한국심리학회지: 건강
The Korean Journal of Health Psychology
2025. Vol. 30, No. 1, 67 - 89

# Women in Their 20s: Moderated Mediation Effects of Emotion Dysregulation and Interoceptive Awareness†

Grace Saeun Bae‡
Department of Psychology,
Ewha Womans University
Master's Degree Graduate

Sung-Kyung Yoo
Department of Psychology,
Ewha Womans University
Professor

This study aims to investigate the mediating effect of emotion dysregulation in the relationship between childhood trauma and depression, as well as the moderated mediating effect of interoceptive awareness within this mediation model. To assess each variable, we utilized the Childhood Trauma Questionnaire-Short Form, the Difficulties in Emotional Regulation Scale, the Center for Epidemiological Studies-Depression Scale, and the Multidimensional Assessment of Interoceptive Awareness. An online self-report questionnaire was administered to women in their 20s living in Seoul, resulting in a sample of 313 participants. The findings confirmed a partial mediating effect of emotion dysregulation in the relationship between childhood trauma and depression. Furthermore, interoceptive awareness was found to moderate this mediation process, albeit in a direction contrary to our original hypothesis. These results underscore the potential for a more nuanced understanding of the connection between trauma and depression. The study also discusses its implications and limitations.

*Keywords: emotion dysregulation, interoceptive awareness, childhood trauma, depression*

† This paper is a revised version of Grace Saeun Bae's (2022) master's thesis.

‡ Corresponding author: Grace Saeun Bae, (03760) 52 Ewhayeodae-gil, Seodaemun-gu, Seoul, Republic of Korea. Department of Psychology, Ewha Womans University. Tel: +82-2-3277-4144. Email: baesaeun@gmail.com

Childhood trauma is a common cause of severe psychiatric disorders (Allen et al., 2000; Carr et al., 2013; McLaughlin et al., 2012) because it usually occurs repeatedly and intentionally in the relationship with a primary caregiver whom the child is dependent upon (Allen, 2008). Traumatic experiences enhance the likelihood of developing psychopathology, including anxiety, depression, posttraumatic stress, and problems with emotional regulation (Cummings et al., 2012; Sansone et al., 2001; Widom, 1999). The most common disorder associated with trauma is depression (Chapman et al., 2004).

Extant research has shown a significant relationship between childhood traumatic experiences and depressive symptoms (Infurna et al., 2016; Poole et al., 2017). For instance, a cross-sectional study with South Korean ('Korean' for short hand from now on) college students found higher levels of emotional trauma experienced in childhood were associated with the development of depression in adulthood (Kim & Kim, 2008). In a sample of clinical patients, the results showed that chronically depressed individuals experienced a significant level of distress due to adversities experienced during their childhood (Negele et al., 2015). In addition, childhood abuse experiences were found to be a strong predictor of depression in childhood as well as adulthood (Feiring et al., 1999; Thornberry et al., 2001). Thus, studies have provided evidence that people who have experienced childhood trauma often experience depression in adulthood.

Research has shown that individuals who undergo childhood trauma develop a variety of emotional problems (Cloitre et al., 2005; Lamoureux et al., 2012) in particular, emotion dysregulation is a frequent dysfunctional change occurring after psychological trauma (Luxenberg et al., 2001). This is because childhood is the period when attachment formation and neurophysiological development, which are the basis for stability, take place (Luxenberg et al., 2001). Experiencing trauma at a young age can significantly disrupt this developmental process. Individuals who have experienced trauma and have difficulty regulating their emotions may overreact to minor stressors, have trouble calming themselves down, and regulate their emotions through extreme self-destructive behaviors (Luxenberg et al., 2001). Furthermore, during childhood, through experiences of soothing and external regulation within the caregiver-child relationship, children internalize emotion regulation skills and learn to self-regulate emotions (Calkins & Hill, 2007). However, repeated exposure to negative experiences with the primary caregiver during this period can make it difficult for children to acquire appropriate emotion regulation skills (Luxenberg et al., 2001). This can result in the formation of maladaptive response patterns,

which may persist and be linked to difficulties in emotion regulation during adulthood (Luxenberg et al., 2001). Therefore, a major problem to address when treating clients who have experienced chronic trauma is emotion dysregulation (Allen, 2008; Kim & Kim, 2020).

Research on depression has focused on emotion dysregulation as a predictor of depression, regardless of the presence or absence of traumatic experiences (Kim & Kim, 2008). Additionally, emotion dysregulation have been reported as a vulnerability factor for various mental disorders (Cicchetti et al., 1995; Seo & Cho, 2012). Moreover, individuals experiencing depression employ dysfunctional emotion regulation strategies more frequently than those without depression (Lee & Kwon, 2006). When these strategies fail, negative emotions can worsen and lead to a range of psychopathologies, including affective disorders (Lee & Kwon, 2006). For example, in a study that included 269 patients diagnosed with depression, difficulties in emotion regulation mediated the association between childhood traumatic experiences and depressive symptoms (Hopfinger et al., 2016).

Despite an increased risk of depression among individuals with a history of childhood trauma, some still do not experience long-term psychological harm. This suggests that certain factors may buffer or mitigate this relationship and have a protective function (Poole et al., 2017; Wang et al., 2020). One such factor is interoceptive awareness, which refers to the process of becoming aware of and focusing attention on the sensory experiences within one's own body (Dunne al., 2021; Khalsa et al. 2018; Van der Kolk, 2014). Interoceptive processes, which involve interpreting and integrating bodily sensations and emotional states, as well as evaluating associated stimuli, are essential for maintaining homeostasis, facilitating self-regulation, and regulating emotions (Brewer et al., 2021; Craig, 2002; Khalsa & Lapidus, 2016). Recently, interoceptive awareness has gained increasing attention in a variety of fields, including neuroscience and has been proposed as a therapeutic approach (Mehling et al., 2009). However, despite its close relationship with the aforementioned variables, few studies have included it as a factor within theoretical models (Minton et al., 2006; Payne et al., 2015). In particular, the buffering role of interoceptive awareness has received limited attention. While numerous studies have consistently demonstrated that emotion dysregulation predicts depression, some literature suggests that this is not always the case (McLaughlin et al., 2011). Therefore, it can be assumed that other variables may influence the relationship between emotional dysregulation and depression. Accordingly, we examine whether interoceptive awareness has a moderating effect.

The following discussion explores the protective effects of interoceptive awareness, with a particular focus on its adaptive aspect. Previous studies have emphasized the protective role of interoceptive awareness for individuals who have blocked sensory information due to traumatic events (Minton et al., 2006; Neukirch et al., 2019; Payne et al., 2015). Individuals who have gone through childhood trauma often distrust their internal senses (Van der Kolk, 2014), impairing their interoceptive awareness, which is fundamental to emotional awareness and regulation (Price & Hooven, 2018; Schmitz et al., 2023). Accordingly, somatic experiencing and sensorimotor psychotherapy have emphasized the importance of interoceptive awareness to help safely recognize emotions. Specifically, identifying and monitoring emotional bodily states helps individuals to accept unbearable emotions indirectly, preventing intense traumatic memories from becoming overwhelming (Payne et al., 2015). As a result, a person with a high level of interoceptive awareness can gradually and safely face inner experiences, trust their inner sensations, and recover self-awareness (Füstös et al., 2013; Van der Kolk, 2014). It is difficult for individuals who have experienced trauma to clearly perceive their emotions if they are blocking internal sensations, and the symptoms of depression, characterized by a decrease in the ability to express or regulate negative emotions, may be lessened by this characteristic of interoceptive awareness. Furthermore, interoceptive awareness enables the adaptive regulation of the autonomic nervous system (Payne et al., 2015; Porges, 2007). This can help individuals who have experienced trauma in maintaining, a balance in the states of hyperarousal or hypoarousal and coping with stress and negative emotions (Minton et al., 2006; Price & Hooven, 2018). Interoceptive awareness can also be beneficial for social engagement, playing a crucial role in social cognition, reactivity, and connection (Arnold et al., 2019; Pollatos et al., 2015; Porges, 2007). Thus, interoceptive awareness may play a protective role in depression by moderating the link between emotion dysregulation and depression.

In addition, recent alternative perspective-taking strategies suggest that interoceptive awareness may mitigate the impact of such emotional dysregulation on depression. According to Gross (2014) (as cited in Adrian et al., 2019), emotional dysregulation predicts depression through three mechanisms: maladaptive reactivity, maladaptive cognitive strategies, and maladaptive behavioral responses. Interoceptive awareness addresses emotional reactivity and cognitive strategies. First, interoceptive awareness can serve as an adaptive strategy to regulate emotional responses, thereby mitigating maladaptive quick

reactivity to events (Mehling et al., 2009). One characteristic observed in individuals who have experienced trauma is altered reactions to stressful situations, with reactive emotional responses to stimuli (Payne et al., 2015). A high level of interoceptive awareness not only enables adaptive regulation of the autonomic nervous system and facilitates defense mechanisms (Payne et al., 2015; Porges, 2007), but also plays an adaptive role in emotion-related response systems (Kever et al., 2015). Second, from a cognitive perspective, it may act as a way to adaptively control attention during rumination, which involves passively focusing on painful emotions and is strongly associated with depression (Adrian et al., 2019; Mehling et al., 2009). Interoceptive awareness may also help manage catastrophizing, which is characterized by exaggerated attention to bodily sensations, or utilize distraction to withdraw attention (Adrian et al., 2019; Mehling et al., 2009). Thus, it could be hypothesized that interoceptive awareness moderated the relationship between emotional dysregulation and depression; that is, higher interoceptive awareness may reduce the impact of emotion dysregulation on depression, thereby lowering depressive symptoms.

This study expands on previous research, offering several unique contributions. Studies that have examined moderating variables in the association between childhood trauma and adult psychopathology (Dolbier et al., 2021; Wang et al., 2020) have found resilience, social support, and trait mindfulness to be moderating factors (Dolbier et al., 2021; Poole et al., 2017). Studies have examined external resources, combinations of internal and external resources, or variables that integrate external stimuli, internal sensations, and thoughts as a moderator. Meanwhile, this study uniquely focuses on internal sensations as a primary internal resource variable, which is the first novelty of this study.

Additionally, while studies on interoceptive awareness have often highlighted the maladaptive outcomes related to internal sensations, we adopt a different approach by emphasizing adaptive aspects (Mehling et al., 2009). Specifically, we incorporate the adaptive perspective provided by the Multidimensional Assessment of Interoceptive Awareness (MAIA), which has been rarely explored in extant research. This approach marks the second novelty of our study. To expand on this, interoceptive awareness was traditionally viewed as maladaptive (Mehling et al., 2009), ultimately linking attention to bodily symptoms with increased anxiety, somatization and depression (Baas et al., 2004). This exaggerated focus can lead to maladaptive thinking patterns such as catastrophic and ruminative thinking (Flink et al., 2009). However, recent research has highlighted the adaptive and beneficial aspects of interoceptive awareness, including mindful

approaches (Flink et al., 2009; Mehling et al., 2009; Mehling et al., 2012), and its therapeutic effect (Mehling et al., 2009). Specifically, the new scale incorporates a nonjudgmental acceptance of bodily sensations (Mehling et al., 2009), and emphasizes the self through being present and sensing the body, which is in contrast to traditional heart rate-sensing scales (Carruthers, 2008; Mehling et al., 2009).

Research on gender differences in the impact of childhood trauma on subsequent psychopathology has yielded conflicting results (Arnow et al., 2011; Reinherz et al., 2003). While some studies suggest that gender does not significantly influence outcomes (Arnow et al., 2011), with reports indicating that men and women are equally at the risk of developing depression following childhood sexual, physical, or emotional abuse (Negele et al., 2015). However, research indicates that abusive experiences and associated depressive symptoms are more prevalent among women and abusive experiences also affect depression differently. For example, other studies report that women experience emotional and sexual abuse more frequently (Negele et al., 2015; Scher et al., 2004), and among individuals with depression linked to such experiences, women outnumber men (MacMillan et al., 2001). Specifically, childhood trauma is a recognized risk factor for anxiety and mood disorders, both of which are reported more frequently in women (Hyman et al., 2008). These findings highlight the need for further investigation into the unique impacts of childhood trauma on women's health and well-being in order to develop tailored interventions.

Therefore, the third feature of this study is the uniqueness of our sample. Extant studies have frequently focused on general adult populations or individuals with clinical depression, while often neglecting certain demographic factors, such as age and gender (Wang et al., 2020). Notably, to the best of our knowledge, no research has concentrated exclusively on a single age group. This study, however, specifically examines women in their 20s because, according to depression treatment data examined by the Health Insurance Review and Assessment Service in South Korea ('Korea' for short hand from now on) from 2017 to 2021, the majority of patients were in their 20s, and women were 2.1 times more likely to receive treatment for depression than men (Kim, 2022).

Given the limitations in the perspectives and approaches of existing studies, it is essential to further explore how the interaction between interoceptive awareness and emotion dysregulation influences the relationship between childhood trauma and later depression. Hence, this study examined the moderating role of interoceptive awareness in the pathway among childhood trauma, emotion dysregulation, and depression, and we analyzed the model targeting

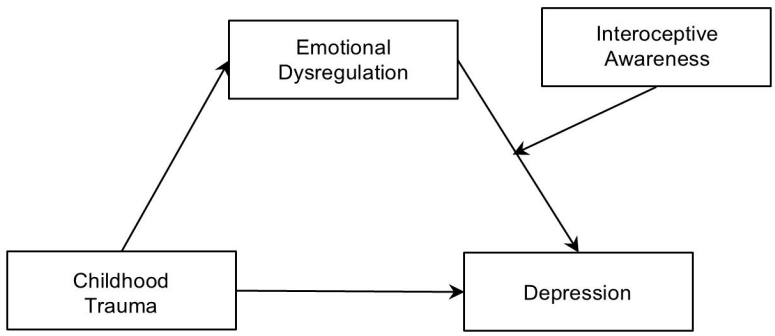


Figure 1. The Conceptual Framework of the Moderated Mediation Model

women in their 20s in Korea (Figure 1). To summarize the above, the hypotheses of this study are as follows. First, emotion regulation difficulties would mediate the relationship between childhood trauma and depression. Second, as interoceptive awareness increase, the indirect effect of childhood trauma on depression will weaken.

## Methods

### Participants and Procedure

The participants were 331 women in their 20s who were recruited from universities or notice boards in Seoul, Korea (Table 1). Their mean age was 24.45 (*SD*=3.08). Women interested in participating were informed of the purpose of

Table 1. Demographic Characteristics of the Study Participants

| Variable | Classification | Frequency (Number of Participants) | Percentage(%) |
|---|---|---|---|
| Age Group | Age 18 - 19 | 23 | 7.4 |
| | Age 20 - 21 | 44 | 14 |
| | Age 22 - 23 | 49 | 15.7 |
| | Age 24 - 25 | 69 | 22 |
| | Age 26 - 27 | 68 | 21.7 |
| | Age 28 - 29 | 60 | 19.2 |
| Level of Education | High School Graduate | 5 | 1.6 |
| | Currently Enrolled in College | 122 | 39 |
| | Barchelors Degree Earned | 113 | 36.1 |
| | Currently Enrolled in a Master's Program or Higher | 73 | 23.3 |

*Note*. *N*=313. This study targets Koreans in their 20s. Since Korean college students mostly enter college in their early 20s, some of the date were collected from college students. However, some college students are not yet 20s and included them in the study.

the study and any risks to participation before obtaining their written consent to participate and completing a self-report questionnaire online. As part of the instructions, the participants were asked to answer the questionnaire items independently. It took 10-15 minutes to complete the questionnaire. Participants received a gift card for a cup of coffee (approximately $3) as compensation for their participation. From October 11th to the 19th in 2021, this study was conducted.

Institutional Review Board approval was not required before conducting this study in the principal investigator's institution.

## Measures

**Childhood Trauma Questionnaire-Short Form.** The Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein et al., 2003) is a 28-item self-report scale that assesses childhood trauma in five domains. We used the Korean version of the CTQ-SF (Kim & Kim, 2010), which demonstrated strong validity and reliability in a study with Korean undergraduate students. The subscale that assesses childhood sexual abuse was not used in the current study in alignment with prevailing research trends that have regarded it as a distinct classification (Kim & Kim, 2010). Cronbach's alpha of the CTQ-SF was .90 in this study.

**Difficulties in Emotional Regulation Scale.** The Difficulties in Emotional Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item self-report questionnaire that assesses difficulties in emotion regulation and has six subscales. The Korean version of the DERS (Cho, 2007) was utilized in this study, and the Cronbach's alpha was .95. In our study, items with factor loadings below .40 were excluded from the scale based on an exploratory factor analysis (Wang & Wang, 2019). This affected the Lack of Attention/Awareness of Emotions subscale, which was excluded from analysis in a previous study due to low factor loadings (Ham & Hyun, 2018). Moreover, findings from other studies (Cho, 2007; Lee, 2010) suggest that the subscale shows heterogeneity compared to the other subscales. Upon scrutinizing its correlations with other variables to assess the validity of the scale, only the Emotional Attention/Lack of Emotion Recognition subscale demonstrated a distinct relationship pattern (Cho, 2007). Therefore, the decision to remove the Lack of Attention/Awareness of Emotions subscale was deemed appropriate.

**Center for Epidemiological Studies-Depression Scale.** The Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) is a self-report questionnaire that assesses respondents' level of depression. Items are measured using a 4-point scale indicating

the extent to which the depressive symptom was experienced in the past week. The Korean version of the CES-D was used in our study, which demonstrated good validity and reliability in a previous study with Korean undergraduates (Chon et al., 2001). Cronbach's alpha in this study was .93.

**Multidimensional Assessment of Interoceptive Awareness.** To measure interoceptive awareness, this study used the Korean version of the Multidimensional Assessment of Interoceptive Awareness (K-MAIA), which was first developed by Mehling et al. (2012) and translated and validated for use in Korea by Gim, Shim, and Cho (2016). The K-MAIA scale is a 32-item questionnaire assessing interoceptive awareness and consists of six subscales: Noticing, accept, attention regulation, mind-body connection awareness, return to body, and trusting. Items are rated using a 7-point Likert scale. Higher scores indicate stronger interoceptive skills. The Cronbach's alpha was .93 in this study.

### Data Analysis

Outliers were identified by verifying Mahalanobis distance D, and 11 reports with values less than .001 were removed from the analysis. Mahalanobis distance is an indicator used to detect extreme values that are far from the overall distribution. It is commonly used to detect outliers. In this study, Mahalanobis distances were calculated using SPSS regression analysis, and cases with values below .001 were excluded. Descriptive and correlational analyses were conducted on the main variables. We then analyzed the mediation and moderated mediation models using PROCESS macro Model 4 and Model 14, respectively. We used 10,000 bootstrapping resamples to generate 95% confidence intervals (CI) to identify the indirect and moderated effects. The significance of the indirect and moderated effects was established if zero was not included in the CI (Preacher & Hayes, 2004). We investigated the conditional direct and indirect effects at different levels of the moderator (i.e., -1 *SD*, *M*, +1 *SD*).

## Results

Table 2 provides the participants' descriptive characteristics and correlations of the study variables.

According to Muller et al. (2005), a moderated mediation effect is valid only when the moderator does not directly influence the relationship between the independent and dependent variables. Therefore, we initially assessed whether interoceptive awareness acts as a moderator in the relationship between childhood trauma and depression using

Table 2. Descriptive Statistics and Correlations of the Study Variables.

| Variables | *M* | *SD* | Skewness | Kurtosis | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|
| 1. Childhood trauma | 1.49 | 0.41 | 0.92 | 0.01 | – | | | |
| 2. Difficulties in emotion regulation | 2.11 | 0.75 | 1.01 | 0.50 | .22** | – | | |
| 3. Depression | 0.84 | 0.52 | 0.73 | -0.09 | .28** | .60** | – | |
| 4. Interoceptive awareness | 3.36 | 0.80 | -0.09 | -0.23 | -.07 | -.26** | -.25** | – |

*Note*. *N*=313. Reliability coefficients are reported along the diagonal.
**$p$<.01.

PROCESS model 1. The interaction effect of interoceptive awareness on the relationship between childhood trauma and depression was not statistically significant.

We used Hayes′ (2013) SPSS PROCESS macro (Model 4) to analyze the indirect effect of childhood trauma on depression through emotion dysregulation. Because zero was not included in the CI (95% CI [0.077, 0.251]), the indirect effect was considered statistically significant. Therefore, our findings confirmed that the pathway between childhood trauma and depression was mediated by emotion dysregulation (Table 3).

We used Hayes′ (2013) SPSS PROCESS macro (Model 14) to analyze the moderated mediation effect of interoceptive awareness between emotion dysregulation and depression. The interaction between emotion dysregulation and interoceptive awareness was positively associated with depression (Figure 2). As shown in Table 3, the results indicate that interoceptive awareness moderates the ′emotion dysregulation′-depression relationship (*B*=0.093, $p$<.01).

Furthermore, Figure 3 illustrates the results

Table 3. Results of Moderated Mediation Analyses

| Criterion and predictor variable | *B* | *SE* | *t* | *LLCI* | *ULCI* |
|---|---|---|---|---|---|
| Emotional dysregulation | | | | | |
| Childhood trauma | 0.403 | 0.102 | 3.938*** | 0.202 | 0.604 |
| | | | $R^2$=.048, *F*=15.510*** | | |
| Depression | | | | | |
| Childhood trauma | 0.204 | 0.059 | 3.489*** | 0.089 | 0.319 |
| Emotional dysregulation | 0.393 | 0.033 | 11.806*** | 0.328 | 0.459 |
| Interoceptive awareness | -0.069 | 0.030 | -2.314* | -0.128 | -0.010 |
| Emotional dysregulation x Interoceptive awareness | 0.093 | 0.034 | 2.747** | 0.026 | 0.159 |
| | | | $R^2$=.401, *F*=51.620*** | | |

*Note*. *$p$<.05, **$p$<.01, ***$p$<.001

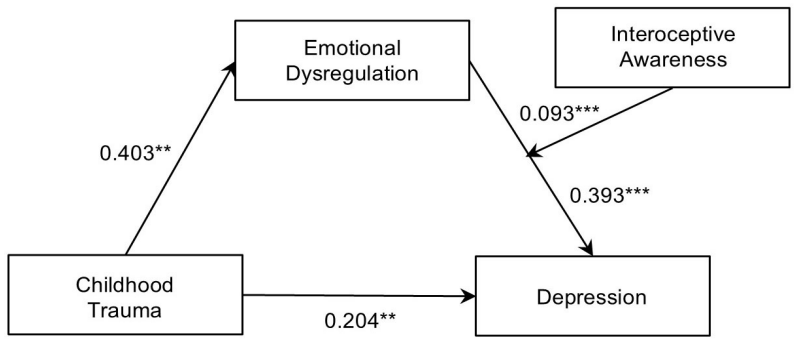


Figure 2. Moderated Mediation Model on Childhood Trauma and Depression Relationship

*Note.* $^{**}p<.01$. $^{***}p<.001$.

of the simple slope analyses used to confirm the level at which the mediator was statistically significant based on a significant interaction at 1 standard deviation (SD) above and 1 SD below the mean of interoceptive awareness. For low levels of interoceptive awareness, $B$=0.32 (95% CI [0.061, 0.204]), whereas for high levels of interoceptive awareness, $B$=0.47 (95% CI [0.083, 0.314]). The higher the value of the moderator, the stronger the indirect effect (-1 $SD$=0.13, $M$=0.16, +1 $SD$=0.19). Therefore, contrary to what was hypothesized, the higher the interoceptive awareness, the stronger the effect of childhood trauma on depression through emotion dysregulation.

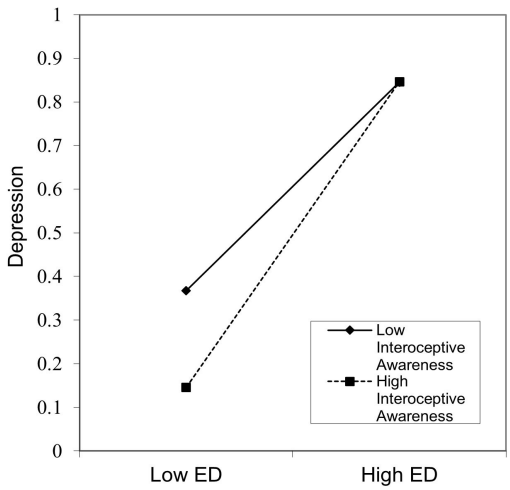


Figure 3. Interoceptive Awareness Moderated the Effect of Childhood Trauma on Emotional Dysregulation (ED)

## Discussion

The objective of this study was to investigate the association between childhood trauma and subsequent depression, with a specific focus on the roles of emotion dysregulation and interoceptive awareness among women in their twenties. We postulated that emotion dysregulation mediates the association between childhood trauma and depression and that interoceptive awareness moderates this relationship.

We found that emotion dysregulation partially

mediated the link between childhood trauma and depression; that is, childhood trauma directly predicted depression and also indirectly predicted depression through emotion dysregulation. Our findings align with previous research that found traumatic childhood experiences had a negative effect on mental health in adulthood (Feiring et al., 1999; Thornberry et al., 2001). Furthermore, because childhood trauma occurs during neurophysiological development and psychological attachment, this progression may be impeded. The hindrance can result in an inability to regulate emotions causing children to react strongly to even small amounts of stress or have difficulties in self-soothing (Cloitre et al., 2005; Lamoureux et al., 2012). The results are also consistent with earlier research that the more frequent use of dysfunctional emotion regulation strategies that make it difficult to reduce unpleasant or negative emotions may lead to higher levels of depression (Crow et al., 2014).

The finding on the moderating effect of interoceptive awareness was contrary to what was hypothesized. Instead of a high level of interoceptive awareness decreasing depressive symptoms by enabling individuals to better regulate their emotions after having experienced childhood trauma, high interoceptive awareness had a stronger effect on depressive symptoms when individuals were high in emotion dysregulation. Specifically, among individuals with low emotion dysregulation, depression was relatively low when interoceptive awareness was high. However, for individuals with high emotion dysregulation, depression was high regardless of the level of interoceptive awareness. Thus, people with higher interoceptive awareness would be more vulnerable to the effects of emotion dysregulation on depression.

The results of this study can be explained in several ways. First, it is possible that interoceptive awareness worked maladaptively (Mallorquí-Bagué et al., 2014; Mehling, 2016), which is consistent with the traditional perspective rather than the more recently emerging alternative perspective. Focusing on bodily symptoms has been regarded as an expression of anxiety and somatization (King et al., 2013) and interpreted as an exaggerated focus or hypervigilance that has maladaptive aspects (Baas et al., 2004; Domschke et al., 2010; Flink et al., 2009; Mehling, 2016). For example, studies have shown that increased interoceptive awareness or sensitivity is associated with anxiety and anxiety disorders (Baas et al., 2004; Domschke et al., 2010; Mallorquí-Bagué et al., 2014). Thus, in this sample of Korean females in their 20s, increased interoceptive awareness functioned maladaptively among women high in emotion dysregulation in relation to depressive symptoms.

Specifically, an excessive focus on bodily sensations can increase the awareness of physical symptoms and physiological changes, potentially heightening sensitivity to internal sensations and experiences. When this heightened sensitivity is perceived to be threatening, anxiety may increase (Domschke et al., 2010). Additionally, catastrophic interpretations of physical symptoms may arise (Domschke et al., 2010), becoming a risk factor for developing anxiety. Rumination is a response style characterized by repetitive and passive focus on the symptoms, causes, and consequences of distress (Nolen-Hoeksema et al., 2008). Rumination may be triggered if bodily sensations are interpreted as dangerous and negative thoughts about them are recurrent. Such rumination prolongs distress, exacerbates negative emotions, and subsequently, increases the risk of anxiety and depression (McLaughlin & Nolen-Hoeksema, 2011; Raes, 2010).

Furthermore, attention to bodily sensations tends to focus more on internal processes than external ones (Ginzburg et al., 2014). Studies also suggest that monitoring bodily signals may be associated with somatosensory amplification (Ginzburg et al., 2014). While not directly comparable, studies measuring interoceptive accuracy via heart rate have established that individuals with high interoceptive accuracy tend to experience more intense emotional responses and report greater negative emotions following stress than individuals with low interoceptive accuracy (Schaan et al., 2019). Conversely, some studies have also reported contradictory results. Thus, individuals with emotion regulation difficulties may perceive amplified negative emotions when attuned to internal sensations, potentially intensifying their emotional distress.

Second, the outcomes may vary depending on the type of adverse experience. For example, emotional abuse and emotional neglect were found to have a significant effect on psychopathology and interpersonal relationships through emotion dysregulation, but the other three types of trauma (i.e., physical abuse, physical neglect, and sexual abuse) did not have a significant effect on emotion dysregulation (Berzenski, 2019; Kim & Kim, 2020). As another example, adolescents who had experienced sexual abuse and were high in mindfulness experienced more anxiety and anger (Daigneault et al., 2016). Moreover, the buffering role of mindfulness may differ depending on the type of maltreatment (Daigneault et al., 2016). Therefore, in the future, it is necessary to determine how the moderating effect varies depending on the type of childhood trauma.

Furthermore, studies suggest that interoceptive awareness is shaped by social interactions. For instance, infants rely on caregivers' responses to develop and understand accurate interoceptive states. Insensitive, slow,

or inconsistent caregiving in early childhood, especially when an infant's distress is dismissed, can impair a child's ability to form accurate bodily representations (Oldroyd et al., 2019). Specifically, neglect may lead individuals to develop tendencies to minimize or suppress bodily signals (Diamond et al., 2006). Consequently, those who have experienced neglect may struggle to accurately recognize or identify interoceptive signals, display underactivation, and face challenges in aligning these signals with emotional states. Conversely, individuals who have endured abuse may excessively amplify or emphasize bodily signals, potentially leading to emotional distress and difficulty in managing heightened reactivity and overactivation in response to internal experiences (Oldroyd et al., 2019). Therefore, even within the context of childhood trauma, tailored interventions are needed to address the unique needs associated with each type of adverse experience.

Third, to further investigate whether the moderating effects differ by subfactor of interoceptive awareness, we examined such effects for each subfactor. The results indicated that, while the four subfactors had no moderating effects, two subfactors, *attention regulation* ($B$=0.079, $p$<.001) and *mind-body connection awareness* ($B$=0.073, $p$<.01), demonstrated significant moderating effects. Thus, individuals with emotion regulation difficulties due to childhood trauma may require different counseling interventions depending on their level of difficulty.

Fourth, this research involved individuals who were not a clinical sample. Therefore, in the future, it will be necessary to conduct a study with a clinical sample of people with depression. When interventions to increase interoceptive awareness are implemented, it would be important to investigate differences in the levels of alteration in interoceptive awareness and the resulting emotion regulation effect.

Finally, gender differences may have influenced the results. This study focused on women in their 20s, as depression is highest in this demographic in Korea. Although limited research on gender differences in this context exists, one study using the MAIA found that men and women responded differently across several MAIA subfactors (Grabauskaitė et al., 2017). In particular, among the subfactors, *not worrying* exhibited a lower score in measuring not to experience emotional distress with physical discomfort in women (Grabauskaitė et al., 2017). This suggests that women may experience more worry or emotional distress when faced with pain or discomfort (Mehling et al., 2012). Mehling et al.'s (2012) scale study further indicated that higher scores on this subfactor were associated with reduced emotional dysregulation; the authors also observed that it had the strongest correlation

with the anxiety scale (Mehling et al., 2012). Therefore, while not conclusive, this reactive nature of women may have influenced the results. As such, further research including both men and women is needed for a more comprehensive understanding of this issue.

Overall, these findings point to various possible counseling interventions. Specifically, interventions may vary depending on the level of emotion regulation difficulties. For individuals with low levels of such difficulties, the previously proposed adaptive aspect of interoceptive awareness intervention may be effective. That is, when emotion regulation difficulties are low, higher levels of interoceptive awareness may reduce depression. As observed in the subfactor analysis, focusing on attention regulation and mind-body connection awareness in these interventions may be particularly effective. Meanwhile, for individuals with high levels of emotion regulation difficulties, depression remains high regardless of the level of interoceptive awareness. This suggests that people with emotion regulation difficulties may already have low emotional and interoceptive awareness (Gratz & Roemer, 2004), reducing the impact of such interventions. Therefore, a more integrated approach to intervention should be considered, incorporating strategies like integrating traumatic memories, cognitive behavioral therapy, and mindfulness, which have been discussed in therapeutic interventions for childhood trauma (Van der Kolk, 2014).

The first significant aspect of this study was that we conducted an empirical study using awareness of body sensations in relation to childhood traumatic experiences and depression. Despite the literature highlighting the importance of interoceptive awareness (Füstös et al., 2013; Payne et al., 2015; Van der Kolk, 2014), few empirical studies that have investigated related variables. In particular, when considering coping strategies and mindfulness that are associated with interoceptive awareness (Dolbier et al., 2021; Payne et al., 2015; Schmitz et al., 2023; Schuette et al., 2021), it would be important to examine the moderating effect of interoceptive awareness. However, we did not find studies that investigated interoceptive awareness as a moderator. This study is the first to explore interoceptive awareness as a potential protective factor. However, because the results contradicted our theoretical argument and therefore what we predicted in this study, in future studies it will be necessary to confirm the moderated mediating effect of interoceptive awareness in clinical groups. In addition, the moderating role of interoceptive awareness should be investigated further.

Another significant aspect of this study is that we examined the effect of depression as an after-effect of childhood trauma and the moderating effect of interoceptive awareness,

which has been identified as a mechanism for recovery from adverse childhood experiences. This study used a multidimensional interoceptive awareness scale that includes mindfulness as characteristic of interoception. Through the measurement of interoceptive awareness, we can extrapolate the therapeutic mechanisms of sensorimotor psychotherapy and somatic experiencing and consider interoceptive awareness as a coping strategy and facilitator of social connection. It is significant and meaningful that we created a model of the operational mechanisms, which can be used to explore and test the protective role of interoceptive awareness in the relationships among childhood trauma, emotion dysregulation, and depression. In the future, it would be helpful to consider various intervention and prevention strategies by exploring other related variables. This effort can help maintain the overall meaning of interoceptive awareness and balanced research related to interventions to address trauma and depression in the future.

## Limitations

First, the data was collected using self-report scales, which are susceptible to bias and social desirability responding. In particular, in the case of childhood trauma, participants might have underreported their experiences due to memory, responded in a defensive manner, or responded in a way that would be viewed as favorable. Therefore, future research should consider ways to increase internal validity by conducting interviews or simultaneously using other objective measures.

Second, the purposive sampling was inherently biased and likely resulted in participants having a low degree of childhood trauma experiences and a low level of depression. Research with clinical groups who have depression (or other possible psychiatric disorders) should be conducted to confirm the effectiveness of interoceptive awareness as proposed in this study. Pre-and post-validation can be conducted through an interoceptive awareness training program based on participants who have experienced childhood trauma. In addition, in a longitudinal study, a group with a low level of interoceptive awareness could be recruited to examine how the subfactors of interoceptive awareness change or to determine the effectiveness when interoceptive awareness improves. Furthermore, a study could examine whether an interoceptive awareness intervention is effective for patients with alexithymia or dissociation.

Lastly, this study investigated childhood trauma based on a total score without differentiating the impact of different trauma patterns. Future research should examine each form of trauma independently.

## References


Adrian, M., Jenness, J. L., Kuehn, K. S., Smith, M. R., & McLaughlin, K. A. (2019). Emotion regulation processes linking peer victimization to anxiety and depression symptoms in adolescence. *Development and Psychopathology*, *31*(3), 999-1009. https://doi.org/10.1017/S0954579419000543

Allen, J. G. (2008). *Coping with trauma: Hope through understanding* (2nd ed.). American Psychiatric Pub.

Allen, J. G., Coyne, L., & Console, D. A. (2000). Course of illness following specialized inpatient treatment for women with trauma-related psychopathology. *Bulletin of the Menninger Clinic*, *64*(2), 235-256.

Arnold, A. J., Winkielman, P., & Dobkins, K. (2019). Interoception and social connection. *Frontiers in Psychology*, *10*, 2589. https://doi.org/10.3389/fpsyg.2019.02589

Arnow, B. A., Blasey, C. M., Hunkeler, E. M., Lee, J., & Hayward, C. (2011). Does gender moderate the relationship between childhood maltreatment and adult depression?. *Child Maltreatment*, *16*(3), 175-183. https://doi.org/10.1177/1077559511412067

Baas, L. S., Beery, T. A., Allen, G., Wizer, M., & Wagoner, L. E. (2004). An exploratory study of body awareness in persons with heart failure treated medically or with transplantation. *Journal of Cardiovascular Nursing*, *19*(1), 32-40.

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., Stokes, J., Handelsman, L., Medrano, M., & Desmond, D. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect*, *27*(2), 169-190. https://doi.org/10.1016/S0145-2134(02)00541-0

Berzenski, S. R. (2019). Distinct emotion regulation skills explain psychopathology and problems in social relationships following childhood emotional abuse and neglect. *Development and Psychopathology*, *31*(2), 483-496. https://doi.org/10. 1017/S0954579418000020

Brewer, R., Murphy, J., & Bird, G. (2021). Atypical interoception as a common risk factor for psychopathology: A review. *Neuroscience & Biobehavioral Reviews*, *130*, 470-508. https://doi.org/10.1017/S0954579418000020

Calkins, S. D., & Hill, A. (2007). Caregiver influences on emerging emotion regulation: Biological and environmental transactions in early development. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 229-248). The Guilford Press.

Carr, C. P., Martins, C. M. S., Stingel, A. M., Lemgruber, V. B., & Juruena, M. F. (2013). The role of early life stress in adult psychiatric disorders: A systematic review according to childhood trauma subtypes. *The Journal of Nervous and Mental Disease*, *201*(12), 1007-1020. https://doi.org/10.1097/NMD.0000000000000049

Carruthers, G. (2008). Types of body representation and the sense of embodiment. *Consciousness and Cognition*, *17*(4), 1302-1316. https://doi.org/10.1016/j.concog.2008.02.001

Chapman, D. P., Whitfield, C. L., Felitti, V. J., Dube, S. R., Edwards, V. J., & Anda, R. F. (2004). Adverse childhood experiences and the risk of depressive disorders in adulthood. *Journal of Affective Disorders*, *82*(2), 217-225. https://doi.org/10.1016/j.jad.2003.12.013

Cho, Y. R. (2007). Assessing emotion dysregulation: Psychometric properties of the Korean version of the difficulties in emotion regulation scale. *Korean Journal of Clinical Psychology*, *26*(4), 1015-1038.

Chon, K. K., Choi, S. C., & Yang, B. C. (2001). Integrated adaptation of CES-D in Korea. *Korean Journal of Health Psychology, 6*(1), 59-76.

Cicchetti, D., Ackerman, B. P., & Izard, C. E. (1995). Emotions and emotion regulation in developmental psychopathology. *Development and Psychopathology, 7*(1), 1-10. https://doi.org/10.1017/S0954579400006301

Cloitre, M., Miranda, R., Stovall-McClough, K. C., & Han, H. (2005). Beyond PTSD: Emotion regulation and interpersonal problems as predictors of functional impairment in survivors of childhood abuse. *Behavior Therapy, 36*(2), 119-124. https://doi.org/10.1016/S0005-7894(05)80060-7

Craig, A. D. (2002). How do you feel? Interoception: The sense of the physiological condition of the body. *Nature Reviews Neuroscience, 3*(8), 655-666.

Crow, T., Cross, D., Powers, A., & Bradley, B. (2014). Emotion dysregulation as a mediator between childhood emotional abuse and current depression in a low-income African-American sample. *Child Abuse & Neglect, 38*(10), 1590-1598. https://doi.org/10.1016/j.chiabu.2014.05. 015

Cummings, M., Berkowitz, S. J., & Scribano, P. V. (2012). Treatment of childhood sexual abuse: An updated review. *Current Psychiatry Reports, 14*, 599-607.

Daigneault, I., Dion, J., Hbert, M., & Bourgeois, C. (2016). Mindfulness as mediator and moderator of post-traumatic symptomatology in adolescence following childhood sexual abuse or assault. *Mindfulness, 7*, 1306-1315.

Diamond L. M., Hicks A. M., Otter-Henderson K. (2006). Physiological evidence for repressive coping among avoidantly attached adults. *Journal of Social and Personal Relationship, 23*(2), 205-229. https://doi.org/10.1177/0265407506062470

Dolbier, C. L., Haley, E. N., Conder, L., & Guiler, W. (2021). Adverse childhood experiences and adult psychopathological symptoms: The moderating role of dispositional mindfulness. *Journal of Contextual Behavioral Science, 21*, 73-79. https://doi.org/10.1016/j.jcbs.2021.06.001

Domschke, K., Stevens, S., Pfleiderer, B., & Gerlach, A. L. (2010). Interoceptive sensitivity in anxiety and anxiety disorders: An overview and integration of neurobiological findings. *Clinical Psychology Review, 30*(1), 1-11. https://doi.org/10.1016/j.cpr.2009.08.008

Dunne, J., Flores, M., Gawande, R., & Schuman-Olivier, Z. (2021). Losing trust in body sensations: Interoceptive awareness and depression symptom severity among primary care patients. *Journal of Affective Disorders, 282*, 1210-1219. https://doi.org/10.1016/j.jad.2020.12.092

Feiring, C., Taska, L., & Lewis, M. (1999). Age and gender differences in children's and adolescents' adaptation to sexual abuse. *Child Abuse & Neglect, 23*(2), 115-128. https://doi.org/10.1016/S0145-2134(98)00116-1

Flink, I. K., Nicholas, M. K., Boersma, K., & Linton, S. J. (2009). Reducing the threat value of chronic pain: A preliminary replicated single-case study of interoceptive exposure versus distraction in six individuals with chronic back pain. *Behaviour Research and Therapy, 47*(8), 721-728. https://doi.org/10.1016/j.brat.2009.05.00

Füstös, J., Gramann, K., Herbert, B. M., & Pollatos, O. (2013). On the embodiment of emotion regulation: Interoceptive awareness facilitates reappraisal. *Social Cognitive and Affective Neuroscience, 8*(8), 911-917. https://doi.org/10.1093/scan/nss089

Gim, W.-S., Sim, K.-L., & Cho, O.-K. (2016). Korean

multidimensional assessment of interoceptive awareness (K-MAIA): Development and validation. *The Korean Journal of Stress Research*, *24*(3). 177-192. https://doi.org/10.17547/kjsr.2016.24.3.177

Ginzburg, K., Tsur, N., Barak-Nahum, A., & Defrin, R. (2014). Body awareness: Differentiating between sensitivity to and monitoring of bodily signals. *Journal of Behavioral Medicine*, *37*, 564-575. https://doi.org/10.1007/s10865-013-9514-9

Grabauskaitė, A., Baranauskas, M., & Griškova-Bulanova, I. (2017). Interoception and gender: What aspects should we pay attention to?. *Consciousness and Cognition*, *48*, 129-137. https://doi.org/10.1016/j.concog.2016.11.002

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*, 41-54.

Ham, S.-M., & Hyun, M.-H. (2018). The mediating effects of emotional dysregulation on the relationship between attention-deficit/hyperactivity disorder traits and disordered eating behaviors. *The Korean Journal of Health Psychology*, *23*(2), 505-523.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression based approach*. New York, NY: Guilford Press.

Hopfinger, L., Berking, M., Bockting, C. L., & Ebert, D. D. (2016). Emotion regulation mediates the effect of childhood trauma on depression. *Journal of Affective Disorders*, *198*, 189-197. https://doi.org/10.1016/j.jad.2016.03.050

Hyman, S. M., Paliwal, P., Chaplin, T. M., Mazure, C. M., Rounsaville, B. J., & Sinha, R. (2008). Severity of childhood trauma is predictive of cocaine relapse outcomes in women but not men. *Drug and Alcohol Dependence*, *92*(1-3), 208-216. https://doi.org/10.1016/j.drugalcdep.2007.08.006

Infurna, M. R., Reichl, C., Parzer, P., Schimmenti, A., Bifulco, A., & Kaess, M. (2016). Associations between depression and specific childhood experiences of abuse and neglect: A meta-analysis. *Journal of Affective Disorders*, *190*, 47-55. https://doi.org/10.1016/j.jad.2015.09.006

Kever, A., Pollatos, O., Vermeulen, N., & Grynberg, D. (2015). Interoceptive sensitivity facilitates both antecedent-and response-focused emotion regulation strategies. *Personality and Individual Differences*, *87*, 20-23. https://doi.org/10.1016/j.paid.2015.07.014

Khalsa, S. S., Adolphs, R., Cameron, O. G., Critchley, H. D., Davenport, P. W., Feinstein, J. S., Feusner, J. D., Garfinkel, S. N., Lane, R. D., & Mehling, W. E. (2018). Interoception and mental health: A roadmap. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, *3*(6), 501-513. https://doi.org/10.1016/j.bpsc.2017.12.004

Khalsa, S. S., & Lapidus, R. C. (2016). Can interoception improve the pragmatic search for biomarkers in psychiatry? *Frontiers in Psychiatry*, *7*, Article 121. https://doi.org/10.3389/fpsyt.2016.00121

Kim, E. J., & Kim, J. S. (2008). Relation between childhood emotional abuse and the level of depression among college students: The mediating effect of emotional regulation difficulties. *The Korea Journal of Counseling*, *9*(4), 1505-1520.

Kim, E. J., & Kim, J. S. (2010). The relation between childhood trauma and early adulthood depression: The mediating effects of early maladaptive schemas, ambivalence over emotional

expressiveness and avoidance coping style. *The Korean Journal of Counseling and Psychotherapy*, *22*(3), 605-630.

Kim, E. J., & Kim, J. S. (2020). The mediating effect of difficulties in emotion regulation on the relationship between childhood emotional trauma, psychopathology and interpersonal problems: With a focus on the distinct paths of emotional abuse and emotional neglect. *The Korea Journal of Counseling*, *21*(3), 23-44.

Kim, S. J. (2022, June 27). Most people with depression are in their 20s, and there are more women than men. *Datanews*. https://www.datasom.co.kr/news/articleView.html?idxno=123538

King, A. P., Erickson, T. M., Giardino, N. D., Favorite, T., Rauch, S. A. M., Robinson, E., Kulkarni, M., & Liberzon, I. (2013). A pilot study of group mindfulness based cognitive therapy (MBCT) for combat veterans with posttraumatic stress disorder (PTSD). *Depression and Anxiety*, *30*(7), 638-645. https://doi.org/10.1002/da.22104

Lamoureux, B. E., Palmieri, P. A., Jackson, A. P., & Hobfoll, S. E. (2012). Child sexual abuse and adulthood-interpersonal outcomes: Examining pathways for intervention. *Psychological Trauma: Theory, Research, Practice, and Policy*, *4*(6), 605-613. https://doi.org/10.1037/a0026079

Lee, J.-Y. (2010). The effects of emotion regulation strategies on emotion dysregulation. *The Korean Journal of Counseling and Psychotherapy*, *22*(3), 821-841.

Lee, J.-Y., & Kwon, S.-M. (2006). Relationship between emotion regulation and psychopathology: Recent research trends and future research tasks. *The Korean Journal of Counseling and Psychotherapy*, *18*(3), 461-493.

Luxenberg, T., Spinazzola, J., & Van der Kolk, B. A. (2001). Complex trauma and disorders of extreme stress (DESNOS) diagnosis, part one: Assessment. *Directions in Psychiatry*, *21*(25), 373-392.

MacMillan, H. L., Fleming, J. E., Streiner, D. L., Lin, E., Boyle, M. H., Jamieson, E., Duku, E. K., Walsh, C. A., Wong, M. Y., & Beardslee, W. R. (2001). Childhood abuse and lifetime psychopathology in a community sample. *American Journal of Psychiatry*, *158*(11), 1878-1883. https://doi.org/10.1176/appi.ajp.158.11.1878

Mallorquí-Bagué, N., Garfinkel, S. N., Engels, M., Eccles, J. A., Pailhez, G., Bulbena, A., & Critchley, H. D. (2014). Neuroimaging and psychophysiological investigation of the link between anxiety, enhanced affective reactivity and interoception in people with joint hypermobility. *Frontiers in Psychology*, *5*, Article 1162. https://doi.org/10.3389/fpsyg.2014.01162

McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2012). Childhood adversities and first onset of psychiatric disorders in a national sample of US adolescents. *Archives of General Psychiatry*, *69*(11), 1151-1160. https://doi.org/10.1001/archgenpsychiatry.2011.2277

McLaughlin, K. A., Hatzenbuehler, M. L., Mennin, D. S., & Nolen-Hoeksema, S. (2011). Emotion dysregulation and adolescent psychopathology: A prospective study. *Behaviour Research and Therapy*, *49*(9), 544-554. https://doi.org/10.1016/j.brat.2011.06.003

McLaughlin, K. A., & Nolen-Hoeksema, S. (2011). Rumination as a transdiagnostic factor in depression and anxiety. *Behaviour Research and Therapy*, *49*(3), 186-193. https://doi.org/10.1016/j.brat.2010.12.006

Mehling, W. E. (2016). Differentiating attention styles and regulatory aspects of self-reported

interoceptive sensibility. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, *371*(1708). https://doi.org/10.1098/rstb.2016.0013

Mehling, W. E., Gopisetty, V., Daubenmier, J., Price, C. J., Hecht, F. M., & Stewart, A. (2009). Body awareness: Construct and self-report measures. *PloS ONE*, *4*(5), 1-18. https://doi.org/10.1371/journal.pone.0005614

Mehling, W. E., Price, C., Daubenmier, J. J., Acree, M., Bartmess, E., & Stewart, A. (2012). The multidimensional assessment of interoceptive awareness (MAIA). *PloS ONE*, *7*(11), Article e48230. https://doi.org/10.1371/journal.pone.0048230

Minton, K., Ogden, P., & Pain, C. (2006). *Trauma and the body: A sensorimotor approach to psychotherapy* (norton series on interpersonal neurobiology). WW Norton & Company.

Muller, D., Judd, C. M., & Yzerbyt, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology*, *89*(6), 852-863. https://doi.org/10.1037/0022-3514.89.6.852

Negele, A., Kaufhold, J., Kallenbach, L., & Leuzinger-Bohleber, M. (2015). Childhood trauma and its relation to chronic depression in adulthood. *Depression Research and Treatment*, *2015*(1), Article 650804. https://doi.org/10.1155/ 2015/650804

Neukirch, N., Reid, S., & Shires, A. (2019). Yoga for PTSD and the role of interoceptive awareness: A preliminary mixed-methods case series study. *European Journal of Trauma & Dissociation*, *3*(1), 7-15. https://doi.org/10.1016/j.ejtd.2018.10.003

Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science*, *3*(5), 400-424. https://doi.org/10.1111/j.1745-6924.2008.00088.x

Oldroyd K., Pasupathi M., Wainryb C. (2019). Social antecedents to the development of interoception: Attachment related processes are associated with interoception. *Frontiers in Psychology, 10*, Article 712. https://doi.org/10.3389/fpsyg.2019.00712

Payne, P., Levine, P. A., & Crane-Godreau, M. A. (2015). Somatic experiencing: Using interoception and proprioception as core elements of trauma therapy. *Frontiers in Psychology*, *6*, Article 93. https://doi.org/10.3389/fpsyg.2015.00093

Pollatos, O., Matthias, E., & Keller, J. (2015). When interoception helps to overcome negative feelings caused by social exclusion. *Frontiers in Psychology*, *6*, Article 786. https://doi.org/10.3389/fpsyg.2015.00786

Poole, J. C., Dobson, K. S., & Pusch, D. (2017). Childhood adversity and adult depression: The protective role of psychological resilience. *Child Abuse & Neglect*, *64*, 89-100. https://doi.org/10.1016/j.chiabu.2016.12.012

Porges, S. W. (2007). The polyvagal perspective. *Biological Psychology*, *74*(2), 116-143. https://doi.org/10.1016/j.biopsycho.2006.06.009

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, *36*, 717-731.

Price, C. J., & Hooven, C. (2018). Interoceptive awareness skills for emotion regulation: Theory and approach of mindful awareness in body-oriented therapy (MABT). *Frontiers in Psychology*, *9*, Article 798. https://doi.org/10.3389/fpsyg.2018.00798

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*(3), 385-401. https://doi.org/10.1177/014662167700100306

Raes, F. (2010). Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. *Personality and Individual Differences*, *48*(6), 757-761. https://doi.org/10.1016/j.paid.2010.01.023

Reinherz, H. Z., Paradis, A. D., Giaconia, R. M., Stashwick, C. K., & Fitzmaurice, G. (2003). Childhood and adolescent predictors of major depression in the transition to adulthood. *American Journal of Psychiatry*, *160*(12), 2141-2147. https://doi.org/10.1176/appi.ajp.160.12.2141

Sansone, R. A., Wiederman, M. W., & Sansone, L. A. (2001). Adult somatic preoccupation and its relationship to childhood trauma. *Violence and Victims*, *16*(1), 39-47. https://doi.org/10.1891/0886-6708.16.1.39

Schaan, V. K., Schulz, A., Rubel, J. A., Bernstein, M., Domes, G., Schächinger, H., & Vögele, C. (2019). Childhood trauma affects stress-related interoceptive accuracy. *Frontiers in Psychiatry*, *10*, Article 750. https://doi.org/10.3389/fpsyt.2019.00750

Scher, C. D., Forde, D. R., McQuaid, J. R., & Stein, M. B. (2004). Prevalence and demographic correlates of childhood maltreatment in an adult community sample. *Child Abuse & Neglect*, *28*(2), 167-180. https://doi.org/10.1016/j.chiabu.2003.09.012

Schmitz, M., Back, S. N., Seitz, K. I., Harbrecht, N. K., Streckert, L., Schulz, A., Herpertz, S. C., & Bertsch, K. (2023). The impact of traumatic childhood experiences on interoception: Disregarding one's own body. *Borderline Personality Disorder and Emotion Dysregulation*, *10*(1), Article 5.

Schuette, S. A., Zucker, N. L., & Smoski, M. J. (2021). Do interoceptive accuracy and interoceptive sensibility predict emotion regulation? *Psychological Research*, *85*, 1894-1908.

Seo, W.-J., & Cho, Y. R. (2012). The influences of emotion regulation difficulties, metacognition, and their dimensions on the severity of generalized anxiety symptoms. *Cognitive Behavior Therapy in Korea*, *12*(1), 43-61.

Thornberry, T. P., Ireland, T. O., & Smith, C. A. (2001). The importance of timing: The varying impact of childhood and adolescent maltreatment on multiple problem outcomes. *Development and Psychopathology*, *13*(4), 957-979. https://doi.org/10.1017/S0954579401004114

Van der Kolk, B. (2014). *The body keeps the score: Brain, mind, and body in the healing of trauma*. Viking Press.

Wang, J., He, X., Chen, Y., & Lin, C. (2020). Association between childhood trauma and depression: A moderated mediation analysis among normative Chinese college students. *Journal of Affective Disorders*, *276*, 519-524. https://doi.org/10.1016/j.jad.2020.07.051

Wang, J., & Wang, X. (2019). *Structural equation modeling: Applications using Mplus*. John Wiley & Sons.

Widom, C. S. (1999). Posttraumatic stress disorder in abused and neglected children grown up. *American Journal of Psychiatry*, *156*(8), 1223-1229. https://doi.org/10.1176/ajp.156.8.1223

원고접수일: 2024년 9월 13일
논문심사일: 2024년 10월 6일
게재결정일: 2024년 12월 3일

한국심리학회지: 건강
The Korean Journal of Health Psychology
2025. Vol. 30, No. 1, 67 - 89

# 20대 여성의 아동기 외상이 우울에 미치는 영향: 정서조절곤란과 신체자각의 조절된 매개효과

**배 세 은**
**이화여자대학교 심리학과**
**석사**

**유 성 경**
**이화여자대학교 심리학과**
**교수**

본 연구의 목적은 아동기 외상이 우울에 영향을 미치는 과정에서 정서조절곤란의 매개효과가 있는지, 그리고 이들의 간접효과를 신체자각이 조절하는 지를 확인하기 위해 조절된 매개효과를 검증하는 데 있다. 이를 위해 각 변인의 측정은 아동기 외상 척도, 우울 척도, 정서조절곤란 척도, 신체자각 척도를 사용하였다. 자료를 수집하기 위해 서울에 거주하는 20대 여성을 대상으로 온라인 자기보고식 설문지를 실시하였다. 총 313명에 대해 수집한 자료를 활용하여 SPSS 20.0과 SPSS Macro 프로그램을 이용하여 기술통계, 상관분석을 실시하였으며, 매개효과, 조절효과 및 조절된 매개효과를 검증하였다. 연구의 주요 결과를 보면, 매개효과 검증 결과, 아동기 외상과 우울의 관계에서 정서조절곤란의 부분매개 효과가 확인되었다. 나아가 조절된 매개효과 검증 결과, 아동기 외상이 정서조절곤란을 매개로 우울에 영향을 미치는 경로를 신체자각이 조절하였다. 다만, 가설과는 다르게 신체 자각의 수준이 높을 때 간접 효과가 오히려 커졌다. 이러한 연구 결과는 향후 외상과 우울의 관계에 대한 보다 통합적인 접근을 위한 시사점을 제공한다. 이런 내용을 바탕으로 본 연구의 의의 및 한계점을 논하였다.

주요어: 정서조절곤란, 신체자각, 아동기 외상, 우울