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Cumulative interpersonal childhood adversity and post-traumatic stress symptoms across heterosexual, cisgender and gender and sexually diverse adolescents: The mediating role of emotion regulation

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ABSTRACT

Background: Emotion regulation has been identified as an explanatory factor in the association between interpersonal childhood adversity and post-traumatic stress symptoms (PTSS). However, most studies focused on adults or older adolescents, neglecting youth from the community, especially gender and sexually diverse (GSD) adolescents, who have a higher risk for exposure to adverse events and psychological difficulties, compared to their heterosexual, cisgender (HC) peers.

Objective: The present cross-sectional study aimed to examine the mediating role of emotion regulation difficulties in the association between cumulative interpersonal childhood adversity and PTSS across HC and GSD adolescents.

Methods: A sample of 2904 ninth grade students ($M_{age} = 14.53$, $SD = 0.61$) completed a self-report survey. Multigroup path analyses were conducted to examine the proposed mediation model in all groups, and comparisons were made using chi-square difference tests.

Results: Greater difficulties in emotion regulation mediated the association between greater cumulative interpersonal childhood adversity ($\beta = 0.36$, $p < .001$) and greater PTSS ($\beta = 0.35$, $p < .001$) – regardless of HC or GSD status – although the direct association between cumulative interpersonal childhood adversity and PTSS was significantly stronger among GSD boys ($\beta = 0.36$, $p < .001$) and GSD girls ($\beta = 0.35$, $p < .001$) than among HC boys ($\beta = 0.21$, $p < .001$) and HC girls ($\beta = 0.25$, $p < .001$).

Conclusions: Findings offer a modifiable target for prevention and/or intervention among middle adolescents, as emotion regulation difficulties may partially explain the presence of PTSS following cumulative interpersonal childhood adversity.

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1. Introduction

About 32.0% of individuals report experiencing at least one form of interpersonal childhood adversity, according to a national survey conducted among 23,395 North American adults (Afifi et al., 2014). This is concerning as childhood adversity has been shown to be a risk factor for later negative consequences, such as psychological difficulties, chronic health conditions and revictimization (Finkelhor et al., 2011; Lewis et al., 2019; López-Martínez et al., 2018). Childhood adversity refers to exposure to different adverse events in childhood, including, but not limited to, sexual, physical and emotional abuse, parental neglect, exposure to interparental violence, and bullying (Chu et al., 2019). Several studies have documented an association between childhood adversity and the subsequent risk of post-traumatic stress symptoms (PTSS), such as the presence of intrusive memories or images, as well as the avoidance of thoughts or emotions related to the adverse event (e.g., Suliman et al., 2009). According to a longitudinal study following 2232 community children and adolescents from the age of five to 18 years, 25.0% of adversity survivors reported the presence of PTSS throughout the study, compared to 7.8% of participants from the total sample (Lewis et al., 2019). PTSS may result in a lower quality of life, other comorbid psychological difficulties, and higher levels of suicidal ideation (Panagioti et al., 2015). Unfortunately, in the past three decades, researchers have mainly studied the effects of single, isolated childhood adverse events (e.g., sexual abuse), without considering the potential effects of the cumulation of several forms of adversity (Ehring & Quack, 2010). Yet, recent findings indicate that exposure to multiple forms of childhood adversity is more common than exposure to a single unique adverse event (Finkelhor et al., 2011) and that PTSS increases linearly with each additional exposure to adversity (Suliman et al., 2009).

The self-trauma model (Briere, 2002) proposes that response to adversity depends on one's ability to deal with its effects through self-capacities (e.g., emotion regulation). Considering that the occurrence of adversity in childhood may interfere with the development of emotion regulation, and that this difficulty in modulating one's emotional reactions may impair the ability to experience a sense of control over events, thoughts, and emotions, emotion regulation has been identified as an explanatory factor in the relationship between exposure to adversity and PTSS (Choi et al., 2014; Ehring & Quack, 2010). Thus, examining its mediating role may contribute to a better understanding of the mechanisms involved in the development of PTSS. Additionally, focusing on younger populations may lead to early interventions aimed at reducing the negative impacts of childhood adversity (Villalta et al., 2018). Previous studies examining exposure to adversity, emotion regulation and PTSS were often based on older adolescent or adult samples (Bennett et al., 2016; Ehring & Quack, 2010; Tull et al., 2007), limiting the preventive window of early intervention. In addition, few studies have examined the associations between cumulative adversity, emotion regulation, and PTSS in gender and sexually diverse (GSD) groups, despite the fact that GSD adolescents may experience more adversity, compared to their heterosexual, cisgender (HC) peers (Roberts et al., 2013). The present study sought to address these limitations by simultaneously examining cumulative childhood adversity, difficulties in emotion regulation, and PTSS in a mediation model, while comparing these results across a large sample of HC and GSD middle adolescents.

1.1. Cumulative interpersonal childhood adversity

Youth often experience multiple forms of childhood adversity rather than a single form only, as adverse childhood experiences tend to co-occur (Ford et al., 2010; Suliman et al., 2009). This cumulation of multiple forms of childhood adversity has been shown to put individuals at higher risk of severe emotional, behavioral, and psychological difficulties such as PTSS (Ford et al., 2010). It is, therefore, essential to examine the combination of various forms of childhood adversity in order to measure the full scope of their associations with key outcomes. Cumulative adversity has also been described as polyvictimization (i.e., being a victim of different forms of adversity, making victimization more of a *condition* than an *event* for these victims; Finkelhor et al., 2007) or complex trauma (i.e., exposure to various adverse experiences at a critical developmental phase and on a prolonged basis that can interfere with personal development; Spinazzola et al., 2005). Despite the fact that there is no consensus yet on the terms used in the literature, the scientific community agrees that the combination of various forms of adversity is associated with more profound disturbances on a person's development, such as identity, physical, emotional, behavioral, cognitive, and interpersonal difficulties (e.g., Dvir et al., 2014). In the present study, we used the term cumulative adversity, focusing on interpersonal adversity (i.e., adversity involving other people). As interpersonal adversity refers to harm inflicted by others, factors such as malevolence, betrayal, and injustice are more likely to be involved, relative to non-interpersonal adversity such as accidents, diseases, and natural disasters (Finkelhor, 2008; Hughesdon et al., 2021). Interpersonal adversity seems to be associated with more debilitating effects than non-interpersonal adversity on individuals, such as deficits in emotion regulation skills. The fact that difficulties in emotion regulation appear more frequent in interpersonal rather than in non-interpersonal adversity histories shows that the interpersonal context is essential in the development of emotion regulation (Dvir et al., 2014; Ehring & Quack, 2010; Hughesdon et al., 2021).

1.2. Post-traumatic stress symptoms

PTSS are defined as the presence of intrusive memories, images and thoughts; avoidance of certain people, places or events related to the adverse experience; constant alertness to potential dangers; difficulty in feeling joy or love; as well as feelings of fear and sadness when something recalls the adverse experience (Donisch et al., 2017). These symptoms may have been preceded by adversity, as it has been found that a higher prevalence of adversity predicts higher levels of PTSS (Lewis et al., 2019; Suliman et al., 2009). Post-traumatic stress may also be associated with difficulties in emotion regulation, since one's way of modulating emotional reactions and experiences (e.g., incapacity to reduce stress response) may contribute to the development or maintenance of PTSS (Briere, 2002; Ehring & Quack, 2010). Further, there seems to be a higher prevalence of PTSS in girls than in boys (Modrowski et al., 2019; Suliman et al.,

2009).

1.3. Emotion regulation difficulties, cumulative interpersonal childhood adversity and PTSS

Emotion regulation is the ability to recognize, understand and accept one's emotions, regulate their intensity, adopt behaviors in the direction of a desired goal, and use different strategies of emotion regulation in a flexible manner (Gratz & Roemer, 2004). This process allows affective responses to be modulated so that they are adapted to a specific context, and can facilitate healthy psychosocial and relational adjustment (Choi et al., 2014; Choi & Oh, 2014). Thus, difficulties in emotion regulation may interfere with recovery following adversity (Choi & Oh, 2014; Ehring & Quack, 2010). Some studies focusing on exposure to adversity reported greater emotion regulation difficulties in boys (Choi & Oh, 2014), while most reported greater emotion regulation difficulties in girls (Modrowski et al., 2019).

Not only does emotion regulation allow adaptation following adversity, but the experience of adversity can affect an individual's emotion regulation skills. Indeed, the learning of emotion regulation begins in early childhood, usually with the help of supportive parental figures (Ehring & Quack, 2010). The onset of adversity at a young age may interfere with the acquisition of adequate processing of emotions, as it occurs at a critical time in the physiological, cognitive, and behavioral development of emotion regulation (Choi et al., 2014; Choi & Oh, 2014). In addition, individuals with PTSS have been shown to report more difficulties with emotion regulation (Tull et al., 2007). Thus, emotion regulation difficulties may mediate the association between cumulative adversity and PTSS.

1.4. Cumulative interpersonal childhood adversity, emotion regulation, and PTSS in GSD adolescents

GSD groups represent individuals whose sexual orientation, sexual behaviors, gender identity and/or gender expression differs from being exclusively attracted to people of different sex/gender (i.e., heterosexual orientation) and/or do not have a gender identity that matches their assigned sex at birth (i.e., cisgender) (Bauer et al., 2017; Chamberland & Saewyc, 2011). Although some forms of adversity taken individually may be more common for some (e.g., sexual abuse for girls; physical abuse for boys; Tourigny et al., 2008), considering cumulative adversity altogether seems to mitigate these differences (Cloitre et al., 2009). However, gender identity and sexual orientation-based differences have been reported, as GSD adolescents may be more likely to be exposed to more frequent adversity (e.g., emotional abuse, bullying), and may therefore be more likely to develop mental health problems. Indeed, 41.3% of GSD adolescents were exposed to multiple forms of interpersonal adversity in comparison to 10.2% of their HC peers (Sterzing et al., 2019).

In addition, this exposure could also be coupled with the daily stress associated with the minority status experienced by GSD individuals (Hatzenbuehler et al., 2008; Sterzing et al., 2019). As described by the minority stress model (Meyer, 2013), their minority status involves unique and chronic stressors that may contribute to emotion regulation difficulties, and may make them more vulnerable to mental health problems (Charak et al., 2019; Hatzenbuehler et al., 2008; Villarreal et al., 2021). For example, GSD adolescents may be 1.6 to 3.9 times more likely to develop PTSS following an adverse experience, compared to HC individuals (Roberts et al., 2013). Considering how emotion regulation has been proposed as a mediator in the association between cumulative adversity and PTSS, without taking into consideration participants' sexual orientation and gender identity (e.g., Bennett et al., 2016; Goldsmith et al., 2013), the present study aimed to address this gap by examining the mediating role of emotion regulation in the association between cumulative interpersonal childhood adversity and PTSS, paying special attention to GSD adolescents.

1.5. Aims and hypotheses

This cross-sectional study aimed to examine the association between cumulative interpersonal childhood adversity and PTSS in a large sample of young adolescents, considering the mediating role of emotion regulation difficulties. Given important gender and sexual orientation-based differences, we compared associations across HC boys, HC girls, GSD boys, GSD girls, and GSD non-binary adolescents. We hypothesized that a higher number of adversities in childhood would be associated with higher levels of PTSS in adolescence. We also hypothesized that this association would be mediated by emotion regulation difficulties. Specifically, higher levels of cumulative interpersonal childhood adversity would be associated with higher levels of emotion regulation difficulties, which, in turn, would be associated with higher levels of PTSS. We further hypothesized that the associations between the examined variables would be stronger among GSD adolescents relative to HC adolescents. Considering the fact that cumulative adversity has been associated with indicators of lower socioeconomic status (SES) such as family income or parents' level of education (Enlow et al., 2013; Viola et al., 2016), SES was controlled for in the main analyses.

2. Method

2.1. Participants

A total of 2904 adolescents ($M_{age} = 14.53$ years, $SD = 0.61$) were included in the present study, and 1520 (52.3%) were girls, based on their sex assigned at birth. The majority of participants reported girl (51.4%; $n = 1492$) or boy (47.9%; $n = 1392$) as their gender and 98.8% ($n = 2868$) reported being a cis person (i.e., their sex assigned at birth corresponds to their gender identity). Most adolescents (82.0%; $n = 2380$) reported being heterosexual. Concerning parents' level of education, 46.5% ($n = 1349$) of mothers or parent 1, and 35.9% ($n = 1042$) of fathers or parent 2, completed university.

2.2. Procedure

Data were collected between November 2018 and February 2020, as part of an ongoing two-site longitudinal study on adolescents' sexual health and victimization experiences. The cohort was recruited from large North American metropolitan and rural areas to ensure sample diversity. More specifically, schools were recruited in northern Quebec and the greater Montreal metropolitan area with 39.1% in urban areas, 21.7% in suburban areas, and 39.1% in rural areas. Schools presenting different socioeconomic backgrounds, and Caucasian and multiethnic populations were approached. Of the 50 schools initially solicited, 23 accepted to take part in the study, 17 did not reply to the invitation, and 10 declined. The overall SES from participating schools in the present study is considered as mid-level, with 26.1% considered low SES, 26.1% middle SES, 21.7% high SES, and 26.1% unknown SES. To be eligible, adolescents had to be in ninth grade, at least 14 years of age, and attending high school. Adolescents provided their own informed consent. Of 3074 potential participants, 20 students refused to participate, and one withdrew from the study. Thus, our participation rate was 99.3%. Participants completed an anonymous, 35-minute self-report survey (Qualtrics Research Suite) in their classrooms on tablets provided by research assistants. The study was presented to the participants as being related to youth's sexual and romantic relationships, and they provided informed consent before completing the surveys. The survey included three simple attention-testing questions. If participants failed at least two of these questions, their data were not used for the analyses and were considered invalid (Thomas & Clifford, 2017). Study participation was compensated with a \$10 gift card. Of the 3053 adolescents who agreed to participate, two were deemed ineligible (13 years of age), four were excluded because they gave inconsistent answers, and 143 were excluded for failing at least two out of the three attention questions in the survey (4.9%). Ethical approval was granted by the ethics committees of the concerned universities and school boards. The present analyses focused on data from the first wave of the study.

2.3. Measures

2.3.1. Gender identity

Participants' gender identity was assessed by two items (Bauer et al., 2017). The first question asked about their gender identity: "What gender or gender identity do you identify with?". The possible options were "boy"; "girl"; "indigenous or other cultural gender minority identity (e.g., two-spirit)"; "non-binary, gender fluid, or something else (e.g., genderqueer)"; and "other" (with specification). The second question asked participants about their trans status: "Some people are trans (including transgender, transsexual, persons having undergone a transition/gender-affirming process, etc.). Are you a trans person?". The possible answers were "no, I am not a trans person"; "yes, a trans boy"; "yes, a trans girl"; "yes, a non-binary trans person"; "I am questioning my gender identity"; and "I don't know what it means".

2.3.2. Sexual orientation

Participants' sexual orientation was assessed by the following item (Weinrich, 2014): "People describe their sexual orientation in different ways. Which expression best describes your current sexual orientation? If no expression describes you, check "None of the above" and write the answer that describes you personally." The possible answers were "straight"; "I do not know yet, or I am currently questioning my sexual orientation"; "gay or lesbian or homosexual"; "heteroflexible"; "homoflexible"; "bisexual"; "queer"; "pansexual"; "asexual"; "none of the above"; "I don't want to answer"; "other" (with specification). Following prior recommendations to increase statistical power in the analysis (Böthe et al., 2020), adolescents were categorized as belonging to a GSD group or HC group. Specifically, five groups were created, based on the questions about sex assigned at birth, gender identity, transgender status, and sexual orientation: HC boys ($n = 1196$), GSD boys ($n = 157$), HC girls ($n = 1152$), GSD girls ($n = 320$), and GSD non-binary individuals ($n = 18$).

2.3.3. Economic status

Based on prior guidelines (Gamache et al., 2019), participants' postal code was assessed in the present study and used to calculate a deprivation index (Pampalon et al., 2009) that was used as a control variable. The deprivation index provides information on disparities by pointing out inequalities in income, education, employment, and family structure (Pampalon et al., 2009). Parents' level of education was also included in the present study as a control variable.

2.3.4. Difficulties in emotion regulation

An adapted, 11-item version of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) was used to assess emotion regulation difficulties (e.g., "When I'm upset, I believe that there is nothing I can do to make myself feel better"). Eleven items were selected from the original, 36-item version of the DERS for the purpose of the study, based on theoretical considerations (experts' evaluations, i.e., co-investigators of the study separately evaluated all items) and the psychometric properties of the items (e.g., standardized factor loadings). Participants responded on a five-point Likert scale ranging from "False" (1) to "True" (5). Higher scores indicated higher levels of difficulties with emotion regulation. The internal consistency of this scale was good in this study ($\alpha = 0.85$).

2.3.5. Post-traumatic stress symptoms

We used the University of Minnesota's Traumatic Stress Screen for Children and Adolescents (TSSCA; Donisch et al., 2017) to assess the levels of PTSS in the present study. Only the participants who reported experiencing adversity completed the scale. The natural "missing" answers of participants who did not experience any adversity were coded as "never" (0) for this scale. This five-item questionnaire was developed to screen for PTSS that may be present in children and adolescents (from age 7 to 18 years), following one or more events considered to be adverse, or when it is suspected that one or more adverse experiences have occurred in

children or adolescents' life (e.g., "During the past month, how often have you had upsetting thoughts, images, or memories of the event come into your mind when you didn't want them to?"). The TSSCA is not designed to assess post-traumatic stress disorder, nor is it designed to make a clinical diagnosis. It assesses symptoms based on the criteria of the post-traumatic stress disorder in the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) such as the presence of stressors, intrusion, avoidance, negative alterations in cognitions and mood, and alterations in arousal and activity (American Psychiatric Association, 2013; Donisch et al., 2020). Participants responded on a three-point scale, ranging from "Never" (0) to "Often" (2). Higher scores indicated higher levels of PTSS. The TSSCA has undergone preliminary validation (Donisch et al., 2020) and the reliability of the scale was high in the present study ($\alpha = 0.86$).

2.3.6. Cumulative interpersonal childhood adversity

We used six forms of adversity to create a composite score of cumulative interpersonal childhood adversity, including sexual abuse, physical abuse, emotional abuse and neglect, exposure to interparental violence, physical neglect, and bullying. The total cumulative interpersonal childhood adversity score varied between zero (no adversity) and six (six forms of adversity), as all indicators were dichotomized (i.e., 0 = the participant did not experience the adversity; 1 = the participant experienced the adversity at least once), regardless of their frequency, given the differences in measurement.

The presence of *sexual abuse* was assessed using three dichotomous (no = 0; yes = 1) items from a subscale of the Early Trauma Inventory Self Report - Short Form (Bremner et al., 2007). This subscale measuring the presence of sexual adversity has been shortened from the original version comprising six items (e.g., "Were you ever touched in an intimate part of your body against your will OR forced or coerced to touch another person in an intimate or private part of their body?"). The reliability of the scale, calculated using the Kuder-Richardson 20 (KR-20) formula, was acceptable in the present study ($\alpha = 0.61$).

Physical abuse was measured with an adapted item from the National Longitudinal Study of Adolescent Health (Hahm et al., 2010). The item "During your childhood, how often did a parent/guardian push you, shove you, hit you or twist your arm?" is answered on a five-point scale, ranging from "Never" (0) to "Six times and more" (4). There was also a "not applicable" option for youth not living with their parents.

Having been a victim of *emotional abuse and neglect* was measured by two items from the Early Trauma Inventory Self Report - Short Form (Bremner et al., 2007; Tourigny et al., 2008). The item assessing emotional abuse is "During your childhood, how often did a parent/guardian ridicule or humiliate you?" while the item assessing emotional neglect is "During your childhood, how often did a parent/guardian treat you with coldness, indifference or in a way that you felt unloved?". Participants indicated their answers using a five-point scale ranging from "Never" (0) to "Six times and more" (4). A "not applicable" option was also available. In our sample, the two items correlated positively and strongly ($r = 0.52$). The measure of emotional adversity used in the present study resembles others where abuse and neglect are taken together (e.g., Spinazzola et al., 2014).

Exposure to interparental violence was measured by four items adapted from the Revised Conflict Tactics Scale (Straus et al., 1996) (e.g., "During my lifetime, I have seen one of my parents/guardians do this to my other parent/guardian: Push, shove, slap, twist the arm, throw an object that could hurt ..."). Participants indicated their answers using a five-point scale, ranging from "Never" (0) to "Eleven times and more" (4). There was also a "not applicable" option for participants who did not live with their parents/guardians or did not remember when they had lived with them. The reliability of the scale was acceptable in the present study ($\alpha = 0.67$), based on prior suggestions about the interpretation of Cronbach's alpha when dealing with a low number of items (Cortina, 1993).

To assess the presence of *physical neglect* from parental figures, two items from the adapted version of the Intimate Partner Violence - Neglect Scale (Hahm et al., 2010) were used (e.g., "During your childhood, how often did a parent/guardian not take care of your basic needs, such as keeping you clean or providing food or adequate clothing?"). Participants responded on a five-point scale, ranging from "Never" (0) to "Six times and more" (4), and a "not applicable" answer option. In our sample, these two items correlated positively and moderately ($r = 0.34$).

The presence of *bullying* was measured by a dichotomous item (no = 0; yes = 1): "Did other kids often hit you, threaten you, pick on you, or insult you?". This item was developed based on a question about peer and sibling victimization used in studies by Finkelhor and colleagues (Finkelhor et al., 2005).

2.4. Data analysis

Descriptive statistics, correlations, and group comparisons were computed using SPSS 25. As the homogeneity of variance assumption was violated, we used Welch's ANOVA F test for the group comparisons with Bonferroni post-hoc tests (Field, 2013). Concerning reliability, Cronbach's alpha values (Nunnally, 1978) were considered acceptable with values ≥ 0.70 and good with values ≥ 0.80 thresholds. Path analyses, with the robust maximum likelihood estimator (MLR), were conducted using Mplus 8.3 (Muthén & Muthén, 2017) to examine whether difficulties in emotion regulation mediated the association between cumulative interpersonal childhood adversity and PTSS, while controlling for socioeconomic variables (i.e., parents' level of education and deprivation index). Next, we examined whether this model would vary based on GSD status (i.e., HC boys; HC girls; GSD boys; and GSD girls) using multigroup path analysis. To examine whether the identified associations were significantly different between the groups, we compared the original, unconstrained model to a model in which all paths were constrained to be equal between all groups, using chi-square difference tests. Given the small sample size of the non-binary GSD adolescent group, it was not possible to include them in this analysis.

Following prior recommendations (Ferguson, 2016; Preacher & Hayes, 2008; Schellenberg et al., 2016), indirect effects were tested by calculating bias-corrected bootstrap (5000 bootstrap replication samples) 95% confidence intervals (CI). Bias-corrected

bootstrapped confidence intervals (CIs) were computed with the maximum likelihood estimator as bootstrapping is not available with MLR. Missing values (ranging from 0 to 3.0%) were missing completely at random, based on Little’s Missing Completely at Random Test (MCAR) ($\chi^2 = 36.28, df = 28, p = .136$) (Little, 1988). Thus, the full information maximum likelihood (FIML) estimation method was used to handle missing data. All models were fully saturated, as the associations between all variables were estimated ($\chi^2 = 0; df = 0$, Comparative Fit Index = 1.00; Tucker-Lewis Index = 1.00; Root-Mean-Square Error of Approximation = 0.00).

3. Results

3.1. Descriptive statistics and comparisons of HC and GSD adolescents

Descriptive statistics and associations between cumulative interpersonal childhood adversity, emotion regulation difficulties, PTSS, and control variables (i.e., parents’ level of education and the deprivation index) are shown in Table 1. Based on the results of the Welch’s ANOVA F tests (Table 2), non-binary GSD individuals ($M = 2.33, SD = 1.75$) and GSD girls reported the highest levels of cumulative interpersonal childhood adversity ($M = 2.27, SD = 1.55$), and these two groups did not differ significantly between each other. However, GSD girls’ scores were significantly higher than HC girls’ ($M = 1.86, SD = 1.42$) and HC boys’ scores ($M = 1.70, SD = 1.31$). No other significant difference was observed in relation to cumulative interpersonal childhood adversity. HC boys ($M = 2.32, SD = 0.74$) reported the lowest levels of emotion regulation difficulties, followed by GSD boys ($M = 2.54, SD = 0.73$), HC girls ($M = 2.73, SD = 0.77$), and GSD girls ($M = 2.93, SD = 0.81$). All these groups differed significantly. Moreover, non-binary GSD adolescents reported significantly higher emotion regulation difficulties ($M = 3.02, SD = 1.20$) than HC boys ($M = 2.32, SD = 0.74$). HC boys ($M = 0.26, SD = 0.42$) and GSD boys ($M = 0.34, SD = 0.47$) reported the lowest levels of PTSS, and their scores did not differ significantly. Non-binary GSD adolescents ($M = 0.77, SD = 0.63$) and GSD girls ($M = 0.57, SD = 0.60$) reported the highest levels of PTSS, and their scores did not differ significantly between each other.

3.2. Associations between cumulative interpersonal childhood adversity, difficulties in emotion regulation, and PTSS in HC and GSD adolescents

Using path analysis, the hypothesized associations between cumulative interpersonal childhood adversity, difficulties in emotion regulation, and PTSS were examined, controlling for parents’ education level and the deprivation index. In the path analysis for the total sample, higher levels of cumulative interpersonal childhood adversity were associated with higher levels of PTSS, with a small effect size ($\beta = 0.25, p < .001$). Higher levels of cumulative interpersonal childhood adversity were also related to higher levels of emotion regulation difficulties ($\beta = 0.36, p < .001$), which, in turn, were related to greater PTSS ($\beta = 0.35, p < .001$), with moderate effect sizes. Overall, the model explained 26.6% of the variance in PTSS. The results of this model, including the bootstrapped indirect effect, are reported in Table 3.

Next, we examined this model across the previously established GSD status-based groups of adolescents. Results of all models, including the bootstrapped indirect effects, are reported in Table 3 and depicted in Fig. 1. Given the small sample size in the non-binary GSD adolescent group, it was not possible to include them in the multigroup analysis. Nevertheless, based on the results of correlational analysis, non-binary GSD individuals’ higher levels of cumulative interpersonal childhood adversity were associated with higher levels of PTSS ($r = 0.29, p = .243$) and difficulties in emotion regulation ($r = 0.69, p = .001$). Also, higher levels of emotion regulation

Table 1

Descriptive statistics and correlations between cumulative interpersonal childhood adversity, difficulties in emotion regulation, post-traumatic stress symptoms, and control variables.

Variables	Skewness (SE)	Kurtosis (SE)	Range	M (SD)	1	2	3	4	5	6
1. Cumulative interpersonal childhood adversity	0.58 (0.05)	-0.37 (0.09)	0-6	1.85 (1.40)	-					
2. Difficulties in emotion regulation	0.33 (0.05)	-0.30 (0.09)	1-5	2.57 (0.79)	0.35**	-				
3. Post-traumatic stress symptoms	1.20 (0.05)	0.41 (0.09)	0-2	0.38 (0.51)	0.38**	0.45**	-			
4. Mother or parent 1’s level of education ^a	-1.26 (0.05)	0.73 (0.10)	1-5	4.35 (0.88)	-0.08**	-0.05*	-0.10**	-		
5. Father or parent 2’s level of education ^a	-0.86 (0.05)	-0.44 (0.10)	1-5	4.09 (1.04)	-0.04*	-0.07**	-0.07**	0.51**	-	
6. Deprivation index – material	-0.02 (0.05)	-1.15 (0.09)	0-5	2.45 (1.63)	-0.01	0.04	0.05*	-0.15**	-0.23**	-
7. Deprivation index – social	0.30 (0.05)	-0.92 (0.09)	0-5	2.15 (1.53)	<0.01	0.03	0.03	0.04	0.05*	0.40**

Note. SE = standard error; M = mean; SD = standard deviation.

^a 1: elementary; 2: high school, uncompleted studies; 3: high school, completed studies; 4: college; 5: university.

* $p < .05$.

** $p < .01$.

Table 2

Comparisons of heterosexual, cisgender and gender and sexually diverse groups of adolescents regarding their cumulative interpersonal childhood adversity, difficulties in emotion regulation, and post-traumatic stress symptoms.

	Total sample of adolescents (<i>N</i> = 2898-2904) <i>M</i> (<i>SD</i>)	(1) Heterosexual, cisgender boys (<i>n</i> = 1194-1196) <i>M</i> (<i>SD</i>)	(2) Heterosexual, cisgender girls (<i>n</i> = 1150-1152) <i>M</i> (<i>SD</i>)	(3) Gender and sexually diverse boys (<i>n</i> = 156-157) <i>M</i> (<i>SD</i>)	(4) Gender and sexually diverse girls (<i>n</i> = 319-320) <i>M</i> (<i>SD</i>)	(5) Non-binary individuals (<i>n</i> = 17-18) <i>M</i> (<i>SD</i>)	Welch's ANOVA F test		
							<i>F</i>	<i>p</i>	ω^2
Cumulative interpersonal childhood adversity	1.85 (1.40)	1.70 (1.31) ⁴	1.86 (1.42) ⁴	1.96 (1.41)	2.27 (1.55) ^{1,2}	2.33 (1.75)	9.80	<0.001	0.01
Difficulties in emotion regulation	2.57 (0.79)	2.32 (0.74) ^{2,3,4,5}	2.73 (0.77) ^{1,3,4}	2.54 (0.73) ^{1,2,4}	2.93 (0.81) ^{1,2,3}	3.02 (1.20) ¹	62.79	<0.001	0.08
Post-traumatic stress symptoms	0.38 (0.51)	0.26 (0.42) ^{2,4,5}	0.45 (0.55) ^{1,4}	0.34 (0.47) ^{4,5}	0.57 (0.60) ^{1,2,3}	0.77 (0.63) ^{1,3}	35.15	<0.001	0.05

Note. *M* = mean; *SD* = standard deviation.

Superscript numbers (^{1, 2, 3, 4, 5}) indicate significant (*p* < .05) difference between the given group and the indexed group within the same variable.

Table 3

Results of the mediation analyses, including total, direct, and indirect effects in the associations between cumulative interpersonal childhood adversity, difficulties in emotion regulation, and post-traumatic stress symptoms in the total sample, and groups of heterosexual, cisgender and gender and sexually diverse adolescents.

	Total effect			Direct effect			Mediator	Indirect effect		
	β	95% CI	<i>p</i>	β	95% CI	<i>p</i>		β	95% CI	<i>p</i>
Cumulative interpersonal childhood adversity → Post-traumatic stress symptoms (total sample, <i>N</i> = 2904)	0.38	0.34 to 0.41	<0.001	0.25	0.21 to 0.29	<0.001	Difficulties in emotion regulation	0.13	0.11 to 0.14	<0.001
Cumulative interpersonal childhood adversity → Post-traumatic stress symptoms (HC boys sample, <i>n</i> = 1196)	0.31	0.26 to 0.37	<0.001	0.21	0.15 to 0.27	<0.001	Difficulties in emotion regulation	0.10	0.08 to 0.14	<0.001
Cumulative interpersonal childhood adversity → Post-traumatic stress symptoms (HC girls sample, <i>n</i> = 1152)	0.38	0.33 to 0.44	<0.001	0.25	0.19 to 0.31	<0.001	Difficulties in emotion regulation	0.13	0.11 to 0.16	<0.001
Cumulative interpersonal childhood adversity → Post-traumatic stress symptoms (GSD boys sample, <i>n</i> = 157)	0.44	0.28 to 0.59	<0.001	0.36	0.20 to 0.53	<0.001	Difficulties in emotion regulation	0.08	0.02 to 0.18	0.035
Cumulative interpersonal childhood adversity → Post-traumatic stress symptoms (GSD girls sample, <i>n</i> = 320)	0.41	0.29 to 0.51	<0.001	0.35	0.23 to 0.46	0.002	Difficulties in emotion regulation	0.06	0.03 to 0.10	<0.001

Note. HC = heterosexual, cisgender; GSD = gender and sexually diverse.

Bootstrapped confidence intervals were based on 5000 replications and were estimated; β = standardized regression coefficients, 95% CI = bias-corrected bootstrapped confidence intervals.

difficulties were associated with higher levels of post-traumatic stress levels ($r = 0.50, p = .036$). However, these preliminary results should be interpreted with caution, given low statistical power.

In the case of *HC boys*, higher levels of cumulative interpersonal childhood adversity were associated with higher levels of PTSS, with a small effect size ($\beta = 0.21, p < .001$). Higher levels of cumulative interpersonal childhood adversity were also related to higher levels of emotion regulation difficulties ($\beta = 0.31, p < .001$), which, in turn, were related to greater PTSS ($\beta = 0.33, p < .001$), with moderate effect sizes. Overall, the model explained 20.6% of the variance in PTSS in HC boys.

As for *HC girls*, higher levels of cumulative interpersonal childhood adversity were associated with higher levels of PTSS, with a small effect size ($\beta = 0.25, p < .001$). Higher levels of cumulative interpersonal childhood adversity were also related to higher levels of emotion regulation difficulties ($\beta = 0.36, p < .001$), which, in turn, were related to greater PTSS ($\beta = 0.37, p < .001$), with moderate effect sizes. Overall, the model explained 27.4% of the variance in PTSS in HC girls.

In the case of *GSD boys*, higher levels of cumulative interpersonal childhood adversity were associated with higher levels of PTSS, with a moderate effect size ($\beta = 0.36, p < .001$). Higher levels of cumulative interpersonal childhood adversity were also related to higher levels of emotion regulation difficulties ($\beta = 0.27, p = .005$), which, in turn, were related to greater PTSS ($\beta = 0.30, p < .001$), with small-to-moderate effect sizes. The model explained 29.5% of the variance in PTSS in GSD boys.

For *GSD girls*, higher levels of cumulative interpersonal childhood adversity were associated with more PTSS, with a moderate effect size ($\beta = 0.35, p < .001$). Higher levels of cumulative interpersonal childhood adversity were also related to higher levels of emotion regulation difficulties ($\beta = 0.25, p < .001$), which, in turn, were related to greater PTSS ($\beta = 0.23, p < .001$), with small-to-moderate effect sizes. Overall, the model explained 22.9% of the variance in PTSS in GSD girls.

To examine whether the identified associations were significantly different between the four groups, we compared the original, unconstrained model to a model in which all hypothesized paths were constrained to be equal between all groups. The chi-square difference test ($\Delta\chi^2 = 34.62, p < .001$) indicated significant differences between the unconstrained and the fully constrained models, suggesting that some associations differed significantly between the four groups. Thus, we constrained each path separately.

When the paths between cumulative interpersonal childhood adversity and difficulties in emotion regulation were constrained to be equal in all groups, the chi-square difference test ($\Delta\chi^2 = 3.92, p = .270$) did not indicate significant differences, suggesting that the path coefficients did not differ significantly between the four groups (i.e., cumulative interpersonal childhood adversity was associated with difficulties in emotion regulation the same way in all groups). When the paths between difficulties in emotion regulation and PTSS were constrained to be equal in all groups, the chi-square difference test ($\Delta\chi^2 = 9.56, p = .023$) indicated significant differences. These findings suggest that the path coefficients in the examined groups differed significantly (i.e., the effect size of the associations was moderate in HC boys, HC girls, and GSD boys, while it was small in GSD girls). When the paths between cumulative interpersonal childhood adversity and PTSS were constrained to be equal in all groups, the chi-square difference test ($\Delta\chi^2 = 11.21, p = .011$) again indicated significant differences. Results suggest that the path coefficients in the examined groups differed significantly (i.e., the effect size of the associations was moderate in GSD boys and GSD girls, and small in HC boys and HC girls).

4. Discussion

The present study examined the mediating role of emotion regulation difficulties in the association between cumulative interpersonal childhood adversity and PTSS across a large sample of HC and GSD middle adolescents. Results showed that greater childhood

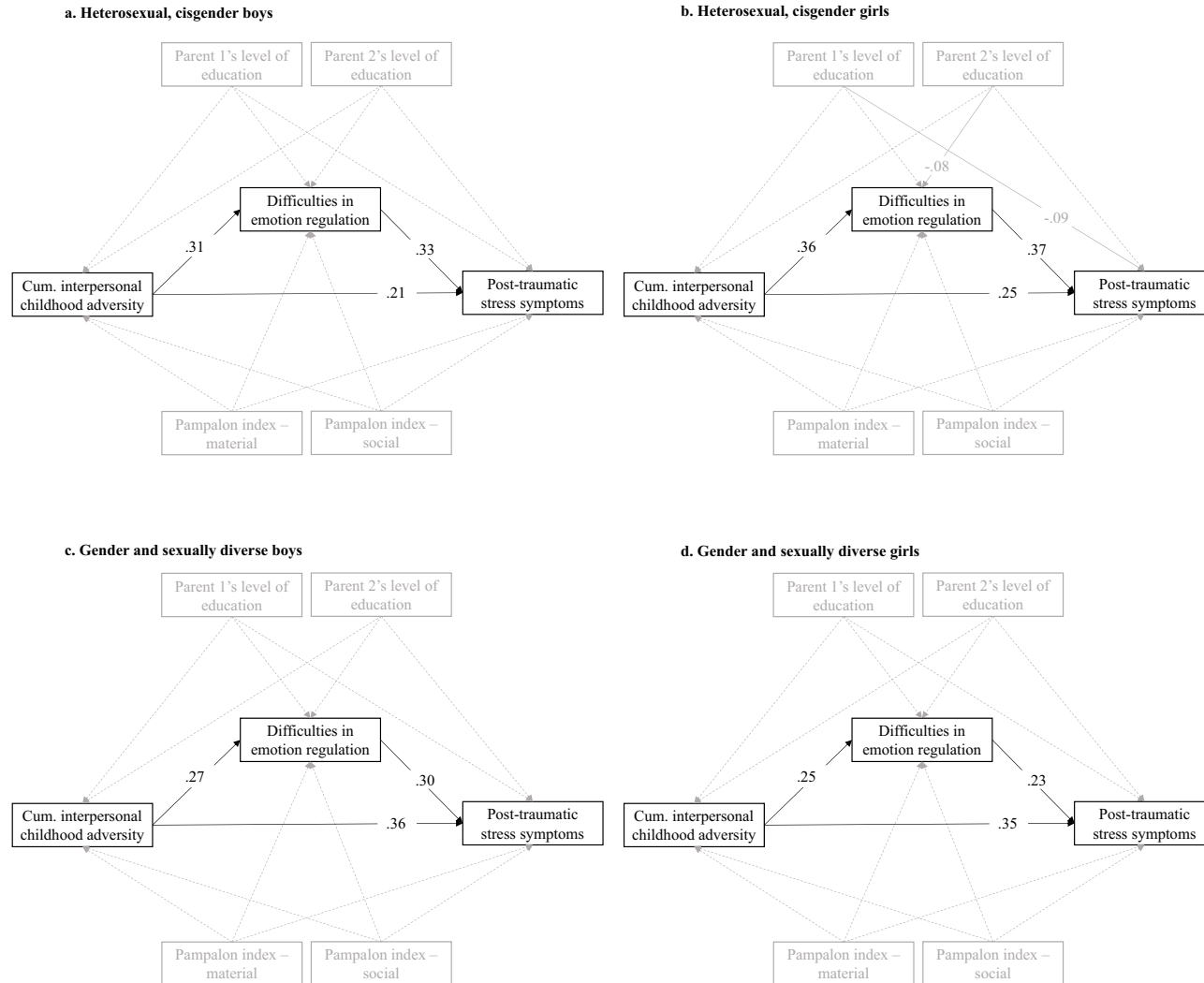


Fig. 1. Visual presentation of the associations between cumulative interpersonal childhood adversity, difficulties in emotion regulation, post-traumatic stress symptoms, and control variables in the groups of heterosexual, cisgender and gender and sexually diverse adolescents

Note. Control variables are depicted in grey. Correlations between the variables are not depicted for the sake of clarity. Significant associations are depicted with solid lines ($p < .05$), non-significant associations are depicted with dashed lines. Coefficients are standardized regression coefficients.

adversity was directly associated with greater PTSS in all adolescents – this association being significantly stronger among GSD boys and girls. Further, it was found that greater childhood adversity was associated with greater emotion regulation difficulties – with no significant differences between groups of participants, but that the strength of the association between greater emotion regulation difficulties and greater PTSS was significantly lower in GSD girls, compared to GSD boys, HC boys and HC girls. Overall, our findings support the notion that difficulties in emotion regulation are a significant mediator in the association between cumulative interpersonal childhood adversity and PTSS in adolescents, regardless of their HC or GSD status.

4.1. Direct associations between cumulative interpersonal childhood adversity and PTSS

Our first hypothesis that a higher number of childhood adversities would be associated with higher levels of PTSS in adolescence was supported by our results. These findings align with the limited research among children and adolescents that established that experiences of cumulative adversity might be associated with a higher risk of PTSS (Finkelhor et al., 2011; Lewis et al., 2019; Suliman et al., 2009). Based on the self-trauma model (Briere, 2002), PTSS are not only signs of dysfunction, but may also serve as a processing of adverse experiences in order to minimize distress. However, when self-capacities such as emotion regulation are not adapted, distressing stimuli (e.g., memories from the adverse event) may be overwhelming and cause more harm (e.g., psychological difficulties). In the present study, it is important to note that these emotion regulation capacities were evaluated at one point in time (regardless of when the adversity occurred) and it is therefore impossible to know if these self-reported emotion regulation difficulties existed before, were influenced by, or developed after the adverse experience(s).

4.2. The mediating role of emotion regulation difficulties in the association between cumulative interpersonal childhood adversity and PTSS

In line with our second hypothesis, experiencing higher levels of cumulative interpersonal childhood adversity was associated with adolescents' higher levels of emotion regulation difficulties, which, in turn, were associated with their higher levels of PTSS. Corroborating previous findings (Ehring & Quack, 2010; Kim & Cicchetti, 2010) among children ($M = 8.11$ years) and adults ($M = 32.03$ years), our results suggest that an interpersonal context characterized by cumulative interpersonal childhood adversity experiences may be disruptive to acquiring and developing adaptive emotion regulation skills. As a result, cumulative adversity survivors may become more vulnerable to experiencing psychological distress, as emotion regulation is an essential self-capacity tool for modulating one's affective reactions and controlling one's behavior (Briere, 2002; Choi & Oh, 2014). A poorer understanding and management of one's emotional experience may therefore be a risk factor for subsequent PTSS by impeding one's capacity to identify, process and eventually communicate one's affective states (e.g., heightened perceived stress, constant alertness, avoidance, etc.), particularly in the context of an adverse experience that may have triggered overwhelming and intense emotions that could not be adequately processed at the time of occurrence.

4.3. Differences between GSD and HC adolescents

Our third hypothesis pertained to the associations between the examined variables being stronger among GSD than HC adolescents, and it was partially supported. Although non-binary adolescents could not be included in the path analysis due to their small sample size, our preliminary correlational results suggest similar patterns, such that higher levels of cumulative adversity were positively associated with greater difficulties in emotion regulation and PTSS, and greater difficulties in emotion regulation were positively associated with PTSS.

First, the association between cumulative interpersonal childhood adversity and PTSS was stronger among GSD boys and GSD girls compared to HC boys and HC girls. This result corroborates prior findings concerning the fact that GSD individuals might have a higher vulnerability to victimization and psychological distress (Hatzenbuehler et al., 2008; Roberts et al., 2013). This could potentially be explained by divergent reactions following adversity. For example, according to Meyer (2013), adversity victims often respond with self-recrimination (e.g., "it is my fault") and self-devaluation (e.g., "I am flawed") when trying to understand the reason they had to go through such a negative experience. In the case of sexual and gender minorities, the likelihood of being a victim of adversity is higher in part because their self-presentation does not necessarily reflect the dominant culture, social structures, and norms. In addition, experiencing discrimination (e.g., homophobia or transphobia) has been shown to have greater mental health impacts than other forms of abuse unrelated to discrimination (Meyer, 2013). It is therefore possible that if GSD youth believe that the reason they were victims of such adversity was because of their GSD identity, it may have the same negative consequences on mental health as discrimination. However, self-perceptions were not assessed in the present study and represent an important research avenue to explore.

Second, results indicated that the association between cumulative interpersonal childhood adversity and difficulties in emotion regulation were not significantly different between the four groups (HC and GSD boys and girls). Additionally, the association between difficulties in emotion regulation and PTSS was significantly stronger for HC boys, HC girls and GSD boys compared to GSD girls. These results differ from what is suggested in the literature (Hatzenbuehler et al., 2008; Meyer, 2013; Sterzing et al., 2016). Although it was believed that all examined associations would be stronger among GSD adolescents based on theoretical and empirical work suggesting a greater prevalence of adversity and psychological distress in this population, possibly due to specific minority stress that may impede the adequate development of emotion regulation (Hatzenbuehler et al., 2008; Meyer, 2013; Sterzing et al., 2016), the present findings did not support this hypothesis. Indeed, the proposed mediation model applied to all participants equally, except GSD girls, for whom the associations were weaker. Girls are generally more vulnerable to internalizing problems such as psychological distress, while having better overall emotion regulation capacities (Séguin-Lemire et al., 2017). Moreover, GSD youth are at higher risk of

experiencing adversities (Sterzing et al., 2016). In the face of greater levels of adversity, such as is the case for GSD girls in the present sample, girls may tend to over-regulate to the point of experiencing internalizing symptoms (Séguin-Lemire et al., 2017). Therefore, these two lines of evidence could explain why the model may apply less to GSD girls, even though they appear more vulnerable to psychological difficulties such as PTSS (regardless of their level of emotion regulation difficulties).

Results of the present study may inform prevention and intervention programs for PTSS in adolescents having lived through cumulative interpersonal childhood adversity, by emphasizing the importance of emotion regulation – a modifiable factor. Promoting the development of emotion regulation of victimized adolescents could improve the evolutionary course of difficulties arising from adversity. Strategies such as cognitive reappraisal (i.e., changing thoughts and beliefs about the meaning of a stimulus or situation; Schäfer et al., 2017), distress tolerance skills (e.g., dialectical behavioral therapy; Linehan, 1993) or mindfulness-based therapy (i.e., paying attention intentionally to the present moment without being self-critical or judgmental; Roemer et al., 2015; Sibinga et al., 2016) may facilitate greater emotion regulation. However, the present study also suggests that other factors – both individual and social – may come into play in explaining the association between cumulative interpersonal childhood adversity and PTSS.

5. Strengths, limitations, and future studies

The majority of previous studies on adversity, emotion regulation, and PTSS were conducted among adults (e.g., Ehring & Quack, 2010; Tull et al., 2007) or older adolescents ($M = 16$ years) (e.g., Bennett et al., 2016), whereas our sample's mean age was 14. This focus on younger teenagers may support earlier prevention efforts among at-risk adolescents, while also addressing a gap in the literature with regards to the way in which emotion regulation difficulties relate to cumulative interpersonal childhood adversity and PTSS among youth (Villalta et al., 2018). Taking into consideration participants' sexual orientation and gender identity was an additional strength, as GSD youth are often overlooked in research (Mustanski, 2015). Indeed, there is a need to increase the representation of GSD groups in various studies as it could contribute to the development of interventions tailored to the needs of this understudied population.

Nevertheless, findings must be interpreted in light of some limitations. No causality can be established due to the study's cross-sectional design. Another limitation is the use of self-report measures that can lead to biases (e.g., social desirability). The sample size of the non-binary subgroup was small, resulting in low statistical power to examine hypothesized associations in this unique and important group. Future studies should oversample non-binary participants to provide sufficient statistical power to examine the aforementioned model.

In future studies, it would be important to study other explanatory factors that could potentially mediate the association between cumulative adversity and PTSS. Although difficulties in emotion regulation explain an important part of this association, including other individual variables (e.g., self-recrimination, self-devaluation, hypervigilance) as well as social variables (e.g., stigma, discrimination, prejudice) in the model may shed light on the association between cumulative adversity and PTSS. Other possibilities include examining different facets of emotion regulation and their role in explaining PTSS, or whether a similar construct (e.g., alexithymia) might better explain the association between cumulative adversity and PTSS. Additionally, studying potential moderating variables (e.g., social support) would be an important way to determine factors that may accentuate or mitigate the negative consequences of cumulative interpersonal childhood adversity in adolescents and thus further enrich support programs for young adversity victims.

6. Conclusion

Cumulative interpersonal childhood adversity has been shown to be associated with later PTSS, especially in GSD adolescents as they may be more likely to be exposed to more frequent adversity and to develop mental health problems (Briere, 2002; Finkelhor et al., 2011; Sterzing et al., 2019). Results of the present study suggest that emotion regulation difficulties may explain in part the relationship between cumulative interpersonal childhood adversity and PTSS in middle adolescents. Findings also indicate that the association between cumulative interpersonal childhood adversity and PTSS was stronger for GSD adolescents, potentially due to specific minority stress factors (Meyer, 2013). Overall, these results can be of importance to professionals working with adversity victims by offering a modifiable target for interventions aiming to prevent and/or reduce PTSS – emotion regulation.

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Declaration of competing interest

None.

References

- Affifi, T. O., MacMillan, H. L., Boyle, M., Taillieu, T., Cheung, K., & Sareen, J. (2014). Child abuse and mental disorders in Canada. *Canadian Medical Association Journal*, 186(9), 324–332. <https://doi.org/10.1503/cmaj.140314>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>

- Bauer, G. R., Braimoh, J., Scheim, A. I., & Dharma, C. (2017). Transgender-inclusive measures of sex/gender for population surveys: Mixed-methods evaluation and recommendations. *PLoS ONE*, 12(5), 1–28. <https://doi.org/10.1371/journal.pone.0178043>
- Bennett, D. C., Modrowski, C. A., Chaplo, S. D., & Kerig, P. K. (2016). Facets of emotion dysregulation as mediators of the association between trauma exposure and posttraumatic stress symptoms in justice-involved adolescents. *Traumatology*, 22(3), 174–183. <https://doi.org/10.1037/trm0000085>
- Böthe, B., Vaillancourt-Morel, M. P., Girouard, A., Stulhofer, A., Dion, J., & Bergeron, S. (2020). A large-scale comparison of Canadian Sexual/Gender minority and heterosexual, cisgender adolescents' pornography use characteristics. *Journal of Sexual Medicine*, 17(6), 1156–1167. <https://doi.org/10.1016/j.jsxm.2020.02.009>
- Bremner, J. D., Bolus, R., & MAYER, E. A. (2007). Psychometric properties of the early trauma inventory-self report. *Journal of Nervous and Mental Disease*, 195(3), 211–218. <https://doi.org/10.1097/01.nmd.0000243824.84651.6c>
- Briere, J. (2002). Treating adult survivors of severe childhood abuse and neglect: further development of an integrative model. In *The APSAC Handbook on Child Maltreatment* (2nd ed., pp. 175–202). Sage Publications.
- Chamberland, L., & Saewyc, E. (2011). Stigma, vulnerability, and resilience: The psychosocial health of sexual minority and gender diverse people in Canada. *Canadian Journal of Community Mental Health*, 30(2), 1–5. <https://doi.org/10.7870/cjcmh-2011-0012>
- Charak, R., Villarreal, L., Schmitz, R. M., Hirai, M., & Ford, J. D. (2019). Patterns of childhood maltreatment and intimate partner violence, emotion dysregulation, and mental health symptoms among lesbian, gay, and bisexual emerging adults: A three-step latent class approach. *Child Abuse & Neglect*, 89, 99–110. <https://doi.org/10.1016/j.chiabu.2019.01.007>
- Choi, J. Y., Choi, Y. M., Gim, M. S., Park, J. H., & Park, S. H. (2014). The effects of childhood abuse on symptom complexity in a clinical sample: Mediating effects of emotion regulation difficulties. *Child Abuse & Neglect*, 38(8), 1313–1319. <https://doi.org/10.1016/j.chiabu.2014.04.016>
- Choi, J. Y., & Oh, K. J. (2014). Cumulative childhood trauma and psychological maladjustment of sexually abused children in Korea: Mediating effects of emotion regulation. *Child Abuse & Neglect*, 38(2), 296–303. <https://doi.org/10.1016/j.chiabu.2013.09.009>
- Chu, D. A., Bryant, R. A., Gatt, J. M., & Harris, A. W. F. (2019). Cumulative childhood interpersonal trauma is associated with reduced cortical differentiation between threat and non-threat faces in posttraumatic stress disorder adults. *Australian and New Zealand Journal of Psychiatry*, 53(1), 48–58. <https://doi.org/10.1177/0004867418761578>
- Cloitre, M., Stolbach, B. C., Herman, J. L., van der Kolk, B., Pynoos, R., Wang, J., & Petkova, E. (2009). A developmental approach to complex PTSD: Childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress*, 22(5), 399–408. <https://doi.org/10.1002/jts.20444>
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78(1), 98–104. <https://doi.org/10.1037//0021-9010.78.1.98>
- Donisch, K., Zhang, Y., Bray, C., Frank, S., & Gewirtz, A. H. (2020). Development and preliminary validation of the University of Minnesota's traumatic stress screen for children and adolescents (TSSCA). *The Journal of Behavioral Health Services & Research*. <https://doi.org/10.1007/s11414-020-09725-1>
- Donisch, K., Zhang, Y., Bray, C., & Gewirtz, A. H. (2017). *University of Minnesota's Traumatic Stress Screen for Children and Adolescents*. TSSCA.
- Dvir, Y., Ford, J. D., Hill, M., & Frazier, J. A. (2014). Childhood maltreatment, emotional dysregulation, and psychiatric comorbidities. *Harvard Review of Psychiatry*, 22(3), 149–161. <https://doi.org/10.1097/HRP.0000000000000014>
- Ehring, T., & Quack, D. (2010). Emotion regulation difficulties in trauma survivors: The role of trauma type and PTSD symptom severity. *Behavior Therapy*, 41(4), 587–598. <https://doi.org/10.1016/j.beth.2010.04.004>
- Enlow, M. B., Blood, E., & Egeland, B. (2013). Sociodemographic risk, developmental competence, and PTSD symptoms in young children exposed to interpersonal trauma in early life. *Journal of Traumatic Stress*, 26(6), 686–694. <https://doi.org/10.1002/jts.21866>
- Fergusson, C. J. (2016). *An effect size primer: A guide for clinicians and researchers* (4th ed.). American Psychological Association. <https://doi.org/10.1037/14805-020>
- Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics*. Sage.
- Finkelhor, D. (2008). *Childhood victimization*. New York, NY: Oxford University Press.
- Finkelhor, D., Hamby, S. L., Ormrod, R., & Turner, H. (2005). The juvenile victimization questionnaire: Reliability, validity, and national norms. *Child Abuse & Neglect*, 29(4), 383–412. <https://doi.org/10.1016/j.chiabu.2004.11.001>
- 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., Turner, H., Hamby, S. L., & Ormrod, R. (2011). Polyvictimization: Children's exposure to multiple types of violence, crime, and abuse. *National Survey of Children's Exposure to Violence*, 1–12.
- Ford, J. D., Elhai, J. D., Connor, D. F., & Frueh, B. C. (2010). Poly-victimization and risk of posttraumatic, depressive, and substance use disorders and involvement in delinquency in a national sample of adolescents. *Journal of Adolescent Health*, 46(6), 545–552. <https://doi.org/10.1016/j.jadohealth.2009.11.212>
- Gamache, P., Hamel, D., & Blaser, C. (2019). L'indice de défavorisation matérielle et sociale : En bref. <https://www.inspq.qc.ca/sites/default/files/santescope/indice-defavorisation/guidemethodologiquefr.pdf>
- Goldsmith, R. E., Chesney, S. A., Heath, N. M., & Barlow, M. R. (2013). Emotion regulation difficulties mediate associations between betrayal trauma and symptoms of posttraumatic stress, depression, and anxiety. *Journal of Traumatic Stress*, 26, 376–384. <https://doi.org/10.1002/jts.21819>
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41–54. <https://doi.org/10.1023/B:JOBA.0000007455.08539.94>
- Hahm, H. C., Lee, Y., Ozonoff, A., & van Wert, M. J. (2010). The impact of multiple types of child maltreatment on subsequent risk behaviors among women during the transition from adolescence to young adulthood. *Journal of Youth and Adolescence*, 39(5), 528–540. <https://doi.org/10.1007/s10964-009-9490-0>
- Hatzenbuehler, M. L., McLaughlin, K. A., & Nolen-Hoeksema, S. (2008). Emotion regulation and internalizing symptoms in a longitudinal study of sexual minority and heterosexual adolescents. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 49(12), 1270–1278. <https://doi.org/10.1111/j.1469-7610.2008.01924.x>
- Hughesdon, K. A., Ford, J. D., Briggs, E. C., Seng, J. S., Miller, A. L., & Stoddard, S. A. (2021). Interpersonal trauma exposure and interpersonal problems in adolescent posttraumatic stress disorder. *Journal of Traumatic Stress*, 34, 733–743. <https://doi.org/10.1002/jts.22687>
- Kim, J., & Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 51(6), 706–716. <https://doi.org/10.1111/j.1469-7610.2009.02202.x>
- Lewis, S. J., Arseneault, L., Caspi, A., Fisher, H. L., Matthews, T., Moffitt, T. E., Odgers, C. L., Stahl, D., Teng, J. Y., & Danese, A. (2019). The epidemiology of trauma and post-traumatic stress disorder in a representative cohort of young people in England and Wales. *The Lancet Psychiatry*, 6(3), 247–256. [https://doi.org/10.1016/S2215-0366\(19\)30031-8](https://doi.org/10.1016/S2215-0366(19)30031-8)
- Linehan, M. M. (1993). *Skills training manual for treating borderline personality disorder*. New York, NY, US: Guilford press.
- Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, 83(404), 1198–1202. <https://doi.org/10.1080/01621459.1988.10478722>
- López-Martínez, A. E., Serrano-Ibáñez, E. R., Ruiz-Párraga, G. T., Gómez-Pérez, L., Ramírez-Maestre, C., & Esteve, R. (2018). Physical health consequences of interpersonal trauma : A systematic review of the role of psychological variables. *Trauma, Violence & Abuse*, 19(3), 305–322. <https://doi.org/10.1177/1524838016659488>
- Meyer, I. H. (2013). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychology of Sexual Orientation and Gender Diversity*, 1(S), 3–26. <https://doi.org/10.1037/2329-0382.1.s.3>
- Modrowski, C. A., Chaplo, S. D., Kerig, P. K., & Mozley, M. M. (2019). Trauma exposure, posttraumatic overmodulation and undermodulation, and nonsuicidal self-injury in traumatized justice-involved adolescents. *Psychological Trauma: Theory, Research, Practice, and Policy*, 11(7), 743–750. <https://doi.org/10.1037/tra0000469>
- Mustanski, B. (2015). Future directions in research on sexual minority adolescent mental, behavioral, and sexual health. *Journal of Clinical Child and Adolescent Psychology*, 44(1), 204–219. <https://doi.org/10.1080/15374416.2014.982756>
- Muthén, L. K., & Muthén, B. O. (2017). *MPlus User's Guide* (8th ed.).

- Nunnally, J. C. (1978). *Psychometric Theory* (2nd ed.). McGraw-Hill.
- Pampalon, R., Hamel, D., Gamache, P., & Raymond, G. (2009). A deprivation index for health planning in Canada. *Chronic Diseases in Canada*, 29(4), 178–191.
- Panagioti, M., Gooding, P. A., Triantafyllou, K., & Tarrier, N. (2015). Suicidality and posttraumatic stress disorder (PTSD) in adolescents: A systematic review and meta-analysis. *Social Psychiatry and Psychiatric Epidemiology*, 50(4), 525–537. <https://doi.org/10.1007/s00127-014-0978-x>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891. <https://doi.org/10.3758/BRM.40.3.879>
- Roberts, A. L., Rosario, M., Corliss, H. L., Koenen, K. C., & Austin, S. B. (2013). Mediation by childhood abuse and gender nonconformity. *American Journal of Public Health*, 102(8), 1587–1593. <https://doi.org/10.2105/AJPH.2011.300530.Elevated>
- Roemer, L., Williston, S. K., & Rollins, L. G. (2015). Mindfulness and emotion regulation. *Current Opinion in Psychology*, 3, 52–57. <https://doi.org/10.1016/j.copsy.2015.02.006>
- Schäfer, J.Ö., Naumann, E., Holmes, E. A., Tuschen-Caffier, B., & Samson, A. C. (2017). Emotion regulation strategies in depressive and anxiety symptoms in youth: A meta-analytic review. *Journal of Youth and Adolescence*, 46(2), 261–276. <https://doi.org/10.1007/s10964-016-0585-0>
- Schellenberg, B. J. L., Bailis, D. S., & Mosewich, A. D. (2016). You have passion, but do you have self-compassion? Harmonious passion, obsessive passion, and responses to passion-related failure. *Personality and Individual Differences*, 99, 278–285. <https://doi.org/10.1016/j.paid.2016.05.003>
- Séguin-Lemire, A., Hébert, M., Cossette, L., & Langevin, R. (2017). A longitudinal study of emotion regulation among sexually abused preschoolers. *Child Abuse & Neglect*, 63, 307–316. <https://doi.org/10.1016/j.chiabu.2016.11.027>
- Sibinga, E., Copeland-Linder, N., Webb, L., Shields, A., & Perry-Parrish, C. (2016). Improving self-regulation in adolescents: Current evidence for the role of mindfulness-based cognitive therapy. *Adolescent Health, Medicine and Therapeutics*, 7, 101–108. <https://doi.org/10.2147/ahmt.s65820>
- Spinazzola, J., Ford, J. D., Zucker, M., van der Kolk, B., Silva, S., Smith, S., & Blaustein, M. (2005). National Survey of complex trauma exposure, outcome, and intervention for children and adolescents. *Psychiatric Annals*, 35(5), 2–7.
- Spinazzola, J., Hodgdon, H., Liang, L.-J., Ford, J. D., Layne, C. M., Pynoos, R., Briggs, E. C., Stolbach, B., & Kisiel, C. (2014). Unseen wounds: The contribution of psychological maltreatment to child and adolescent mental health and risk outcomes. *Psychological Trauma: Theory, Research, Practice, and Policy*, 6(S1), S18–S28. <https://doi.org/10.1037/a0037766>
- Sterzing, P. R., Fisher, A. J., & Gartner, R. E. (2019). Familial pathways to polyvictimization for sexual and gender minority adolescents: Microaffirming, microaggressing, violent, and adverse families. *Psychology of Violence*, 9(4), 461–470. <https://doi.org/10.1037/vio0000224>
- Sterzing, P. R., Hong, J. S., Gartner, R. E., & Auslander, W. F. (2016). Child maltreatment and bullying victimization among a community-based sample of sexual minority youth: The mediating role of psychological distress. *Journal of Child and Adolescent Trauma*, 9(4), 283–293. <https://doi.org/10.1007/s40653-016-0101-4>
- Straus, M. A., Hamby, S. L., Boney-McCoy, S., & Sugarman, D. B. (1996). The revised conflict tactics scales (CTS2) development and preliminary psychometric data. *Journal of Family Issues*, 17(3), 283–316. <https://doi.org/10.1177/019251396017003001>
- Suliman, S., Mkabile, S. G., Fincham, D. S., Ahmed, R., Stein, D. J., & Seedat, S. (2009). Cumulative effect of multiple trauma on symptoms of posttraumatic stress disorder, anxiety, and depression in adolescents. *Comprehensive Psychiatry*, 50(2), 121–127. <https://doi.org/10.1016/j.comppsy.2008.06.006>
- Thomas, K. A., & Clifford, S. (2017). Validity and mechanical Turk: An assessment of exclusion methods and interactive experiments. *Computers in Human Behavior*, 77, 184–197. <https://doi.org/10.1016/j.chb.2017.08.038>
- Tourigny, M., Hébert, M., Joly, J., Cyr, M., & Baril, K. (2008). Prevalence and co-occurrence of violence against children in the Quebec population. *Australian and New Zealand Journal of Public Health*, 32(4), 331–335. <https://doi.org/10.1111/j.1753-6405.2008.00250.x>
- Tull, M. T., Barrett, H. M., McMillan, E. S., & Roemer, L. (2007). A preliminary investigation of the relationship between emotion regulation difficulties and posttraumatic stress symptoms. *Behavior Therapy*, 38(3), 303–313. <https://doi.org/10.1016/j.beth.2006.10.001>
- Villalta, L., Smith, P., Hickin, N., & Stringaris, A. (2018). Emotion regulation difficulties in traumatized youth: A meta-analysis and conceptual review. *European Child and Adolescent Psychiatry*, 27(4), 527–544. <https://doi.org/10.1007/s00787-018-1105-4>
- Villarreal, L., Charak, R., Schmitz, R. M., Hsieh, C., & Julian, D. (2021). The relationship between sexual orientation outcome, heterosexism, emotion dysregulation, and alcohol use among lesbian, gay, and bisexual emerging adults. *Journal of Gay & Lesbian Mental Health*, 25(1), 94–115. <https://doi.org/10.1080/19359705.2020.1809588>
- Viola, T. W., Salum, G. A., Kluge-Schiavon, B., Sanvicente-Vieira, B., Levandowski, M. L., & Grassi-Oliveira, R. (2016). The influence of geographical and economic factors in estimates of childhood abuse and neglect using the childhood trauma questionnaire: A worldwide meta-regression analysis. *Child Abuse & Neglect*, 51, 1–11. <https://doi.org/10.1016/j.chiabu.2015.11.019>
- Weinrich, J. D. (2014). On the design, development, and testing of sexual identity questions: A discussion and analysis of Kristen Miller and J. Michael Ryan's work for the National Health Interview Survey. *Journal of Bisexuality*, 14(3–4), 502–523. <https://doi.org/10.1080/15299716.2014.952052>