention, and fostering the adolescents' prosocial behavior can act as an important protective factor. Moreover, parents and professionals should be capable of monitoring the psychosocial functioning of adolescents and provide the needed support, according to the specific challenges adolescents meet. Prevention measures of mental health problems in adolescence, responding to the pandemic-related challenges, and returning to usual daily life routine challenges, are needed.

Abbreviations

COVID-19: Coronavirus disease of 2019; SDQ: The Strengths and Difficulties Questionnaire; RS-14: The Resilience Scale; CFI: Comparative Fit Index; TL: The Tucker–Lewis Index; RMSEA: The Root Mean Square Error of Approximation.

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Authors' contributions

ID: writing—original draft; ID, ITK, ST, PZ, EK: writing—review and editing; ID, PZ: data collection; ITK: data analysis; EK, PZ: principal investigators; ST, EK: supervision. All authors read and approved the final manuscript.

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Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available due to ethical reasons but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethics approval was issued by the Ethics Committee for Psychological Research in Vilnius University (2019-03-06, No. 23). Before the data collection, all the adolescents participating in the study and their parents signed the written form of consent. Informed consent was obtained from all individual participants. The adolescents of non-consenting parents did not participate in the study.

Consent for publication

NA.

Competing interests

The authors declare that they have no competing interests.

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PRESENTATIONS IN INTERNATIONAL CONFERENCES

1. **Daniunaite I.**, Thoresen S., Zelviene P., Kazlauskas E. (2022). Discriminating factors of PTSD and CPTSD in adolescence. 17th European Conference of Psychology “Psychology as the Hub Science: Opportunities and Responsibility”. Ljubljana, Slovenia, 5-8th July 2022.
2. **Daniunaite I.**, Kazlauskas E., Grigutyte N., Truskauskaitė-Kuneviciene I., Thoresen S., Zelviene P. (2021). Initial Findings of the Lithuanian Stress and Resilience in Adolescence Study (STAR-A). ICP conference “Psychology in 21st Century: Open Minds, Societies and the World”. Prague, Czech Republic, 18-23th July, 2021.
3. **Daniunaite I.**, Kazlauskas E. (2021). Child Abuse and Neglect Data Collection in Lithuania. Towards the establishment of an inter-sectoral epidemiological surveillance mechanism for child abuse and neglect incidents in European countries: challenges & lessons learned from the piloting of CAN-MDS System, 29-30th June, 2021.
4. **Daniunaite I.**, Truskauskaitė-Kuneviciene I., Thoresen S., Zelviene P., Kazlauskas E. (2021) Adolescence Mental Health and COVID-19: Exploring Changes During Pandemic. Virtual ESTSS Conference, 18th June 2021.
5. **Daniunaite I.**, Zelviene P., Truskauskaitė-Kuneviciene I., Thoresen S., Kazlauskas E. (2021) Prevalence of abuse and its effects in Lithuanian adolescents. Symposium EuroCAN: What about the context? On the importance of organizational and regional factors in child maltreatment epidemiology. ISPCAN Milan 2021, 7-11th June 2021.
6. **Daniunaite I.**, Lakis-Miciene V., Zelviene P., Kazlauskas E. (2019). Effects of childhood abuse and violence in Lithuania: A cross-sectional study. ESTSS conference “Trauma in Transition: Building Bridges”. Rotterdam, The Netherlands, 14-16 June, 2019.
7. **Daniunaite I.**, Kazlauskas E. (2019). Group Trauma-Focused Cognitive-Behavioral Therapy (TF-CBT) for Adolescents: Preliminary findings. ESTSS conference “Trauma in Transition: Building Bridges”. Rotterdam, The Netherlands, 14-16 June, 2019.

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Ieva Daniunaite prepared her dissertation in 2018-2022 at the Center for Psychotraumatology, Institute of Psychology, Vilnius University. Her research and professional interests are childhood traumatic experiences and their psychological consequences. The thesis results were presented in international scientific peer-reviewed journals and international and national conferences. Ieva Daniunaite has been working as a clinical psychologist for more than 15 years and is coordinating the program “Childhood without Abuse” at NGO Children Support Centre. She has been involved in specialists’ training, child abuse prevention activities and child rights advocacy extensively in her career.

NOTES

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