

The Relationship Between Adverse Childhood Experiences and Callous Unemotional Trait in Adolescents

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Abstract. This literature review aims to analyze the relationship between Adverse Childhood Experiences (ACEs) and Callous-Unemotional (CU) Traits in adolescents by examining various empirical studies. The findings indicate that ACEs, such as physical abuse, neglect, and exposure to domestic conflict, are significantly correlated with increased levels of CU Traits, which are characterized by a lack of empathy, guilt, and emotional affection. This study employed a literature review method using the SPIDER framework (Sample, Phenomenon of Interest, Design, Evaluation, and Research Type). Articles were selected through a systematic search of databases such as PsycINFO, PubMed, Google Scholar, and ScienceDirect. The review found that children and adolescents who experience violence, neglect, and family dysfunction tend to develop personality patterns marked by reduced empathy, absence of guilt, and blunted emotional responses in interpersonal contexts. This association is further reinforced by factors such as negative parenting styles, genetic vulnerabilities, and broader social and cultural influences.

Keywords: *Adverse childhood experiences, callous-unemotional traits, adolescence*

Abstrak. Tinjauan pustaka ini bertujuan untuk menganalisis hubungan antara *Adverse Childhood Experiences* (ACEs) dan *Callous-Unemotional* (CU) Traits pada remaja dengan menelaah berbagai studi empiris. Hasil tinjauan menunjukkan bahwa ACEs, seperti kekerasan fisik, penelantaran, dan paparan konflik rumah tangga, secara signifikan berkorelasi dengan peningkatan CU Traits, yang ditandai oleh kurangnya empati, rasa bersalah, dan afeksi emosional. Metode dalam penelitian ini menggunakan kajian pustaka dengan pendekatan SPIDER (*Sample, Phenomenon of Interest, Design, Evaluation, dan Research Type*). Artikel-artikel yang dikaji dipilih melalui pencarian sistematis pada basis data seperti PsycINFO, PubMed, Google Scholar, dan ScienceDirect. Hasil tinjauan ini menemukan bahwa anak-anak dan remaja yang mengalami kekerasan, pengabaian, dan disfungsi keluarga cenderung mengembangkan pola kepribadian yang ditandai dengan kurangnya empati, tidak adanya rasa bersalah, serta respons emosional yang tumpul dalam konteks interpersonal. Hubungan ini semakin diperkuat oleh faktor-faktor seperti gaya pengasuhan yang negatif, kerentanan genetik, serta pengaruh sosial dan budaya yang lebih luas.

Kata kunci: *Pengalaman buruk masa kecil, perilaku tidak berperasaan, remaja*

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Introduction

Adolescence is a critical stage of development in which individuals undergo significant transformations in physical, emotional, social, and cognitive aspects. During this period, adolescents begin to shape their self-identity, develop independence, and expand their social relationships beyond the family sphere. According to Hurlock (2004), one of the most complex developmental challenges in adolescence is the process of social adjustment. As adolescents prepare to enter adulthood, they face the demands of adapting to various new roles and expectations. In this process, they are expected to abandon childish attitudes and behaviors and begin to demonstrate more mature and responsible conduct in accordance with adult norms. This adjustment is influenced by interactions with peers, prevailing social norms, and the values upheld by the adult society they are entering. However, this transitional phase is also frequently accompanied by an increased risk of maladaptive behaviors, one of which is antisocial behavior (Steinberg, 2014). Furthermore, Andriani (2012) emphasizes that when adolescents fail to adapt to their social environment, they become vulnerable to various psychosocial problems such as low self-confidence, social alienation, deviant behavior, juvenile delinquency, mental health disorders, and even the potential involvement in criminal acts.

The transition from childhood to adulthood is not only marked by biological maturation but also by the formation of self-identity, moral maturity, and the development of complex social skills (Steinberg, 2014). However, the developmental trajectory of adolescents is greatly influenced by the quality of their early childhood experiences, particularly when those experiences are traumatic or harmful. In this context, Adverse Childhood Experiences (ACEs) emerge as a crucial factor that contributes to various psychological and behavioral developmental disorders during adolescence. The concept of Adverse Childhood Experiences (ACEs) was first introduced by Felitti et al. (1998) and encompasses a range of negative experiences encountered by individuals before the age of 18, such as physical abuse, emotional neglect, sexual abuse, and household dysfunction, including domestic violence, substance abuse, parental mental illness, or divorce. Subsequent studies have shown that the greater the number of ACEs experienced by a child, the higher the risk of developing various psychological and behavioral disorders later in life, including depression, anxiety, substance abuse, personality disorders, and even criminal behavior (Hughes et al., 2017). One of the

psychological consequences of ACEs that reflects the complexity of adolescent development is the emergence of Callous Unemotional (CU) Traits. Callous Unemotional (CU) Traits is a personality trait characterized by low levels of empathy, a lack of guilt or remorse, flattened emotional expression, and indifference to the feelings of others (Frick & White, 2008). Adolescents exhibiting Callous Unemotional (CU) Traits tend to engage in manipulative interpersonal relationships and are more prone to aggressive and antisocial behaviors (Viding & McCrory, 2012).

Psychologically and neurologically, ACEs can disrupt the development of brain systems responsible for emotional regulation, empathy, and decision-making. Teicher & Samson (2016) argue that early exposure to violence or neglect can lead to dysregulation in the limbic system (amygdala, hippocampus) and the prefrontal cortex, which are critical for empathic responses and impulse control. Chronic stress also leads to hyperactivation of the hypothalamic-pituitary-adrenal (HPA) axis, resulting in long-term stress dysregulation that contributes to blunted emotional responses (McLaughlin et al., 2014). This explains how ACEs can create a biological foundation for the emergence of Callous-Unemotional (CU) Traits. In addition, environmental factors such as inconsistent parenting, emotional neglect, or verbal abuse by caregivers also contribute to the development of Callous-Unemotional (CU) Traits characteristics. Children raised in emotionally unresponsive environments often struggle to form secure attachments and fail to internalize the moral and social values that underpin empathy and a sense of responsibility (Waller et al., 2015). On the other hand, adolescents with Callous-Unemotional (CU) Traits often go undetected in early stages because they do not display overt emotional symptoms such as anxiety or sadness. As a result, they may be overlooked in psychological interventions, only to exhibit more severe antisocial behaviors later.

In Indonesia, the issue of Adverse Childhood Experiences (ACEs) is often overlooked within the context of child protection and educational policy. According to reports from the Ministry of Women's Empowerment and Child Protection, the prevalence of violence against children remains high, both within the family environment and educational institutions. However, there is still minimal attention paid to the long-term impacts of such experiences, particularly in the form of Callous-Unemotional (CU) Traits. Existing interventions tend to focus on addressing deviant adolescent behaviors from a normative perspective, without

considering the traumatic roots of these problems. In fact, a deeper understanding of the relationship between ACEs and Callous-Unemotional (CU) Traits could provide a crucial foundation for developing early detection and trauma-informed intervention programs, which are more effective in preventing the emergence of aggressive and antisocial behaviors in adolescents. In the 2024 Annual Report from the Indonesian Child Protection Commission, 1,097 complaint cases were recorded concerning problematic family environments and parenting practices, including parental conflict, custody disputes, and the failure to fulfill children's rights. These figures reflect a year-over-year increase in reports of violence and deviant behaviors among adolescents. Based on previous studies, this literature review aims to synthesize and analyze scientific findings related to the relationship between ACEs and Callous-Unemotional (CU) Traits in adolescents, with the hope of contributing conceptually to the development of adolescent psychopathology theories, while also serving as a practical reference for preventive and curative efforts to address behavior problems rooted in childhood trauma.

Method

The design employed in this study is a literature review method. A literature review is a method of exploring and investigating scholarly sources by reading and examining various journals, books, and other published texts relevant to the research title, to produce a written work related to a specific topic or issue (Marzali, 2016). This literature study employs SPIDER, which, according to Methley et al. (2014), can be used for qualitative research, other methods, or a combination of both. SPIDER is an abbreviation of Sample, Phenomenon of Interest, Design, Evaluation, and Research type. The SPIDER used by the researcher includes the Sample (S) category which is adolescents aged 12 to 22 years, Phenomenon of Interest (PI) in the form of adverse childhood experience, Design (D) namely questionnaires, Evaluation (E) namely callous-unemotional traits and Research type (R) is quantitative and qualitative research conducted during the period 2005 to 2024. The reviewed articles were selected through a systematic search of databases such as PsycINFO, PubMed, Google Scholar, and ScienceDirect. The study is based on the analysis of approximately 11,400 clinical and research articles published between 2005 and 2024.

Criteria for literature review sources:

1. Articles that have been peer reviewed
2. Focus on adolescent populations (ages 12–22)
3. No specific cultural restrictions
4. Written in Indonesian and English
5. Published between 2015 and 2024
6. Use quantitative or qualitative approaches

Result

Based on a review of 11,400 clinical and research articles published between 2015 and 2024, a systematic search was conducted across databases including PsycINFO, PubMed, Google Scholar, and ScienceDirect. A total of 8 relevant articles were identified and analyzed thematically to illustrate the relationship between Adverse Childhood Experiences (ACEs) and Callous-Unemotional Traits.

Table 1.
Summary Results of Article Review

Title, Author, Year Published	Country	Samples	Design and Data Collection	Main Findings
Association between childhood maltreatment and callous-unemotional traits in youth: A meta-analysis (Todorov et al, 2023)	United Kingdom	9894 respondents	Meta-analysis studies	This study revealed a significant, moderate positive association between childhood maltreatment and callous-unemotional (CU) traits. Nearly all types of maltreatment, except sexual abuse, were significantly associated with CU traits. However, direct comparisons between primary and secondary CU traits are difficult due to inconsistencies in their definitions. This limitation highlights the importance of developing clearer clinical and operational

				<p>guidelines for defining both types of CU traits. Furthermore, prospective, longitudinal studies that consider genetic factors are needed to determine whether maltreatment is a direct cause of CU traits.</p>
<p>Callous unemotional traits and the relationship between aggressive parenting practices and conduct problems in Singaporean families (Sng et al, 2018)</p>	<p>Australia</p>	<p>282 respondents</p>	<p>Descriptive analysis techniques</p>	<p>The study showed that mild and severe parental physical aggression were uniquely associated with child proactive aggression, while parental psychological aggression was uniquely associated with both proactive and reactive aggression. These findings are consistent with previous evidence suggesting CU traits as moderators of the relationship between hostile parenting and child behavior problems, with physically aggressive parenting being more strongly associated with child proactive aggression among children with low levels of CU traits, compared with those with high levels of CU traits. These findings support the need for continued research on CU traits in Asian cultures, focusing on heterogeneous risk pathways to antisocial behavior and individual differences in response to family-based</p>

				interventions.
Leveraging parasympathetic nervous system activity to study risk for psychopathology: The special case of callous-unemotional traits (Wagner dan Waller, 2020)	United States (US)	This research sample is a summary of evaluation studies on previous studies related to psychopathology and CU traits.	Evaluation study on the Parasympathetic Nervous System (PNS).	This review concludes that fundamental and testable hypotheses about the role that PNS dysfunction may play in various pathways to CU traits begin in infancy and throughout development.
Child and adolescent maltreatment as a mediator of continuity in callous-unemotional traits and low self-control (Walters, 2018)	United States (US)	The sample for this study consisted of children from the second cohort of the National Survey of Child and Youth Well-Being (NSCAW II: National Data Archive on Child Abuse and Neglect, 2014). A total of 738 participants	Longitudinal mediation analysis based on panel data (multiple waves), to examine the role of maltreatment as a mediator of the continuity of CU traits and low self-control.	The results of this study indicate that child and adolescent abuse is associated with two early behavioral problems (namely, callous and unemotional traits and low self-control) that are known to trigger juvenile delinquency.
Relations between maternal parenting styles and callous-unemotional behavior in Chinese children: A longitudinal study (Zhu et al, 2024)	China	492 respondents	Longitudinal study	These findings have significant implications for parenting strategies aimed at addressing CU behaviors in children, underscoring the importance of warmth, reasoning, and autonomy in parenting practices.
Altered functional connectivity of the amygdala across variants of callous-unemotional traits: A resting-	Canada	1416 respondents	Latent profile analysis and seed-to-voxel connectivity analysis on fMRI data	Latent Profile Analysis revealed four subgroups, including primary and secondary variants, anxious adolescents, and typically developing adolescents. Seed-to-voxel analysis indicated

state fMRI study in children and adolescents (Dugre dan Potvin, 2023)				that the primary variant was characterized by increased connectivity between the left amygdala and the left thalamus. Dimensional analysis suggested that behavioral problems may play a mediating role between callous-unemotional states and amygdala-dmPFC functional connectivity among adolescents with already high levels of callous-unemotional states.
Childhood maltreatment, serotonin transporter gene, and risk for callous and unemotional traits: A prospective investigation (Widom et al, 2020)	US	414 respondents	Prospective cohort design	The Findings indicate that the effect of childhood maltreatment on CU traits did not differ based on genetic risk (high or low 5-HTTLPR activity). In ccontrast, controls with the LL genotype had higher CU scores than controls with the SS genotype. Similar results were found in women and non-Hispanic whites, but not in men and blacks. Variation in 5-HTTLPR did not influence the impact of childhood maltreatment on CU traits in adulthood. Genetic risk had a more substantial in adults with lower environmental risk (controls). Having a history of childhood maltreatment or the LL genotype placed participants at risk for higher scores on callous-

				unemotional and unemotional traits.
Childhood maltreatment and violent delinquency in Chinese juvenile offenders: Callous-unemotional traits as a mediator (Chang et al, 2021)	China	The research subjects were 441 juvenile perpetrators of violence and a control group of 543 non-perpetrators, using a questionnaire.	Mediation analysis to look at direct and indirect effects	The results showed no mediation of callous-unemotional traits in the relationship between physical violence and juvenile delinquency. However, callous-unemotional traits mediated the relationship between sexual violence and juvenile delinquency, as well as between emotional neglect and juvenile delinquency.

Interpretation

A meta-analysis study by Todorov et al. (2023) examined the association between childhood maltreatment and the emergence of callous-unemotional (CU) traits in children and adolescents. By analyzing 29 studies involving nearly 9894 participants, the research found a significant and moderate correlation between various forms of maltreatment, such as emotional abuse, physical neglect, emotional neglect, and elevated levels of CU traits ($r = 0.23$). Interestingly, neglect demonstrated a more consistent correlation compared to physical or sexual abuse. Notably, sexual abuse did not show a significant association, which may be attributed to reporting biases or limitations in sample size. Moreover, the association between maltreatment and CU traits was found to be stronger in female samples and community populations compared to clinical groups or males. These findings support the view that CU traits, particularly the secondary type, may develop as a response to traumatic environments or emotionally unresponsive caregiving. Thus, the results of this study underscore the importance of trauma-informed approaches in the early detection and intervention efforts for adolescents exhibiting CU characteristics.

The study by Sng et al. (2018) examined the mediating role of callous-unemotional (CU) traits in the relationship between harsh parenting practices and behavioral problems in children in Singapore. The findings indicated that harsh parenting, including physical and verbal punishment, was significantly associated with increased behavioral issues in children,

particularly conduct problems. CU traits emerged as a key mediator in this relationship. Children frequently exposed to aggressive parenting tended to develop traits marked by a lack of empathy and emotional insensitivity, which in turn reinforced their tendency to exhibit problematic behaviors. This study highlights the importance of interventions that target not only children's behavior but also parental practices, especially within Asian cultural contexts where harsh parenting may still be viewed as acceptable.

The study by Wagner and Waller (2020) highlights the importance of parasympathetic nervous system activity, particularly respiratory sinus arrhythmia (RSA), in understanding the risk of psychopathology associated with callous-unemotional (CU) traits. RSA is a biological indicator that reflects an individual's capacity for emotion regulation and adaptive responses to social stress. The study found that individuals with CU traits tend to exhibit lower levels of RSA, both at rest and during stressful situations. This reduced RSA activity indicates a weakened physiological response to emotional and social cues, aligning with core features of CU traits such as lack of empathy, absence of guilt, and blunted emotional reactivity. Furthermore, Wagner and Waller emphasize that dysregulation within the autonomic nervous system may serve as a biological mechanism underlying difficulties in emotion regulation and the development of antisocial behavior. Therefore, RSA measurement may serve as a potential biomarker for the early detection of psychopathological risk, particularly in children and adolescents with tendencies toward CU traits.

The study by Walters (2018) explored the role of childhood and adolescent maltreatment as a mediator in the relationship between Callous-Unemotional (CU) traits and low self-control. The findings revealed that early-life experiences of abuse or neglect significantly mediated the link between early-emerging CU traits and diminished self-control in later developmental stages. In other words, individuals who exhibit CU traits at a young age and experience maltreatment are more likely to retain callous characteristics and struggle with impulse control into adolescence or early adulthood. These findings underscore the significant impact of adverse environments, such as maltreatment, in reinforcing antisocial and emotionally dysfunctional traits, and highlight the critical importance of early intervention to break the developmental trajectory of psychopathology starting in childhood.

A 1.5-year longitudinal study conducted by Zhu et al. (2024) involving 492 preschool

children in China found a bidirectional relationship between maternal parenting styles and children's callous-unemotional (CU) behavior. An authoritative parenting approach characterized by warmth, reasoning, and autonomy support at Time 1 was shown to have a protective effect against CU behavior at Time 2 (approximately 1.5 years later), indicating that maternal warmth and effective communication may reduce the likelihood of children developing callous traits. In contrast, an authoritarian parenting style involving physical coercion and verbal aggression at Time 1 not only predicted an increase in CU behavior at Time 2, but also exhibited a reciprocal pattern: children's CU behavior at Time 1 predicted increased maternal aggressive responses at Time 2. No significant gender differences were found in these patterns of association.

Dugre & Potvin (2023) utilized resting-state fMRI data from 1416 adolescents to compare amygdala connectivity patterns across four subgroups based on CU trait variants identified through latent profile analysis (primary, secondary, anxious, and typically developing). The findings revealed that the primary CU variant (high callousness, low anxiety) was characterized by increased connectivity between the left amygdala and the left thalamus. In contrast, the secondary CU variant (high callousness and high anxiety) exhibited deficits in connectivity between the left amygdala and several fronto-parietal and temporo-parietal brain regions, including the dmPFC, TPJ, premotor cortex, and postcentral gyrus. Both variants also showed increased connectivity between the left amygdala and the right thalamus. Still, they demonstrated divergent patterns in relation to the parahippocampal gyrus connectivity, which increased in the primary variant but decreased in the secondary variant. Dimensional analysis further revealed that conduct problems mediated the relationship between callousness and amygdala-dorsolateral prefrontal cortex (dmPFC) connectivity among adolescents with high levels of callous traits. These findings highlight the neurobiological differences among CU trait variants and suggest that CU-related psychopathology risk is manifested through specific patterns of brain connectivity, which may serve as potential targets for clinical intervention.

The prospective study by Widom et al. (2020) examined the relationship between childhood maltreatment, serotonin transporter gene variation (5-HTTLPR), and the later development of callous-unemotional (CU) traits. The study followed a cohort of children with documented histories of abuse or neglect, alongside a matched control group, and assessed

CU traits in adulthood (N = 414). Results indicated that childhood maltreatment significantly predicted higher CU trait scores in adulthood, while the 5-HTTLPR genetic variation did not significantly moderate this relationship. Thus, environmental factors such as maltreatment were found to be strong predictors of CU trait development, whereas the genetic factor studied did not systematically increase risk.

Chang et al., (2021) investigated the role of callous-unemotional (CU) traits as a mediator in the relationship between various forms of childhood abuse and violent offending in a sample of delinquent adolescents in China. The study included 441 adolescent offenders and 543 non-offending controls. Mediation analysis revealed that CU traits did not mediate the effect of physical abuse on delinquency, but significantly mediated the relationship between sexual abuse and emotional neglect with violent behavior. This means that the influence of sexual abuse on adolescent violence operates both directly and indirectly via increased CU traits, while the impact of emotional neglect affects delinquency exclusively through the mediating role of CU traits. These findings highlight the importance of considering CU traits in understanding and addressing the specific effects of interpersonal trauma on violent behavior in adolescents.

Conclusion

Based on this literature review, it can be concluded that Adverse Childhood Experiences (ACEs) have a significant relationship with the development of Callous-Unemotional Traits in adolescents. Children and adolescents who experience abuse, neglect, and family dysfunction tend to develop personality patterns characterized by a lack of empathy, absence of guilt, and blunted interpersonal emotions. This relationship is further reinforced by factors such as negative parenting styles, genetic predispositions, and social and cultural contexts. The impact of CU Traits extends beyond adolescent psychological development and may persist into adulthood, potentially leading to more serious antisocial behavior. Therefore, a comprehensive understanding of the relationship between ACE and CU Traits is crucial for developing effective and targeted intervention programs for adolescents.

Suggestion

Parents need to be educated about the importance of consistent and supportive parenting as a protective factor against the effects of Adverse Childhood Experiences (ACEs). Parenting programs based on developmental psychology should be widely developed and implemented. Additionally, schools and educational institutions must be actively involved in identifying children who have experienced childhood adversities at an early stage. The provision of psychological interventions, counseling, and social support from an early age can help reduce the potential development of Callous-Unemotional Traits. On the other hand, at the governmental level, there is a pressing need to design comprehensive child protection policies, with a focus on preventing ACEs and enhancing psychosocial intervention services. A cross-sectoral approach, involving the fields of education, social welfare, and health, is essential to address the wide-ranging impacts of ACEs effectively.

Reference

- Adriani, M. (2012). *Peranan Gizi Dalam Siklus Kehidupan*. Jakarta: Prenadamedia Group.
- Chang, S., Hou, Q., Wang, C., Wang, M., Wang, L., & Zhang, W. (2021). Childhood maltreatment and violent delinquency in Chinese juvenile offenders: Callous-unemotional traits as a mediator. *Child Abuse & Neglect*, 117, 105085.
- Dugré, J. R., & Potvin, S. (2023). Altered functional connectivity of the amygdala across variants of callous-unemotional traits: A resting-state fMRI study in children and adolescents. *Journal of Psychiatric Research*, 163, 32-42.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., ... & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14(4), 245-258.
- Frick, P. J., & White, S. F. (2008). Research review: The importance of callous-unemotional traits for developmental models of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry*, 49(4), 359-375.
- Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., ... & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *The Lancet public health*, 2(8), e356-e366.
- Hurlock, E.B. (2004). *Psikologi Perkembangan: Suatu Pendekatan Sepanjang Rentang Kehidupan*. Jakarta: Penerbit Erlangga.
- Marzali, Amri. 2016. Menulis Kajian Literatur. *Jurnal Etnosia*. 1(2), 112-117.
- Methley, A. M., Campbell, S., Chew-Graham, C., McNally, R., & Cheraghi-Sohi, S. (2014). PICO, PICOS and SPIDER: a comparison study of specificity and sensitivity in three search tools for qualitative systematic reviews. *BMC health services research*, 14(1), 1-10.
- McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2012). Childhood adversities and first onset of psychiatric disorders in a national sample of US adolescents. *Archives of general psychiatry*, 69(11), 1151-1160.
- Sng, K. I., Hawes, D. J., Raine, A., Ang, R. P., Ooi, Y. P., & Fung, D. S. (2018). Callous unemotional traits and the relationship between aggressive parenting practices and conduct problems in Singaporean families. *Child Abuse & Neglect*, 81, 225-234.
- Steinberg, L. (2014). *Age of Opportunity: Lessons from the New Science of Adolescence*.
- Teicher, M. H., & Samson, J. A. (2016). Annual Research Review: Enduring neurobiological effects of childhood abuse and neglect. *Journal of Child Psychology and Psychiatry*, 57(3), 241-266.
- Todorov, J. J., Devine, R. T., & De Brito, S. A. (2023). Association between childhood maltreatment and callous-unemotional traits in youth: A meta-analysis. *Neuroscience & Biobehavioral Reviews*, 146, 105049.

- Viding, E., & McCrory, E. J. (2012). Why should we care about measuring callous-unemotional traits in children? *The British Journal of Psychiatry*, 200(3), 177–178.
- Wagner, N. J., & Waller, R. (2020). Leveraging parasympathetic nervous system activity to study risk for psychopathology: The special case of callous-unemotional traits. *Neuroscience & Biobehavioral Reviews*, 118, 175-185.
- Waller, R., Gardner, F., & Hyde, L. W. (2013). What are the associations between parenting, callous-unemotional traits, and antisocial behavior in youth? A systematic review of evidence. *Clinical psychology review*, 33(4), 593-608.
- Walters, G. D. (2018). Child and adolescent maltreatment as a mediator of continuity in callous-unemotional traits and low self-control. *Children and Youth Services Review*, 84, 26-34.
- Widom, C. S., Miller, D., Li, X., Gordon, D., & Brzustowicz, L. (2020). Childhood maltreatment, serotonin transporter gene, and risk for callous and unemotional traits: A prospective investigation. *Psychiatry research*, 291, 113271.
- Zhu, J., Zou, S., & Li, Y. (2024). Relations between maternal parenting styles and callous-unemotional behavior in Chinese children: A longitudinal study. *Child Abuse & Neglect*, 154, 106865.