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The role of perfectionism in the relationship between adverse childhood experiences, symptoms of depression, and life satisfaction among Vietnamese adults

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Abstract

Introduction: Adverse childhood experiences (ACEs) were known as a risk factor for mental health problems and impact during adulthood. This study puts intention on the perfectionism concept that is a personality trait that may be developed from ACEs and impact on mental health.
Objective: This study aims to explore the relationship between ACEs, perfectionism, depressive symptoms and life satisfaction. Additionally, we aim to find the differences between symptoms of depression and life satisfaction by gender and birth order as a consideration of Vietnamese culture.
Methods: We used random sampling and collected 554 valid respondents (including 178 participants who had ACEs) in Vietnam. The respondents ranged from 18 to 60 years old (Mean = 20.92, SD = 3.252) PLS-SEM model was conducted to examine the relationship among constructs of this study. Furthermore, One-way and Two-way MANOVA was used to find the differences of variables.
Results: Maladaptive aspects of perfectionism (including concern over mistakes, doubt about actions, parental expectations, parental criticism, and personal standards) played a mediating role in the

relationship between ACEs and depressive symptoms (β = 1.063, 95% CI [0.760; 1.416], p < 0.001). In addition, the adaptive aspect of perfectionism (organization) played a moderating role in the pathway from maladaptive perfectionism to life satisfaction (β = -0.122, 95% CI [-0.222; -0.022], p < 0.05). We also found significant differences in depressive symptoms and life satisfaction by gender and birth order.

Conclusion: The coexistence of both adaptive and maladaptive aspects of perfectionism provides researchers with a foundation to further investigate the relationship between perfectionism and other mental health issues. Additionally, it extends the data available for mental health practitioners to develop treatment plans for patients and clients who have experienced childhood adversities.

Take-home message: A healthy childhood lays the foundation for later life well-being. Conversely, childhood adversity can shape maladaptive personality traits, increasing the risk of mental disorders and lowering life satisfaction. Cultural factors, such as the emphasis on gender and birth order in Asian families, may amplify these effects. Effective mental health strategies need to consider national and cultural contexts.

Keywords: Adverse childhood experiences; adult; depression; life satisfaction; perfectionism.

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INTRODUCTION

Adverse Childhood Experiences (ACEs) are no longer a novel subject in the scientific community. Numerous studies have been carried out to determine how they affect mental disorders, physical health, and psychological well-being [1]. According to the definition of the World Health Organization, "ACEs refer to some of the most intensive and frequently occurring sources of stress that children may suffer early in life. Such experiences include multiple types of abuse; neglect; violence between parents or caregivers; other kinds of serious household dysfunction such as alcohol and substance abuse; and peer, community and collective violence" [2]. Several studies in Vietnam have focused on ACEs, with figures showing that the prevalence of ACEs is not low. Tran et al. (2015) found that around 76% of students from 8 medical colleges in Vietnam had at least one ACE score, while 21% had an ACE score of four or above [3]. A study conducted by Le et al. (2022) revealed that over 74% of high school students experienced at least one ACE, with over 25% of students reporting an ACE score of three or higher [4]. To our best knowledge, studies in Vietnam have not yet fully explored the consequences of ACEs in adulthood. According to Pham et al. (2022), Vietnamese young people who experience four or more ACEs related to using methamphetamine, depression and symptoms of psychosis [5]. Additionally, experiencing childhood adversities increases the risk of suicide among Vietnamese young individuals [6]. In this study, we continue to explore the impact of ACEs on mental health, especially symptoms of depression and find the mechanism underlying this relationship. We hypothesize perfectionism as a mediation factor that leads to mental health problems, as ACEs contribute to the emergence of perfectionistic traits and behaviors in adulthood [7]. Therefore, the present study aimed to explore the relationship between ACEs, perfectionism and mental health as well as satisfaction with life in adults.

The role of perfectionism in the relationship between adverse childhood experiences and symptoms of depression

ACEs include abuse, neglect, and home dysfunction that have profound impacts on mental health that often persist into adulthood. Among the consequences of ACEs on mental health, depression has been a long-standing topic of discussion. Previous studies found that individuals who experienced household dysfunction had higher rates of depression compared to those with other types of adverse experiences [8]. In addition, sexual abuse, and emotional abuse were found to have the strongest associations with depression among adults [9,10]. Recent research has expanded this field by exploring psychological factors that mediate the pathway from ACEs to depression. For instance, individuals experiencing emotional maltreatment have negative social self-concept such as low social connection because of shame [11]. Additionally, self-compassion has been identified as a crucial factor mediating the relationship between maltreatment and depression [12,13]. In this study, it was of interest to investigate whether perfectionistic traits could be considered as a mediation factor in the path of ACEs to mental health problems because perfectionism has emerged as a notable personality characteristic shaped by adversity in childhood [14].

Horney (1950) provides information regarding the concept of perfectionism as a tyranny of necessity and a susceptible neurotic personality trait. In line with this perspective, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V), perfectionism as one of the required diagnostic criteria for Obsessive-Compulsive Personality Disorder (OCPD) is called "rigid perfectionism" [15]. Similarly, psychological studies have characterized perfectionism as striving for perfection, establishing high performance standards, and being highly critical of behaviors [16, 17]. According to Frost et al. (1990), perfectionism is a multidimensional construct consisting of 6 dimensions encompassing concern over mistakes, doubt about actions, parental expectations, parental criticism, personal standards and organization [16].

Recent studies have emphasized the significant correlation between ACEs and perfectionism in adulthood [18]. Several theories of this relationship have explained that individuals who endure childhood trauma and adverse parenting behaviors experience despair, shame, feelings of powerlessness, and reduced security [14,19]. These ideas suggest that individuals who experience adversity in childhood often struggle with negative feelings about themselves during adulthood. Consequently, this pursuit of perfection serves as a coping mechanism to secure love and acceptance from others, attempting to suppress negative emotions about themselves to evade further maltreatment or trauma [19]. As suggested by Flett et al., (2002), individuals exposed to physical abuse and psychological mistreatment may become perfectionist in order to decrease humiliation or establish control in an uncertain situation [19]. In particular, experiencing non-verbal language has negatively affected mental well-being [20]. While previous studies have emphasized the link between ACEs and perfectionism, maladaptive perfectionism has also been strongly associated with depression, particularly in adults with chronic fatigue syndrome [21]. Considering the substantial correlations between ACEs and perfectionism, along with the recognized connections between perfectionism and depression, examining its mediating function offers important insights into this relationship. Derived from these discussions, hypothesis 1 is proposed for this study.

Hypothesis 1 (H1): *Perfectionism-maladaptive aspects would mediate the relationship between ACEs and symptoms of depression.*

The association among adverse childhood experiences, perfectionism aspects, symptoms of depression and satisfaction with life

Life satisfaction pertains to evaluative and cognitive mechanisms [22]. It is a subjective assessment grounded in an individual's perception of their living conditions and their comparison to the standards they believe should be fulfilled [22]. Life satisfaction is an important indicator of mental health [22]. Numerous studies have shown that mental disorders and negative psychological problems might impact an individual's life satisfaction [23-25]. Furthermore, perfectionism has also impacted life satisfaction [26-28]. A great deal of research has indicated that perfectionism can be categorized into adaptive and maladaptive [29]. Research demonstrates that the impact of

perfectionism on life satisfaction varies, as maladaptive perfectionism negatively impacts life satisfaction [27,28], while adaptive perfectionism displays a positive influence [30,31]. Early studies on perfectionism predominantly concentrated on maladaptive forms of perfectionism. Notably, the FMPS (Frost Multidimensional Perfectionism Scale), developed by Frost et al. (1990), was specifically designed to assess the negative dimension of perfectionism and has made substantial contributions to the comprehension of its effects on mental health [16]. Nevertheless, a more comprehensive scale analysis indicated that one particular subscale, designated as O (organization), does not correlate with the overall FMPS [32]. Moreover, the delineation of this subscale from the FMPS has demonstrated its correlation with favorable psychological attributes, including success orientation and goal commitment [33,34]. This indicates that not all dimensions of perfectionism are maladaptive; rather, adaptive dimensions also exist. Nevertheless, a paucity of research examines the influence of the O subscale, which demonstrates an individual's requirement for organization and orderliness, on personal psychological challenges. Consequently, to gain a deeper insight into the function of O within the context of the relationship between perfectionism and life satisfaction, this study posits that O serves as a moderating variable in the association between perfectionism and life satisfaction.

In addition to research examining the impact of perfectionism on life satisfaction, another critical factor identified is ACEs, which pertain to detrimental events encountered by an individual before age 18. Numerous studies have shown that individuals with ACEs report less satisfaction with life [35,36]. However, how do ACEs influence an individual's contemporary life satisfaction? This can be partially explained by the fact that ACEs are a significant cause of severe mental health issues, including depression, a prevalent mental disorder worldwide [37]. Research has demonstrated that depression negatively impacts an individual's life satisfaction [38-40]. Individuals experiencing depression frequently regard positive future outcomes as unachievable rather than viewing them as aspirational objectives to pursue [41]. Chronic self-discrepancies create hopelessness and futility in individuals [42]. In other words, individuals who exhibit symptoms of depression frequently experience diminished life satisfaction as a result of the dysfunction brought on by these symptoms. An individual's life satisfaction is not solely a passive element affected by the aforementioned factors; it also influences their health and functions as a crucial indicator of their quality of life [43,44]. Consequently, a more in-depth investigation into the interrelationships among the factors influencing life satisfaction is essential for identifying suitable solutions and strategies to improve individuals' life satisfaction. In light of the preceding discussion, hypotheses 2 and 3 are proposed for this study:

Hypothesis 2: *Organization-an adaptive aspect of perfectionism would moderate the relationship between perfectionism-maladaptive aspects and life satisfaction.*

Hypothesis 3: *Symptoms of depression would mediate the relationship between ACEs and life satisfaction.*

Factors associated with life satisfaction and symptoms of depression

ACEs have been identified as a common risk factor for depressive symptoms and reduced life satisfaction at any age [45-47]. Moreover, additional variables beyond those previously identified as linked to depressive symptoms have been found, further enhancing our understanding of their effects on both general mental health and depression specifically. In this study, we consider two variables: sex and birth order. This concern arises from the unique and complex cultural context of an Asian country like Vietnam where barriers to investigating and getting mental health care persist [48,49]. Previous studies suggested that women are more likely to have depression than men, especially in the postpartum stage [50]. A paradox exists in that, despite women being more prone to depression, they reported greater life satisfaction than men [51]. The difference in life satisfaction between men and women reflects their differing needs and concerns in life (for example, women's life satisfaction tends to depend on factors such as social support, marriage, and health problems, etc.) [52]. Whereas, satisfaction with life in men is related to household finance, marriage, business, education,...[52,53]. In Vietnam, satisfaction with life of Vietnamese women is greater than men [54]. Although the factors related to life satisfaction between Vietnamese women and men were not

explored fully, we hypothesize that it is based on the characteristic culture of Asia where emphasizes the role of men in society and spend more expectations in male [55]. Based on the above arguments, we hypothesize that there is a difference between men and women in life satisfaction and depression in Vietnamese adults.

With the birth order variable, Adler suggested that differences in birth order had distinct effects throughout adulthood through development of personality. The importance and distinction in birth order have also been highlighted in various cultures. For example, the first born in the family were more likely to get elaborate birth ceremonies, receiving respect from siblings and authority in the family [56]. However, previous study in China showed that birth order did not impact on personality aspects in Chinese samples despite long-term characteristics of China culture heavy the position in family and sex [57]. To the best of our knowledge, no study has looked at the aspect of birth order in Vietnam, despite being an Asian country influenced by Confucian principles comparable to China. In this study, we consider the differences among birth order in symptoms of depression and life satisfaction with the question: Do cultural aspects in Vietnam exacerbate mental health problems? According to Risal & Tharoor, (2012), patients diagnosed with depression and anxiety can be found across all birth orders. In contrast, when exploring the differences between birth order in life satisfaction, previous studies found a variety of differences [58]. According to Shao et al., (2013), onlyborns are more likely to be satisfied with life than others [59]. While Soysal et al. (2016) found that females who were first-born children were less satisfied with life than those who were second-born [60]. Based on the above arguments, we put forward the following hypotheses:

Hypothesis 4: *There is a significant difference in the combined dependent variables (depression and life satisfaction) based on gender.*

Hypothesis 5: *There is a significant difference in the combined dependent variables (depression and life satisfaction) by birth order.*

In general, our hypotheses and concerns originate from the cultural context of Vietnam. Hypotheses 1, 2, and 3, which involve both adaptive and maladaptive perfectionism, reflect distinct characteristics of Asian culture if examined more closely. In many Asian societies, parents tend to be stricter and have higher expectations for their children, a trend that is even more apparent when compared to other cultures, such as Western societies [61]. Parent-child connections and family environments are essential contexts in which perfectionistic behaviors are established, maintained, and/or improved [62]. Simultaneously, growing up in an unstable family environment may increase the likelihood of experiencing additional adverse events and negatively impact mental health. Hypotheses 4 and 5 focus on the interaction between gender and birth order on life satisfaction and depression, both of which are shaped by family and sociocultural dynamics in Vietnam.

METHODS

Study design

This study employed a cross-sectional design conducted among Vietnamese adults aged 18 to 60 years. We surveyed individuals in Vietnam using random sampling, and data were collected through a set of validated self-report questionnaires. The study aimed to examine the associations between adverse childhood experiences, perfectionism, depressive symptoms, and satisfaction with life. In addition, birth order and gender were included as demographic factors of interest. Particular attention was given to the cultural and contextual relevance of these associations in an Asian country such as Vietnam, where mental health and early-life experiences may be shaped by unique sociocultural factors.

Data collection

This study collected data between December 2023 and April 2024. All participants have 25 to 30 minutes to complete the entire questionnaire via Google Forms. Participants agreed to participate in this study and understood the anonymity and confidentiality terms offered by the researchers. Participants were informed about the study's objectives, and their participation was entirely voluntary, without any remuneration. Additionally, they were explicitly informed of their right to withdraw from the study at any time. The research team encouraged participants to contact via the

provided email or phone number if they needed clarification at any point during the survey. The determined sample size of this study is based on the recommendation of using a starting sample size from 100 to 200 for studies involving path estimation analysis, especially for structural equation models [63]. Therefore, we obtained a sample size exceeding expectations, which was 796 respondents. We excluded incomplete and low-quality responses, resulting in a final sample size of 554 respondents (69.6% response rate).

Ethical considerations

The study received approval from the Ethics Committee of the Department of Science and Technology at Ho Chi Minh City University of Education (under the Vietnamese MoET) under the reference number CS.2024.19.22ĐH. Additionally, this research adhered to the ethical guidelines of the Declaration of Helsinki and followed the American Psychological Association's principles for human participant research, ensuring compliance with established ethical standards that prioritize participant well-being, rights, and privacy.

Demographic characteristics

With 554 valid questionnaires, the respondents range from 18 to 60 years old (Mean = 20.92, SD = 3.252). In which, 178 participants (32.1%) reported at least one ACE according to Adverse Childhood Experiences Questionnaire (ACE-Q). It included 73 males (41.0%) and 105 females (59.0%). Table 1 and Table 2 present demographic information.

Measures

We translated the scales from English to Vietnamese before receiving the finalized survey questionnaire. A native Vietnamese speaker who is fluent in English translated the English and Vietnamese versions and vice versa. The Vietnamese translations also take into account Vietnam's lifestyle and cultural context. To determine the final version, the research team compared the content's correctness and differences between the original and the two modifications.

Adverse Childhood Experiences Questionnaire (ACE-Q)

Over the last two decades, ACE-Q has made significant contributions to research and clinical practice. The ACE-Q is often used in public health and medical research, as well as clinical settings, to detect and treat the effect of childhood trauma on both physical and mental health [1]. Felitti et al. (1998) conducted the initial investigations into ACEs which served as the foundational instrument for subsequent studies to refine the questionnaire [64]. This study uses ACE-Q version 10-items [65]. The ACE-Q consists of ten questions that assess exposure to psychological (Eg: Did a parent or other adult in the household often swear at you, insult you, put you down, or humiliate you?), physical (Eg: Did a parent or other adult in the household often push, grab, slap or throw something at you?), and sexual abuse (Eg: Did an adult or person at least five years than you ever touch or fondle you or have you touch their body in a sexual way?), and family dysfunction (Eg: Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?) throughout childhood before the age of 19. Respondents were classified as exposed if they replied "yes" to one or more questions from each category. The score might range from 0 to 10, with higher scores suggesting more exposure to ACEs. The ACE-Q fails to evaluate the intensity or length of the traumatic events described in the questionnaire for each individual; instead, it concentrates on the number of adverse events and their convergence. This may be a weakness as well as a strength. However, validation study reveals that the ACE-Q score remains a valid predictor despite possible biases due to prior self-reported memory errors [1]. In this study, the internal consistency of the scale was acceptable (Cronbach's Alpha = 0.802).

The Frost Multidimensional Perfectionism Scale (FMPS)

The FMPS was developed the first time by Frost et al. (1990) with six dimensions assessment perfectionism include: Concern over Mistakes (CM), Personal Standards (PS), Parental Expectations (PE), Parental Criticism (PC), Doubts about actions (D), and Organization (O). In this study, we used FMPS with four dimensions of perfectionism due to its advantages when compared to first versions [66]. These changes combine PC and PE (PEC), CM and D (CMD). FMPS consists of 35 items using Likert 5-point ranging from 0 (strongly disagree) to 4 (strongly agree). In this study, the instrument

displayed the Cronbach's Alpha of PEC, O, PS, and CMD are 0.87, 0.83, 0.78, and 0.90 respectively. All subscales show good internal consistency.

Satisfaction with Life Scale (SWLS)

The original scale of SWLS was developed by Diener et al. (1985), it consists of 5 items such as "In most ways my life is close to my ideal" and "The conditions of my life are excellent" [22]. Participants are prompted to indicate the degree to which they agree or disagree with each statement using a five-point Likert scale. In previous studies, SWLS showed good internal consistency 0.88 among adults [54]. In this study, SWLS indicates good internal consistency with Cronbach's Alpha reaching 0.80.

Patient Health Questionnaire (PHQ-9)

PHQ-9 is a self-reported scale consisting of 9 items based on 9 criteria of depression in the Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) to measure depressive symptoms [67]. Each item was scored ranging from 0 (not at all) to 3 (nearly everyday). Although this scale is mainly used to assess patients, later research has shown that it is appropriate for a wide range of samples. In Vietnam, PHQ-9 is commonly used in clinical settings, it obtained 0.86 internal consistency in a sample of sexual minority women [68], and 0.89 internal consistency in infertile women [69]. In this study, the Cronbach's Alpha value of PHQ-9 is 0.89 that shows good internal consistency.

Data analysis

The Social Sciences Statistics Program (SPSS) version 26.0 and SmartPLS 4 software were used to analyze data of the current study. To begin with, data filtering and coding were conducted on SPSS and descriptive statistics were performed. Then, SmartPLS 4 was used to analyze deeply data such as measurement model (indicator reliability, construct reliability, convergent validity, and discriminant validity) and construct model (variance inflation factor – VIF, standardized root means square residual - SRMR, coefficient of determination - R^2, cross-validated redundancy - Q^2, and the effect size - f^2). Using a PLS-SEM analysis with 5000 bootstrap samples, we estimated path coefficients with P-values, specific indirect, specific direct, and total effects to test the mediation hypothesis and investigate the impacts of the independent factors on the dependent variables. Additionally, a multivariate analysis of variance (MANOVA) test was used to examine the overall impact of independent variables (ACE exposure, gender, and birth order) and check their interactions on independent variables (SWLS, PHQ). This process needs to test assumptions through Box's M test for homogeneity of variance-covariance, the Mahalanobis distance method, and Pearson correlations for checking multicollinearity among the dependent variables.

RESULTS

Descriptive statistics

To provide an overview of the study sample and contextualize the subsequent statistical analyses, we first examined the descriptive characteristics of the 554 participants included in the final dataset. Participants ranged from 18 to 60 years old, with a mean age of 20.92 years (SD = 3.252), and represented a diverse cross-section of Vietnamese adults. Gender distribution showed a predominance of females (61.7%), and various birth order positions were represented, including only children, first-borns, middle-borns, and youngest siblings. Notably, 32.1% of respondents reported experiencing at least one adverse childhood experience (ACE), allowing us to meaningfully compare groups based on exposure to early adversity.

Table 1 presents a comprehensive breakdown of the sample by ACE exposure, gender, and birth order, along with the frequency of different ACE categories and their distribution across demographic subgroups.

Table 1. Demographic characteristics table.

Before 18 years old	Gender		Birth order				Total
	Male	**Female**	**Only child**	**First child**	**Middle child**	**Youngest child**	
Total	212 (38.3)	342 (61.7)	75 (13.5)	237 (42.8)	73 (13.2)	169 (30.5)	554 (100)
No ACEs exposure	139 (25.1)	237 (42.8)	48 (8.7)	165 (29.8)	46 (8.3)	117 (21.1)	376 (67.9)
ACEs exposure	73 (13.2)	105 (18.9)	27 (4.8)	72 (13.0)	27 (4.9)	52 (9.4)	178 (32.1)
Distribution by number of ACEs							
1	28 (5.1)	60 (10.8)	9 (1.6)	42 (7.6)	10 (1.8)	27 (4.9)	**88 (15.9)**
2	22 (4.0)	14 (2.5)	8 (1.4)	10 (1.8)	5 (0.9)	13 (2.3)	**36 (6.5)**
3	8 (1.4)	15 (2.7)	3 (0.5)	10 (1.8)	7 (1.3)	3 (0.5)	**23 (4.2)**
≥ 4	15 (2.7)	16 (2.9)	7 (1.3)	10 (1.8)	5 (0.9)	9 (1.6)	**31 (5.6)**
Distribution by ACE categories							
Abuse	5 (0.9)	22 (4.0)	1 (0.2)	14 (2.5)	5 (0.9)	7 (1.3)	**27 (4.9)**
Household dysfunction	34 (6.1)	51 (9.2)	13 (2.3)	34 (6.1)	11 (2.0)	27 (4.9)	**85 (15.3)**
Both	34 (6.1)	32 (5.8)	13 (2.3)	24 (4.3)	11 (2.0)	18 (3.2)	**66 (11.9)**

Note: Adverse Childhood Experiences (ACEs)

Table 2. Mean scores of participants.

Characteristic	n (%)	SWLS		PHQ	
		Mean ± SE	95% CI	Mean ± SE	95% CI
ACEs		p > 0.05		p < 0.001	
No ACEs exposure	376 (67.9)	3.228 ± 0.048	[3.134; 3.322]	0.811 ± 0.039	[0.735; 0.888]
ACEs exposure	178 (32.1)	3.052 ± 0.064	[2.926; 3.178]	1.313 ± 0.052	[1.210; 1.416]
Gender		p < 0.01		p > 0.05	
Male	212 (38.3)	3.028 ± 0.062	[2.907; 3.150]	1.032 ± 0.050	[0.933; 1.131]
Female	342 (61.7)	3.251 ± 0.051	[3.150; 3.352]	1.092 ± 0.042	[1.010; 1.175]
Birth order		$p_{2\text{-}3}$ < 0.01		p > 0.05	
Only child[1]	75 (13.5)	3.082 ± 0.093	[2.898; 3.265]	1.148 ± 0.076	[0.999; 1.297]
First child[2]	237 (42.8)	3.349 ± 0.057	[3.236; 3.461]	0.991 ± 0.047	[0.898; 1.084]
Middle child[3]	73 (13.2)	3.004 ± 0.098	[2.811; 3.197]	0.966 ± 0.080	[0.809; 1.124]
Youngest child[4]	169 (30.5)	3.125 ± 0.065	[2.997; 3.253]	1.143 ± 0.053	[1.039; 1.248]

Note: Standard Error (SE); Confidence Intervals (CI); Adverse Childhood Experiences (ACEs); Satisfaction With Life Scale (SWLS); Patient Health Questionnaire (PHQ).

Inferential analysis

To evaluate the overall impact of three factors (ACE exposure, gender, and birth order) and their interactions on two dependent variables (SWLS, PHQ), a multivariate analysis of variance (MANOVA) was conducted.

Before performing the MANOVA, important assumptions were checked and confirmed to be met. Specifically, Box's M test for homogeneity of variance-covariance matrices was non-significant, p = 0.102, indicating that the assumption of homogeneity of covariances was met. As a result, Wilk's Lambda value was used to confirm the result. Levene's test of homogeneity of variance was non-significant for SWLS (p = 0.428), and PHQ (p = 0.057), indicating that this assumption was also satisfied. Pearson correlations confirmed that there was no multicollinearity among the dependent variables, with p < 0.01 (SWLS correlated with PHQ at -0.141) and correlation coefficients not exceeding 0.9, ensuring no violations [70]. The Mahalanobis distance method was applied, and no significant outliers were detected.

Table 3 shows that there was a statistically significant effect of ACE on the multivariate pattern of two dependent variables, $F_{(2, 540)}$ = 30.477, p < 0.001, Wilk's Lambda = 0.899, partial η2 = 0.101. A follow-up univariate ANOVA was conducted for each dependent variable, with each ANOVA evaluated at an alpha level adjusted by Bonferroni correction, 0.025 (that is 0.05/2). The outcome shows that a significant group difference existed on PHQ ($F_{(1, 541)}$ = 59.151, p < 0.001, partial η2 = 0.099). A group experiencing ACE had a higher level of PHQ (Mean = 1.313, SE = 0.052) than those who did not experience ACE (Mean = 0.811, SE = 0.039).

There was a significant difference between males and females on SWLS and PHQ, $F_{(2, 540)} = 4.582$, $p < 0.05$, Wilk's Lambda = 0.983, partial $\eta 2 = 0.017$. Hence, hypothesis 4 was confirmed. The follow-up univariate analyses (ANOVAs) describes that there was a significant effect of gender on SWLS ($F_{(1, 541)} = 7.680$, $p < 0.01$, partial $\eta 2 = 0.014$) which showed that females satisfied with life (Mean = 3.251, SE = 0.051) than males (Mean = 3.028, SE = 0.062).

A significant effect on two dependent variables based on birth order was found, $F_{(6, 1080)} = 3.324$, $p < 0.01$, Wilk's Lambda = 0.964, partial $\eta 2 = 0.018$. Hence, hypothesis 5 was accepted. A follow-up analysis shows that a significant group difference existed on SWLS ($F_{(3, 541)} = 4.508$, $p < 0.01$, partial $\eta 2 = 0.024$), indicating that first child (Mean = 3.349, SE = 0.057) had a higher level of SWLS than middle child (Mean = 3.004, SE = 0.098).

On the other hand, the results reveal that the impact of ACE x gender ($F_{(2, 540)} = 0.148$, $p > 0.05$, Wilk's Lambda = 0.999, partial $\eta 2 = 0.001$), ACE x birth order ($F_{(6, 1080)} = 1.675$, $p > 0.05$, Wilk's Lambda = 0.982, partial $\eta 2 = 0.009$), and gender x birth order ($F_{(6, 1080)} = 0.520$, $p > 0.05$, Wilk's Lambda = 0.994, partial $\eta 2 = 0.003$) were non-significant on SWLS and PHQ.

Table 3. Multivariate analysis and Combined univariate ANOVA.

Source	Dependent variables	Wilk's Lambda	Type III	df	Mean Square	F	p	Partial η2
Corrected Model	SWLS		22.583[a]	12	1.882	3.136	< 0.001	0.065
	PHQ		36.410[b]	12	3.034	7.589	< 0.001	0.144
Intercept	SWLS		3658.248	1	3658.248	6096.750	< 0.001	0.918
	PHQ		418.611	1	418.611	1046.991	< 0.001	0.659
ACE	**Multivariables**	**0.899*** **				**30.477**		**0.101**
	SWLS		2.896	1	2.896	4.826	0.028	0.009
	PHQ		23.650	1	23.650	59.151	< 0.001	0.099
Gender	**Multivariables**	**0.983***				**4.582**		**0.017**
	SWLS		4.608	1	4.608	7.680	0.006	0.014
	PHQ		0.340	1	0.340	0.851	0.357	0.002
Birth order	**Multivariables**	**0.964****				**3.324**		**0.018**
	SWLS		8.114	3	2.705	4.508	0.004	0.024
	PHQ		2.910	3	0.970	2.426	0.065	0.013
ACE * Gender	**Multivariables**	**0.999**				**0.148**		**0.001**
	SWLS		0.065	1	0.065	0.108	0.743	0.000
	PHQ		0.063	1	0.063	0.158	0.691	0.000
	Multivariables	**0.982**				**1.675**		**0.009**

ACE * Birth order	SWLS		4.689	3	1.563	2.605	0.051	0.014
	PHQ		1.208	3	0.403	1.007	0.389	0.006
Gender * Birth order	**Multivariables**	**0.994**				**0.520**		**0.003**
	SWLS		1.431	3	0.477	0.795	0.497	0.004
	PHQ		0.230	3	0.077	0.192	0.902	0.001
Error	SWLS		324.618	541	0.600			
	PHQ		216.304	541	0.400			
Total	SWLS		6189.080	554				
	PHQ		773.667	554				
Corrected Total	SWLS		347.201	553				
	PHQ		252.714	553				

Note: a. R Squared = 0.065 (Adjusted R Squared = 0.044)
b. R Squared = 0.144 (Adjusted R Squared = 0.125)
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$
Adverse Childhood Experience (ACE); Satisfaction With Life Scale (SWLS); Patient Health Questionnaire (PHQ).

Analysis model results

Evaluation of Measurement Model

Firstly, based on Hair et al., (2023), only factor loadings under 0.30 recommended automatic removal [71]. After analyzing, our model indicated the factor loadings of all the items exceeded 0.3, in particular ACE ranged from 0.440 to 0.744, FMPS ranged from 0.422 to 0.763, SWLS ranged from 0.681 to 0.868, O ranged from 0.670 to 0.836 and PHQ ranged from 0.698 to 0.814. All outer loadings were statistically significant ($p < .001$). Secondly, internal consistency, measured by Cronbach's α, ranged from 0.802 to 0.948 for the five constructs confirming the excellent reliability of the instrument [72]. Thirdly, the AVEs of the constructs consistent with convergent validity, AVE scores surpassed 0.5 for O, SWLS and PHQ. Although ACE and FMPS exhibited AVE slightly below .50, their CR values exceeded 0.70 (0.841 and 0.952, respectively), supporting adequate convergent validity for all constructs [73] (Table 4).

Table 4. Measurement Scale Items of This Study

Construct	AVE	CR (rho_c)	Cronbach's α	R^2 Adjusted	Q^2 predict
ACE	0.351	0.841	0.802		
FMPS	0.409	0.952	0.948	0.141	0.084
O	0.588	0.895	0.859		
SWLS	0.620	0.890	0.847	0.165	0.117
PHQ	0.558	0.919	0.900	0.320	0.092

Note: Average Variance Extracted (AVE); Composite Reliability (CR).
Adverse Childhood Experience (ACE); Frost Multidimensional Perfectionism Scale (FMPS); Organization (O); Satisfaction With Life Scale (SWLS); Patient Health Questionnaire (PHQ).

Table 5. Heterotrait-Monotrait Ratios (HTMT) of correlations.

	ACE	FMPS	O	SWLS	PHQ
ACE					
FMPS	0.351				
O	0.157	0.582			
SWLS	0.139	0.141	0.377		
PHQ	0.420	0.535	0.130	0.163	

Note: Adverse Childhood Experience (ACE); Frost Multidimensional Perfectionism Scale (FMPS); Organization (O); Satisfaction With Life Scale (SWLS); Patient Health Questionnaire (PHQ).

Finally, Heterotrait-Monotrait Ratios (HTMT) ranged from 0.130 to 0.582, fell well below the 0.85 threshold commonly recommended for discriminant validity [74], showing that the constructs within the model are indeed distinct from one another (see Table 5).

Evaluation of the Structural Model

The variance inflation factor (VIF) was used to evaluate collinearity of the formative indicators. All VIF values, ranging from 1.167 to 3.034, which were close to 3 and lower so it was acceptable levels of collinearity [72]. In our study, the value of R^2 adjusted explained varying degrees of variance in outcomes and key findings include: FMPS R^2 adjusted = 0.141; SWLS R^2 adjusted = 0.165; and PHQ R^2 adjusted = 0.320, with higher values indicating greater explanation [72]. In terms of Q^2, all indicators showed positive values above zero indicate successful reconstruction and confident prediction of endogenous construct values [75] (see Table 4).

The analysis revealed varying effect sizes between constructs. The effect of ACE on FMPS was significant ($f^2 = 0.089$, $p < 0.001$), indicating a small effect. ACE's impact on PHQ was smaller but significant ($f^2 = 0.043$, $p = 0.046$). However, ACE's effect on SWLS was not significant ($f^2 = 0.016$, $p = 0.164$). FMPS had a strong effect on PHQ ($f^2 = 0.232$, $p < 0.001$) but didn't have a significant effect on SWLS ($f^2 = 0.000$, $p = 0.985$). O had a significant effect on SWLS ($f^2 = 0.073$, $p = 0.008$). PHQ didn't have a significant effect on SWLS ($f^2 = 0.016$, $p = 0.136$). Lastly, O did not have a significant effect on association between FMPS and SWLS ($f^2 = 0.014$, $p = 0.256$).

Figure 1 and Table 6 show the final PLS-SEM model outcomes. In terms of direct effects, there were positive influences between ACE and FMPS ($\beta = 2.447$, $p < 0.001$) with the significant quadratic effect ($\beta = -1.105$, $p < 0.001$), ACE and PHQ ($\beta = 1.577$, $p < 0.001$) with the quadratic term was significant ($\beta = -0.755$, $p < 0.05$) whereas ACE exhibited a significant negative association with SWLS ($\beta = -1.102$, $p < 0.01$). These findings indicated that experiencing more ACEs increases the level of perfectionism and depressive symptoms, whereas life satisfaction decreases significantly. Additionally, FMPS had a positive effect on PHQ ($\beta = 0.435$, $p < 0.001$) with the significant quadratic effect ($\beta = 0.050$, $p < 0.05$), but didn't have a significant effect on SWLS ($\beta = -0.009$, $p > 0.05$). O had a positive effect on SWLS ($\beta = 0.308$, $p < 0.001$). Lastly, PHQ negatively impacted SWLS ($\beta = -0.158$, $p < 0.01$) with the insignificant quadratic effect ($\beta = 0.050$, $p > 0.05$).

Mediation analyses were also conducted to confirm our hypotheses. With the mediating role of FMPS, ACE positively influenced PHQ ($\beta = 1.577$, $p < 0.001$). Hence, hypothesis 1 is confirmed. Furthermore, ACE indirectly impacted SWLS through PHQ ($\beta = -1.102$, $p < 0.01$, respectively). Hence, hypothesis 3 is accepted. Finally, all of the effects' t-value were well above 1.96 indicating that the results are significant.

We conducted moderation analyses, O was found to moderate the relationship between FMPS and SWLS ($\beta = -0.122$, $p < 0.05$). This result verifies hypothesis 2: organization-a positive aspect of Perfectionism plays a moderating role in the relationship between Perfectionism-negative aspects and Satisfaction with Life.

Table 6. Hypothesis testing.

Path	**β coefficient**	**t-value**	**95% CI**	**95% BC CI**
Direct effects				
ACE → FMPS	2.447	7.822***	[1.858; 3.071]	[1.782; 3.012]
ACE → PHQ	1.577	4.095***	[0.811; 2.324]	[0.839; 2.357]
ACE → SWLS	-1.102	2.880**	[-1.863; -0.354]	[-1.863; -0.354]
FMPS → PHQ	0.435	10.828***	[0.354; 0.513]	[0.350; 0.508]
FMPS → SWLS	-0.009	0.162	[-0.118; 0.098]	[-0.116; 0.099]

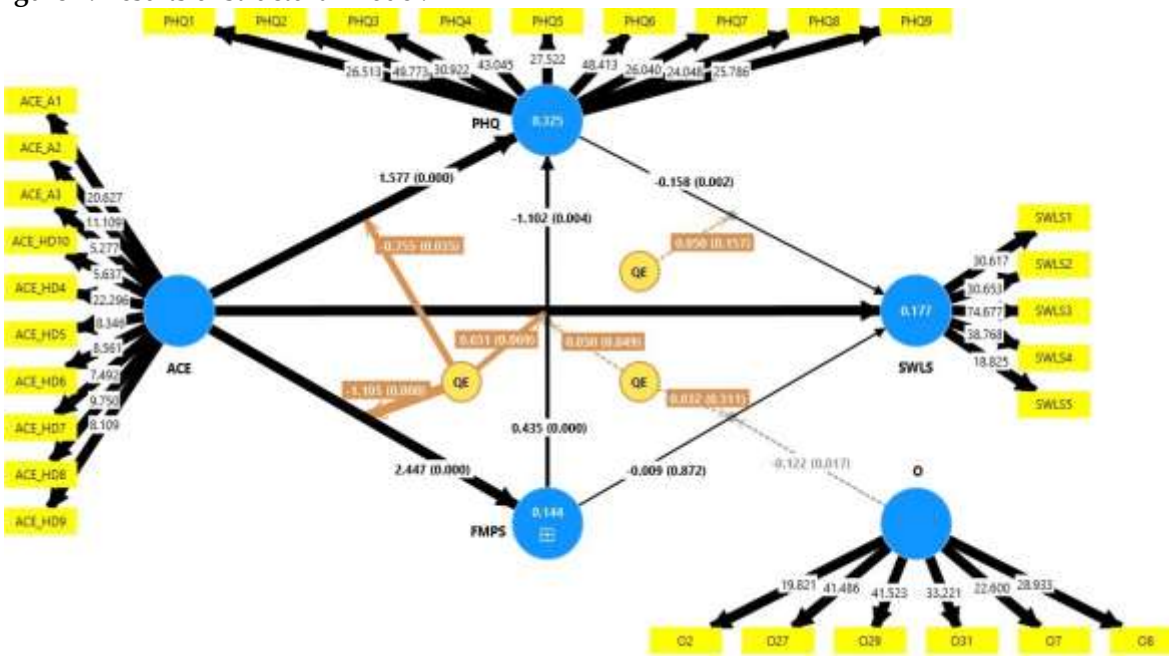
O → SWLS	0.308	6.028***	[0.213; 0.415]	[0.199; 0.403]
PHQ → SWLS	-0.158	3.137***	[-0.257; -0.060]	[-0.253; -0.058]
O x FMPS → SWLS	-0.122	2.392*	[-0.222; -0.022]	[-0.222; -0.023]
Quadratic effect				
QE (PHQ) → SWLS	0.050	1.415	[-0.017; 0.121]	[-0.018; 0.121]
QE (FMPS) → PHQ	0.050	1.965*	[-0.002; 0.098]	[-0.001; 0.100]
QE (ACE) → FMPS	-1.105	3.733***	[-1.694; -0.538]	[-1.666; -0.494]
QE (ACE) → PHQ	-0.755	2.114*	[-1.410; -0.003]	[-1.442; -0.048]
QE (ACE) → SWLS	0.651	1.820	[-0.029; 1.371]	[-0.027; 1.371]
Indirect effect				
ACE → PHQ → SWLS	-0.249	2.478*	[-0.474; -0.078]	[-0.502; -0.094]
ACE → FMPS → PHQ	1.063	6.359***	[0.760; 1.416]	[0.740; 1.390]
FMPS → PHQ → SWLS	-0.069	3.032**	[-0.115; -0.026]	[-0.114; -0.025]

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Bias Corrected (BC); Confidence Intervals (CI); Quadratic effect (QE).

Adverse Childhood Experience (ACE); Frost Multidimensional Perfectionism Scale (FMPS); Organization (O); Satisfaction With Life Scale (SWLS); Patient Health Questionnaire (PHQ).

Figure 1. Results of structural model.



Notes: QE (Quadratic effect).
Abbreviations: PHQ (Patient Health Questionnaire; ACE (Adverse Childhood Experience) ; FMPS (Frost Multidimensional Perfectionism Scale) ; SWLS (Satisfaction with Life Scale) ; O (Organization).

DISCUSSION

The present study confirmed the findings about the relationships between ACEs, perfectionism, depression and satisfaction with life in Vietnamese adults. Firstly, maladaptive perfectionism (except organization aspect) played a mediating role in the path from ACEs to depressive symptoms. Secondly, although no effect of maladaptive perfectionism on life satisfaction was discovered, the organization dimension of perfectionism was revealed as a mediator of this relationship. Thirdly, symptoms of depression played a mediating role in the relationship between ACEs and life satisfaction. In addition, we found the differences between women and men when considering simultaneously life satisfaction and depressive symptoms; similarly, the difference was found for the birth order variable.

Mediation role of perfectionism (except Organization aspect) in the relationship between ACEs and symptoms of depression

In the current study, the aspects of perfectionism (include concern over mistakes, doubt about actions, parental expectations, parental criticism, personal standards) play a mediating role between ACEs and depression. This finding aligns with previous studies, which found that perfectionism evolved as a mechanism to cope with the psychological consequences resulting from adversity in childhood [19]. Most of the explanations for this finding are related to parental aspects through childhood. A qualitative analysis of women diagnosed with depression revealed that having an authoritarian, rigid father and a mother who was emotionally distant or unavailable often resulted in feelings of inadequacy, guilt, and shame in their role as mothers. Consequently, these women tended to attempt to strive for perfection in order to counteract their deep-seated belief that they were inadequate [75]. Additionally, when considered specifically adversity categories in childhood, family dysfunction was positively related to the display of perfection [7]. This discovery also gives more specific information for the suggestion that parent-child connections and family environments are

essential contexts in which perfectionistic behaviors are established, maintained, and/or improved [62].

The impact of perfectionism on satisfaction with life and role of organization-a positive aspect of perfectionism

While the correlation between perfectionism and life satisfaction did not reach statistical significance, this study further revealed that Organization (O) was a negative moderator in the relationship between perfectionism and life satisfaction. This phenomenon may be elucidated by the observation that O does not demonstrate a significant correlation with the total score of the FMPS. Instead, it reveals associations with positive outcomes, in contrast to the negative correlations observed in other subscales of the FMPS [32]. As a result, O is regarded as a variant of adaptive perfectionism, given its correlation with various positive outcomes [76], including life satisfaction [30,31]. In light of these findings, it is anticipated that subsequent research will delve deeper into the causal relationship between the O subscale and individual life satisfaction, as well as its implications for personal psychological challenges and various dimensions of perfectionism.

The association among perfectionism, satisfaction with life and symptoms of depression

The study indicated that symptoms of depression served as a mediator in the relationship between ACEs and life satisfaction. This discovery offers enhanced clarity and a more profound elucidation of the pathways that affect individual life satisfaction, a significant indicator of mental health [22]. Furthermore, the findings indicated that an increase in depressive symptoms, in conjunction with the direct effects of ACEs encountered before the age of 18, collectively contribute to a lower level of life satisfaction. Other researchers have also identified the impacts of these factors in their studies, such as the relationship between ACEs and depression [37], the relationship between ACEs and life satisfaction [35,36], and the relationship between depression and life satisfaction [38-40]. By recognizing depression as a mediating factor in the relationship between ACEs and life satisfaction, this study underscored the significance of childhood experiences, which can exert enduring effects on an individual's mental health and life satisfaction in subsequent years.

The differences between men and women on satisfaction with life and symptoms of depression

In this study, we found that there was a significant difference between men and women on life satisfaction and symptoms of depression, in which women were more satisfied with life than men. This finding is consistent with prior studies conducted in both outside of Asia as well as inside Asia. A previous study conducted in Italy showed that women were more satisfied with life than men although both men and women had depressive symptoms and dysthymic disorder [77]. Furthermore, the investigation on satisfaction with life and depression for gender which was called "gender paradox" because women reported more likely depression but show satisfaction with life than men [51]. Similarly, Jun & Jung (2022) also found the differences in life satisfaction and depression by gender but the results did not show "paradox" because female college students showed higher depression and less satisfaction with life than males [78]. As mentioned in the introduction, we consider that lasting cultural elements, notably gender inequality, may continue to impact Vietnam's larger mental health setting [79]. Gender norms have been deeply affected by Confucian thinking in China for centuries and are difficult to eliminate. According to Qing (2020), men played a "breadwinner" role while women were shaped as a "homemaker" [80]. Therefore, a study conducted in a Chinese sample showed that homeownership is related to depression and life satisfaction especially in men [81]. Future directions could investigate deeply in these variables to examine factors impact on life satisfaction and mental health in Vietnamese samples.

The differences among birth order on satisfaction with life and symptoms of depression

In this study, there was a difference among birth order (only child, first child, middle child, and youngest child) on life satisfaction and depressive symptoms simultaneously. In contrast to gender, a widely studied characteristic in human research, birth order has received little attention in exploring both life satisfaction and depression. Previous study did not find the difference among birth order on depression, anxiety, and somatoform disorders [58]. Whereas, a little difference was found in young adults from 18 years old that middle-born and last-born have a higher level of

depression than first-born [82], but this difference only shows in small samples. Most studies did not prove significant differences in birth order, so our findings run counter to prior studies [58,83]. This result may be explained by cultural differences between our study and previous studies. Asian culture may emphasize position in the family and create the discrimination, especially for the first-born position [56]. In addition, other factors could contribute to mental health problems and decrease the effect of birth other, such as employee status, partnership status, and years in education [83]. On the other hand, our result showed that first-borns had a higher level of life satisfaction than middle-borns. This result in line with previous studies showed the significant differences among birth order on life satisfaction. A study conducted in a large Chinese sample showed that in families with two sons, birth order influences happiness and found a significant difference in level of happiness between them [84]. Hence, considering cultural characteristics when investigating mental health is vital to provide data for mental health care in Asia context.

Strengths and limitations

The current study provides vital findings on the role of both maladaptive and adaptive aspects of perfectionism, in which maladaptive aspects (include concern over mistakes, doubt about actions, parental expectations, parental criticism, personal standards) play a mediating role in the path from ACEs to symptoms of depression; on the other hand, organization aspect of perfectionism played a moderating role in the relationship between maladaptive aspects of perfectionism and life satisfaction. Therefore, when considering perfectionism in exploring mental health of individuals, the understanding of contributing factors to mental health problems or adjusting mental health status was widened [85-90]. Additionally, the significant differences were found in symptoms of depression and satisfaction with life by gender and birth order, emphasizing the risk of mental health problems and individual happiness may relate to cultural factors. However, these results are preliminary. Future studies are needed to validate the kinds of findings that may be drawn from this study. Besides, this study also provides key insights for the mental health field in Vietnam setting, especially beneficial for psychologists and psychiatrists to make plans and interventions for individuals who had childhood adversities based on clients' sociocultural contexts related to perfectionism, gender, and birth order.

Despite its strengths, this study has several limitations that should be acknowledged and improved in further studies. Firstly, this study was designed as a cross-sectional study and self-report data that did not show casual relationships. Secondly, data collection involved a switch from the original 7-point Likert to a 5-point Likert in SWLS assessment, which adds possible biases and limits researchers' ability to compare this sample to other studies using the SWLS. In addition, our study employed random sampling, which might limit the findings' generalizability to Vietnamese populations.

CONCLUSION

This study explores the relationships between ACE, perfectionism, symptoms of depression, and life satisfaction. The findings suggest that ACE negatively impacts life satisfaction while positively influencing symptoms of depression and perfectionism. Additionally, symptoms of depression have a negative effect on life satisfaction, whereas perfectionism worsen depression. Mediation analyses reveal that symptoms of depression mediates the relationship between ACE and life satisfaction, while perfectionism mediates the association between ACE and symptoms of depression. Furthermore, O moderates the relationship between perfectionism and life satisfaction. However, there are some limitations such as cross-sectional design and self-report data which may limit causal interpretations as well as introduce bias. Future research should consider longitudinal approaches and expand to a wider range of participants across different age groups. Despite these limitations, our findings contribute to the literature by offering a deeper understanding of the role of perfectionism in the relationship between ACE and mental health outcomes. Unlike previous research that primarily concentrated on direct effects, our study highlights the mediating effects of perfectionism and depression, offering a more comprehensive perspective to understand the pathway from ACE to mental health status that may consider personality aspects, especially focusing

on perfectionism in this study. The coexistence of two aspects of perfectionism (adaptive and maladaptive) provides researchers with a foundation to further investigate the relationship between perfectionism and other mental health issues. At the same time, it offers data for mental health service providers in Vietnam to consider this perfectionism factor in treatment or intervention planning. In addition, gender and birth order also was considered for mental health care planning and treatment because the potential influence of Vietnamese culture on mental health remains persistent.

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Informed Consent Statement: All participants in the study provided their informed consent.

Institutional Review Board Statement: The study adhered to the principles of the Declaration of Helsinki and received approval from the Ethics Committee of the Department of Science and Technology at Ho Chi Minh City University of Education (under the Vietnamese MoET) under the reference number CS.2024.19.22ĐH.

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