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ORIGINAL ARTICLE

The Influence of Early Experiences on Perinatal Mental Health: A Dual Perspective on Adversity and Benevolence

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Abstract

Early childhood experiences may shape the transition to motherhood. Research has mainly examined Adverse Childhood Experiences (ACEs), while Benevolent Childhood Experiences (BCEs) remain comparatively understudied. Considering both together is key to understanding maternal adjustment. This study aimed to identify subgroups of pregnant women based on ACEs, specifically childhood maltreatment (CM), and BCEs levels and to examine how these clusters relate to emotional symptoms and adaptation to pregnancy. A total of 454 pregnant women (M=34.70 years; SD=3.94 years; range=22–47 years; 95.4% Spanish) from an urban setting were recruited through a hospital and completed questionnaires assessing ACEs, BCEs, anxiety, depression, and adaptation to pregnancy. Cluster analyses identified four distinct CM–BCE profiles. Psychological outcomes during pregnancy differed significantly across clusters. Differences in depressive symptoms were associated with both CM and BCEs ($H(3)=44.92$, $p < .001$, $\eta^2 = .10$), whereas pregnancy anxiety ($H(3)=24.96$, $p < .01$, $\eta^2 = .05$) and adaptation to pregnancy ($H(3)=49.62$, $p <. 01$, $\eta^2 = .11$) were particularly sensitive to the absence of BCEs. Overall, BCEs emerged as a significant promotive factor for psychological adjustment during pregnancy. The findings support integrating both CM and BCEs into research and clinical assessments, encouraging a resilience-oriented framework.

Keywords Adverse childhood experiences · Childhood maltreatment · Benevolent childhood experiences · Perinatal mental health · Adaptation to pregnancy · Anxiety · Depression

Introduction

Adverse Childhood Experiences (ACEs), including abuse, neglect, and family dysfunction, represent a major public health concern (World Health Organization, 2009). Since the concept was first introduced by Felitti et al. (1998) in their landmark study, extensive research has established strong associations between adversity during the first 18 years of life and an increased risk of both physical and mental health disorders (Hughes et al., 2017). These associations are particularly concerning given the high prevalence of ACEs. In the United States, 61.55% of adults report experiencing at least one ACE (Merrick et al., 2018), with higher prevalence rates observed among women compared to men (Merrick et al., 2019).

ACEs can exert long-term effects on health through biological, psychological, and social pathways. Biologically, exposure to toxic stress during sensitive developmental periods can disrupt the hypothalamic-pituitary-adrenal axis, impairing neuroendocrine, immune, and cardiovascular

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functioning (Dempster et al., 2021). Psychologically, individuals with a history of ACEs are more likely to develop maladaptive emotion regulation strategies and negative self-cognitions (Hager & Runtz, 2012; Stevens et al., 2013; Walter et al., 2010). Socially, they face increased risk of resource loss (Walter et al., 2010) and revictimization (Merrick et al., 2020; Scrafford et al., 2018) such as intimate partner violence (Mersky & Janczewski, 2018). These vulnerabilities are especially relevant during the perinatal period, a time marked by significant biopsychosocial changes (Athan, 2024) and recognized as a potential trigger for the onset or worsening of mental health disorders (Munk-Olsen et al., 2016).

In recent years, researchers have turned their attention toward early positive experiences that can coexist with adversity and are associated with more favorable adult outcomes (Han et al., 2023). Benevolent Childhood Experiences (BCEs) encompass early experiences of safety and affection from caregivers and other supportive relationships, the development of a healthy sense of self, and a stable and predictable daily life (Narayan et al., 2018). Although often inversely related to ACEs, BCEs appear to represent a distinct dimension of childhood experience rather than the opposite end of a continuum (Han et al., 2023). This perspective is important, as BCEs have been shown to predict health outcomes beyond what is explained by ACEs alone (Bethell et al., 2019).

Given this evidence, examining BCEs during pregnancy is especially important, as this period may represent not only a time of vulnerability but also a window of heightened sensitivity in which women could be particularly receptive to positive, resilience-promoting influences (Davis & Narayan, 2020).

ACEs and Perinatal Period

Adults with a history of childhood adversity may be particularly vulnerable to perinatal stress. Research suggests that even relatively low levels of stress can trigger depressive episodes in those with ACEs, compared to individuals without such experiences (Hammen et al., 2000). Early adversity appears to heighten sensitivity to stressful life events in adulthood, potentially lowering stress tolerance thresholds (McLaughlin et al., 2010; Schumm et al., 2005). In this context, the transition to motherhood may act as a trigger for the onset of psychopathology in vulnerable women, consistent with the diathesis–stress model (Choi & Sikkema, 2016).

Beyond the stress associated with the perinatal period, motherhood also entails the development of a new identity (Athan, 2020). ACEs may influence maternal mental health during this period, as becoming a parent can evoke cognitions and emotions linked to one's own childhood experiences (Slade et al., 2009). Mothers with ACEs often reflect on their own early experiences to consider how they wish to nurture their children, either by identifying with or rejecting aspects of the parenting they received (Narayan et al., 2017; Slade et al., 2009). In this process, unresolved adversities with their caregivers may re-emerge (Narayan et al., 2017).

Given that ACEs are a well-documented risk factor for expectant mothers (Biaggi et al., 2016), systematic reviews and meta-analyses have documented their association with anxiety, depression, and posttraumatic stress disorder (Erickson et al., 2024). Research also suggests that the effects of early-life stress in mothers predict symptomatology beyond more recent adversities (Choi & Sikkema, 2016). Among the types of adversity with the greatest impact during the perinatal period, childhood maltreatment (CM) appears to be especially salient over family dysfunction (Atzl et al., 2019; Narayan et al., 2023). In the general population, sexual abuse is considered the most influential ACE for predicting adverse psychological outcomes (Daníelsdóttir et al., 2024). However, during the perinatal period and early parenting, emotional abuse and emotional neglect also appear to play a central role (Choi & Sikkema, 2016; Fu et al., 2024; Torres-Pérez et al., 2026).

BCEs and Perinatal Period

While ACEs are well established as risk factors in the perinatal period, growing evidence reveals the equally important role of protective factors that can support more positive outcomes during this critical window (Borg & Alhusen, 2023). Research suggests that a higher number of BCEs is associated with reduced symptomatology, even in the presence of ACEs, particularly if they are occur since early childhood (Merrick et al., 2020). For instance, pregnant women who had experienced sexual abuse but also reported having a supportive relationship with their mothers were less prone to depression than those lacking this protective influence (Chung et al., 2008).

In this light, encouraging parents to reflect on and reconnect with moments from their own childhood when they felt safe, cared for, and loved can serve as a powerful therapeutic resource. Such recollections may inspire caregiving behaviors that promote emotional security in their children (Narayan et al., 2017). By drawing on these positive early experiences, parents can help build resilience and disrupt the intergenerational cycle of adversity and mental health difficulties (Tadjine & Swords, 2024).

Study Aims

This study aims to examine the influence of CM and BCEs on depressive symptoms, pregnancy anxiety symptoms, and adaptation to pregnancy by analysing the combination of both types of experiences. CM, rather than ACEs more broadly, was selected because, as noted above, maltreatment appears to be one of the most relevant childhood adversities in this context (Narayan et al., 2023) and is often perpetrated by parents or primary caregivers (Choi & Sikkema, 2016). Moreover, research on ACEs has increasingly moved toward a more nuanced examination of specific adversity subtypes rather than relying on cumulative ACE scores (Ellis et al., 2022).

Specifically, we aimed to reproduce the cluster typology described by Narayan et al. (2018), expecting women to be grouped into distinct profiles reflecting combinations of high and low adverse and positive experiences. These dimensions were not expected to be mutually exclusive, as some women may have experienced high levels of both (Narayan et al., 2023). Given the differences observed across clusters in relation to covariates, we conducted a *post hoc* supplementary analysis to examine whether early-life experiences predicted symptomatology above and beyond these factors.

In line with prior research, we hypothesized that these clusters would differ in psychological adjustment, with women characterized by more CM and fewer BCEs showing greater depressive and pregnancy anxiety symptoms, as well as poorer adaptation to pregnancy. These patterns were expected to point out the role of early life experiences as both risk and promotive influences on maternal mental health.

Method

Participants

Initially, 502 pregnant women expressed interest and provided informed consent. However, 48 did not meet eligibility criteria or subsequently withdrew, resulting in a final sample of 454 participants (M=34.70 years, SD=3.94, range=22–47).

Inclusion criteria were: being pregnant at the time of enrollment (regardless of gestational stage); being over 18 years of age; having proficiency in Spanish; and signing the informed consent form. Exclusion criteria were limited to not residing in Spain, in order to control for potential differences in healthcare access during pregnancy.

Data were collected between March 2024 and July 2025. Complete sociodemographic characteristics of the sample, as well as CM and BCEs scores and prevalences, are presented in Table 1. Sample size considerations based on G*Power analyses are described in Section S1 of the Supplementary Materials.

Table 1 Sociodemographic characteristics and childhood experience variables (CM and BCEs)

	M (SD)/*N* (%)
Age (22–47 years)	34.70 (3.94)
Nationality	
Spanish	433 (95.4)
Other	21 (4.6)
Education Level	
Basic (Compulsory Secondary Education)	7 (1.5)
Intermediate (Undergraduate degree or Higher Vocational Training)	128 (28.2)
Advanced (Postgraduate studies)	319 (70.3)
Employment Status	
Employed	416 (91.6)
Unemployed	38 (8.4)
Financial Independence	
Yes	423 (93.2)
No	31 (6.8)
In a Relationship	
Yes	446 (98.2)
No	8 (1.8)
Number of Children (0–6)	0.56 (0.71)
Number of Children	
Childless	244 (53.7)
Experienced Mother	210 (46.3)
Weeks Pregnant	28.18 (8.8)
CM (0–15)*	1.29 (1.99)
Physical abuse (0–2)	0.29 (0.53)
Emotional abuse (0–2)	0.39 (0.66)
Sexual abuse (0–4)	0.26 (0.76)
Physical neglect (0–2)	0.03 (0.18)
Emotional neglect (0–5)	0.29 (0.89)
BCE (0–10)	8.72 (1.49)

BCEs Benevolent Childhood Experiences, *CM* Childhood Maltreatment, *Prevalence of CM 46.9%; Physical abuse 25.1%; Emotional abuse 28.4%; Sexual abuse 14.3%; Physical neglect 2.6%; Emotional neglect 12.3%

Measures

Sociodemographic Questionnaire

An ad hoc 16-item questionnaire was developed to collect sociodemographic information. It included questions on age, education level (Compulsory Secondary Education, Undergraduate degree or Higher Vocational Training, Postgraduate studies), number of children, relationship status, nationality, gestational age (in weeks), employment status, and financial independence.

Childhood Experiences

The Adverse Childhood Experiences International Questionnaire (ACE-IQ) was used in this study, adapted from instruments developed by Felitti et al. (1998), the World Health Organization (WHO, 2020), and other complementary sources. The full questionnaire comprises 30 items (available at https://osf.io/7wm65/files/eujb6), from which we selected those related to CM, including physical (2 items), emotional (2 items), and sexual abuse (4 items), as well as physical (2 items) and emotional neglect (5 items). Full instrument was rated on a five-point Likert scale (0 = "Never" to 4 = "Often", with a DK/NA). However, items used a binary response format ("Presence" = 1, "Absence" = 0). The total ACE score was calculated by summing the number of adversity categories experienced (range 0–15). In the present study, the reliability coefficient was α = 0.70.

The Benevolent Childhood Experiences (BCE) questionnaire (Narayan et al., 2018) is a self-report measure consisting of 10 items. It aims to account for BCEs experienced between birth and 18 years of age. The items ask about positive experiences reflecting issues of care, quality of life, and safety during childhood. Each item comprises two response options: "yes" or "no". Positive responses ("yes") are summed to obtain the total BCE score. The BCE score has been shown to have good psychometric properties (e.g., Miguel-Alvaro et al., 2024; Narayan et al., 2018). In this study, the BCE total score demonstrated acceptable internal consistency (α = 0.64).

Measures of Emotional Symptoms and Adjustment to Pregnancy

The Pregnancy-Related Anxiety Questionnaire (PRAQ-20), originally developed by Van den Bergh (1990), was used in its validated Spanish version by Vázquez and Míguez (2021). This 20-item self-report tool assesses pregnancy-specific anxiety across five dimensions: worry about changes in themselves, fear for the integrity of the baby, feelings about themselves, fear of childbirth, and worries about the future and their ability as a mother. Items are rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), with total scores ranging from 20 to 100. Higher scores reflect greater anxiety. In this study, the PRAQ-20 showed excellent internal consistency (α = 0.90).

The Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001) is a nine-item self-report measure that assesses the presence of depressive symptoms based on the DSM-IV criteria for major depressive episodes. The questionnaire asks about depressive symptoms experienced during the previous two weeks. Each item of the PHQ-9 is answered on a Likert scale with 4 response options: 0 (never), 1 (several days), 2 (more than half of the days), and 3 (almost every day). Total scores range from 0 to 27. Symptom severity can be organised into 4 categories: 0–4 (minimal), 5–9 (mild), 10–14 (moderate), 15–19 (moderate to severe), 20–27 (severe). The Spanish version used (Muñoz-Navarro et al., 2017) showed satisfactory internal consistency (McDonald's $\omega = 0.89$). In this study, the PHQ-9 demonstrated acceptable internal consistency ($\alpha = 0.81$).

The Prenatal Self-Evaluation Questionnaire (PSQ) was developed by Lederman (1996) and validated for the Spanish population by Asenjo et al. (2007). The PSQ assesses women's psychological and emotional experiences during pregnancy. It specifically measures the degree of prenatal adjustment across seven psychosocial dimensions: acceptance of pregnancy, identification with the maternal role, quality of the relationship with the mother, quality of the relationship with the partner, preparation for childbirth, fear of pain and loss of control during childbirth, and concern for personal and fetal well-being. The questionnaire comprises 42 items rated on a Likert-type scale ranging from 0 ("Never") to 4 ("Often"). Scores can range from 42 to 168. Higher scores indicate poorer adaptation to pregnancy. Since some participants did not have a mother or partner and therefore systematically answered "Not my case" in these dimensions, the original values were converted into T-scores. This conversion allowed us to work with equivalent scales and thus prevent the absence of a mother or partner from being falsely interpreted as a low score, when this did not apply to their situation. The Spanish validation test had a reliability of 0.85 (Asenjo et al. 2007), while the one obtained in this study was 0.88.

2.2.5. Current stressful events. To measure current stressful life events, the proposal by Osofsky et al. (2021) was used. Women were asked to answer 'Yes' or 'No' to ten categories of current stressful life events. Specifically, they were asked about experiences such as the recent death of a partner, child, close family member, or friend; serious conflicts with their current partner; highly stressful financial or work-related problems; recent loss of housing; recent emigration from the country; experiences of physical or psychological violence from a partner or another person; ongoing legal proceedings; and situations such as an unwanted pregnancy or lacking a partner. To obtain an estimate of the women's current general stressors, the number of affirmative responses to the different items was added up.

Procedure

This study is part of a broader longitudinal research project. Participants were recruited through the dissemination of the study in the Gynecology Department of a public hospital in

Madrid (Spain), as well as via social media and women's associations. In the initial phase, they completed a preliminary form, accessible through a QR code, where they provided their email address and phone number.

Subsequently, a member of the research team contacted each participant by phone to explain the study in detail, emphasizing confidentiality and outlining the anonymization procedures. This step was included because, when addressing questions related to ACEs, women consider it important to receive information about the purpose of the assessment, the protection of the data, the assessment process, and the availability of support if distress arises (Olsen et al., 2021).

Women who agreed to participate signed the informed consent form digitally and received a personal code to anonymize responses to the online questionnaire. A dedicated team member remained available throughout the study to answer questions and ensure accurate questionnaire completion. Additionally, a protocol was also established for cases of miscarriage. All personnel who interacted with participants were trained to respond appropriately to such situations, and a list of psychological support resources was provided for referral when needed. The study was approved by the Research Ethics Committee of Hospital Universitario Puerta de Hierro (Madrid, Spain) and was pre-registered on the OSF platform (https://osf.io/24wgz, https://osf.io/4q2nm/overview?view_only=9f7ba7bdda82486a9ec5267a103292c1).

Data Analysis Plan and Missing Data

Descriptive statistics were computed in SPSS (version 27) to summarize the study variables and examine their bivariate correlations. Python (version 3.6) was used to address missing data and detect outliers. Several women ($n=35$; 7,71%) were unable to provide information about their mother or partner due to the absence of those figures.These cases were addressed through sensitivity analyses. Cluster analyses were conducted under three different conditions: (1) excluding these women, (2) standardizing group results and generating a unified variable, and (3) imputing the corresponding values using Random Forest imputation (Pedregosa et al., 2011). The findings were consistent across all three scenarios. Multivariate outliers were identified and removed using the Local Outlier Factor (LOF) algorithm (Breunig et al., 2000). Further methodological details are provided in Section S2 of the Supplementary Material.

As previously noted, based on the selection of maltreatment-related items from the ACE scale, clusters are classified as high or low in childhood maltreatment (CM). To identify subgroups based on patterns of CM and BCEs, a k-means cluster analysis was conducted using R (version 4.4.3), which was also employed for all subsequent statistical analyses. All continuous variables were standardized before the cluster analysis, following standard procedures. A four-cluster solution was selected based on interpretability and internal coherence, as detailed in the Results Section.

To examine differences between the resulting clusters across study variables, non-parametric analyses of variance (Kruskal–Wallis tests with Bonferroni-adjusted p-values for pairwise contrasts), as well as Chi-square or Fisher's exact tests, were conducted, given that the data did not meet assumptions for parametric testing (Shapiro–Wilk and Levene's tests). Comparisons were first performed on potential confounding variables, followed by analyses of the primary dependent variables. Covariates were selected based on bivariate correlations and theoretical relevance. Key sociodemographic factors, including age, education level, and parity, were included following previous studies using similar methodologies (Narayan et al., 2018). In addition, current stressful life events were incorporated, as they were correlated with CM or BCEs and considered theoretically meaningful (Merrick et al., 2020). Finally, supplementary regression models were conducted to further evaluate the unique contributions of CM and BCEs beyond the included covariates.

Results

Descriptive Statistics

Table 1 presents the main sociodemographic characteristics of the sample, as well as CM and BCEs scores and prevalences. Most participants were Spanish nationals (95.4%), had completed university studies (70.3%), were employed (91.6%), reported financial independence (93.2%), and were in a relationship (98.2%). Just over half of the women (53.7%) were childless. The mean gestational age was 28.18 weeks ($SD=8.8$).

Descriptive statistics for CM, BCEs, current stressful events, emotional symptoms, and pregnancy adjustment, along with bivariate correlations among all variables (including sociodemographic characteristics), are provided in the Supplementary Material (Section S3.1; Table S1).

Cluster Analysis based on Child Maltreatment and Benevolent Childhood Experiences

Initially, a k-means cluster analysis was conducted based on patterns of CM and BCEs, implementing a three-cluster partition in line with Narayan et al. (2018). However, within this solution, one cluster comprised participants whose CM levels spanned the full range of possible values. This

heterogeneity reduced the interpretability and predictive utility of the solution. Therefore, a four-cluster solution was implemented to improve interpretability and differentiation between profiles.

Based on the four-cluster solution, the analysis identified distinct participant groups characterized by varying levels of CM and BCEs. To ease interpretation, we followed criteria from prior literature. High CM scores were defined as ≥3, whereas low CM scores were defined as 0–2 (Folger et al., 2018). In contrast, no standardized cutoffs for BCE scores have been consistently established. In our sample, as in other studies (Crandall et al., 2020), the mean BCE score was relatively high (M=8.72, SD=1.49). Accordingly, high BCE scores were operationalized as values above the sample mean, and low BCE scores as those at or below this threshold, consistent with previous approaches (Hou et al., 2022; Miguel-Álvaro et al., 2024).

Thus, the clusters were characterized as follows. Cluster 1 (n=251) was characterized by low CM scores (M=0.34, SD=0.59) and high BCE levels (M=9.65, SD=0.48). Cluster 2 (n=69) presented high scores on both CM (M=3.09, SD=1.09) and BCE (M=8.58, SD=0.91). Cluster 3 (n=86) showed low scores on CM (M=0.56, SD=0.84) and BCE (M=7.33, SD=0.8). Finally, Cluster 4 (n=31) displayed high CM scores (M=6.45, SD=2.26) and low BCE levels (M=5.39, SD=1.56). These clusters are depicted in Fig. 1.

Kruskal–Wallis tests indicated statistically significant differences across clusters for both CM ($H(3)$=269.74, p <.01) and BCE ($H(3)$=307.77, p <.01) supporting the validity of the cluster structure (Table 2).

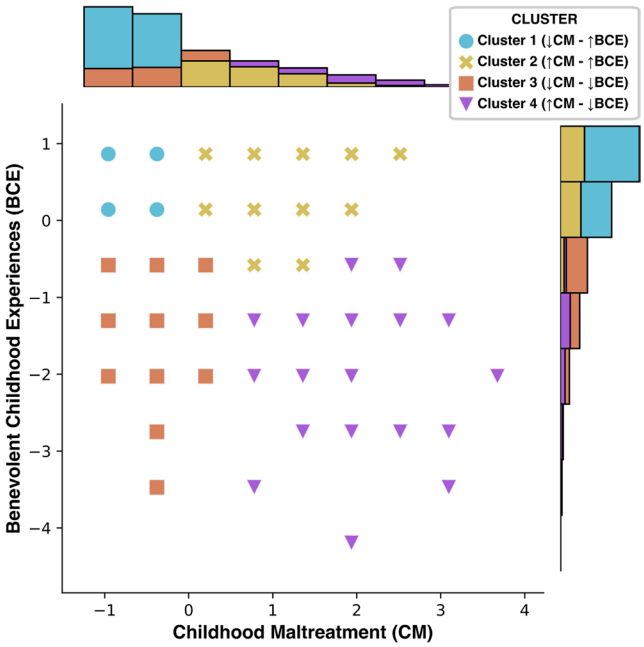

Fig. 1 Distribution of ACE and BCE scores across clusters

Differences between Clusters in Prenatal Mental Health Variables

Kruskal–Wallis tests revealed significant differences between clusters in depressive symptoms, pregnancy anxiety symptoms, and adaptation to pregnancy (Table 2).

Specifically, depressive symptoms significantly differed among clusters ($H(3)$=44.92, p <.001, η^2 = 0.1). *Post hoc* pairwise comparisons showed that women in the Cluster 4 (high CM and low BCEs) reported significantly higher levels of depressive symptoms than all other clusters, while those in Cluster 3 (low CM and BCEs) and Cluster 2 (high CM and BCEs) scored higher than Cluster 1 (low CM and high BCEs). Figure 2 illustrates this pattern. The x-axis represents increasing severity of depressive symptoms, divided into four categories (S1–S4) corresponding to equal intervals of the PHQ-9 score distribution. The y-axis indicates the proportion of each cluster within those segments. As symptom severity increases, the proportion of women in Cluster 1 (low CM and high BCE) declines, while the proportion in Cluster 4 (high CM and low BCEs) rises.

Similarly, pregnancy anxiety symptoms differed significantly between clusters ($H(3)$=24.96, p <.01, η^2 = 0.05). *Post hoc* comparisons indicated that Cluster 3 (low CM and BCE) reported significantly higher anxiety symptoms than Cluster 1 (low CM and high BCE) and Cluster 2 (high CM and BCEs) (see Section S3.3 of Supplementary Material; Figure S1).

For adaptation to pregnancy, differences were also significant ($H(3)$=49.62, p <.01, η^2 = 0.11). Women in the Cluster 3 (low CM and BCE) reported significantly poorer adaptation than those in the Cluster 1 (low CM and high BCE). In addition, the Cluster 4 (high CM and low BCEs) also showed significantly lower adaptation compared with these two groups, mirroring the pattern observed for depressive symptoms.

Characterization of Clusters

We examined whether the clusters differed in sociodemographic variables (age, education level, number of children) and contextual factors (current stressful life events), which were included as covariates (Table 2). No significant differences were observed across clusters in age ($H(3)$=3.58, p =.31), education level (Fisher's exact test, p =.42), number of children (Fisher's exact test, p =.12), or current stressful events ($H(3)$=6.18, p =.1).

To evaluate whether CM and BCEs provided incremental predictive value beyond current contextual risk factors (stressful life events and demographic covariates), hierarchical regression analyses were conducted with the three dependent variables: depressive symptoms, pregnancy

Table 2 Descriptive statistics for the clusters

Cluster Indicators	Cluster 1 (low CM, high BCEs) $n=251$	Cluster 2 (high both) $n=69$	Cluster 3 (low both) $n=86$	Cluster 4 (high CM, low BCEs) $n=31$	H or χ^2 statistic	Significant Contrast
Maltreatment	0.34 (0.59)	3.09 (1.09)	0.56 (0.84)	6.45 (2.26)	269.74**	1 vs. 2**/1 vs. 4**/2 vs. 3**/2 vs. 4**/3 vs. 4**
BCEs	9.65 (0.48)	8.58 (0.91)	7.33 (0.8)	5.39 (1.56)	307.77**	All
Abuse	0.32 (0.58)	2.52 (1.01)	0.49 (0.76)	3.42 (1.82)	240.18**	All
Neglect	0.02 (0.17)	0.57 (0.95)	0.07 (0.34)	3.03 (1.85)	228.6**	All
Demographics						
Age	34.8 (3.76)	34 (3.84)	35.3 (3.82)	34.3 (5.58)	n.s.	NA
Education Level	1.20%	1.45%	1.16%	6.45%	n.s.	NA
Basic	27.9%	27.5%	26.7%	35.5%		
Intermediate	70.9%	71%	72.1%	58.1%		
Advanced						
Number of Children (Childless)	57%	44.9%	59.3%	41.9%	n.s.	NA
Weeks Pregnant	28.5 (3.76)	26.7 (3.84)	28.3 (3.82)	27.4 (5.58)	n.s.	NA
Current Stressful Events	0.49 (3.76)	0.68 (3.84)	0.66 (3.82)	0.84 (5.58)	n.s.	NA
Dependent Variables						
Depressive Symptoms (PHQ-9)	5.04 (3.42)	6.45 (4.05)	6.84 (4.46)	10.1 (4.82)	44.92**	1 vs. 2*/1 vs. 3**/1 vs. 4**/2 vs. 4**/3 vs. 4**
Pregnancy Anxiety Symptoms (PRAQ-20)	54.6 (15)	54.9 (16.3)	63.4 (14.3)	61.2 (14.3)	24.96**	1 vs. 3**/2 vs. 3**
Adaptation to pregnancy (PSQ)	47.4 (8.88)	51 (11.4)	53.9 (8.32)	57.7 (10.8)	49.62**	1 vs. 3**/1 vs. 4**/2 vs. 4*

n.s. not significant, *NA* not applicable. *p <.05, **p <.01

anxiety symptoms, and adaptation to pregnancy (see Section S3.2 of Supplementary Material; Table S2). For depressive symptoms, higher CM predicted more symptoms after controlling for covariates ($\beta=0.46$, p <.01), but this effect dropped to non-significance when BCEs were included. In the final step, BCEs predicted fewer depressive symptoms ($\beta = -0.72$, p <.01). For pregnancy anxiety, CM was not significant ($\beta=0.23$, n.s.), whereas BCEs predicted lower anxiety ($\beta = -2.29$, p <.01). Finally, for adaptation to pregnancy, higher CM predicted poorer adaptation after controlling for covariates ($\beta=1.18$, p <.01). This effect remained significant when BCEs were included ($\beta=0.55$, p <.05). In the final step, BCEs predicted greater adaptation to pregnancy ($\beta = -1.55$, p <.01) (Table S2).

Discussion

The present study examined how pregnant women can be grouped according to their levels of childhood adversity, specifically CM, and BCEs, and how these profiles relate to adjustment during pregnancy. A four-cluster classification was constructed from the combination of high and low CM and BCEs. Overall, the results were broadly consistent with our initial hypothesis: the cluster structure resembled that reported by Narayan et al. (2018), and women with more CM and fewer BCEs exhibited greater emotional symptoms and poorer adaptation to pregnancy. Two notable divergences also emerged. First, our solution included one additional cluster compared to Narayan et al. (2018). Second, and more importantly, BCEs played a more prominent role in perinatal mental health than expected. These patterns suggest that BCEs may hold greater predictive value for perinatal mental health outcomes than CM, as detailed in the following discussion. Both findings may be interrelated, as a heterogeneous cluster solution, such as the one obtained in our initial analysis, might have masked the protective effects of BCEs.

In terms of prevalence, the rates of the different types of maltreatment observed in our sample were largely comparable to those reported in the global review of meta-analyses by Stoltenborgh et al. (2015), with the notable exception of physical neglect. In that review, which synthesizes worldwide estimates, the prevalence of physical neglect was 16.3%, whereas in our sample it was considerably lower (2.6%). Given that these figures reflect global data across diverse socioeconomic contexts, this comparison should be interpreted with caution. The discrepancy may be partially attributable to the relatively high socioeconomic status of our participants. Physical

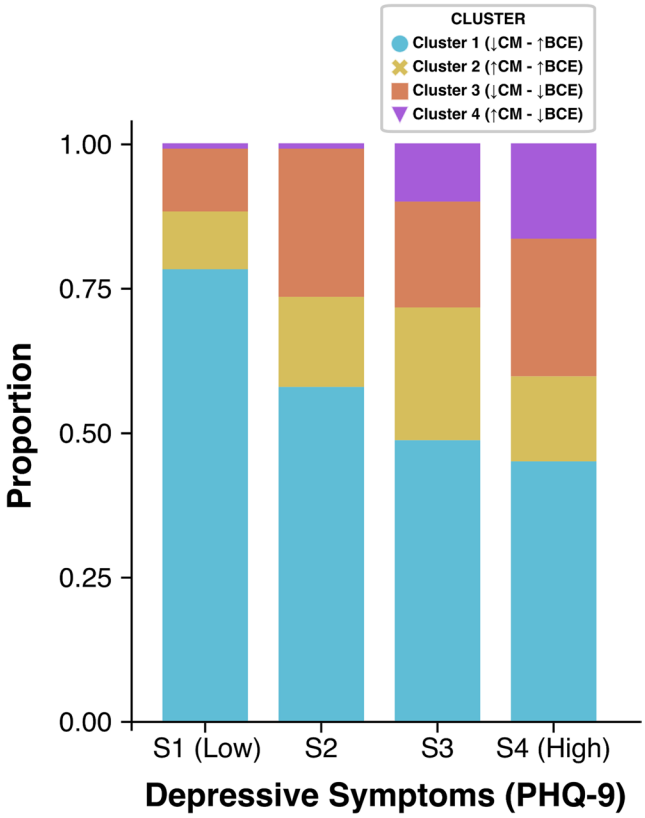

Fig. 2 Distribution of clusters across four segments of increasing depressive severity (S1–S4)

neglect has been consistently associated with economic deprivation (Berger et al., 2017), and it may at times be difficult to distinguish between caregivers' limited ability to adequately utilize available resources and the structural absence of such resources (Perea-Martínez et al., 2007). Mean BCE scores in our sample were consistent with prior research, with averages typically above eight positive experiences (Crandall et al., 2020; Doom et al., 2021; Hou et al., 2022).

In our analyses, we identified four distinct clusters: two with parallel exposure levels, either high CM and BCEs (Cluster 2, 15.8%) or low CM and BCEs (Cluster 3, 19.7%), and two with divergent patterns, where one type of experience was high and the other low (Cluster 1, 57.4%; Cluster 4, 7.1%). This structure and distribution closely resemble those reported by Narayan et al. (2018). In our case, we selected a four-cluster solution because the three-cluster model lacked interpretability. The Cluster 3 (low CM, low BCEs) identified in our analysis was not observed in Almeida et al. (2021), Narayan et al. (2018), or Narayan et al. (2023, with BCEs-Original scores), though it has been reported by Hou et al. (2022). These findings reinforce that adverse and positive childhood experiences are not mutually exclusive or opposite ends of a continuum, but rather co-occurring and independent dimensions (Narayan et al., 2023; Bethell et al., 2019).

The identified clusters did not differ on sociodemographic variables but showed significant differences in exposure to concurrent stressful events, consistent with prior findings (Almeida et al., 2021; Narayan et al., 2018). Such stressors are frequently documented in ACE/BCE research (Merrick et al., 2020; Narayan et al., 2018) and are often conceptualized as mediators linking early adversity to psychological outcomes in adulthood (Benham et al., 2025; Manyema et al., 2018).

To address cluster differences, we conducted a *post hoc* analysis to test whether early-life experiences predicted psychological symptoms after accounting for factors such as current stress exposure. Our findings support the view that early experiences play a meaningful role in later psychological functioning, even when considering immediate stressors (Doom et al., 2021). Specifically, BCEs emerged as the strongest predictor, generally surpassing CM. Prior findings, however, are mixed, with some studies emphasizing ACEs, others their combined effects, and others broader links for BCEs (Chung et al., 2008; Narayan et al., 2023; Doom et al., 2021). Such variability likely reflects outcome differences (e.g., PTSD may be more strongly tied to ACEs; Merrick et al., 2020), highlighting the need for outcome-specific approaches to clarify the distinct roles of ACEs and BCEs.

Cluster comparisons of prenatal variables suggest that CM may act as a risk factor for depressive symptoms. By contrast, other analyses highlighted the protective effect of BCEs. No differences were observed between Cluster 1 (low CM and high BCEs) and Cluster 2 (high CM and high BCEs) in pregnancy related variables such aspregnancy anxiety symptoms, or pregnancy adaptation. Although depressive symptoms differed significantly between groups, the difference was small in magnitude. In turn, the comparison between Cluster 2 (high CM and BCEs) and Cluster 4 (high CM and low BCEs), which differ only in the number of BCEs, revealed higher depressive symptoms and poorer pregnancy adaptation in the latter. Similarly, Cluster 1 and Cluster 3, which also differed only in BCEs, displayed significant differences across all three outcomes. Taken together, these comparisons support the protective role of BCEs and suggest that positive factors may exert greater explanatory power than adverse ones, especially for pregnancy related variables.

These results are broadly consistent with previous studies (Hou et al., 2022; Narayan et al., 2018, 2023), although in our case the association between higher levels of BCEs and more favorable outcomes, even under high CM exposure, was more evident. For example, Narayan et al. (2018) did not find this promotive effect for depression. However, our results also indicate that this beneficial role does not consistently extend to pregnancy-related anxiety symptoms, as it

does for adaptation to pregnancy. Prior evidence has been mixed, with several studies failing to detect a significant association between BCEs and anxiety (Han et al., 2023). Future research should clarify the number and types of BCEs required to exert protective or promotive effects on developmental outcomes.

Moreover, our findings indicate that depressive symptoms are sensitive to both positive and negative early experiences, whereas outcomes related to the transition to motherhood appear particularly influenced by the absence of protective experiences, regardless of adversity. With respect to adversity, it is well established that disruptions in biological and psychological processes resulting from childhood maltreatment can affect sensitive developmental periods such as pregnancy (Souch et al., 2022). Conversely, BCEs may be especially relevant for domains related to motherhood. For instance, Coe et al. (2020) note that when women remember their mothers as supportive and caring, even in contexts with early adversity, they may rely on these internalized models in their own parenting. Access to such positive caregiving representations during childhood may thus provide an internal framework that facilitates women's adaptation to the transition to motherhood (Narayan et al., 2020).

Overall, these results suggest that maternal psychological outcomes are shaped not only by childhood adversity but, more importantly, by the absence of positive experiences. Women with both low and high CM reported similarly favorable pregnancy related outcomes when their BCEs were high, highlighting the role of BCEs as promotive factors in psychological adjustment. Although some studies have argued that BCEs exert a protective effect primarily when they substantially outnumber ACEs (Crandall et al., 2020), a growing body of evidence, including the present study, indicates that BCEs can serve as protective factors even in the context of considerable adversity (Crouch et al., 2019; Daines et al., 2021; Hillis et al., 2010). As suggested by the present findings, considering both the presence and absence of adversity and benevolence offers a valuable framework for perinatal mental health professionals to integrate into assessment and intervention.

Limitations, Strengths, and Future Research

The findings of the present study should be interpreted in light of certain limitations. First, the cross-sectional design precludes causal inference. Second, the sample was characterized by relatively high socioeconomic status, which may limit generalizability to more diverse populations. Although considered low-risk, a substantial proportion of participants (46.9%) reported at least one type of maltreatment. This finding reveals that adversity is prevalent even among individuals with low sociodemographic risk and suggests that such experiences can still have a negative influence on mental health regardless of the women's potential socioeconomic advantages (Thomas et al., 2018).

Another limitation concerns measurement. ACEs and BCEs were assessed retrospectively, raising the possibility of recall bias. However, prior work has shown moderate stability in self-reports of maltreatment over time (Fergusson et al., 2011), and a strong predictive validity for adult outcomes (Newbury et al., 2018). In addition, to reduce underreporting (McKinney et al., 2009), the ACEs instrument employed asked about specific events rather than relying on broad or generalized labels (Thombs et al., 2006). Regarding BCEs, the original 10-item scale was used (Narayan et al., 2018), several items of which show endorsement rates above 80% across multiple samples, limiting score variability and discriminative capacity (Narayan et al., 2023). The expanded BCEs-Revised scale, which addresses this issue and demonstrates stronger psychometric properties, had not yet been published when the study was designed and could therefore not be incorporated.

Despite these limitations, the study presents several notable strengths. To our knowledge, it is the first investigation to examine the combined role of CM and BCEs in a pregnant sample in Spain, and more broadly in a Spanish-speaking cultural context. This expands the applicability of previous findings (e.g. Narayan et al., 2018) and contributes to the cross-cultural validation of ACE/BCE research (Han et al., 2023). It also addresses the relative lack of research on BCEs in adulthood (Miguel-Álvaro et al., 2024), compared to the extensive literature on ACEs. Finally, this is the first study on childhood adversity to incorporate pregnancy-specific variables, such as adaptation to pregnancy, offering a more nuanced understanding of how early life experiences shape maternal psychological functioning during a key developmental transition.

Future research should further explore the role of BCEs, following the trajectory of ACE research. This includes replicating findings across diverse populations to determine a clinically meaningful threshold (comparable to the three- or four-ACE cutoff) and identifying which specific BCEs are most strongly associated with positive mental health outcomes during the perinatal period. In this regard, future studies are recommended to employ the BCEs-Revised scale (Narayan et al., 2023), as this instrument provides greater score variability and discriminative capacity, which would facilitate a more precise differentiation between participant profiles in person-oriented analyses.

An important unresolved question concerns whether BCEs primarily function as general promotive factors or instead act as buffers against the impact of ACEs, given the mixed findings reported in prior research (Narayan et al., 2023; Samji et al., 2024). Moreover, it remains unclear

whether these patterns are specific to the perinatal period or reflect a broader developmental trajectory.

Finally, although beyond the scope of the present study, the assessment of post-traumatic stress symptoms would provide valuable additional insight. Given that childhood adversity is frequently associated with the development of post-traumatic stress symptoms (e.g., Stevens et al., 2013), future research should extend outcome assessment beyond anxiety and depression.

Conclusions

The findings of this study provide robust support for developmental models that acknowledge the interplay between childhood risk and protective factors. A person-centered approach offers a deeper understanding of how diverse configurations of adversity and positive exposure shape perinatal well-being. In this study, the clustering of ACEs and BCEs revealed distinct exposure profiles, each differentially associated with maternal mental health and pregnancy adaptation.

Within this framework, BCEs emerge as a meaningful promotive factor for pregnancy adjustment, even in the context of high adversity. This supports their conceptualization as a distinct dimension, rather than merely the inverse of ACEs, with unique mechanisms and developmental trajectories. Understanding this difference is important because it helps identify internal resources that can be leveraged in clinical practice.

Moreover, the simultaneous assessment of both ACEs and BCEs may enhance psychological risk detection during the perinatal period and guide the design of more tailored, effective interventions. Such perspective facilitates the identification of both vulnerability and resilience during a critical life stage with intergenerational implications.

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Data Availability Data will be made available on request.

Declarations

Public Relevance Statement Early positive experiences predicted perinatal mental health beyond adversity, and the lack of these experiences seems to have a greater impact on adjustment to pregnancy.

Pre-Registration Statement The study was registered at the Open Science Framework (OSF; https://osf.io/24wgz) shortly after data collection began, and includes the study's hypotheses, design, and analysis plan. Deviation: An exploratory analysis was added following the main analyses.

Conflict of Interest The authors declare that they have no conflict of interest.

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