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**JOANA ALVES DOS
SANTOS RAMOS**

**ATTACHMENT AND WORLD ASSUMPTIONS
MEDIATE ASSOCIATIONS BETWEEN
POLYTRAUMATIZATION AND COMPLEX
PTSD SYMPTOMS IN FAROESE
ADOLESCENTS**

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Dissertação apresentada à Faculdade de Ciências Sociais e Tecnologia da Universidade Europeia, para cumprimento dos requisitos necessários à obtenção do grau de Mestre em *Psicologia Clínica e da Saúde* realizada sob a orientação científica do Doutor Paulo Alexandre da Silva Ferrajão, *Professor Auxiliar da Universidade Europeia*.

Dedico este trabalho à minha madrinha. Obrigada por me teres indicado a direção certa, quando eu andava à deriva.

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Resumo

Experienciar acontecimentos adversas na infância e adolescência (AAI) pode colocar esta população em risco de desenvolveres sintomas de perturbação de stress pós-traumático complexo (PSPTC). As preocupações crescentes com os problemas de saúde física e mental de longa duração associados tornam o estudo desta associação uma necessidade para melhor prevenir e informar os planos de tratamento. As orientações de vinculação e os pressupostos básicos podem ajudar a explicar aspetos desta relação. Testámos um modelo de mediação de duas fases com estas variáveis como mediadores da associação entre a exposição a AAI e os sintomas de PSPTC. Foram recolhidos dados de 687 adolescentes das Ilhas Faroé, com uma idade média de 14,4 anos (DP = 0,6), através de questionários de autorrelato. Foram testados dois modelos, um para cada sexo. Nas participantes do sexo feminino, uma maior exposição direta a AAI esteve associada a níveis mais elevados de orientação de vinculação ansiosa, que por sua vez esteve associada a níveis mais baixos de valor próprio e, finalmente, a níveis mais elevados em todos os sintomas de PSPT. Nos participantes do sexo masculino, tanto a exposição direta como indireta a AAI estiveram associadas a níveis mais elevados em orientação de vinculação evitante, o que por sua vez estava associado a níveis mais baixos de valor próprio e, finalmente, a níveis mais elevados em todos os grupos de sintomas de PSPT. No mesmo modelo, a exposição indireta a AAI estava associada a níveis mais elevados na orientação de vinculação ansiosa, o que, por sua vez, estava associado a níveis mais baixos de valor próprio e a níveis mais elevados de significado do mundo e, finalmente, ambos estavam associados a níveis mais elevados em todos os sintomas de PSPT. Os resultados indicam que as orientações de vinculação e os pressupostos básicos são variáveis importantes na relação entre a exposição a AAI e o desenvolvimento de CPTSD, e os profissionais de saúde podem tê-las em consideração na intervenção, tanto para a prevenção como para o tratamento.

Palavras-chave: acontecimentos adversos na infância, orientações de vinculação, pressupostos básicos, perturbação de stress pós-traumático complexo, adolescentes Faroeses.

Abstract

Exposure to adverse childhood experiences (ACE) could increase children and adolescents' risk of developing complex post-traumatic stress disorder (CPTSD) symptoms. Growing concerns about the long lasting mental and physical health problems associated with this disorder make the study of this association a necessity to better prevent and inform treatment plans. Attachment orientations and world assumptions could help explain the link between ACE in CPTSD symptoms. We tested a two-step mediation model with attachment orientations and world assumptions as mediators of the association between ACE exposure and CPTSD symptoms. Data were collected from 687 Faroese adolescents, mean age of 14.4 (SD = 0.6) through self-report questionnaires. Two models were tested, one for each sex. In female participants, higher direct ACE exposure was associated with higher levels of attachment anxiety, which in turn was associated with lower levels in worthiness of the self, and finally these were associated with higher levels in all CPTSD symptom clusters. In male participants both direct and indirect exposure to ACE were associated with higher levels of attachment avoidance, which was associated with lower levels in worthiness of the self, and finally these were associated with higher levels in all CPTSD symptom clusters. In the same model indirect exposure to ACE was associated with higher levels in attachment anxiety, which in turn was associated with lower levels of worthiness of the self and higher levels in meaningfulness of the world, and finally both were associated with higher levels in all CPTSD symptom clusters. Results indicate that attachment orientations and world assumptions are important variables in the relationship between ACE exposure and development of CPTSD, and clinicians could take these into consideration in intervention for both prevention and treatment.

Keywords: adverse childhood experiences, attachment orientations, world assumptions, complex post-traumatic stress disorder, Faroese adolescents.

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Introduction

The exposure to one or multiple adverse childhood experiences (ACE) is very prevalent among adolescents (Carlson et al., 2020; Crouch et al., 2020; Witt et al., 2019). Adolescents are especially at risk due to biological, psychological, and social factors that are specific to the developmental age (Breslau, 2004). Past research has shown that polytraumatized (i.e., people who experience more than one type of ACE) youth are at higher risk of developing severe post-traumatic symptoms (Gustaffson, 2009; Finkelhor et al., 2007). Complex post-traumatic stress disorder (CPTSD) has emerged as a new diagnostic, since besides the symptoms post-traumatic stress disorder (PTSD) there were marked disturbances in self-organization (DSO). These were organized into three distinct symptom clusters, including emotional dysregulation, negative self-concept, and relationship difficulties (Herman, 1992; World Health Organization, 2022). There are growing concerns about the lifelong impacts of CPTSD, namely regarding the physical health problems and the possible costs to healthcare systems (Koball et al., 2019; Loxton et al., 2019; van der Feltz-Cornelis et al., 2019).

Prevalence studies of ACE in samples of Northern European youth indicate that the prevalence is rather high (Bödvarsdóttir & Elklit, 2007; Elklit, 2002; Petersen et al., 2010). The Faroese Islands are an autonomic region of Denmark and to the extent of our knowledge there are no studies that analyzed the relationship between ACE and CPTSD in adolescents in this country. The Faroese Island is considered a small-scale society characterized by traditional family values and a particularly intricate network of social relationships and a lack of anonymity (Elklit & Petersen, 2008; Tönnies, 2001). Mental health services in the Faroese Islands lack resources to adequately provide care for its region's youth (Petersen, 2018). The results of this dissertation could offer some insight into the way ACE exposure affects adolescents in this cultural context and information that can improve interventions.

Research on Faroese youth has found that there are important sex differences in this population. A study on the prevalence of ACE in Faroese adolescents reported 94% of females and 89% of males had been exposed to ACE whether directly or indirectly. (Petersen & Elklit, 2010). Another study found that, after exposure to traumatic events, females were reporting PTSD symptoms twice as much than males (Elklit & Petersen, 2008). Previous research has shown that the association between ACE exposure and CPTSD is not linear and could be

mediated by various psychological variables (Guo et al., 2021; Kampling et al., 2022; Kuhar & Kocjan, 2022; Vasilopoulou et al., 2019). In this dissertation we will explore the role of some of these variables.

Attachment orientations develop in early childhood and in the context of the relationship of the child with their caregiver and serve as behavioral models for future interpersonal relationships (Mikulincer & Shaver, 2007). Research has found that attachment orientations are mediators of the association between ACE and CPTSD in both adults and young adults (i.e., college students) from different countries (Karatzias et al., 2019; Sandberg & Refrea, 2022; van Dijke et al., 2018).

World assumptions are cognitive schemas that develop alongside attachment orientation and in the same dyadic relationship. These cognitive schemas were divided into three main clusters: Benevolence of the world (BW), Meaningfulness of the world (MW) and Worthiness of the Self (WS). According to the author Janoff-Bullman (1989) every individual maintains a delusional cognitive schema that their world is good, people in it are good, and their world is just. These assumptions can be shattered after the traumatic event leading to post-traumatic symptoms, according to the cognitive model of PTSD (Ehlers & Clark, 2000),

There is some literature that suggests that attachment orientations and world assumptions are associated and can influence each other (Barr, 2014; Ferrajão & Elklit, 2021; O'Connor & Elklit). In our study we posit that the attachment orientations are associated with our beliefs regarding world assumptions (Lilly et al., 2019). This dissertation aim is to study the possible mediation roles that attachment orientation and world assumptions can have in the association between ACE exposure and development of CPTSD symptoms in Faroese adolescents. We will assess whether direct and indirect ACE exposure is associated with higher levels of both attachment anxiety and avoidance, if these are in turn associated with lower levels in world assumptions, and if, finally these are associated with higher levels in CPTSD symptoms. There could be significant differences between sexes in these variables, as suggested from previous literature, which we will explore, testing two models, one for female participants and other for male participants.

This dissertation is organized in the form of an empirical study. It will be divided into two sections: empirical study and overall discussion. In the empirical study there will be a Background section in which will be presented a literature review and the description of the

variables in the study and their relationships according to previous research, along with the relevance of the study based on the sample population and, finally, the hypothesis we will test. Finally, the relevance of the study is mentioned, and the hypotheses are formulated. In the Methods, the research methodology adopted for this study is described, a characterization of the participants and instruments is made, and the procedure followed for the data collection and data analysis is explained. In the Results, the outcomes of the data analysis are presented in accordance with the study's objectives. In the Discussion, the hypotheses and results of the study are discussed according to the existing literature and the main conclusions are drawn. Also, study limitations are mentioned. The second and last section is the overall discussion, where results are more profoundly discussed, clinical implications are explained and suggestions for future research are given.

EMPIRICAL STUDY

**Attachment and World Assumptions Mediate Associations Between Polytraumatization
and Complex PTSD Symptoms in Faroese Adolescents**

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Attachment and World Assumptions Mediate Associations Between Polytraumatization and Complex PTSD Symptoms in Faroese Adolescents

Adverse Childhood Experiences and Polytraumatization

Adverse childhood experiences (ACE) are potentially traumatic events that occur in childhood and adolescence, until the age of 18 years old (Boullier & Blair, 2018). These experiences were originally divided into three main categories: abuse (e.g., physical, emotional, or sexual), neglect (e.g., physical, or emotional), and household dysfunctions (e.g., divorce or living with someone with mental illness), although these categories do not encompass all possible ACE. These events typically occur in the family or social context, causing harm and distress that can result in a disruption of the child's physical and psychological development (Felitti et al., 1998; Kalmakis & Chandler, 2013). These events have five distinct characteristics: harmful, chronic, distressing, cumulative and varying in severity (Kalmakis & Chandler, 2015). Research on ACE has been able to establish a link between ACE exposure and physical and mental illness in adolescence (Bomysoad & Francis, 2020; Flaherty et al., 2013; Groenewald et al., 2020).

While most of studies has focused on one specific type of ACE, the literature suggests that individuals who are exposed to one ACE are more vulnerable to being exposed to other types as well. The term polytraumatized has been used to describe people who experience different types of ACE (Gustaffson, 2009). Some research suggests that polytraumatized children and adolescents present higher severity of psychological symptoms than individuals who report exposure to a single ACE (Finkelhor et al., 2007).

Meanwhile, there are three different approaches to the conceptualization of polytraumatization. Some authors have focused on the possibility that different types of ACE can have differential impact on mental health outcomes (Campbell et al., 2015). In accordance, some studies have observed that some types of ACE (e.g., sexual violence) had a more detrimental impact on mental health problems, in a sample of United States of America (USA) adolescents (Briere et al., 2016; Stempel et al., 2017). Other approach assumes that there is a threshold of the number of ACE, that makes an individual more vulnerable to mental health problems than those with a number of ACE below that same threshold (Finkelhor et al., 2007). Another commonly used approach is the cumulative, or dose-effect, that proposes that the severity of mental health

problems is associated with a higher number of ACE exposure (Appleyard et al., 2015; Contractor et al., 2018). In this study we will use the cumulative approach, which was used in similar studies (Ferrajão & Elklit, 2021; Petersen et al., 2010; Zerach & Elklit, 2019).

The experience of ACE is associated with poor mental health outcomes, namely among adolescents, such as post-traumatic stress disorder (PTSD) and complex PTSD (CPTSD), (Petruccelli et al., 2019). Moreover, the literature has consistently found an association between higher exposure to ACE and higher CPTSD severity (Anastas et al., 2021; Frewen, et al., 2019; Herzog & Schmahl, 2018; Karatzias et al., 2021; Palić et al., 2016; Palić & Elklit, 2014).

The exposure to ACE can be direct, from first-hand personal contact, and indirect, which can be due to witnessing the traumatic event while it happens to others, learning that it happened to someone else (e.g., a family member or a close friend) or experiencing repeated or extreme exposure to aversive details of it (American Psychiatric Association [APA], 2013). Studies have shown that both direct and indirect exposure to ACE can be associated with post-traumatic symptoms and other mental health problems in adolescents from the USA (Fleckman et al., 2016; Zimmerman & Posick, 2016).

ACE and Adolescence

Research on this topic has verified that some groups experience increased vulnerability to polytraumatization, namely adolescents (Breslau et al., 2004). This can happen due to altered cognitions or lower self-esteem following exposure to ACE (Finkelhor et al., 2011). Adolescence is a very important physical, social, and psychological developmental period and is also one of the most vulnerable developmental stages for ACE exposure, being similar in risk with early childhood stages of development (Moretti & Peled, 2004). The most recent worldwide systematic review about their prevalence reports that almost two thirds of children and adolescents experience them events in different countries (Carlson et al., 2020). Two studies with European representative samples (Denmark and Iceland, both northern countries) found there was a prevalence of ACE exposure ranging from 79% to 82% in adolescents. (Bödvarsdóttir & Elklit, 2007; Elklit, 2002).

Changes on neurological functions and structures, namely the adjustments on the dopamine levels and changes in the prefrontal cortex, that are linked to anhedonia, risk taking and increased irritability, could be associated with the increased vulnerability of ACE exposure that exists in the adolescent period (Spear, 2000; Takeuchi et al., 2000). Moreover, the inherent

social changes can cause a higher risk of exposure to multiple ACE, namely the diminished time spent with parents and the subsequent increase of time spent with peers and without parental supervision, first romantic and sexual experiences, and new social roles (Larson et al., 1996).

Complex PTSD

The study of CPTSD firstly emerged mainly due to the discovery of several specific symptoms, that extended the criteria for PTSD, that occurred mainly in children exposed to traumatic or adverse experiences throughout childhood or adolescence (Herman, 1992). Meanwhile, more recently, in the International Classification of Diseases 11 (ICD-11, World Health Organization, 2022) CPTSD was added as a new disorder associated with stress. One of the core features refers to CPTSD being associated with repeated exposure to different types of ACE in early childhood and adolescence. Individuals suffering from CPTSD have some symptoms that overlap with PTSD such as re-experiencing the traumatic event, avoidance of reminders likely to produce re-experiencing, and persistent perceptions of heightened current threat.

Despite the fact that both disorders share some characteristics some authors propose that PTSD is a memory disorder (Kopelman, 2002; van Marle, 2015) linked to the failure to consolidate the memory of a traumatic event into the autobiographical memories. CPTSD symptoms, on the other hand, relate also to disturbances in self-organization (DSO). This extension of new symptoms can be divided into three different main clusters: affective dysregulation, negative self-concept, and disturbances in relationships (Maercker et al., 2022). Affective dysregulation refers to the difficulties in managing extreme states of affect, often being divided into under-regulation (i.e., difficulty in applying strategies to reduce intense affective states, in managing impulse control and in goal-oriented behaviours) or overregulation (i.e., lack of awareness of emotions resulting sometimes in detachment or emotional emptiness). Negative self-concept refers to a vast array of symptoms that stem from the difficulty in maintaining a coherent sense of self. Disturbances in relationships refers to the difficulty maintaining relationships or feel close to others. This specific cluster can also relate to anxious, avoidant, and disorganized attachment style (e.g., fear of being close to another or fear of being abandoned by another) that result in difficulty maintaining relationships (Barbieri et al., 2019; Rød & Schmidt, 2021).

According to the developmental theory of Erikson (1968), each individual must resolve a conflict that characterizes the developmental stage they are in. The developmental task or conflict that adolescents have to work through is most commonly known as “identity vs identity diffusion”. For Erikson (1956), identity was “a sameness within oneself and a persistent sharing of some kind of essential character with others” (p. 57). The ability to develop a stable identity will help the adolescent navigate the physical, social, and psychological changes typical in the stage and prepare for the next task (“intimacy vs isolation”). As mentioned before, one of the disturbances that can occur in CPTSD is the difficulty to maintain a coherent sense of self, and this is especially detrimental to the psychological health of the adolescent increasing the severity of psychological symptoms, according to a recent review (Waterman, 2020). Erikson’s theory also relates specifically with the disturbances in relationship dimension of CPTSD (Beyers & Seiffge-Krenke, 2010). Experiencing ACE can interfere in the resolution of these conflicts, impacting future mental health.

Faroese Islands

The Faroese Islands are an autonomic region of Denmark. The Faroese are considered a small-scale society due to their small population (47.901 in 2013: 49.307 in 2022). Moreover, it is ranked 43rd (out of 48 European countries) in population density, with 35 habitants per km². Small-scale societies are characterized as having more intricate social relationships with a lack of anonymity, most common in densely populated cities (Tönnies, 2001). No studies have been conducted with the Faroe Islands population about ACE and their relation to CPTSD.

Mental health services in the Faroese Islands lack resources to adequately provide care for its region’s youth (Petersen, 2018). The results of this dissertation could offer some insight into the way ACE exposure affects adolescents in this cultural context and information that can improve interventions. Research on Faroese youth has found that there are important sex differences in this population. A study on prevalence of ACE in Faroese adolescents reported 94% of females and 89% of males had been exposed to ACE whether directly or indirectly. (Petersen & Elklit, 2010). Another study found that, after exposure to traumatic events, females reported PTSD symptoms twice as much than males (Elklit & Petersen, 2008; Petersen, 2018). Sex differences in PTSD symptoms and prevalence of exposure to potentially traumatic events have been found in a meta-analysis, indicating that while women tend to report higher PTSD symptoms, men are more likely to be exposed to traumatic events (Tolin & Foa, 2006). The same

meta-analysis found that there were sex differences in the different types of traumatic events, with men experiencing more accidents, physical assault, combat or war, disaster or fire, or serious illness, and women experiencing more sexual assault.

Due to the prevalence and lifelong mental and physical health issues that can ensue after exposure to one or several ACE, this could result in public health problems in the future, with authors suggesting that screening for ACE could save money in health costs (Bellis et al., 2019). Previous research on the development of CPTSD has found that other variables, aside from ACE exposure, can factor into the risk of developing this disorder, suggesting that this relationship is complex (Cloitre et al., 2013; Perkonigg et al., 2016). To better understand the relationship between ACE and CPTSD, the most recent research had mainly focused on the mediation role of several psychosocial variables (Guo et al., 2021; Kampling et al., 2022; Kuhar & Kocjan, 2022; Vasilopoulou et al., 2019). The study of these mediators can help understand the underlying psychological processes for the development of CPTSD and result in more informed and effective treatment approaches for specific age groups (e.g., childhood and adolescence).

Attachment Orientations

One of the possible mediators for the association between ACE exposure and CPTSD symptoms can be attachment orientations. Attachment theory has been developed from the study of the bond between primary caregiver and child. Attachment serves as a model to the behavioural system that evolves from it. According to Bowlby (1973), the relationship between caregiver and child results in the development of internal working models, functioning like cognitive maps that contain information which can be used in making predictions and decisions related to attachment goals. The internal working models will be the blueprint for all close interpersonal relationships. The attachment system is activated when facing stressful and threatful events. This results in goal-oriented behaviours that seek proximity and to restore feelings of security and protection, or the seeking help from the attachment figure for emotion regulation (Mikulincer & Shaver, 2007).

According to the Model of Attachment-System Functioning and Dynamics (Mikulincer & Shaver, 2007) when a person is confronted with a stressful or threatful situation and the attachment figure is regularly responsive, available, and attentive, there is a feeling of security, relief, and positive affect, which develops a secure attachment. Securely attached people rely on these past positive emotional regulation experiences during stressful or threatful situations to

invoke thoughts of safety and support (Gillath et al., 2008). In contrast, insecurely attached people use secondary attachment strategies that are activated within this system when the attachment figure is not available, attentive, or responsive, or when experiencing ACE or stressful events. Depending on the circumstances they can either activate hyperactivating strategies, resulting in an anxious attachment orientation, or deactivating strategies, resulting in an avoidant attachment orientation.

The use of anxious attachment strategies occurs when the attachment figure is unpredictable when attending the needs of the child. The anxious attachment orientation relies on hyperactivation strategies to obtain the goal of seeking proximity to the attachment figure. These strategies consist in exaggerating the normal strategies, namely distress, demanding excessive attention or aggressive and controlling behaviour with a partner. These behaviours can, implicit or explicitly, convey that one is helpless, hopeless, and weak, is intrusive and undermines the ability to regulate emotions or with experiencing traumatic events when the attachment figure is not present (Mikulincer & Shaver, 2007).

The use of avoidant attachment strategies occurs when the attachment figure rejects, pays no attention or is angry in response to proximity seeking behaviours or is abusive or violent. This orientation is one that relies on the deactivation of the attachment system, characterized by an exaggerated self-reliance, the denial of attachment needs and the distancing of the self from attachment or threat related cues. Some common strategies are the control and maintenance of an emotional distance when in relationships, and the avoiding of negative emotional states. These behaviours can, implicit or explicitly, convey that one needs to be self-reliant, should not be vulnerable and could be punished when one has proximity seeking behaviours (Mikulincer & Shaver, 2007). According to this model, a secure attachment refers to low levels in both anxious and avoidant orientations.

Several studies have shown a link between insecure attachment styles (anxious and avoidant) and worse mental and physical health problems, compared to secure attachments in adolescent samples from the United Kingdom (UK), in a sample of Ugandan adolescents, and a sample of adolescents from China (Ferrajão & Elklit, 2021; Jinyao et al., 2012; Schimmenti & Bifulco, 2018). Moreover, a secure attachment style has been found to have a negative correlation with the development of PTSD in a Danish sample (O'Connor & Elklit, 2008).

Current research indicates that attachment can be a mediator in the association between ACE and PTSD (Ferrajão & Elklit, 2021; Zerach & Elklit, 2020). Research suggests that ACE have an impact on childhood and adult attachment styles, which in turn can influence the severity of mental and physical health problems (Widom et al., 2018). There is a study by Petersen and Elklit (2013) that found that the Faroese had a larger number of securely attached individuals compared to Denmark and Iceland.

High levels of attachment anxiety and/or avoidance seem to be detrimental to the healthy identity development (Karatzias et al., 2019). More specifically there are studies that show the impact of attachment orientations on the association between ACE and CPTSD (Karatzias et al., 2021). Research showed that both anxious and avoidant attachment orientations mediated the association between childhood trauma and CPTSD in a sample from the Netherlands, and attachment anxiety is a mediator in the association between interpersonal trauma and CPTSD in a sample from the USA (van Dijke et al., 2018; Sandberg & Refrea, 2022). Attachment anxiety has been found to be associated with a perceived centrality of the trauma in older adults' identity and attachment avoidance was associated with trauma related alterations in identity (Ogle et al., 2015). However, there is a lack of studies that further investigate this potential mediation role of attachment orientation in association with CPTSD specifically, namely in adolescent samples from European small-scale societies or while analysing possible sex differences.

Previous studies identified that there are sex differences between attachment orientations in Western and Middle Eastern countries with women reporting higher levels of anxiety attachment styles and men with higher levels of avoidant attachment styles (Del Giudice, 2011; 2019). Although the effect sizes are small, they could explain the differences in reporting PTSD and the variety in the severity of symptoms between the sexes. Still most research investigating sex differences in attachment orientations present contradictory findings. There is a study that found that being female was a predictor to the development of PTSD in Faroese population, which may warrant further investigations into sex differences in the subject (Elklit & Petersen, 2008).

World Assumptions

Conflicting findings may be related to a second variable which could intervene in the association between attachment orientations and CPTSD symptoms. We propose that the cognitions of individuals regarding world assumptions could be one the psychological processes

that factors in the association between ACE exposure and CPTSD. According to the cognitive model of PTSD (Ehlers & Clark, 2000), the post-traumatic symptoms that arise after a traumatic event are influenced by prior beliefs and cognitions that can be reinforced or shattered by said event. Janoff-Bulman (1989) proposes that the attachment system is a preverbal forerunner of development of the core beliefs which will later become strongly held world assumption schemas.

According to the assumptive world theory (Janoff-Bulman, 1991), everyone lives their lives while maintaining basic assumptions that create a delusional feeling of safety and invulnerability about the world and themselves. Just like attachment style, these assumptions develop in early childhood in deep connection with the attachment relationships which, therefore, influence the development of those assumptions.

Janoff-Bulman (1991) proposed three main areas: The first area refers to assumptions on the benevolence of the world (BW), which is divided into two basic assumptions: benevolence of the people, referring to the overall goodness of others, and benevolence in the interpersonal world, which refers to the overall goodness of the events that occur in the world. The second area refers to assumption about the meaningfulness of the world (MW), which is divided into three basic assumptions: justice, which refers to the belief of overall fairness of events happening in the world, controllability, which refers to the belief that people have some degree of control and accountability for what happens in the world, and randomness, referring to the belief that what happens in the world is not random, meaning events make sense. The last area refers to assumptions about the worthiness of the self (WS), which is divided into three basic assumptions: self-worth, which refers to beliefs about oneself being good and worthy, self-controllability, which refers to beliefs of control over one's own actions, and luck, referring to beliefs about one's own luck.

After the experience of an adverse or potentially traumatic event, most victims report feelings of vulnerability and unsafety (Janoff-Bulman, 1989). According to Janoff-Bulman (1991) some events turn potentially traumatic when they shatter world assumptions. It's the way the event shatters this basic assumption of relative invulnerability that can result in psychological trauma. In the BW individuals may develop beliefs that the world is a dangerous and unsafe place, where bad things happen and where people are mostly malevolent. In regard to MW individuals may develop beliefs that the world is unfair, that people have no control of their

actions and that things happen at random. Finally, relative to WS, people may develop beliefs that they are unworthy, unlucky and that they have no control over their own actions.

To the extent of our knowledge there are no studies that investigate the role of world assumptions in the association between ACE and CPTSD. However, there is extensive research on the association between exposure to traumatic events and lower levels in world assumptions scales in adolescent and young adults' samples (Maschi et al, 2010; Schleider et al., 2018; Solomon & Laufer, 2004; Webb & Whitmer, 2001). One study found that, in a female sample that reported having experienced interpersonal trauma, self-worth mediated the effect between attachment orientations and PTSD symptoms (Lim et al., 2010). Following the suggestion of Janoff Bullman (1989) that attachment is a frontrunner for cognitive beliefs such as world assumptions we will posit that BW, MW and SW could be the second mediator in our model. To the extent of our knowledge there are no studies that have analysed the association between ACE and CPTSD alongside attachment orientations and world assumptions.

Since both attachment orientations and world assumptions are two constructs developed in the same developmental time and in the same relationship dynamic, they could be associated. In accordance, some studies have found that there is an association between these constructs. Namely in a study with a sample of survivors of sexual abuse, both anxious and avoidant attachment mediated the relationship between BW and WS on post-traumatic symptoms (Ferração & Elklit, 2021). In a different study, secure attachment was associated with higher levels in BW (O'Connor & Elklit, 2008).

Purpose of the Study

There is a growing body of literature that analyses ACE and its association with the new CPTSD diagnostic. Current research indicates that not only ACE exposure is related to a higher risk of developing CPTSD but also that there is an impact of the cumulative nature of these experiences which increase the severity of CPTSD symptoms. This is the case for both direct and indirect exposure to ACE. There are various psychological variables that factor in this relationship, increasing or decreasing the risk and severity of the CPTSD symptoms. Attachment orientations have been studied as possible mediators of the association between ACE and CPTSD symptoms, but not world assumptions. These are closely associated with attachment orientations and there is research that indicates that these assumptions are influenced by ACE exposure, and also have an association with post-traumatic symptoms. Sex differences in ACE

prevalence have been reported in the population we will be studying, and research indicated that there are also differences for female and male individuals in both attachment orientations and world assumptions. Thus is the main goal of this study to analyse the effect of both direct and indirect exposure to ACE on CPTSD symptoms through a two-step mediation model of attachment orientations followed by world assumptions, in a sample of Faroese adolescents.

Following the previous research we will test six hypothesis in total: sex will moderate the association between ACE exposure and CPTSD symptoms (H1); higher the number of ACE (whether direct or indirect) reported by adolescents will be associated with higher scores on CPTSD symptoms (H2); anxious and avoidant attachment orientations will mediate the association between ACE and CPTSD symptoms (H3); world assumptions will mediate the association between ACE and CPTSD symptoms (H4); anxious and avoidant attachment orientations and world assumptions will mediate the association between ACE (whether direct or indirect) exposure and CPTSD symptoms (H5); the two-step serial mediation model will reveal that the higher the number of ACE (whether direct or indirect) reported, the higher the scores will be in anxious and avoidant attachment orientations, which will be associated with lower scores in world assumptions, and those will be associated with higher scores on CPTSD symptoms (H6).

Method

Participants

A sample of 687 Faroese school youth participated in this study. Sample characteristics are presented in Table 1. The mean age of the sample was around 14 years old (age range: 13-16 years old). The proportion of females was higher compared with males. Most participants lived with both their parents and a very small proportion had other arrangements. There were some differences between the parents' education in which the fathers' level of education was slightly higher than mothers' level of education.

Table 1

Sample Demographic Characteristics

Female	Male	Total
(n= 353)	(n = 334)	(N = 687)

Age			
13 years	7 (2.0%)	13 (3.9%)	20 (2.9%)
14 years	177 (50.1%)	179 (53.6%)	356 (51.8%)
15 years	167 (47.3%)	137 (41.0%)	304 (44.3%)
16 years	2 (0.6%)	5 (1.5%)	7 (1.0%)
Mean	14.5	14.4	14.4
	(SD=0.5)	(SD=0.6)	(SD=0.6)
Living with			
Both parents	290 (82.2%)	272 (81.4%)	562 (81.8%)
One of their parents	58 (16.4%)	53 (15.9%)	111 (16.2%)
Other arrangements (uncles, siblings, grandparents or other relatives)	5 (1.4%)	9 (2.7%)	14 (2.0%)
Father education			
Did not report	34 (9.6%)	46 (13.8%)	80 (11.6%)
Primary school	86 (24.4%)	59 (17.7%)	145 (32.8%)
High school	42 (11.9%)	62 (18.6%)	104 (15.1%)
College	112 (31.7%)	80 (24.0%)	192 (27.9%)
University	79 (22.4%)	87 (26.0%)	166 (24.2%)
Mother education			
Did not report	32 (9.1%)	46 (13.8%)	78 (11.4%)
Primary school	74 (21.0%)	68 (20.4%)	142 (20.7%)
High school	121 (34.3%)	112 (33.5%)	233 (33.9%)
College	81 (22.9%)	64 (19.2%)	145 (21.1%)
University	45 (12.7%)	44 (3.2%)	89 (13.0%)

Procedure

The primary aim of the current study was to collect data about previous trauma exposure and trauma reactions among Faroese adolescents. Participants were recruited from 19 schools that taught eighth grade students. The schools were located on six different islands. According to the Faroese Ministry of Education, there were 804 students in eighth grade at the time the data were collected; that is 85% of all the Faroese students participated.

Prior to data collection, all questionnaires and a letter explaining the objectives of the study, and the confidentiality procedures were sent to the Faroese Data Inspection, who approved the study. A similar procedure was conducted afterwards with the Faroese Ministry of Education, and the Faroese Ethical Board, who also approved the study. Following, the questionnaire and a letter explaining the purpose of the study, the confidentiality procedures, and the procedure during the collection were presented to the school principals which reviewed and approved the study. Finally, it was delivered to the “head teacher” (the teacher responsible for each class of students) a letter explaining the purpose, the confidentiality, and the procedures of data collection.

It was applied passive consent which a usual procedure in most school studies, i.e., the parents were informed about the study and have the right to refuse the participation of their child. In the Faroe Islands, the parents trust the school system and the teachers who are in *parentis loco*, i. e. they are granted the position to act in the best interests of their children. Information about the study aims, procedures and the role of the participant was introduced to the students verbally and by letter. The participation was voluntary and those accepting to participate, gave their informed consent directly. The students filled in the questionnaire in the classroom, supervised by a team researcher in co-operation with the “head teacher”. The students were informed that their answers were anonymous, and they were asked to answer as openly as possible, in spite of the somewhat uncomfortable subject. All students present accepted to participate in the study.

Measures

Sociodemographic data. Participants provided information on their sex, age, highest level of parental education and current living arrangements.

Adverse Childhood Experiences. It was asked to participants if they had been exposed directly and/or indirectly to a list of 20 life-threatening experiences and stressful family conditions. This measure was developed by Bødvarsdóttir and Elklit (2007) who selected the list of events from

scientific literature and clinical experience, and it is comprised of life-threatening experiences (e.g., rape) and stressful family conditions (e.g., neglect). Participants reported whether, or not, they had experienced each event. The sum of events that the adolescents were exposed was calculated by the number of different types of ACE that the participants reported that they had been directly or indirectly exposed to. This measure has been widely applied cross-culturally (e.g., Ferrajão & Elklit, 2021).

Revised Adult Attachment Scale. The Revised Adult Attachment Scale (RAAS; Collins & Read, 1990) was used to measure participants' attachment orientations. This self-report scale includes 18 items in which all the responses are scored on a 5-point Likert scale from *not at all characteristic of me* (1) to *very characteristic of me* (5). The scale covers three dimensions: (a) six items on closeness attachment ("I find it relatively easy to get close to others"); (b) six items on dependency attachment ("I find it difficult to allow myself to depend on others") and (c) six items comprised the anxious attachment dimension ("In relationships, I often worry that my partner does not really love me"). The sum of items in the anxious dimension was used as the index score of attachment anxiety orientation. The mean of index scores of both closeness and dependency dimensions was used as the index score of attachment avoidance orientation. The RAAS is a widely used measure for adult attachment dimensions and attachment styles among adults and adolescents. It has been used in previous studies on samples of African adolescents (Ferrajão & Elklit, 2021). The reliability of the attachment anxiety scale (Cronbach's alpha =.82) and the attachment avoidance scale (Cronbach's alpha =.78) were satisfactory to good.

World Assumption Scale. World assumptions were assessed through the World Assumption Scale (WAS; Janoff-Bulman, 1992). The WAS is a 32-item checklist of world assumptions that are answered on a 6-point Likert Scale, ranging from *strongly disagree* (1) to *strongly agree* (6) the degree to which they consider a certain statement appropriate. The scale assesses world assumptions about the BW ("If you look closely enough, you will see that the world is full of goodness"), MW ("People will experience good fortune if they themselves are good), and the WS ("I often think that I am no good at all"). In this study, the total scores on the WS, BW, and MW were analyzed according to the procedure performed by Owens et al. (2001). Higher scores in the scales refer to more positive world assumptions. The reliability of the WS scale (Cronbach's alpha =.83), the BW scale (Cronbach's alpha =.78), and the MW scale (Cronbach's alpha =.84) was satisfactory to good.

CPTSD Item Set. Six items were selected from two standardized measures, the Harvard Trauma Questionnaire Part IV (HTQ; Mollica et al., 1992) and the Trauma Symptom Checklist (TSC; Briere & Runtz, 1989) to assess CPTSD symptoms clusters. The HTQ includes 30 items, answered on a 4-point Likert scale from *not present* (1) to *very often present* (4), 16 corresponding directly to DSM-IV-TR PTSD symptoms (American Psychiatric Association, 2000). The reliability of the item set (Cronbach’s alpha =.92) was good. The TSC assesses general psychiatric symptoms and includes 33 items with reference to the previous month that are answered on a 4-point Likert scale from *never* (0) to *very often* (3). The reliability of the item set (Cronbach’s alpha =.94) was good. According to Elklit et al. (2014) procedure, five items from the TSC and one item from the HTQ were used in the CPTSD item set to assess the CPTSD clusters (affective dysregulation, negative self-concept, and disturbances in relationships). The items representing PTSD and CPTSD are shown in Table 2.

Table 2

Items Representing Complex PTSD

Cluster	Test items
Affect dysregulation	TSC 16. Temper outburst that you could not control TSC 14. Crying easily
Negative self-concept	TSC 28. Feelings of inferiority or insecurity TSC 29. Blaming yourself
Interpersonal problems	TSC 6. Feeling isolated from other people HTQ 27. Feeling that you have no one to rely upon

Data Analysis

Data analysis was conducted using the IBM SPSS Statistics for Windows (version 29). Multiple Pearson correlation analyses were conducted to test bi-variate relationships between the study variables. Coefficients ranging between ± 0.50 and ± 1 indicate a strong correlation; coefficients ranging between ± 0.30 and ± 0.49 indicate a medium correlation; and coefficients below $\pm .29$ indicate a small correlation (Cohen, 1988). Considering previous evidence on sex

differences in the study variables, a *t*-test was conducted to compare the mean of direct and indirect exposure to ACE, attachment dimensions, and world assumptions between the females and males with a Bonferroni correction.

To test our hypothesis of serial mediation, we employed the multiple step mediation methodology, with a bootstrapped confidence interval for indirect effects (Model 6; Hayes, 2013). The final model included three outcome variables (Affective dysregulation, Negative self-concept, and Disturbances in relationships), so that examination of this model through Structural Equation Modeling (SEM) was chosen. Specifically, the following was examined: (a) if both direct and indirect exposure to ACE were directly linked to Affective dysregulation, Negative self-concept, and Disturbances in relationships; (b) if both direct and indirect exposure to ACE was indirectly linked to Affective dysregulation, Negative self-concept, and Disturbances in relationships through attachment anxiety and attachment avoidance; (c) if both direct and indirect exposure to ACE was indirectly linked to Affective dysregulation, Negative self-concept, and Disturbances in relationships through WS, BW and MW; and (d) if a two-step mediation process existed in which both direct and indirect exposure to ACE was indirectly linked to Affective dysregulation, Negative self-concept, and Disturbances in relationships through attachment orientation and world assumptions.

Considering our hypothesis that the direct association between exposure to ACE and CPTSD symptoms clusters was moderated by gender, a first model will be tested in which sex will be introduced as moderator of the direct path from both direct and indirect exposure to ACE to Affective dysregulation, Negative self-concept, and Disturbances in relationships. If sex moderates the relationship between the variables, the sample will be separated into girls and boys and the analysis of the models will be conducted separately for each group.

Missing data analysis were conducted before executing analyses. Proportion of missing values in the tested variables ranged from 1.2% to 10.0%. Missing data occurred because some participants did not respond to all items. A Little's Missing Completely at Random (MCAR) was conducted which indicated that data were missing completely at random, $\chi^2(1) = 115.00, p = .74$. Imputation of missing data was conducted through a maximum likelihood (ML) module. Specifically, each case of available data was used to compute ML estimates. The ML estimate of a parameter was the value of the parameter that was most likely to have resulted in the observed data. The likelihood was computed separately for those cases with complete data on some

variables and those with complete data on all variables. These two likelihoods were then maximized together to find the estimates.

Finally, to test the serial mediation model, a SEM (Hoyle & Smith, 1994) strategy using the AMOS software (Version 27; Arbuckle, 2020) and the ML method, was employed. The following criteria for SEM models fit were adopted: (a) a χ^2 test, (b) the root mean square error of approximation (RMSEA), (c) the comparative fit index (CFI), (d) the normed fit index (NFI), (e) Tucker Lewis Index (TLI), and (f) standardized root mean square residual (SRMR). The following criteria for each model fit were adopted: chi-square value should be non-significant, CFI, TLI and NFI > 0.95, and the RMSEA and SRMR should range from 0.00 to 0.08. We computed the chi square test, but as it is sensitive to sample size (e.g., Kline, 2010), we used the ratio of chi square to degrees of freedom. Values between 1 and 5 indicated a satisfactory fit between the theoretical model (Kline, 2010).

All analyses included only participants who had undergone at least one traumatic event. To assess significance of indirect paths, a bootstrapped confidence interval for the ab indirect effect, employing Preacher and Hayes' procedures (2008), was adopted. A total of 5,000 bootstrapped samples were obtained to estimate indirect effects of each mediator. We computed bias corrected, accelerated 95% confidence intervals (CIs) to measure statistical significance for each mediator's "ab" paths and the one-step mediation. A Confidence Interval that does not include zero reflects evidence of a significant indirect effect or significant mediation.

Results

Prevalence of exposure to traumatic events, depression, and anxiety symptoms

As can be seen in Table 3, the most reported event in the full sample was direct exposure to the death of someone close, followed by indirect exposure to traffic accident. These two events were reported by more than half of the participants. Least prevalent was direct exposure to pregnancy/abortion followed by indirect exposure to other events, and direct exposure to rape and severe childhood neglect.

In females, the most common event was direct exposure to the death of someone close, followed by indirect exposure to traffic accident. Least reported event was direct exposure to pregnancy/abortion followed by direct exposure to rape and severe childhood neglect. In males, the most reported event was indirect exposure to traffic accident, followed by direct exposure to

the death of someone close. Least reported event was indirect exposure to other events followed by direct exposure pregnancy/abortion and sexual abuse.

Table 3

Adverse Childhood Events according to Exposure and Sex

Event	Females (n = 353)		Males (n = 334)		Full sample (N = 687)	
	Direct Count (%)	Indirect Count (%)	Direct Count (%)	Indirect Count (%)	Direct Count (%)	Indirect Count (%)
Traffic accident	46 (13.0)	188 (53.3)	69 (20.7)	157 (47.0)	115 (16.7)	345 (50.2)
Other serious accidents	39 (11.0)	108 (30.6)	41 (12.3)	101 (30.2)	80 (11.6)	209 (30.4)
Physical assault	28 (7.9)	91 (25.8)	38 (11.4)	90 (26.9)	66 (9.6)	181 (26.3)
Rape	14 (4.0)	61 (17.3)	14 (4.2)	37 (11.1)	28 (4.1)	98 (14.3)
Witnessed other people injured or killed	29 (8.2)	54 (15.3)	37 (11.1)	44 (13.2)	66 (9.6)	98 (14.3)
Came close to being injured or killed	37 (10.5)	35 (9.9)	50 (15.0)	47 (14.1)	87 (12.7)	82 (12.9)
Threats of violence	84 (23.8)	90 (25.5)	133 (39.8)	99 (29.6)	217 (31.6)	189 (27.5)
Near-drowning	67 (19.0)	52 (14.7)	83 (24.9)	55 (16.5)	150 (21.8)	107 (15.6)

Attempted suicide	49 (13.9)	104 (29.5)	19 (5.7)	44 (13.2)	68 (9.9)	148 (21.5)
Robbery/theft	43 (12.2)	112 (31.7)	51 (15.3)	77 (23.1)	94 (13.7)	189 (27.5)
Pregnancy /abortion	10 (2.8)	76 (21.5)	11 (3.3)	33 (9.9)	21 (3.1)	109 (15.9)
Serious illness	50 (14.2)	154 (43.6)	38 (11.4)	117 (35.0)	88 (12.8)	271 (29.4)
Death of someone close	208 (58.9)	183 (51.8)	154 (46.1)	137 (41.0)	362 (52.7)	320 (46.6)
Divorce	44 (12.5)	149 (42.2)	46 (13.8)	77 (23.1)	90 (13.1)	226 (32.9)
Sexual abuse	23 (6.5)	61 (17.3)	12 (3.6)	30 (9.0)	35 (5.1)	91 (13.2)
Physical abuse	18 (5.1)	64 (18.1)	32 (9.6)	45 (13.5)	50 (7.3)	109 (15.9)
Severe childhood neglect	14 (4.0)	71 (21.1)	20 (6.0)	43 (12.9)	34 (4.9)	114 (16.6)
Humiliation or persecution (bullying)	106 (30.0)	141 (39.9)	101 (30.2)	98 (29.3)	207 (30.1)	239 (34.8)
Absence of a parent	60 (17.0)	89 (25.2)	41 (12.3)	52 (15.6)	101 (14.7)	141 (20.5)
Other events	23 (6.5)	15 (4.2)	25 (7.5)	10 (3.0)	48 (7.0)	25 (3.6)

It was observed that 66 participants (9.6%) did not report at least one ACE (direct or indirect exposure). Specifically, 23 females and 43 males did not report at least one ACE. Since we are analyzing polytraumatization, our baseline would be experiencing at least one ACE so

these participants were excluded from subsequent analyses. The average number of total exposure to ACE per participant was 7.7 ($SD = 6.3$; range 0-37); the average number of direct exposure to ACE per participant was 2.9 ($SD = 3.1$; range 0-20); and, the average number of indirect exposure to ACE per participant was 4.8 ($SD = 4.3$; range 0-20).

A t -test was conducted to compare the mean of direct and indirect exposure to ACEs between the females and males. All data were tested for normality prior to the analyses using Kolmogorov-Smirnov test, as well as Levene's test for the homogeneity of the variance, and both assumptions were met. The difference between both groups in the number of direct exposure to ACE ($t(685) = .97$; $p = .17$) was not statistically significant, but there were statistically significant differences in the number of indirect exposure to ACE ($t(685) = 3.68$; $p < .01$). The mean of indirect exposure to ACE was higher in females ($M = 5.4$; $SD = 4.4$; 95% CI: 4.9–5.8) compared to males ($M = 4.2$; $SD = 4.2$; 95% CI: 3.7–4.6).

Intercorrelations between study variables

As can be seen in Table 4, the direct exposure to ACE presented a medium positive correlation with indirect exposure to ACE and Disturbances in relationships; it was weakly positively linked to Attachment anxiety, Affective dysregulation, and Negative self-concept; it presented a medium positive association with WS and BW. The indirect exposure to ACE was weakly positively linked to Attachment anxiety, Attachment avoidance, Affective dysregulation, Negative self-concept, and Disturbances in relationships; it was weakly negatively associated with WS and BW. Attachment anxiety was strongly positively linked to attachment avoidance, a weak positive correlation with all CPTSD symptoms clusters, and weakly negatively correlated with Worthiness of the and MW. Attachment avoidance was weakly negatively linked to MW, and it was weakly positively associated with Negative self-concept and Disturbances in relationships. WS presented a strong positive correlation with BW, a medium positive correlation with MW, and medium positive association with CPTSD symptoms clusters. BW showed a medium positive association with MW, and it was weakly negatively linked to Affective dysregulation and Disturbances in relationships. MW was weakly positively linked to Negative self-concept. CPTSD symptoms clusters presented a medium positive association among them. All the remaining association were non-significant.

Table 4*Correlation Matrix of Study Variables*

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Direct exposure to ACE	-	.33***	.10**	.02	-	-	-.05	.26***	.20***	.36***
2. Indirect exposure to ACE		-	.15***	.11**	-	-.10*	-.01	.21***	.22***	.27***
3. Attachment anxiety			-	.62***	-	.04	-.14*	.28***	.39***	.34***
4. Attachment avoidance				-	-.05	.01	-	.08	.26***	.22***
5. Worthiness of the self					-	.56***	.39***	-	-	-
6. Benevolence of the world						-	.37***	-	-.03	-
7. Meaningfulness of the world							-	.04	.17***	.06
8. Affective dysregulation								-	.38***	.40***
9. Negative self-concept									-	.43***
10. Disturbances in relationships										-

Note. ACE = Adverse Childhood Experiences. * $p < .05$. ** $p < .01$. *** $p < .001$.

Mean comparisons between males and females

As can be seen in Table 5, there were statistically significant differences between females and males on all variables. Females had higher mean scores in most variables except for WS and MW, in which males had higher mean scores compared to females.

Table 5

Means, Standard Deviations and Mean Differences between Females and Males on Attachment Dimensions, World Assumptions, and CPTSD Symptoms Clusters

	Females (<i>n</i> =330)		Males (<i>n</i> =291)		<i>t</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Attachment anxiety	2.86	.96	2.39	1.01	5.91***	.48
Attachment avoidance	2.64	.57	2.52	.71	2.23*	.18
Worthiness of the self	44.43	12.29	47.65	11.65	-3.34***	.27
Benevolence of the world	31.36	7.12	30.02	7.70	2.24*	.18
Meaningfulness of the world	38.42	9.20	40.65	10.84	-2.78**	.22
Affective dysregulation	4.18	1.48	3.33	1.29	7.67***	.62
Negative self-concept	3.69	1.40	3.05	1.20	6.10***	.49
Disturbances in relationships	3.65	1.55	3.11	1.28	4.74***	.38

Analysis of serial mediation

Considering our hypothesis that sex was a moderator of the link between exposure to ACE and CPTSD symptoms clusters, a model was specified in which direct and indirect

exposure to ACE to CPTSD symptoms clusters was moderated by sex. This model fit the observed data well ($\chi^2(1) = 1.16, p = .28$; NFI = .99; CFI = .99; TLI = .97; RMSEA = .04; SMSR = .02). The direct paths from sex to direct exposure to ACE ($b = -.48, p < .05, 95\% \text{ CI}, -.91, -.05$) and indirect exposure to ACE ($b = .97, p < .01, 95\% \text{ CI}, .30, 1.64$) were significant. For this reason, subsequent analyses were conducted separately for females and males.

Females

The existence of significant direct relations between direct and indirect exposure to ACE with CPTSD symptoms clusters was analyzed first. This model fit the observed data well ($\chi^2(1) = 1.03, p = .31$; NFI = 1.0; CFI = 1.0; TLI = 1.0; RMSEA = .01; SMSR = .01). Higher levels of direct exposure to ACE were associated significantly with higher levels of Affective dysregulation ($b = .16, p < .01, 95\% \text{ CI}, .10, .22$), Negative self-concept ($b = .08, p < .05, 95\% \text{ CI}, .02, .14$), and Disturbances in relationships ($b = .23, p < .01, 95\% \text{ CI}, .17, .29$). Higher levels of indirect exposure to ACE were associated significantly with higher levels of Negative self-concept ($b = .07, p < .01, 95\% \text{ CI}, .03, .11$) and Disturbances in relationships ($b = .05, p < .05, 95\% \text{ CI}, .01, .09$), but not with levels of Affective dysregulation ($b = .02, p = .31, 95\% \text{ CI}, -.02, .06$).

Next, a model was specified in which exposure to ACE had direct paths to CPTSD symptoms, as well as indirect paths through attachment anxiety and attachment avoidance (one-step mediation). The mediation model fit the observed data well ($\chi^2(1) = 0.34, p = .56$; NFI = 1.0; CFI = 1.0; TLI = 1.0; RMSEA = 0.0; SMSR = .01). The direct paths from direct exposure to ACE to Affective dysregulation ($b = .15, p < .01, 95\% \text{ CI}, .09, .21$), Negative self-concept ($b = .06, p < .05, 95\% \text{ CI}, .01, .11$), and Disturbances in relationships ($b = .21, p < .01, 95\% \text{ CI}, .15, .27$) remained significant when attachment dimensions were included in the model. Likewise, the direct paths from indirect exposure to ACE to Negative self-concept ($b = .06, p < .01, 95\% \text{ CI}, .02, .10$) and Disturbances in relationships ($b = .04, p < .05, 95\% \text{ CI}, .01, .07$) remained significant. When applying the bootstrapping analysis, only total indirect effects from direct exposure to ACE through attachment anxiety to Affective dysregulation ($b = .35, p < .01, 95\% \text{ CI}, .19, .51$), Negative self-concept ($b = .39, p < .01, 95\% \text{ CI}, .21, .57$), and Disturbances in relationships ($b = .26, p < .05, 95\% \text{ CI}, .07, .45$) were significant. However, higher levels of attachment avoidance were associated with lower levels of Affective dysregulation ($b = -.41, p < .05, 95\% \text{ CI}, -.73, -.09$), and higher levels of Negative self-concept ($b = .30, p < .05, 95\% \text{ CI},$

.01, .59) and Disturbances in relationships ($b = .30, p < .05, 95\% \text{ CI}, .01, .59$). The remaining paths were non-significant.

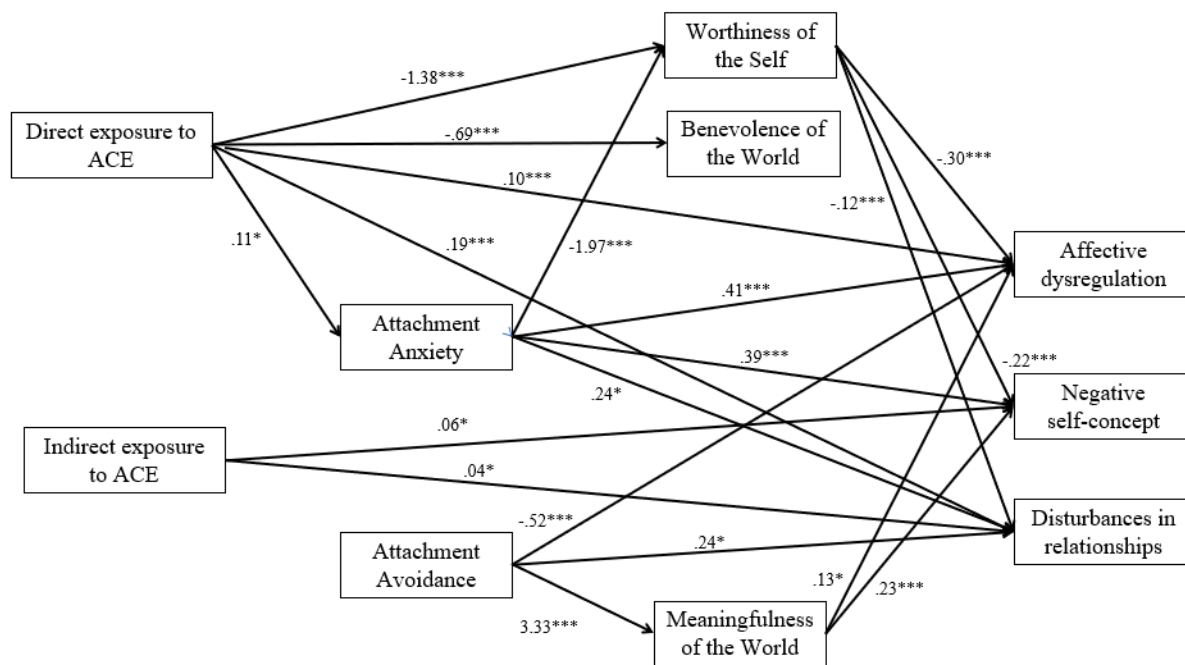
Following, it was examined if exposure to ACE had direct paths to CPTSD symptoms clusters, as well as indirect paths through the world assumptions. The mediation model fit the observed data well ($\chi^2(1) = 2.25, p = .13$; NFI = 1.0; CFI = 1.0; TLI = .98; RMSEA = .03; SMSR = .02). Only the direct paths from direct exposure to ACE to Affective dysregulation ($b = .11, p < .01, 95\% \text{ CI}, .05, .17$) and Disturbances in relationships ($b = .20, p < .01, 95\% \text{ CI}, .14, .26$) remained significant when world assumptions were included in the model. The direct paths from indirect exposure to ACE to Negative self-concept ($b = .06, p < .01, 95\% \text{ CI}, .03, .09$) and Disturbances in relationships ($b = .04, p < .05, 95\% \text{ CI}, .01, .07$) remained significant. When applying the bootstrapping analysis, only total indirect effects from direct exposure to ACE through WS to Affective dysregulation ($b = 1.29, p < .01, 95\% \text{ CI}, .69, 1.69$) and Negative self-concept ($b = .30, p < .01, 95\% \text{ CI}, .28, .32$) were significant. However, higher levels of MW were associated with higher levels of Affective dysregulation ($b = .03, p < .05, 95\% \text{ CI}, .01, .05$) and Negative self-concept ($b = .05, p < .05, 95\% \text{ CI}, .03, .07$). The remaining paths were non-significant.

Finally, a model was specified in which exposure to ACE had direct paths to CPTSD symptoms clusters; one-step indirect paths through the attachment dimensions; and two-step indirect paths through the attachment dimensions and world assumptions. Unstandardized results are presented in Figure 1. The observed data fit the mediational model well ($\chi^2(1) = .13, p = .94$; NFI = 1.0; CFI = 1.0; TLI = 1.0; RMSEA = 0.0; SMSR = 0.0). The direct paths from direct exposure to ACE to Affective dysregulation ($b = .10, p < .01, 95\% \text{ CI}, .04, .14$) and Disturbances in relationships ($b = .19, p < .01, 95\% \text{ CI}, .13, .25$) were significant when the model included all mediators. Specifically, the two-step indirect effects results indicated that direct exposure to ACE was significantly associated with higher levels of attachment anxiety, which were associated with lower levels of WS which in turn were associated with higher levels of Affective dysregulation ($b = 2.47, p < .01, 95\% \text{ CI}, .85, 4.09$) and Negative self-concept ($b = 1.30, p < .01, 95\% \text{ CI}, .89, 1.71$). It was also observed that the indirect effect of direct exposure through attachment anxiety to Affective dysregulation ($b = .39, p < .01, 95\% \text{ CI}, .20, .58$), Negative self-concept ($b = .31, p < .01, 95\% \text{ CI}, .14, .58$) and Disturbance in relationships ($b = .21, p < .05, 95\% \text{ CI}, .01, .41$) was significant. The indirect effect of direct exposure through WS to Affective

dysregulation ($b = 1.19, p < .01, 95\% \text{ CI}, .70, 1.68$) and Negative self-concept ($b = .28, p < .01, 95\% \text{ CI}, .11, .45$) was also significant. After omitting non-significant paths our final model fit the observed data well ($\chi^2(18) = 16.61, p = .55; \text{NFI} = .98; \text{CFI} = 1.0; \text{TLI} = 1.0; \text{RMSEA} = 0.0; \text{SMSR} = .04$).

Figure 1

Serial Mediation Integrated Model for CPTSD Symptoms by Attachment Orientations and World Assumptions in Female Participants



Note. Paths of the serial mediational model are shown for the two-step mediation process from direct and indirect exposure to ACE to Affective dysregulation, Negative self-concept, and Disturbances in relationships through attachment orientation and world assumptions in female participants. Rectangles indicate measured variables. Unidirectional arrows depict hypothesized directional links. Standardized maximum likelihood parameters are used. $N = 330; *p < .05, ***p < .001$.

Males

The model that tested direct relations between direct and indirect exposure to ACE with CPTSD symptoms clusters showed fit the observed data well ($\chi^2(1) = .08, p = .77; \text{NFI} = 1.0; \text{CFI}$

=1.0; TLI = 1.0; RMSEA =0.0; SMSR =.01). Higher levels of direct exposure to ACE were associated significantly with higher levels of Affective dysregulation ($b = .09, p <.01, 95\% \text{ CI}, .05, .13$), Negative self-concept ($b = .07, p <.01, 95\% \text{ CI}, .03, .11$), and Disturbances in relationships ($b = .10, p <.01, 95\% \text{ CI}, .06, .14$). Higher levels of indirect exposure to ACE were only associated significantly with higher levels of Disturbances in relationships ($b = .04, p <.05, 95\% \text{ CI}, .01, .07$). The remaining paths were non-significant.

The model in which direct paths from exposure to ACE to CPTSD symptoms, as well as indirect paths through attachment anxiety and attachment avoidance (one-step mediation) were analyzed fit the observed data well ($\chi^2 (1) = 0.37, p = .54$; NFI= 1.0; CFI =1.0; TLI = 1.0; RMSEA = 0.0; SMSR =.01). The direct paths from direct exposure to ACE to Affective dysregulation ($b = .09, p <.01, 95\% \text{ CI}, .05, .13$), Negative self-concept ($b = .07, p <.05, 95\% \text{ CI}, .03, .11$), and Disturbances in relationships ($b = .10, p <.01, 95\% \text{ CI}, .06, .14$) remained significant. The direct paths from indirect exposure to ACE to CPTSD symptoms were no longer significant when attachment dimensions were included in the model. The indirect effects from indirect exposure to ACE through attachment anxiety to Affective dysregulation ($b = .19, p <.01, 95\% \text{ CI}, .11, .27$), Negative self-concept ($b = .30, p <.01, 95\% \text{ CI}, .12, .48$), and Disturbances in relationships ($b = .35, p <.01, 95\% \text{ CI}, .17, .53$) were significant. The remaining paths were non-significant.

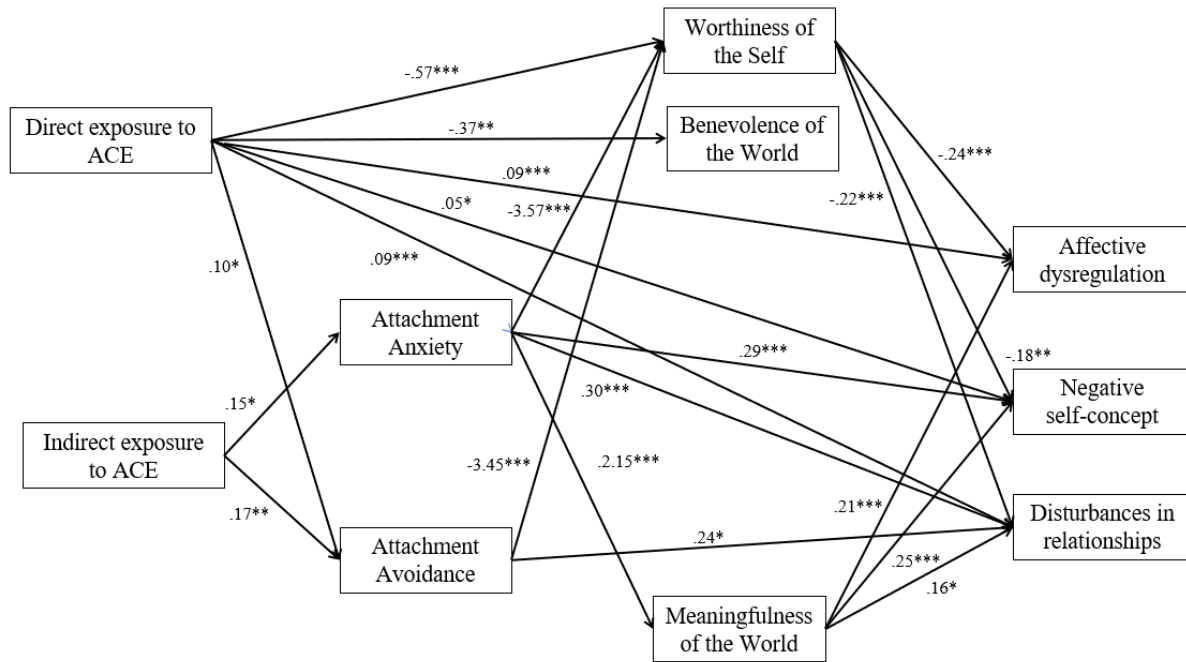
The model with direct paths from exposure to ACE to CPTSD symptoms clusters, as well as indirect paths through the world assumptions, fit the observed data well ($\chi^2 (1) = .02, p = .88$; NFI= 1.0; CFI =1.0; TLI = 1.0; RMSEA =0.0; SMSR =.02). The direct paths from direct exposure to ACE to Affective dysregulation ($b = .07, p <.05, 95\% \text{ CI}, .03, .11$), Negative self-concept ($b = .06, p <.05, 95\% \text{ CI}, .02, .10$), and Disturbances in relationships ($b = .08, p <.01, 95\% \text{ CI}, .04, .12$) remained significant. The direct paths from indirect exposure to ACE to CPTSD symptoms were non-significant. The indirect effects from direct exposure to ACE through WS to Affective dysregulation ($b = .20, p <.01, 95\% \text{ CI}, .18, .22$), Negative self-concept ($b = .31, p <.01, 95\% \text{ CI}, .27, .35$), and Disturbances in relationships ($b = .26, p <.01, 95\% \text{ CI}, .21, .31$) were significant. The remaining paths were non-significant.

Finally, it was specified a model in which exposure to ACE had direct paths to CPTSD symptoms clusters; one-step indirect paths through the attachment dimensions; and two-step indirect paths through the attachment dimensions and world assumptions. Unstandardized results

are presented in Figure 2. The observed data fit the mediational model well ($\chi^2(1) = .07, p = .80$; NFI = 1.0; CFI = 1.0; TLI = 1.0; RMSEA = 0.0; SMSR = 0.0). The direct paths from direct exposure to ACE to Affective dysregulation ($b = .07, p < .05, 95\% \text{ CI}, .03, .11$), Negative self-concept ($b = .06, p < .05, 95\% \text{ CI}, .02, .10$) and Disturbances in relationships ($b = .08, p < .01, 95\% \text{ CI}, .04, .12$) were significant when the model included all mediators. The two-step indirect effects results indicated that indirect exposure to ACE was significantly associated with higher levels of attachment anxiety, which were associated with lower levels of WS which in turn were associated with higher levels of Affective dysregulation ($b = .18, p < .01, 95\% \text{ CI}, .13, .23$), Negative self-concept ($b = .24, p < .01, 95\% \text{ CI}, .19, .29$) and Disturbances in relationships ($b = .16, p < .05, 95\% \text{ CI}, .11, .21$). The two-step indirect effects results also indicated that indirect exposure to ACE was significantly associated with higher levels of attachment anxiety, which were associated with lower levels of MW which in turn were associated with higher levels of Affective dysregulation ($b = .15, p < .01, 95\% \text{ CI}, .08, .22$), Negative self-concept ($b = .19, p < .01, 95\% \text{ CI}, .11, .27$) and Disturbances in relationships ($b = .11, p < .05, 95\% \text{ CI}, .15, .17$). It was observed that direct exposure to ACE was significantly associated with higher levels of attachment avoidance, which were associated with lower levels of WS which in turn were associated with higher levels of Affective dysregulation ($b = .09, p < .05, 95\% \text{ CI}, .03, .15$), Negative self-concept ($b = .06, p < .05, 95\% \text{ CI}, .01, .11$) and Disturbances in relationships ($b = .08, p < .05, 95\% \text{ CI}, .03, .13$). It was also observed that indirect exposure to ACE was significantly associated with higher levels of attachment avoidance, which were associated with lower levels of WS which in turn were associated with higher levels of Affective dysregulation ($b = .12, p < .05, 95\% \text{ CI}, .07, .17$), Negative self-concept ($b = .24, p < .01, 95\% \text{ CI}, .20, .28$) and Disturbances in relationships ($b = .04, p < .05, 95\% \text{ CI}, .02, .06$). It was also observed that the indirect effect of indirect exposure through attachment anxiety to Negative self-concept ($b = .21, p < .05, 95\% \text{ CI}, .03, .39$) and Disturbance in relationships ($b = .33, p < .05, 95\% \text{ CI}, .15, .51$) was significant. The indirect effect of direct exposure through WS to Affective dysregulation ($b = .53, p < .01, 95\% \text{ CI}, .13, .93$), Negative self-concept ($b = .18, p < .05, 95\% \text{ CI}, .03, .33$) and Disturbances in relationships ($b = .16, p < .05, 95\% \text{ CI}, .02, .30$) was also significant. After omitting non-significant paths our final model fit the observed data well ($\chi^2(18) = 18.40, p = .43$; NFI = .97; CFI = 1.0; TLI = 1.0; RMSEA = .01; SMSR = .03).

Figure 2

A Serial Mediation Integrated Model for CPTSD Symptoms by Attachment Orientations and World Assumptions in Male Participants



Note. Paths of the serial mediational model are shown for the two-step mediation process from direct and indirect exposure to ACE to Affective dysregulation, Negative self-concept, and Disturbances in relationships through attachment orientation and world assumptions in male participants. Rectangles indicate measured variables. Unidirectional arrows depict hypothesized directional links. Standardized maximum likelihood parameters are used. $N = 291$; * $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

The main goal of the current study was to analyse the effect of both direct and indirect exposure to ACE on CPTSD symptom clusters through the mediation of both attachment orientations and world assumptions in a sample of Faroese adolescents. This study analysed a data from Faroese adolescents in a sample that accounted for 85% of students of the Faroese Islands at the date of collection. We found sex to be a moderator in the effect of ACE exposure in CPTSD symptoms, which led us to test two separate models, one for female and other for

male participants. In female participants, direct exposure to ACE was associated with higher levels in attachment anxiety, which was associated with lower levels in WS, which in turn was associated with higher levels in all CPTSD symptom clusters (affective dysregulation, negative self-concept, and disturbances in relationships). In male participants, direct and indirect exposure to ACE were associated with higher levels in attachment avoidance, which was associated with lower levels in WS, which in turn was associated with all CPTSD symptom clusters. Additionally, it was also observed that indirect exposure to ACE was associated with higher levels in attachment anxiety, which was associated with lower levels in WS, which in turn was associated with higher levels in all CPTSD symptom clusters in the male participants. In males' indirect exposure to ACE was associated with higher levels in attachment anxiety, which was associated with higher levels in MW, which in turn was associated with higher levels in all CPTSD symptom clusters. Our hypothesis will be discussed in turn.

Our results suggest that there is an increased risk of multiple ACE exposure in adolescence. In the full sample 90.4% of participants had been exposed, directly or indirectly to at least one ACE, and 85.9% reported more than one ACE. This is in accordance with the research on ACE that shows that the adolescent period is a vulnerable developmental period for experiencing ACE, and that individuals who experience one ACE have increased vulnerability to experience others (Carlson et al., 2020; Gustaffson, 2009; Riedl et al., 2020). The vast majority of the participants on this study reported at least one ACE with the average report of direct ACE exposure being 2.9 and indirect exposure being 4.8. Direct exposure to the death of someone close, followed by indirect exposure to traffic accident were the two most reported events in our full sample. The least prevalent events were direct exposure to pregnancy/abortion followed by indirect exposure to other events, and direct exposure to rape and severe childhood neglect. In female participants the most reported event was direct exposure to the death of someone close, while indirect exposure to traffic accident was the most reported event among male participants. When analysing sex as a moderator between ACE exposure and CPTSD symptoms, gender roles may have some impact on this effect, as this has been shown to be the case in PTSD studies (Christiansen & Elklit, 2012). Masculine and feminine gender roles encompass other dimensions, besides biological sex, namely culture, age group, ethnicity, class, and sexual orientation. The fact that the Faroese Islands are a small-scale society with traditional family values may contribute to the difference between the most reported event by males and females, as sex

differences in PTSD are especially evident in cultures which emphasize traditional gender roles (Norris et al., 2007). Some ACE like “witnessed other people injured or killed”, “serious illness” or “death of someone close” usually happen within family or in the presence of caregivers, a typically female role (Johannessen et al., 2022; Morgan et al., 2016).

Females reported higher levels of indirect exposure to ACE than males. There were no significant differences between female and male participants regarding direct ACE exposure. Our results suggest that Faroese female adolescents are especially vulnerable to witnessing sexual abuse, attempted suicide, robbery/theft, pregnancy/abortion, serious illness, divorce, severe childhood neglect, humiliation or persecution, and absence of a parent, compared to males. While there is some research indicating that indirect exposure to polytraumatization is associated with PTSD and post-traumatic symptoms (Ferração et al., 2022; Petersen et al., 2010), there is a lack of research on sex differences in direct and indirect ACE exposure. One possible explanation for the increase indirect exposure to ACE in females could be that since the Faroese Islands have traditional family values, females are more prone to witness family-related, or self-inflicted ACE (Elklit, 2002). A possible explanation for other types of ACE could come from the fact that the Faroese Islands are a small-scale and fairly homogenous population where indirect exposure could be more prevalent due to intrinsic social relationships (Petersen et al., 2010). Future research should investigate possible sex differences in direct and indirect exposure to ACE in adolescents.

Our first hypothesis was that sex was a moderator in the association between ACE exposure and CPTSD symptoms. Sex moderated the association between ACE exposure and CPTSD symptoms, indicating that the associations between the study variables will be different for each sex. This was the first hypothesis of the study which was fully supported with results finding statistical differences between the sexes in all the study variables. Female participants reported higher levels of CPTSD symptomatology. These results are consistent with the literature that indicated that women report more post-traumatic symptoms than men (Elklit & Petersen 2008; Tolin & Foa, 2006). Female participants also reported higher levels in both anxious and avoidant attachment orientations. While most studies indicate that women have higher levels in attachment anxiety and men have higher levels in attachment avoidance (DelGiudice, 2019), most studies use adult samples. In contrast with our results, there is a study that used a Japanese

sample of adolescents, with results showed that females had more secure attachment than males (Matsuoka et al., 2005). Future studies on adolescent sex differences in attachment orientations should be conducted using samples from different cultures. BW was higher in female participants, while MW and WS was higher in male participants. While this finding is in accordance with a study where women reported lower controllability and predictability of people (Schleider et al., 2021), the populations and cultural contexts of these studies are different. Our results indicate that female adolescents exposed to multiple ACE have lower levels of WS and MW than males, while male participants report lower levels in BW than females. One possible explanation for these results could be related to the fact that females reported more exposure to self-inflicted or family related ACE (e.g., attempted suicide, sexual abuse, and absence of a parent), having more impact in personal related beliefs such as WS and in beliefs about the MW, while male participants reported more exposure to ACE that typically happen outside the family context (e.g., traffic accidents, near-drowning, and threats of violence), contributing to negative beliefs about BW. Future research should try and analyse further these differences.

The second hypothesis of this study was that higher levels in ACE exposure were associated with higher levels in CPTSD symptom clusters. This hypothesis was partially supported by the results, as there were significant sex differences in this association. For female participants direct exposure to ACE was associated with higher levels in affective dysregulation and disturbances in relationships, while indirect exposure to ACE was associated with higher levels in negative self-concept and disturbances in relationships. For male participants direct ACE exposure was associated with higher levels in affective dysregulation, negative self-concept, and disturbances in relationships, while indirect exposure to ACE was not associated with CPTSD symptom clusters. For both female and male participants, disturbances in relationships had the strongest association with direct exposure to ACE. One possible explanation for this stronger association between direct ACE exposure and disturbances in relationships could be due to the specificity of the population that, being a small-scale society, can have a lack of anonymity, which in turn could lead to stronger social repercussions such as gossip, judging, pettiness, and overall social control (Gaini, 2013). Another explanation as to why this is the case may be related to the fact that the participants were adolescents. In this period, and following ACE exposure, adolescents are more vulnerable to external influences due to disruptions in identity (Vartanian et al, 2022; Vartanian & Hayword, 2020).

The third hypothesis of this study was that attachment orientations mediated the association between ACE exposure and CPTSD symptom clusters. This hypothesis was partially supported by the results of this study. As expected, anxious attachment orientation mediated the association between ACE and CPTSD cluster symptoms in both female and male samples, although from different paths. In the female sample, anxious attachment mediated the effect of direct ACE on all three CPTSD symptom clusters. In the male sample, anxious attachment only mediated the effect of indirect ACE on Negative self-concept and Disturbances in relationships, while avoidant attachment mediated the effect of both indirect and direct ACE on disturbances in relationships. While both anxious and avoidant attachment orientations can be a source of mental health problems, there is a key difference between how such problems are developed and expressed. Anxious attachment has more impact in emotional regulation, while avoidant attachment is characterized by an effort not to access negative emotions (Mikulincer & Shaver, 2007; Stevens, 2014). This is even more true when the stressful situations are prolonged, which often is the case with some types of ACE. Higher awareness of emotional state combined with problems in emotional regulation could explain why anxious and not avoidant attachment was a mediator between direct exposure to ACE and all CPTSD symptoms, which include affective dysregulation, on the female sample (Stevens, 2014). Interestingly, although females reported higher levels in both attachment orientations, avoidant attachment orientation was only a mediator for the male group. One of the key aspects of avoidant attachment is the lack of self-disclosure, which is associated with poor quality relationships, which associates directly with CPTSD symptoms (Criddle et al., 2022). Studies have shown that men tend to self-disclose less than women (Papini et al., 1990; Stein & Brodsky, 1995), and a study showed that the higher the levels of post-traumatic symptoms, the less men were willing to self-disclose feelings of happiness, while in woman participants, the higher the level of post-traumatic symptoms, the higher the willingness to self-disclose about feelings of anxiety (Purves & Erwin, 2004). Thus, although females reported higher avoidant attachment, sex differences in other psychological processes can contribute to the fact that only in male participants, attachment avoidance mediates the impact of ACE exposure on CPTSD symptoms.

The fourth hypothesis of this study was that world assumptions would mediate the association between ACE exposure and CPTSD symptom clusters. This hypothesis was partially supported. It was observed that WS mediated the link between direct ACE exposure and all

CPTSD symptom clusters in both groups. Our results suggest that adolescents who were directly exposed to ACE, have lower levels in WS which in turn increase vulnerability developing CPTSD symptoms. This could be due to the fact that CPTSD symptom clusters relate to DSO, and WS is the world assumption that refers to beliefs about oneself. WS is composed of the self-worth, self-controllability, and luck subscales (Heim et al., 2022). While there was no mediation effect found for BW, it was found in both female and male samples an association between direct ACE exposure and lower levels in this specific world assumption. Our results indicate that Faroese adolescents directly exposed to ACE have increased negative beliefs about the world and others. BW is the world assumption that most closely relates to others and the social environment, being composed of benevolence of the interpersonal world and benevolence of the people subscales. A possible explanation for this result could be the fact that ACE exposure typically occur in an interpersonal context (Boullier & Blair, 2018) which can contribute to negative beliefs about others and the world (Rizeq & McCann, 2021). MW did mediate the association between ACE exposure and CPTSD symptoms.

The fifth hypothesis of our study was that both attachment orientations and world assumptions would mediate the association between both direct and indirect ACE exposure and CPTSD cluster symptoms. Our results partially support this hypothesis. In both models for female and male participants attachment orientation and world assumptions mediated the association between ACE and CPTSD symptom clusters, although through different dimensional paths.

Our sixth hypothesis was that exposure to ACE would be associated with higher levels in attachment orientations, which would associate with lower levels in world assumptions, which finally would associate with higher levels in CPTSD symptoms. This hypothesis was partially supported. Both will be discussed in turn. In females, the two-step mediation model indicated that there was only a two-step mediation effect following the direct exposure of ACE. Direct exposure to ACE was associated with higher levels in attachment anxiety, which was associated with lower levels in WS, which was associated with higher levels in all CPTSD symptom clusters. This is consistent with the literature that indicates that attachment anxiety is associated with a negative model of self, namely the idea that one is unworthy of love and affection (Bartz & Lydon, 2004). The two-step model indicates that female adolescents in our sample that

experience direct ACE develop higher levels of attachment anxiety, which in turn lowers their levels in WS and finally lead to an increased risk for developing affective dysregulation, negative self-concept, and disturbances in relationships.

In the male sample both direct and indirect ACE had two-step mediation effects in their association with CPTSD clusters. The two-step model mediation for the male group indicated that experiencing direct and indirect ACE leads to higher attachment avoidance, which leads to lower WS, which finally leads to higher levels in all CPTSD symptom clusters. Experiencing indirect ACE also increased levels in attachment anxiety, which leads to lower WS, which finally leads to higher levels in all CPTSD symptom clusters. Indirect ACE exposure also leads to higher levels in attachment anxiety, which lead to higher levels of MW, which finally leads to higher levels in all CPTSD symptom clusters. Although the cognitive schemas about the MW, that impact the way people perceive justice, controllability, and randomness of events in the world, mediated the association alongside attachment orientations, it was not in the expected direction. This unexpected result may also be explained by the fact that feelings of low self-worth are closely associated to attachment anxiety, which in turn could increase already existing beliefs about the justice or randomness of the world (e.g., “this occurred to me because I am a bad person, and that makes sense”).

Limitations

This study has several limitations. The data regarding ACE exposure were collected using a self-report checklist which can always be subjected to the effects of social desirability. The recollection can also be affected since this was a retrospective study. There was also no data on the severity of the ACE, the specific timing, or the number of times one specific ACE was experienced. All these variables can impact the attachment orientation or the world assumptions. Although it has been used in other cultures (Ferrajão & Elklit, 2021), the ACE questionnaire is not validated for the Faroese population. To determine attachment orientation, world assumptions and CPTSD symptoms this study used self-report scales that are also subject to be biased because of social desirability and some degree of subjectivity from the participants. Another limitation is the fact that this study was cross-sectional, making it impossible to know the lasting effects of ACE exposure or to infer causality. The data was collected in 2012, which

makes it more than ten years old. It could prove useful to replicate this analysis on more recent data.

Implications

The results of our study indicate that Faroese adolescents are vulnerable to multiple ACE exposure, increasing the risk of polytraumatization. These findings indicate that mental health professionals working with adolescents in the Faroese Islands should assess both direct and indirect ACE exposure. When working with female adolescents' clinicians should pay special attention to indirect ACE exposure, since it is associated with a risk of developing CPTSD symptoms in this group. The results of our study also suggest that ACE exposure increases the risk of developing CPTSD symptoms, namely disturbances in relationships, affective dysregulation, and negative self-concept, which should also be assessed when dealing with polytraumatized Faroese adolescents. Clinicians should ask polytraumatized adolescents about their interpersonal relationships, about their emotion regulation and about their self-concept.

Our study also suggests that polytraumatized adolescents with higher levels of both anxious and avoidant attachment orientations, which in turn increase the risk of developing CPTSD symptoms. In female Faroese adolescents, with direct exposure to ACE, mental health professional should assess levels of attachment anxiety, which are associated with higher levels in CPTSD symptoms. In male Faroese adolescents with indirect exposure to ACE, clinicians should assess levels in both attachment anxiety and avoidance, which increase the risk for developing negative self-concept and disturbances in relationships. Attachment orientations could be a focus in treatment interventions. Moreover, WS can increase the risk of CPTSD symptoms following direct exposure to ACE in adolescents. While working with polytraumatized Faroese adolescents, mental health professionals should pay attention to beliefs about self-worth, self-controllability, and luck. While in treatment interventions, working on positive beliefs about oneself could prove useful in decreasing the risk for CPTSD symptoms.

The findings of this study indicate that polytraumatized adolescents from the Faroese Islands develop higher levels in attachment anxiety and avoidance, which in turn have an effect on world assumptions, which finally increase the risk for developing CPTSD symptoms. Future research should also study the different effects of different types of ACE in these different variables, as there may be meaningful differences between interpersonal types of ACE and

impersonal ACE, both on attachment orientations (Lanier et al., 2018; Lew & Xian, 2019) and world assumptions (McArthur et al., 2019). The results of our study are also in accordance with other studies that show that the prevalence of ACE is high in adolescent populations, and so are the post-traumatic symptoms of CPTSD (Carlson et al., 2019; Redican et al., 2022; Anastas et al., 2021). Studies on CPTSD, and their possible mediators are still scarce, possibly due to the novelty of the diagnostic, but the results of existing studies, and now ours, suggest that these variables are important, as they can increase the risk of developing CPTSD symptoms. Further investigation should be conducted in samples of adolescents from different countries.

Cultural context is also an important factor to consider when dealing with adolescents suffering from CPTSD, as is illustrated by the results we found in an island setting. The Faroese Islands provide further insight into a unique reality, such as is a small-scale society, inserted in a European setting. In this study most of the participants lived with both parents. One of the mediators used was attachment orientations, which is directly affected by the child's relationship with their parents/caregivers. In this sense, it could be useful to test the same model with a different sample to see if the living situation has an impact on the attachment orientation mediation. To the extent of our knowledge there are no studies that tested different two-step models for both sexes. The differences between male and female samples warrant further investigation in adolescents exposed to ACE and on CPTSD symptoms.

Interventions on individuals suffering from CPTSD should take these variables into account. While there is a lot of research on the effectiveness of treatments for PTSD, there is not a lot of evidence on the treatment for CPTSD, mainly due to it being a fairly recent diagnostic. A recent meta-analysis found that some of the treatments that are used for PTSD, namely cognitive-behavioural therapy (CBT) and eye movement desensitisation and reprocessing (EMDR) also seemed to be effective on Negative self-concept and Disturbances in relationships (Karatziyas et al., 2019). Other type of treatments that have been shown to be effective in the treatment for PTSD are trauma-focused psychotherapies. Trauma-focused CBT has been found to be an effective treatment for CPTSD in German adolescents (Sachser et al, 2016). Future studies should investigate other types of treatment in adolescents. These treatments all have a common base on the biopsychosocial model for intervention originally defended by George Engel (1977). The model claims that the best treatment approach is the one that not only focuses

on the biological causes of the problem, but also the psychological and social dimensions. In the case of PTSD and CPTSD this is especially apparent due to the somatic symptoms, the cognitive schemas involved in the psychological process of the trauma and the role of social support that is a very important protective factor in the development of these disorders (Daniunaite et al., 2021; Hašto et al., 2013). Attachment orientation and world assumptions refer to behavioural models in relationships and cognitive beliefs about the world, oneself, and others respectively, highlighting the importance of social relationships. This can be considered in treatment interventions, where a relationship centred approach should be prioritized (Borrell-Carrió et al., 2004).

Conclusion

Our study results suggest that ACE exposure in Faroese adolescents can lead to CPTSD symptoms. This diagnostic includes symptoms of PTSD combined with DSO which makes it particularly detrimental to the health of the individuals suffering from CPTSD. Informed and effective interventions are required not only to prevent ACE exposure in childhood and adolescent developmental periods, but also for the treatment of these disorders, since CPTSD and PTSD is a growing public health concern due to the physical health problems associated with the disorder and the financial strain it can cause on healthcare systems (Koball et al., 2019; Loxton et al., 2019; van der Feltz-Cornelis et al., 2019). In the female sample direct exposure to ACE was associated with higher levels in attachment anxiety, which was in turn associated with lower levels in WS, which finally was associated with higher levels in all CPTSD symptom clusters. These dimensions should be assessed by mental health professionals when examining female adolescents following direct exposure to ACE. In the male sample direct and indirect exposure to ACE were associated with higher levels in attachment avoidance, which was associated with lower levels in WS, which in turn was associated with all CPTSD symptom clusters. Indirect exposure to ACE was associated with higher levels in attachment anxiety, which was associated with lower levels in WS, which in turn was associated with higher levels in all CPTSD symptom clusters in the male model. Still, in the male model, indirect exposure to ACE was associated with higher levels in attachment anxiety, which was associated with higher levels in MW, which in turn was associated with higher levels in all CPTSD symptom clusters. Assessment into these dimensions prior to intervention could help the efficacy of interventions for the treatment of CPTSD symptoms.

References

- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR*. American Psychiatric Association.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>
- Arbuckle, J. L. & IBM. (2020). *IBM SPSS Amos 27 User's Guide*. Amos Development Corporation.
- Anastas, J. W., Payne, N. A., & Ghuman, S. A. (2021). Adverse childhood experiences and complex post-traumatic stress in pregnant teens: a pilot study. *Maternal and Child Health Journal*, 25(5), 741–750. <https://doi.org/10.1007/s10995-020-03041-y>
- Appleyard, K., Egeland, B., Dulmen, M. H., & Alan Sroufe, L. (2005). When more is not better: the role of cumulative risk in child behavior outcomes. *Journal of Child Psychology and Psychiatry*, 46(3), 235–245. <https://doi.org/10.1111/j.1469-7610.2004.00351.x>
- Ardelt, M., & Day, L. (2002). Parents, siblings, and peers: Close social relationships and adolescent deviance. *Journal of Early Adolescence*, 22(3), 310–349.
- Barbieri, A., Visco-Comandini, F., Fegatelli, D. A., Schepisi, C., Russo, V., Calò, F., Dessì, A., Cannella, G., & Stellacci, A. (2019). Complex trauma, PTSD and complex PTSD in African refugees. *European Journal of Psychotraumatology*, 10(1), 1700621. <https://doi.org/10.1080/20008198.2019.1700621>
- Barr, P. B. (2014). Adult Attachment Dimensions, World View Schemas, and the Psychological Health of Parents of Infants in a Neonatal Intensive Care Unit. *Journal of Loss & Trauma*, 19(6), 537–557. <https://doi.org/10.1080/15325024.2013.809296>
- Bartz, J. A., & Lydon, J. P. (2004). Close Relationships and the Working Self-Concept: Implicit and Explicit Effects of Priming Attachment on Agency and Communion. *Personality and Social Psychology Bulletin*, 30(11), 1389–1401. <https://doi.org/10.1177/0146167204264245>
- Bellis, M. A., Hughes, K., Ford, K., Ramos Rodriguez, G., Sethi, D., & Passmore, J. (2019). Life course health consequences and associated annual costs of adverse childhood experiences across Europe and North America: a systematic review and meta-analysis. *The Lancet Public Health*, 4(10), e517–e528. [https://doi.org/10.1016/s2468-2667\(19\)30145-8](https://doi.org/10.1016/s2468-2667(19)30145-8)

- Beyers, W., & Seiffge-Krenke, I. (2010). Does identity precede intimacy? Testing Erikson's theory on romantic development in emerging adults of the 21st century. *Journal of Adolescent Research, 25*(3), 387–415. <https://doi.org/10.1177/0743558410361370>
- Bödvarsdóttir, R., & Elklit, A. (2007). Victimization and PTSD-like states in an Icelandic youth probability sample. *BMC Psychiatry, 7*(1). <https://doi.org/10.1186/1471-244x-7-51>
- Bomysoad, R. N., & Francis, L. A. (2020). Adverse Childhood Experiences and Mental Health Conditions Among Adolescents. *Journal of Adolescent Health, 67*(6), 868–870. <https://doi.org/10.1016/j.jadohealth.2020.04.013>
- Borrell-Carrio, F. (2004). The Biopsychosocial Model 25 Years Later: Principles, Practice, and Scientific Inquiry. *Annals of Family Medicine, 2*(6), 576–582. <https://doi.org/10.1370/afm.245>
- Boullier, M., & Blair, M. (2018). Adverse Childhood Experiences. *Symposium: Social Pediatrics*.
- Bowlby, J. (1969). *Attachment: Attachment and Loss Volume One (Basic Books Classics)* (2nd ed.). Basic Books.
- Breslau, N. (2004). Trauma Exposure and Posttraumatic Stress Disorder: A Study of Youths in Urban America. *Journal of Urban Health: Bulletin of the New York Academy of Medicine, 81*(4), 530–544. <https://doi.org/10.1093/jurban/jth138>
- Briere, J., & Runtz, M. (1989). The Trauma Symptom Checklist (TSC-33). *Journal of Interpersonal Violence, 4*(2), 151–163. <https://doi.org/10.1177/088626089004002002>
- Briere, J., Agee, E., & Dietrich, A. (2016). Cumulative trauma and current posttraumatic stress disorder status in general population and inmate samples. *Psychological Trauma: Theory, Research, Practice, and Policy, 8*(4), 439–446. <https://doi.org/10.1037/tra0000107>
- Campbell, J. A., Walker, R. J., & Egede, L. E. (2016). Associations Between Adverse Childhood Experiences, High-Risk Behaviors, and Morbidity in Adulthood. *American Journal of Preventive Medicine, 50*(3), 344–352. <https://doi.org/10.1016/j.amepre.2015.07.022>
- Carlson, J. S., Yohannan, J., Darr, C. L., Turley, M. R., Larez, N. A., & Perfect, M. M. (2019). Prevalence of adverse childhood experiences in school-aged youth: A systematic review (1990–2015). *International Journal of School & Educational Psychology, 8*(sup1), 2–23. <https://doi.org/10.1080/21683603.2018.1548397>

- Christiansen, D., & Elklit, A. (2012). Sex Differences in PTSD. In *InTech eBooks*.
<https://doi.org/10.5772/28363>
- Cloitre, M., Garvert, D. W., Brewin, C. R., Bryant, R. A., & Maercker, A. (2013). Evidence for proposed ICD-11 PTSD and complex PTSD: a latent profile analysis. *European Journal of Psychotraumatology*, 4(1). <https://doi.org/10.3402/ejpt.v4i0.20706>
- Cohen, J. (1988). Set Correlation and Contingency Tables. *Applied Psychological Measurement*, 12(4), 425–434. <https://doi.org/10.1177/014662168801200410>
- Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology*, 58(4), 644–663.
<https://doi.org/10.1037/0022-3514.58.4.644>
- Contractor, A. A., Brown, L. A., & Weiss, N. H. (2018). Relation between lifespan polytrauma typologies and post-trauma mental health. *Comprehensive Psychiatry*, 80, 202–213.
<https://doi.org/10.1016/j.comppsy.2017.10.005>
- Criddle, J. M., Sease, T. B., & Malm, E. K. (2022). Exploring the interpersonal consequences of adverse childhood experiences in college students. *Journal of Contextual Behavioral Science*, 26, 29–35. <https://doi.org/10.1016/j.jcbs.2022.08.004>
- Crouch, E., Probst, J. C., Radcliff, E., Bennett, K. J., & McKinney, S. H. (2019). Prevalence of adverse childhood experiences (ACEs) among US children. *Child Abuse & Neglect*, 92, 209–218. <https://doi.org/10.1016/j.chiabu.2019.04.010>
- 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(1).
<https://doi.org/10.1080/20008198.2021.1890937>
- Del Giudice, M. (2011). Sex differences in romantic attachment: a meta-analysis. *Personality and Social Psychology Bulletin*, 37(2), 193–214.
<https://doi.org/10.1177/0146167210392789>
- Del Giudice, M. (2019). Sex differences in attachment styles. *Current Opinion in Psychology*, 25, 1–5. <https://doi.org/10.1016/j.copsyc.2018.02.004>
- Ding, Y. H., Xu, X., Wang, Z. Y., Li, H. R., & Wang, W. P. (2014). The relation of infant attachment to attachment and cognitive and behavioural outcomes in early childhood.

- Early Human Development*, 90(9), 459–464.
<https://doi.org/10.1016/j.earlhumdev.2014.06.004>
- Ehlers, A., & Clark, D. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, 38(4), 319–345. [https://doi.org/10.1016/s0005-7967\(99\)00123-0](https://doi.org/10.1016/s0005-7967(99)00123-0)
- Elklit, A. (2002). Victimization and PTSD in a Danish national youth probability sample. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(2), 174–181. <https://doi.org/10.1097/00004583-200202000-00011>
- Elklit, A., & Petersen, T. (2008). Exposure to traumatic events among adolescents in four nations. *PubMed*, 18(1), 2–11. <https://pubmed.ncbi.nlm.nih.gov/19289877>
- Elklit, A., Hyland, P., & Shevlin, M. (2014). Evidence of symptom profiles consistent with posttraumatic stress disorder and complex posttraumatic stress disorder in different trauma samples. *European Journal of Psychotraumatology*, 5(1).
<https://doi.org/10.3402/ejpt.v5.24221>
- Engel, G. L. (1977). The Need for a New Medical Model: A Challenge for Biomedicine. *Science*, 196(4286), 129–136. <https://doi.org/10.1126/science.847460>
- Erikson, E. H. (1956). The problem of ego identity. *Journal of the American Psychoanalytic Association*, 4(1), 56–121. <https://doi.org/10.1177/000306515600400104>
- Erikson, E. H. (1968). *Identity: Youth and Crisis* (2nd Printing). W.W. Norton & Company.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine*, 14(4), 245–258. [https://doi.org/10.1016/s0749-3797\(98\)00017-8](https://doi.org/10.1016/s0749-3797(98)00017-8)
- Ferrajão, P., & Elklit, A. (2021). Attachment orientations mediate the effect of world assumptions on posttraumatic stress in survivors of childhood sexual abuse. *Illness, Crisis & Loss*, 31(1), 200–221. <https://doi.org/10.1177/10541373211050498>
- Ferrajão, P. C., Dias, J., & Elklit, A. (2022). Defense mechanisms mediate associations between exposure to adverse childhood experiences and anxiety and depression in Kenyan adolescents. *Traumatology*. <https://doi.org/10.1037/trm0000426>
- Finkelhor, D., Ormrod, R. K., & Turner, H. A. (2007). Poly-victimization: a neglected component in child victimization. *Child Abuse & Neglect*, 31(1), 7–26.
<https://doi.org/10.1016/j.chiabu.2006.06.008>

- Finkelhor, D., Shattuck, A., Turner, H. A., Ormrod, R., & Hamby, S. L. (2011). Polyvictimization in developmental context. *Journal of Child & Adolescent Trauma*, 4(4), 291–300. <https://doi.org/10.1080/19361521.2011.610432>
- Flaherty, E. G., Thompson, R. F., Dubowitz, H., Harvey, E. A., English, D. J., Proctor, L. J., & Runyan, D. K. (2013). Adverse Childhood Experiences and Child Health in Early Adolescence. *JAMA Pediatrics*, 167(7), 622. <https://doi.org/10.1001/jamapediatrics.2013.22>
- Fleckman, J. M., Drury, S. S., Taylor, C. A., & Theall, K. P. (2016). Role of Direct and Indirect Violence Exposure on Externalizing Behavior in Children. *Journal of Urban Health-bulletin of the New York Academy of Medicine*, 93(3), 479–492. <https://doi.org/10.1007/s11524-016-0052-y>
- Ford, J. D. (2017). Complex trauma and complex post-traumatic stress disorder. In S. N. Gold (Ed.), *APA Handbook of Trauma Psychology*. American Psychological Association.
- Frewen, P., Zhu, J., & Lanius, R. (2019). Lifetime traumatic stressors and adverse childhood experiences uniquely predict concurrent PTSD, complex PTSD, and dissociative subtype of PTSD symptoms whereas recent adult non-traumatic stressors do not: results from an online survey study. *European Journal of Psychotraumatology*, 10(1). <https://doi.org/10.1080/20008198.2019.1606625>
- Gaini, F. (2013). *Lessons of Islands: Place and Identity in the Faroe Islands*.
- Gillath, O., Selcuk, E., & Shaver, P. R. (2008). Moving Toward a Secure Attachment Style: Can Repeated Security Priming Help? *Social and Personality Psychology Compass*, 2(4), 1651–1666. <https://doi.org/10.1111/j.1751-9004.2008.00120.x>
- Groenewald, C. B., Murray, C. B., & Palermo, T. M. (2020). Adverse childhood experiences and chronic pain among children and adolescents in the United States. *Pain Reports*, 5(5), e839. <https://doi.org/10.1097/pr9.0000000000000839>
- Guo, T., Huang, L., Hall, D. L., Jiao, C., Chen, S. T., Yu, Q., Yeung, A., Chi, X., & Zou, L. (2021). The relationship between childhood adversities and complex posttraumatic stress symptoms: a multiple mediation model. *European Journal of Psychotraumatology*, 12(1). <https://doi.org/10.1080/20008198.2021.1936921>

- Gustafsson, P. E., Nilsson, D., & Svedin, C. G. (2009). Polytraumatization and psychological symptoms in children and adolescents. *European Child & Adolescent Psychiatry*, 18(5), 274–283. <https://doi.org/10.1007/s00787-008-0728-2>
- Hašto, J., Vojtova, H., Hruby, R., & Tavel, P. (2013). Biopsychosocial approach to psychological trauma and possible health consequences. *PubMed*, 34(6), 464–481. <https://pubmed.ncbi.nlm.nih.gov/24378444>
- Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. The Guilford Press.
- Heim, E., Karatzias, T., & Maercker, A. (2022). Cultural concepts of distress and complex PTSD: Future directions for research and treatment. *Clinical Psychology Review*, 102143. <https://doi.org/10.1016/j.cpr.2022.102143>
- Herman, J. L. (1992). Complex PTSD: A syndrome in survivors of prolonged and repeated trauma. *Journal of Traumatic Stress*, 5(3), 377–391. <https://doi.org/10.1002/jts.2490050305>
- Herzog, J. I., & Schmahl, C. (2018). Adverse childhood experiences and the consequences on neurobiological, psychosocial, and somatic conditions across the lifespan. *Frontiers in Psychiatry*, 9. <https://doi.org/10.3389/fpsy.2018.00420>
- Hoyle, R. H., & Smith, G. T. (1994). Formulating clinical research hypotheses as structural equation models: A conceptual overview. *Journal of Consulting and Clinical Psychology*, 62(3), 429–440. <https://doi.org/10.1037/0022-006x.62.3.429>
- Janoff-Bulman, R. (1989). Assumptive Worlds and the Stress of Traumatic Events: Applications of the Schema Construct. *Social Cognition*, 7(2), 113–136. <https://doi.org/10.1521/soco.1989.7.2.113>
- Janoff-Bulman, R. (1991). *Shattered Assumptions*. Amsterdam University Press.
- Jinyao, Y., Xiong-Zhao, Z., Auerbach, R. P., Gardiner, K. B. a. C., Lin, C., Yuping, B. a. W., & Shu-Qiao, Y. (2012). Insecure attachment as a predictor of depressive and anxious symptomology. *Depression and Anxiety*, 29(9), 789–796. <https://doi.org/10.1002/da.21953>
- Johannesen, E. J. D., Timm, H. U., & Róin, Á. (2023). Caregivers' experiences of end-of-life caregiving to severely ill relatives with cancer dying at home: A qualitative study in the

- Faroe Islands. *Scandinavian Journal of Caring Sciences*.
<https://doi.org/10.1111/scs.13165>
- Kalmakis, K. A., & Chandler, G. E. (2013). Adverse childhood experiences: towards a clear conceptual meaning. *Journal of Advanced Nursing*, *70*(7), 1489–1501.
<https://doi.org/10.1111/jan.12329>
- Kalmakis, K. A., & Chandler, G. E. (2015). Health consequences of adverse childhood experiences: A systematic review. *Journal of the American Association of Nurse Practitioners*, *27*(8), 457–465. <https://doi.org/10.1002/2327-6924.12215>
- Kamplung, H., Kruse, J., Lampe, A., Nolte, T., Hettich, N., Brähler, E., Sachser, C., Fegert, J. M., Gengelmaier, S., Fonagy, P., Krakau, L., Zara, S., & Riedl, D. (2022). Epistemic trust and personality functioning mediate the association between adverse childhood experiences and posttraumatic stress disorder and complex posttraumatic stress disorder in adulthood. *Frontiers in Psychiatry*, *13*. <https://doi.org/10.3389/fpsyt.2022.919191>
- Karatzias, T., Shevlin, M., Ford, J. D., Fyvie, C., Grandison, G., Hyland, P., & Cloitre, M. (2021). Childhood trauma, attachment orientation, and complex PTSD (CPTSD) symptoms in a clinical sample: Implications for treatment. *Development and Psychopathology*, *34*(3), 1192–1197. <https://doi.org/10.1017/s0954579420001509>
- Karatzias, T., Shevlin, M., Fyvie, C., Grandison, G., Garozi, M., Latham, E., Sinclair, M., Ho, G. W. K., McAnee, G., Ford, J. D., & Hyland, P. (2020). Adverse and benevolent childhood experiences in posttraumatic stress disorder (PTSD) and Complex PTSD (CPTSD): implications for trauma-focused therapies. *European Journal of Psychotraumatology*, *11*(1). <https://doi.org/10.1080/20008198.2020.1793599>
- Karatzias, T., Murphy, P. M., Cloitre, M., Bisson, J. I., Roberts, N., Shevlin, M., Hyland, P., Maercker, A., Ben-Ezra, M., Coventry, P. A., Mason-Roberts, S., Bradley, A., & Hutton, P. (2019). Psychological interventions for ICD-11 complex PTSD symptoms: systematic review and meta-analysis. *Psychological Medicine*, *49*(11), 1761–1775.
<https://doi.org/10.1017/s0033291719000436>
- Karatzias, T., Shevlin, M., Hyland, P., Brewin, C. R., Cloitre, M., Bradley, A., Kitchiner, N. J., Jumbe, S., Bisson, J. I., & Roberts, N. P. (2018). The role of negative cognitions, emotion regulation strategies, and attachment style in complex post-traumatic stress disorder:

- Implications for new and existing therapies. *British Journal of Clinical Psychology*, 57(2), 177–185. <https://doi.org/10.1111/bjc.12172>
- Kline, R. B. (2010). *Principles and Practice of Structural Equation Modeling, Third Edition*. Guilford Publications.
- Koball, A. M., Rasmussen, C., Olson-Dorff, D., Klevan, J. L., Ramirez, L., & Domoff, S. E. (2019). The relationship between adverse childhood experiences, healthcare utilization, cost of care and medical comorbidities. *Child Abuse & Neglect*, 90, 120–126. <https://doi.org/10.1016/j.chiabu.2019.01.021>
- Kopelman, M. D. (2002). Disorders of memory. *Brain*, 125(10), 2152–2190. <https://doi.org/10.1093/brain/awf229>
- Kuhar, M., & Zager Kocjan, G. (2022). Adverse childhood experiences and somatic symptoms in adulthood: a moderated mediation effects of disturbed self-organization and resilient coping. *Psychological Trauma: Theory, Research, Practice, and Policy*, 14(8), 1288–1298. <https://doi.org/10.1037/tra0001040>
- Lanier, P., Maguire-Jack, K., Lombardi, B. M., Frey, J., & Rose, R. A. (2018). Adverse Childhood Experiences and Child Health Outcomes: Comparing Cumulative Risk and Latent Class Approaches. *Maternal and Child Health Journal*, 22(3), 288–297. <https://doi.org/10.1007/s10995-017-2365-1>
- Larson, R. W., Richards, M. H., Moneta, G., Holmbeck, G., & Duckett, E. (1996). Changes in adolescents' daily interactions with their families from ages 10 to 18: Disengagement and transformation. *Developmental Psychology*, 32(4), 744–754. <https://doi.org/10.1037/0012-1649.32.4.744>
- Lew, D., & Xian, H. (2019). Identifying Distinct Latent Classes of Adverse Childhood Experiences Among US Children and Their Relationship with Childhood Internalizing Disorders. *Child Psychiatry & Human Development*, 50(4), 668–680. <https://doi.org/10.1007/s10578-019-00871-y>
- Lilly, M. M., Valdez, C. E., & Graham-Bermann, S. A. (2011). The Mediating Effect of World Assumptions on the Relationship Between Trauma Exposure and Depression. *Journal of Interpersonal Violence*, 26(12), 2499–2516. <https://doi.org/10.1177/0886260510383033>
- Lim, B. H. P., Hodges, M. A., & Lilly, M. M. (2020). The Differential Effects of Insecure Attachment on Post-Traumatic Stress: A Systematic Review of Extant Findings and

- Explanatory Mechanisms. *Trauma, Violence, & Abuse*, 21(5), 1044–1060.
<https://doi.org/10.1177/1524838018815136>
- Loxton, D., Townsend, N., Dolja-Gore, X., Forder, P. M., & Coles, J. Y. (2019). Adverse Childhood Experiences and Healthcare Costs in Adult Life. *Journal of Child Sexual Abuse*, 28(5), 511–525. <https://doi.org/10.1080/10538712.2018.1523814>
- Maercker, A., Cloitre, M., Bachem, R., Schlumpf, Y. R., Khoury, B., Hitchcock, C., & Bohus, M. (2022). Complex post-traumatic stress disorder. *The Lancet*, 400(10345), 60–72. [https://doi.org/10.1016/s0140-6736\(22\)00821-2](https://doi.org/10.1016/s0140-6736(22)00821-2)
- Maschi, T., MacMillan, T., Morgen, K., Gibson, S., & Stimmel, M. (2010). Trauma, World Assumptions, and Coping Resources among Youthful Offenders: Social Work, Mental Health, and Criminal Justice Implications. *Child and Adolescent Social Work Journal*, 27(6), 377–393. <https://doi.org/10.1007/s10560-010-0211-z>
- Matsuoka, N., M, U., Hiramura, H., Chen, Z., Shikai, N., Kishida, Y., & Kitamura, T. (2006). Adolescents' attachment style and early experiences: a gender difference. *Women's Mental Health*, 9(1), 23–29. <https://doi.org/10.1007/s00737-005-0105-9>
- McArthur, B. A., Burke, T. A., Connolly, S. L., Olino, T. M., Lumley, M. N., Abramson, L. Y., & Alloy, L. B. (2019). A Longitudinal Investigation of Cognitive Self-schemas across Adolescent Development. *Journal of Youth and Adolescence*, 48(3), 635–647. <https://doi.org/10.1007/s10964-018-00981-1>
- Mikulincer, M., & Shaver, P. R. (2007). *Attachment in Adulthood: Structure, Dynamics, and Change* (First). The Guilford Press.
- Mollica, R. F., Caspi-Yavin, Y., Bollini, P., Truong, T., Tor, S., & Lavelle, J. J. (1992). The Harvard Trauma Questionnaire. Validating a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in Indochinese refugees. *Journal of Nervous and Mental Disease*, 180(2), 111–116.
- Moretti, M. M., & Peled, M. (2004). Adolescent-parent attachment: bonds that support healthy development. *Paediatrics & Child Health*, 9(8), 551–555. <https://doi.org/10.1093/pch/9.8.551>
- Morgan, T., Williams, L. A., Trussardi, G., & Gott, M. (2016). Gender and family caregiving at the end-of-life in the context of old age: A systematic review. *Palliative Medicine*, 30(7), 616–624. <https://doi.org/10.1177/0269216315625857>

- Muuss, R. E. H., Velder, E., & Porton, H. (1996). *Theories of Adolescence*. McGraw-Hill Education.
- Norris, F. H., Foster, J. D., & Weisshaar, D. L. (2007). The epidemiology of sex differences in PTSD across developmental, societal, and research contexts, in *Gender and PTSD*, Kimerling, R., Ouimette, P., & Wolfe, J., pp. 3-42, The Guilford Press, ISBN: 1-57230-783-8, NY.
- O'Connor, M., & Elklit, A. (2008). Attachment styles, traumatic events, and PTSD: a cross-sectional investigation of adult attachment and trauma. *Attachment & Human Development*, 10(1), 59–71. <https://doi.org/10.1080/14616730701868597>
- Ogle, C. M., Rubin, D. C., & Siegler, I. C. (2015). The relation between insecure attachment and posttraumatic stress: Early life versus adulthood traumas. *Psychological Trauma: Theory, Research, Practice, and Policy*, 7(4), 324–332. <https://doi.org/10.1037/tra0000015>
- Owens, G. P., Pike, J. L., & Chard, K. M. (2001). Treatment effects of cognitive processing therapy on cognitive distortions of female child sexual abuse survivors. *Behavior Therapy*, 32(3), 413–424. [https://doi.org/10.1016/s0005-7894\(01\)80028-9](https://doi.org/10.1016/s0005-7894(01)80028-9)
- Palić, S., & Elklit, A. (2014). Personality dysfunction and complex posttraumatic stress disorder among chronically traumatized Bosnian refugees. *Journal of Nervous & Mental Disease*, 202(2), 111–118. <https://doi.org/10.1097/nmd.0000000000000079>
- Palić, S., Zerach, G., Shevlin, M., Zeligman, Z., Elklit, A., & Solomon, Z. (2016). Evidence of complex posttraumatic stress disorder (CPTSD) across populations with prolonged trauma of varying interpersonal intensity and ages of exposure. *Psychiatry Research*, 246, 692–699. <https://doi.org/10.1016/j.psychres.2016.10.062>
- Papini, D. R., Farmer, F. L., Clark, S. L., Micka, J. C., & Barnett, J. K. (1990). Early adolescent age and gender differences in patterns of emotional self-disclosure to parents and friends. *PubMed*, 25(100), 959–976. <https://pubmed.ncbi.nlm.nih.gov/2275449>
- Perkonig, A., Höfler, M., Cloitre, M., Wittchen, H., Trautmann, S., & Maercker, A. (2016). Evidence for two different ICD-11 posttraumatic stress disorders in a community sample of adolescents and young adults. *European Archives of Psychiatry and Clinical Neuroscience*, 266(4), 317–328. <https://doi.org/10.1007/s00406-015-0639-4>
- Petersen, T. (2018). Mental health among youth in the Faroe Islands. *Nordic Welfare Centre*.

- Petersen, T., & Elklit, A. (2013). Attachment styles and PTSD in adolescents in three nordic countries. *Open Journal of Epidemiology*, *03*(02), 62–69.
<https://doi.org/10.4236/ojepi.2013.32010>
- Petersen, T., Elklit, A., & Olesen, J. G. (2010). Victimization and PTSD in a Faroese youth total-population sample. *Scandinavian Journal of Psychology*, *51*(1), 56–62.
<https://doi.org/10.1111/j.1467-9450.2009.00728.x>
- Petrucelli, K., Davis, J., & Berman, T. (2019). Adverse childhood experiences and associated health outcomes: a systematic review and meta-analysis. *Child Abuse & Neglect*, *97*, 104127. <https://doi.org/10.1016/j.chiabu.2019.104127>
- Preacher, K. J., & Hayes, A. F. (2008). Contemporary Approaches to Assessing Mediation in Communication Research. *The SAGE Sourcebook of Advanced Data Analysis Methods for Communication Research*, 13–54. <https://doi.org/10.4135/9781452272054.n2>
- Redican, E., Cloitre, M., Hyland, P., McBride, O., Karatzias, T., Murphy, J., & Shevlin, M. (2022). The latent structure of ICD-11 posttraumatic stress disorder (PTSD) and complex PTSD in a general population sample from USA: A factor mixture modelling approach. *Journal of Anxiety Disorders*, *85*, 102497. <https://doi.org/10.1016/j.janxdis.2021.102497>
- Riedl, D., Lampe, A., Exenberger, S., Nolte, T., Trawöger, I., & Beck, T. L. (2020). Prevalence of adverse childhood experiences (ACEs) and associated physical and mental health problems amongst hospital patients: Results from a cross-sectional study. *General Hospital Psychiatry*, *64*, 80–86. <https://doi.org/10.1016/j.genhosppsy.2020.03.005>
- Rizeq, J., & McCann, D. (2021). The cognitive, emotional, and behavioral sequelae of trauma exposure: An integrative approach to examining trauma's effect. *Psychological Trauma: Theory, Research, Practice, and Policy*, *15*(2), 313–321.
<https://doi.org/10.1037/tra0001152>
- Rød, Å. N., & Schmidt, C. (2021). Complex PTSD: what is the clinical utility of the diagnosis? *European Journal of Psychotraumatology*, *12*(1).
<https://doi.org/10.1080/20008198.2021.2002028>
- Rubin, D. C., Berntsen, D., & Bohni, M. K. (2008). A memory-based model of posttraumatic stress disorder: evaluating basic assumptions underlying the PTSD diagnosis. *Psychological Review*, *115*(4), 985–1011. <https://doi.org/10.1037/a0013397>

- Sachser, C., Keller, F., & Goldbeck, L. (2017). Complex PTSD as proposed for ICD-11: validation of a new disorder in children and adolescents and their response to Trauma-Focused Cognitive Behavioral Therapy. *Journal of Child Psychology and Psychiatry*, 58(2), 160–168. <https://doi.org/10.1111/jcpp.12640>
- Sandberg, D. A., & Refrea, V. (2022). Adult attachment as a mediator of the link between interpersonal trauma and International Classification of Diseases (ICD)-11 Complex Posttraumatic Stress Disorder symptoms among college men and women. *Journal of Interpersonal Violence*, 37(23–24), NP22528–NP22548. <https://doi.org/10.1177/08862605211072168>
- Schimmenti, A., & Bifulco, A. (2013). Linking lack of care in childhood to anxiety disorders in emerging adulthood: the role of attachment styles. *Child and Adolescent Mental Health*, 20(1), 41–48. <https://doi.org/10.1111/camh.12051>
- Schleider, J. L., Woerner, J., Overstreet, C., Amstadter, A. B., & Sartor, C. E. (2021). Interpersonal Trauma Exposure and Depression in Young Adults: Considering the Role of World Assumptions. *Journal of Interpersonal Violence*, 36(13–14), 6596–6620. <https://doi.org/10.1177/0886260518819879>
- Solomon, Z., & Laufer, A. (2005). In the Shadow of Terror. *Journal of Aggression, Maltreatment & Trauma*, 9(3–4), 353–364. https://doi.org/10.1300/j146v09n03_06
- Spear, L. (2000). The adolescent brain and age-related behavioral manifestations. *Neuroscience & Biobehavioral Reviews*, 24(4), 417–463. [https://doi.org/10.1016/s0149-7634\(00\)00014-2](https://doi.org/10.1016/s0149-7634(00)00014-2)
- Stein, L. A., & Brodsky, S. J. (1995). When Infants Wail: Frustration and Gender as Variables in Distress Disclosure. *The Journal of General Psychology*, 122(1), 19–27. <https://doi.org/10.1080/00221309.1995.9921218>
- Stempel, H., Cox-Martin, M., Bronsert, M., Dickinson, L. M., & Allison, M. A. (2017). Chronic School Absenteeism and the Role of Adverse Childhood Experiences. *Academic Pediatrics*, 17(8), 837–843. <https://doi.org/10.1016/j.acap.2017.09.013>
- Takeuchi, Y., Matsushita, H., Sakai, H., Kawano, H., Yoshimoto, K., & Sawada, T. (2000). Developmental changes in cerebrospinal fluid concentrations of monoamine-related substances revealed with a coulochem electrode array system. *Journal of Child Neurology*, 15(4), 267–270. <https://doi.org/10.1177/088307380001500415>

- Tolin, D. F., & Foa, E. B. (2006). Sex differences in trauma and posttraumatic stress disorder: a quantitative review of 25 years of research. *Psychological Bulletin*, 132(6), 959–992. <https://doi.org/10.1037/0033-2909.132.6.959>
- Tönnies, F. (2001). *Community and Civil Society*. Cambridge University Press.
- van der Feltz-Cornelis, C. M., Potters, E. C., Van Dam, A., Koorndijk, R. P., Elfeddali, I., & Van Eck Van Der Sluijs, J. F. (2019). Adverse Childhood Experiences (ACE) in outpatients with anxiety and depressive disorders and their association with psychiatric and somatic comorbidity and revictimization. Cross-sectional observational study. *Journal of Affective Disorders*, 246, 458–464. <https://doi.org/10.1016/j.jad.2018.12.096>
- van Dijke, A., Hopman, J. A. B., & Ford, J. D. (2018). Affect dysregulation, psychoform dissociation, and adult relational fears mediate the relationship between childhood trauma and complex posttraumatic stress disorder independent of the symptoms of borderline personality disorder. *European Journal of Psychotraumatology*, 9(1). <https://doi.org/10.1080/20008198.2017.1400878>
- van Marle, H. (2015). PTSD as a memory disorder. *European Journal of Psychotraumatology*, 6(1). <https://doi.org/10.3402/ejpt.v6.27633>
- Vartanian, L. R., & Hayward, L. E. (2020). Dimensions of internalization relevant to the identity disruption model of body dissatisfaction. *Body Image*, 32, 1–4. <https://doi.org/10.1016/j.bodyim.2019.10.008>
- Vartanian, L. R., Nicholls, K., & Fardouly, J. (2022). Testing the Identity Disruption Model among Adolescents: Pathways Connecting Adverse Childhood Experiences to Body Dissatisfaction. *Journal of Youth and Adolescence*, 52(1), 134–148. <https://doi.org/10.1007/s10964-022-01683-5>
- Vasilopoulou, E., Karatzias, T., Hyland, P., Wallace, H., & Guzman, A. (2019). The mediating role of early maladaptive schemas in the relationship between childhood traumatic events and Complex Posttraumatic Stress Disorder symptoms in older adults (>64 years). *Journal of Loss and Trauma*, 25(2), 141–158. <https://doi.org/10.1080/15325024.2019.1661598>
- Waterman, A. S. (2020). “Now what do I do?”: toward a conceptual understanding of the effects of traumatic events on identity functioning. *Journal of Adolescence*, 79(1), 59–69. <https://doi.org/10.1016/j.adolescence.2019.11.005>

- Webb, M., & Whitmer, K. J. O. (2001). Abuse History, World Assumptions, and Religious Problem Solving. *Journal for the Scientific Study of Religion*.
<https://doi.org/10.1111/0021-8294.00068>
- Widom, C. S., Czaja, S. J., Kozakowski, S. S., & Chauhan, P. (2018). Does adult attachment style mediate the relationship between childhood maltreatment and mental and physical health outcomes? *Child Abuse & Neglect*, 76, 533–545.
<https://doi.org/10.1016/j.chiabu.2017.05.002>
- Witt, A., Sachser, C., Plener, P. L., Brähler, E., & Fegert, J. M. (2019). The Prevalence and Consequences of Adverse Childhood Experiences in the German Population. *Deutsches Arzteblatt International*. <https://doi.org/10.3238/arztebl.2019.0635>
- World Health Organization. (2022). International Classification for Diseases - 11. ICD-11 for Mortality and Morbidity Statistics. <https://icd.who.int/browse11/1-m/en>
- Zerach, G., & Elklit, A. (2020). Attachment and social support mediate associations between Polyvictimization and psychological distress in early adolescence. *International Journal of Psychology*, 55(3), 380–391. <https://doi.org/10.1002/ijop.12590>
- Zimmerman, G. M., & Posick, C. (2016). Risk Factors for and Behavioral Consequences of Direct Versus Indirect Exposure to Violence. *American Journal of Public Health*, 106(1), 178–188. <https://doi.org/10.2105/ajph.2015.302920>

OVERALL
DISCUSSION

Overall Discussion

Objectives and Hypothesis

The main objectives of this dissertation were to analyze the association between direct and indirect exposure to ACE and CPTSD symptom clusters (i.e., affective dysregulation, negative self-concept, and disturbances in relationships), to assess the association between anxiety and avoidance attachment orientations and CPTSD symptoms, to analyze the association between world assumptions and CPTSD symptoms, to assess the mediation role of attachment orientations and world assumptions in the association between ACE exposure and CPTSD symptoms, and to analyze the series of associations to multiple ACE exposure, attachment orientations, world assumptions and CPTSD symptoms.

Our empirical study successfully addressed the main goal of the study: to analyse the effect of direct and indirect ACE exposure on CPTSD cluster symptoms through the mediation of both attachment orientations and world assumptions in a sample of Faroese adolescents. This study analysed data from Faroese adolescents in a sample that accounted for 85% of students enrolled in the eighth grade of the Faroese Islands at the date of collection. Our results suggest that attachment orientations and world assumptions both mediate the association between ACE and CPTSD symptoms, but there are significant differences between the models for female and male participants. In female participants, direct exposure to ACE was associated with higher levels in attachment anxiety, which was associated with lower levels in WS, which in turn was associated with higher levels in all CPTSD symptom clusters (affective dysregulation, negative self-concept, and disturbances in relationships). In male participants, direct and indirect exposure to ACE were associated with higher levels in attachment avoidance, which was associated with lower levels in WS, which in turn was associated with all CPTSD symptom clusters. Indirect exposure to ACE was associated with higher levels in attachment anxiety, which was associated with lower levels in WS, which in turn was associated with higher levels in all CPTSD symptom clusters in the male model. Still, among male participants, indirect exposure to ACE was associated with higher levels in attachment anxiety, which was associated with higher levels in MW, which in turn was associated with higher levels in all CPTSD symptom clusters. Most of our hypothesis were supported, with some unexpected findings, which could be tested in future studies. These results highlight previous research that indicated that attachment and world assumptions were associated with the development of post-traumatic symptoms (Ferração &

Elklit, 2021; Karatzias et al., 2021; Sandberg & Refrea, 2022). Moreover, the results of the study contribute to the growing body of literature concerning CPTSD, and the psychological processes involved in the development of its symptoms after both direct and indirect ACE exposure.

Data from the study indicate that Faroese adolescents are vulnerable to both direct and indirect exposure to ACE. Female participants significantly experienced a higher number of indirect ACE than male participants, namely “witnessed other people injured or killed”, “serious illness” and “death of someone close”. Since the Faroese Islands are a small-scale society with traditional family values, these events are more likely to take place in a family setting and in the presence of family or a caregiver, a typically female role (Johannessen et al., 2022; Morgan et al., 2016). Moreover, in the Faroese Islands family traditional dynamics adolescence is a period where parents tend to start giving more freedom and overall less control over their sons’ behaviour, as a preparation for adulthood, which can increase the vulnerability to witness or know of someone that experienced ACE (Gaini, 2013). In our sample, most participants reported having experienced more than one ACE. This is in accordance with research that indicates that adolescence is an especially vulnerable developmental period that increases the risk for ACE (Breslau, 2014; Carlson et al., 2020; Moretti & Peled, 2004), but also that individuals who are exposed to one ACE are more vulnerable to being exposed to other types of ACE (Gustaffson et al., 2009). These results also highlight previous research on samples of Faroese youth and their high risk of exposure to different types of ACE (Petersen, 2018; Petersen & Elklit, 2010).

The first hypothesis of our study was that sex would moderate the association between ACE exposure and CPTSD. This hypothesis was fully supported. In our study sample female participants reported higher levels in all CPTSD symptom cluster, in BW and in both anxious and avoidant attachment orientations. These results are in accordance with previous research that found that women report more post-traumatic symptoms than men (Elklit & Petersen, 2008; Tolin & Foa, 2006), while highlighting that this also happens with CPTSD symptomatology, specifically. While most studies indicate that women have higher levels in attachment anxiety and men have higher levels in attachment avoidance (DelGiudice, 2019), most studies use adult samples. In contrast with our results, there is a study that used a Japanese sample of adolescents, with results showed that females had more secure attachment than males (Matsuoka et al., 2005). Future studies on adolescent sex differences in attachment orientations should be conducted

using samples from different cultures. Meanwhile male participants reported higher levels in both MW and WS. Regarding differences in world assumptions our results are in accordance with another study that found that women reported lower levels of controllability and predictability of people than men in a sample of college students from the USA (Schleider et al., 2021). Future research should try and analyse further these differences.

Our second hypothesis was that the exposure to both direct and indirect ACE would be associated with higher levels in all CPTSD symptom clusters (affective dysregulation, negative self-concept, and disturbances in relationships) in the sample of Faroese adolescents. The results of the study partially supported this hypothesis. For female participants direct exposure to ACE was associated with higher levels in affective dysregulation and disturbances in relationships, while indirect exposure to ACE was associated with higher levels in negative self-concept and disturbances in relationships. For male participants direct ACE exposure was associated with higher levels in affective dysregulation, negative self-concept, and disturbances in relationships, while indirect exposure to ACE was not associated with CPTSD symptom clusters. For both female and male participants, disturbances in relationships had the strongest association with direct exposure to ACE. The symptom cluster that showed the strongest association with both direct and indirect ACE exposure was disturbances in relationships. This association was stronger for direct exposure. The social and cultural context of the population studied in our sample could partly account for this result. The Faroese Islands are a small-scale society, characterised by a lack of anonymity in social relationships, which in turn can be a source of stronger social repercussion such as gossip, judging, pettiness, and overall social control (Gaini, 2013). Not only the cultural context but the developmental period of adolescence may be one of the factors why disturbances in relationships is the symptom which is most strongly associated with ACE exposure. Adolescence is a time where overall social and peer relationships play a pivotal role in the individuals' development (Ardelt & Day, 2002; Kiuru et al., 2020). Characteristics such as self-reliance and a higher sense of responsibility may be detrimental to the development of meaningful and satisfactory relationships following ACE exposure (Gaini, 2013, Petersen, 2018).

For our third hypothesis of the study we posited that attachment orientations would mediate the association between both direct and indirect ACE exposure and CPTSD symptom

clusters. The results of the study partially support our hypothesis. As expected, anxious attachment orientation mediated the association between ACE and CPTSD cluster symptoms in both female and male samples, although from different paths. In the female sample, only anxious attachment mediated the effect of direct ACE on all three CPTSD symptom clusters. This is in accordance with our second hypothesis results showing that female participants report lower levels on WS, since attachment anxiety is associated with a negative model of self, namely the idea that one is unworthy of love and affection (Bartz & Lydon, 2004). Moreover, anxious attachment has a stronger impact on emotional regulation, which in turn can impact impulse control, increasing the risk for developing CPTSD symptomatology. Neither attachment anxiety or avoidance mediated the association between indirect ACE exposure and CPTSD symptoms. In the male sample, anxious attachment mediated the effect of indirect ACE on negative self-concept and disturbances in relationships, while avoidant attachment mediated the effect of both indirect and direct ACE only for Disturbances in relationships. Avoidant attachment orientation is characterised by an effort not to access negative emotions that can arise after stressful situations, moreover when the stressful events are of a chronic or prolonged nature (Stevens, 2014). The efforts to avoid negative emotions and maintain distance from others has an impact on communication, namely self-disclosure, which could be detrimental to forming meaningful social relationships, which may explain why avoidant attachment mediated the association between both direct and indirect ACE exposure and disturbances in relationships (Mikulincer & Nachson, 1991). Interestingly, although females reported higher levels in both attachment orientations, avoidant attachment orientation was only a mediator for the male group.

Our fourth hypothesis was that world assumption would mediate the association between both indirect and direct ACE exposure and CPTSD symptom clusters. The results of our study partially support this hypothesis. It was observed that WS mediated the link between direct ACE exposure and all CPTSD symptom clusters in both the male and female groups. The CPTSD symptom clusters relate to DSO (Heim et al., 2022), and given that WS is the world assumption that refers to one's self-worth, self-controllability and luck could explain why WS is the only mediator of the association between ACE exposure and CPTSD symptomatology. Moreover, research has found that SW is a key predictor of post-traumatic symptoms and in their perpetuation (Grills-Taquechel et al., 2011) While there was no other world assumption that mediated the association between ACE exposure and CPTSD symptomatology, ACE exposure

was associated with lower levels of BW. Since BW is the world assumption that refers to the benevolence of others and the world, and CPTSD symptoms relate more closely to the self and interpersonal relationships, than the world and others in general, this could explain why it does not mediate the association between ACE exposure and CPTSD symptoms (Rizeq & McCan, 2021). Moreover, BW is known to have an association to PTSD symptoms (Dekel et al., 2004; Lilly, 2011), which can be developed through a larger set of possibly traumatic events. While the symptoms of PTSD relate more closely to memory problems and appraisal of threats, the association between the multiple occurrences of ACE and CPTSD symptoms relate more closely to identity and negative self-concept (Cloitre et al., 2013). This could be the reason why BW, being a cognitive schema concerning the goodness of the world and other people is not a predictor of symptoms of CPTSD. Neither indirect nor direct ACE exposure were associated with MW. This could be related to the fact that ACE happen mostly in family and interpersonal contexts, relating less to constructs like the overall fairness of the world or randomness of events. Moreover, the negative and uncontrollable nature of the ACE, can lead to more stable and enduring beliefs about MW (Ferrajão & Elklit, 2021; Reiland & Clark, 2017).

Our fifth hypothesis was that both attachment orientations and world assumptions would mediate the association between both direct and indirect ACE exposure and CPTSD cluster symptoms, and the sixth hypothesis concerned the direction of the two-step model mediation: direct and indirect ACE exposure would associate with higher levels in both anxious and avoidant attachment orientations, which would in turn associate with lower levels in world assumptions (BW, MW and WS), which finally would associate with higher levels in CPTSD symptom clusters (affective dysregulation, negative self-concept and disturbances in relationships). The results of our study fully support the fifth hypothesis and partially support the sixth. Attachment orientations and world assumptions mediated the association in both female and male groups, although through different dimensional paths. Both group results will be discussed in turn.

In the female sample, the two-step model revealed that experiencing direct ACE is associated to higher levels of anxious attachment, which in turn associates to lower levels in WS and finally leads to higher levels in Affect dysregulation, Negative self-concept, and Disturbances in relationships. These results are in accordance with the study of Lim et al. (2010)

that found that after experiencing interpersonal trauma, self-worth mediated the effect between attachment orientations and PTSD symptoms in a sample of female participants. This is also in accordance with findings of current research that highlight the impact that ACE polytraumatization has on self-concept and overall self-worth, which increases the risk to develop CPTSD symptoms (Maecker et al., 2022). Although females reported higher level of exposure to indirect ACE, this type of exposure was only associated with higher levels on negative self-concept and disturbances in relationships. Further studies should analyse which other psychological processes can factor in the development of these CPTSD symptom cluster in indirect exposure in female samples.

In the male sample, both direct and indirect exposure to ACE was associated with higher levels in avoidant attachment orientation, which was associated with lower levels in WS, which was associated with higher levels in all CPTSD symptom clusters. In the same group indirect exposure to ACE was also associated with higher levels in anxious attachment avoidance, which was associated with lower levels in WS, and finally associated with higher levels in all CPTSD symptom clusters. Finally, for male participants, indirect exposure to ACE was associated with higher levels in avoidant attachment orientation, which was associated with higher levels in MW, which finally was associated with higher levels in all CPTSD symptom clusters. Although the cognitive beliefs about MW, that refer to the way people perceive justice, controllability, and randomness of events in the world, mediated the association between indirect ACE and all CPTSD symptom clusters alongside attachment orientations, it was not in the expected direction. While cognitive schemas are not entirely stable, especially during adolescence, and can be influenced by a lot of external factors, such as parents, family, and social environment (McArthur et al., 2019), some types of ACE can have more impacts on this specific assumption, than others. This unexpected result may also be explained by the fact that attachment anxiety relates more closely to negative views of one's self-worth and self-concept and this could increase already held beliefs about the world being just and not random (e.g., "this occurred to me because I am a bad person, and that makes sense"). These beliefs are deeply impacted by religion and in the Faroe Islands the Catholic religion is very present and plays a crucial role in its social and political identity, which could be the reason why ACE exposure was associated with higher levels in MW (Prager & Soloman, 2007; van Kersbergen & Leifsdóttir, 2015).

Further studies should extend knowledge on the relationship between ACE exposure and MW's impact on CPTSD symptoms.

Overall, our study results suggests that both attachment orientations and world assumptions are psychological processes that impacted the development of CPTSD symptoms after both direct and indirect exposure to ACE in a sample of Faroese adolescents. Results from our study can be used in further research on the role of world assumptions and attachment orientations in the development of CPTSD symptoms in adolescents.

Limitations

This study has several limitations that should be addressed. First, the data regarding ACE exposure was collected using a self-report checklist, which can be affected by social desirability and memory. There was also no retrospective time limit (e.g., "check if in the last 5 years"), which may result in early age ACE not being accounted for due to memory issues. Second, there was no collection of data regarding severity, specific timing, or number of times one specific ACE was experienced. All these variables could impact the mediators of the study and future studies should take them into account. To ascertain attachment orientations, world assumptions and CPTSD symptoms this study used self-report scales, which can result in biased results due to social desirability and overall subjectivity in the interpretation of the items. Future research could use other type of measures. Third, the data was collected in 2012, which makes it more than ten years old. It could prove useful to replicate this analysis on more recent data. Fourth, although it has been used in other cultures (Ferrajão & Elklit, 2021), the ACE questionnaire is not validated for the Faroese population. Finally, this study is cross-sectional, meaning that all associations cannot infer causality, and the results cannot provide knowledge on the long-lasting effect of ACE exposure. Future research should consider longitudinal designs that would increase the knowledge on the long-lasting effects of ACE exposure on CPTSD symptoms, and the changes in attachment orientations and world assumptions.

Implications for future research

Our results highlight findings of previous research that found high prevalence of exposure to multiple ACE is prevalent in adolescent populations, alongside post-traumatic CPTSD symptoms (Carlson et al., 2019; Redican et al., 2022; Anastas et al., 2021). Moreover, the results are also in accordance with previous research that found sex differences on post-

traumatic symptoms, attachment orientations and world assumptions. Further research is needed to assess sex differences in other psychological processes that can increase the risk of CPTSD symptomatology and also on possible differences between direct and indirect ACE exposure. Attachment orientations mediated the relationship between ACE exposure and CPTSD symptoms in Faroese adolescents. Adolescence is a developmental period where attachment can be influenced due to the typical expansion of the social network (Schumaker et al., 2010). Our study results indicate that adolescents with higher levels in attachment anxiety and avoidance have an increased risk of developing CPTSD symptoms following ACE exposure. The role of attachment orientations should also be analysed further, namely considering the role of different types of ACE as there may be meaningful differences between interpersonal types of ACE and impersonal ACE, namely on attachment orientations (Lanier et al., 2018; Lew & Xian, 2019). Moreover, most of the participants reported living with both parents, which is deeply related to attachment orientations. In this sense, it could be useful to test the same model with a different sample, in different cultural context to see if the living situation has an impact on the attachment orientations mediation. World assumptions also mediated the association between ACE exposure and CPTSD symptoms. Our results are in accordance with the research that indicates that post-traumatic cognitions can be risk factors to develop post-traumatic symptoms. It could prove useful investigation if world assumptions have the same associations in different cultural contexts, since there are studies that indicate that social and cultural context impacts world assumptions (Schleider et al., 2021). Although there is a growing body of research on CPTSD, studies on possible mediators of the association between ACE exposure and CPTSD is still scarce. Future studies should analyse possible mediators as to provide a better understanding of this disorder and provide informed and effective interventions for prevention and treatment.

Implications for Clinical Intervention

Our study contributes to the already existing literature that indicates that mental health professionals should screen for potential ACE exposure, both direct and indirectly, namely in adolescents. Polytraumatized adolescents have an increased risk for developing CPTSD symptoms, thus clinicians should ask about ACE exposure, paying special attention to ACE exposure history, as opposed to focusing only on the latest or most significant ACE. Time sensitive intervention could help prevent the development of post-traumatic symptoms or decrease their severity. Our study also suggests that sex differences warrant attention for

adolescents who experience CPTSD symptoms, as in our study women reported higher levels in CPTSD symptoms.

Our results suggest that clinicians should try and incorporate attachment orientations into their assessment of adolescents which were exposed to ACE. Assessing the dynamic internal models of attachment of polytraumatized adolescents in the relationship with their parents or caregivers is important, as attachment anxiety and avoidance could increase the risk for developing CPTSD symptoms. This assessment could also be useful during treatment interventions, as attachment orientations can impact the relationship between patient and clinician/therapist. Working on ways to improve relationships could also impact directly the CPTSD cluster of disturbances in relationships, which was the strongest associated with ACE exposure.

Our study also indicates that world assumptions, namely WS and MW, can influence the development of CPTSD symptoms following ACE exposure on adolescents. Mental health professionals should work with adolescents exposed to ACE in order to try and develop beliefs about the MW that are more realistic, decreasing discrepancies within the context. Our results also suggest that WS should be considered by clinicians when designing interventions on adolescents who were exposed to ACE. This world assumption relates very closely to the CPTSD symptom cluster of negative self-concept. Clinicians should work to increase levels of SW on adolescents exposed to ACE as it could decrease the likelihood of developing CPTSD symptoms or lessen their severity. Although BW did not mediate the association between ACE exposure and CPTSD symptoms, it was still negatively associated with direct ACE exposure in both female and male samples. Since lower levels of BW have been associated with PTSD symptoms following exposure to traumatic events (Magwaza, 1999), and these symptoms can also be present in CPTSD, it could also be important not only to assess but to work on these beliefs in an intervention setting, with adolescents.

A recent meta-analysis found that some of the treatments that are used for PTSD, namely cognitive-behavioural therapy (CBT) and eye movement desensitisation and reprocessing (EMDR) also seemed to be effective on Negative self-concept and Disturbances in relationships (Karatzias et al., 2019). Other type of treatments that have been shown to be effective in the treatment for PTSD are trauma-focused psychotherapies. A study with a sample of adolescents

from Germany found trauma-focused CBT to be effective in the treatment of CPTSD (Sascher et al., 2016). Future research should investigate other types of treatment in samples of adolescents from other countries. Trauma-focused therapies have a common base on the biopsychosocial model for intervention originally defended by George Engel (1977). The biopsychosocial model states that the best treatment is the one that not only focuses on the biological causes of the problem, but also the psychological and social dimensions. A relationship centred approach, in which the relationship between clinician and patient is pivotal during assessment and treatment (Borrell-Carrió et al., 2004) can also be a good option when dealing with adolescents with CPTSD, as both attachment orientations and world assumptions refer to behavioural models in relationships and cognitive beliefs about the world, oneself, and others respectively.

Implications for community intervention

Our study suggests that adolescents from the Faroese Islands are fairly vulnerable to ACE polytraumatization. The results also show that this exposure can lead to the development of CPTSD. This is in accordance with previous research that indicated that the youth in the Faroese Islands have mental health problems (Petersen, 2018). Due to the specificity of the cultural and social context in the Faroese Islands, a community centred approach could prove effective in the prevention and treatment of CPTSD symptoms (Patcher et al., 2017), since the country is fairly small and has a small-scale society.

Community interventions are also one of the best options for interventions focused on prevention. Research shows that one of the best approaches for prevention should be multidisciplinary, facing the multiple social, economic and psychological aspects in which factor in the risk for ACE exposure and it is best achieved through the building of community capacity (Hall et al., 2012), which refers to the empowering of the community to be able to join together, split the burden of solving problems, enhance services, and provide a safe environment for children and families (Chaskin, 1999). The Faroese Islands are facing challenges in providing its young people with mental health care, so both interventions for prevention and treatment are needed (Petersen, 2018).

Psychological Assessment

Our study suggests that the assessment of attachment orientations and world assumptions in adolescents following both direct and indirect exposure to ACE could inform on the risk of

developing CPTSD symptoms. These assessments could be integrated in future screening programs for adolescents in the Faroese Islands, to inform clinicians in which ways to proceed forward with intervention. Although our results indicate that attachment orientations and world assumptions in adolescents, future research should study if this is the case in samples from different countries, namely on different social and cultural contexts.

References

- Anastas, J. W., Payne, N. A., & Ghuman, S. J. (2021). Adverse Childhood Experiences and Complex Post-traumatic Stress in Pregnant Teens: A Pilot Study. *Maternal and Child Health Journal*, 25(5), 741–750. <https://doi.org/10.1007/s10995-020-03041-y>
- Ardelt, M., & Day, L. (2002). Parents, siblings, and peers: Close social relationships and adolescent deviance. *Journal of Early Adolescence*, 22(3), 310–349.
- Bartz, J. A., & Lydon, J. P. (2004). Close Relationships and the Working Self-Concept: Implicit and Explicit Effects of Priming Attachment on Agency and Communion. *Personality and Social Psychology Bulletin*, 30(11), 1389–1401.
<https://doi.org/10.1177/0146167204264245>
- Borrell-Carrio, F. (2004). The Biopsychosocial Model 25 Years Later: Principles, Practice, and Scientific Inquiry. *Annals of Family Medicine*, 2(6), 576–582.
<https://doi.org/10.1370/afm.245>
- Breslau, N., Wilcox, H. C., Storr, C. L., Lucia, V. C., & Anthony, J. C. (2004). Trauma Exposure and Posttraumatic Stress Disorder: A Study of Youths in Urban America. *Journal of Urban Health-bulletin of the New York Academy of Medicine*, 81(4), 530–544.
<https://doi.org/10.1093/jurban/jth138>
- Carlson, J. E., Yohannan, J., Darr, C., Turley, M., Larez, N. A., & Perfect, M. M. (2020). Prevalence of adverse childhood experiences in school-aged youth: A systematic review (1990–2015). *International Journal of School and Educational Psychology*, 8(sup1), 2–23. <https://doi.org/10.1080/21683603.2018.1548397>
- Chaskin, R. J. (1999). Defining Community Capacity: A Framework and Implications from a Comprehensive Community Initiative. *Urban Affairs Association Annual Meeting*.
http://www.instituteccd.org/uploads/iccd/documents/chaskin-defining_community_capacity.pdf
- Cloitre, M., Garvert, D. W., Brewin, C. R., Bryant, R. A., & Maercker, A. (2013). Evidence for proposed ICD-11 PTSD and complex PTSD: a latent profile analysis. *European Journal of Psychotraumatology*, 4(1). <https://doi.org/10.3402/ejpt.v4i0.20706>
- Dekel, R., Solomon, Z., Elklit, A., & Ginzburg, K. (2004). World Assumptions and Combat-Related Posttraumatic Stress Disorder. *Journal of Social Psychology*, 144(4), 407–420.
<https://doi.org/10.3200/socp.144.4.407-420>

- Engel, G. L. (1977). The Need for a New Medical Model: A Challenge for Biomedicine. *Science*, 196(4286), 129–136. <https://doi.org/10.1126/science.847460>
- Ferrajão, P. C., & Elklit, A. (2021). Attachment and social support mediate associations between polyvictimization and psychological distress in early Uganda and Kenya adolescents. *Child Abuse & Neglect*, 121, 105271. <https://doi.org/10.1016/j.chiabu.2021.105271>
- Gaini, F. (2013). *Lessons of Islands: Place and Identity in the Faroe Islands*.
- Grills-Taquechel, A. E., Littleton, H., & Axsom, D. (2011). Social support, world assumptions, and exposure as predictors of anxiety and quality of life following a mass trauma. *Journal of Anxiety Disorders*, 25(4), 498–506. <https://doi.org/10.1016/j.janxdis.2010.12.003>
- Hall, J., Porter, L. S., Longhi, D., Becker-Green, J., & Dreyfus, S. (2012). Reducing Adverse Childhood Experiences (ACE) by Building Community Capacity: A Summary of Washington Family Policy Council Research Findings. *Journal of Prevention and Intervention in the Community*, 40(4), 325–334. <https://doi.org/10.1080/10852352.2012.707463>
- Heim, E., Karatzias, T., & Maercker, A. (2022). Cultural concepts of distress and complex PTSD: Future directions for research and treatment. *Clinical Psychology Review*, 93, 102143. <https://doi.org/10.1016/j.cpr.2022.102143>
- Johannesen, E. J. D., Timm, H. U., & Róin, Á. (2023). Caregivers' experiences of end-of-life caregiving to severely ill relatives with cancer dying at home: A qualitative study in the Faroe Islands. *Scandinavian Journal of Caring Sciences*. <https://doi.org/10.1111/scs.13165>
- Karatzias, T., Murphy, P. M., Cloitre, M., Bisson, J. I., Roberts, N., Shevlin, M., Hyland, P., Maercker, A., Ben-Ezra, M., Coventry, P. A., Mason-Roberts, S., Bradley, A., & Hutton, P. (2019). Psychological interventions for ICD-11 complex PTSD symptoms: systematic review and meta-analysis. *Psychological Medicine*, 49(11), 1761–1775. <https://doi.org/10.1017/s0033291719000436>
- Karatzias, T., Shevlin, M., Ford, J. D., Fyvie, C., Grandison, G., Hyland, P., & Cloitre, M. (2021). Childhood trauma, attachment orientation, and complex PTSD (CPTSD) symptoms in a clinical sample: Implications for treatment. *Development and Psychopathology*, 34(3), 1192–1197. <https://doi.org/10.1017/s0954579420001509>

- Kiuru, N., Wang, M., Salmela-Aro, K., Kannas, L., Ahonen, T., & Hirvonen, R. (2020). Associations between Adolescents' Interpersonal Relationships, School Well-being, and Academic Achievement during Educational Transitions. *Journal of Youth and Adolescence*, 49(5), 1057–1072. <https://doi.org/10.1007/s10964-019-01184-y>
- Lanier, P., Maguire-Jack, K., Lombardi, B. M., Frey, J., & Rose, R. A. (2018). Adverse Childhood Experiences and Child Health Outcomes: Comparing Cumulative Risk and Latent Class Approaches. *Maternal and Child Health Journal*, 22(3), 288–297. <https://doi.org/10.1007/s10995-017-2365-1>
- Lew, D., & Xian, H. (2019). Identifying Distinct Latent Classes of Adverse Childhood Experiences Among US Children and Their Relationship with Childhood Internalizing Disorders. *Child Psychiatry & Human Development*, 50(4), 668–680. <https://doi.org/10.1007/s10578-019-00871-y>
- Lilly, M. M., Valdez, C. E., & Graham-Bermann, S. A. (2011). The Mediating Effect of World Assumptions on the Relationship Between Trauma Exposure and Depression. *Journal of Interpersonal Violence*, 26(12), 2499–2516. <https://doi.org/10.1177/0886260510383033>
- Lim, B. H. P., Hodges, M. A., & Lilly, M. M. (2020). The Differential Effects of Insecure Attachment on Post-Traumatic Stress: A Systematic Review of Extant Findings and Explanatory Mechanisms. *Trauma, Violence, & Abuse*, 21(5), 1044–1060. <https://doi.org/10.1177/1524838018815136>
- Maercker, A., Cloitre, M., Bachem, R., Schlumpf, Y. R., Khoury, B., Hitchcock, C., & Bohus, M. (2022). Complex post-traumatic stress disorder. *The Lancet*, 400(10345), 60–72. [https://doi.org/10.1016/s0140-6736\(22\)00821-2](https://doi.org/10.1016/s0140-6736(22)00821-2)
- Magwaza, A. (1999). Assumptive World of Traumatized South African Adults. *Journal of Social Psychology*, 139(5), 622–630. <https://doi.org/10.1080/00224549909598422>
- McArthur, B. A., Burke, T. A., Connolly, S. L., Olino, T. M., Lumley, M. N., Abramson, L. Y., & Alloy, L. B. (2019). A Longitudinal Investigation of Cognitive Self-schemas across Adolescent Development. *Journal of Youth and Adolescence*, 48(3), 635–647. <https://doi.org/10.1007/s10964-018-00981-1>
- Mikulincer, M., & Nachshon, O. (1991). Attachment styles and patterns of self-disclosure. *Journal of Personality and Social Psychology*, 61(2), 321–331. <https://doi.org/10.1037/0022-3514.61.2.321>

- Moretti, M. M., & Peled, M. (2004). Adolescent-parent attachment: Bonds that support healthy development. *Paediatrics and Child Health*, 9(8), 551–555.
<https://doi.org/10.1093/pch/9.8.551>
- Morgan, T., Williams, L. A., Trussardi, G., & Gott, M. (2016). Gender and family caregiving at the end-of-life in the context of old age: A systematic review. *Palliative Medicine*, 30(7), 616–624. <https://doi.org/10.1177/0269216315625857>
- Petersen, T. (2018). Mental health among youth in the Faroe Islands. *Nordic Welfare Centre*.
- Petersen, T., Elklit, A., & Olesen, J. G. (2010). Victimization and PTSD in a Faroese youth total-population sample. *Scandinavian Journal of Psychology*, 51(1), 56–62.
<https://doi.org/10.1111/j.1467-9450.2009.00728.x>
- Prager, E., & Solomon, Z. (1995). Perceptions of world benevolence, meaningfulness, and self-worth among elderly israeli holocaust survivors and non-survivors. *Anxiety Stress and Coping*, 8(4), 265–277. <https://doi.org/10.1080/10615809508249378>
- Redican, E., Cloitre, M., Hyland, P., McBride, O., Karatzias, T., Murphy, J., & Shevlin, M. (2022). The latent structure of ICD-11 posttraumatic stress disorder (PTSD) and complex PTSD in a general population sample from USA: A factor mixture modelling approach. *Journal of Anxiety Disorders*, 85, 102497. <https://doi.org/10.1016/j.janxdis.2021.102497>
- Sandberg, D. E., & Refrea, V. (2022). Adult Attachment as a Mediator of the Link Between Interpersonal Trauma and International Classification of Diseases (ICD)-11 Complex Posttraumatic Stress Disorder Symptoms Among College Men and Women. *Journal of Interpersonal Violence*, 37(23–24), NP22528–NP22548.
<https://doi.org/10.1177/08862605211072168>
- Schleider, J. L., Woerner, J., Overstreet, C., Amstadter, A. B., & Sartor, C. E. (2021). Interpersonal Trauma Exposure and Depression in Young Adults: Considering the Role of World Assumptions. *Journal of Interpersonal Violence*, 36(13–14), 6596–6620.
<https://doi.org/10.1177/0886260518819879>
- Stevens, F. L. (2014). Affect regulation styles in avoidant and anxious attachment. *Individual Differences Research*. <https://psycnet.apa.org/record/2014-43846-004>
- Tolin, D. F., & Foa, E. B. (2006). Sex differences in trauma and posttraumatic stress disorder: A quantitative review of 25 years of research. *Psychological Bulletin*, 132(6), 959–992.
<https://doi.org/10.1037/0033-2909.132.6.959>

Van Kersbergen, K., & Lindberg, E. L. (2015). Political Contestation, Secularization, and Religious Supply: Why is Morality Policy so Restrictive in the Faroe Islands? *Politics and Religion*. <https://doi.org/10.1017/s1755048315000619>