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Risk factors for depression in adolescents

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Abstract:

Introduction: This study aims to analyze the risk factors associated with depression in adolescents, focusing on the interplay between biological, psychological, and social determinants.

Materials and methods: A review of chosen literature from PubMed, and Google Scholar was conducted, using key words including "depression", "adolescence", "stress", "mental health".

Summary: Depression in adolescents is strongly associated with significant biological changes, including hormonal shifts, and neural maturation. Gender differences are particularly prominent, with girls showing higher prevalence and severity of depressive symptoms due to factors such as hormonal sensitivity to stress, and genetic variance. Family and interpersonal relationships also play a role, as parental depression, low parental warmth, high criticism, and peer rejection increase the risk of depression. Conversely, positive family dynamics and supportive peer relationships act as protective factors. Sleep disturbances were found to have a profound impact on adolescent mental health. Delayed circadian rhythms, and poor sleep hygiene are linked to increased depressive symptoms. Stressful life events emerged as significant environmental risk factors, with maladaptive coping strategies exacerbating vulnerability. The study underscores the critical mediating role of perceived social support in mitigating the effects of stress on mental health.

Conclusions: The findings of this study highlight the need for integrated strategies to address adolescent depression. Interventions should include early detection programs, gender-sensitive approaches, and family-based therapies to foster supportive relationships. Given that depression during adolescence often tracks into adulthood and increases the risk of recurrent episodes and suicidality, targeted efforts during this developmental phase are paramount.

Key words: depression, adolescence, stress, mental health

Introduction

Depression is a common psychiatric disorder and a major contributor to the global burden of diseases [1]. The most typical symptoms include continuous depressive mood, recurring thoughts of death and suicide, feeling of worthlessness, social withdrawal, and anhedonia, all of which further decrease the level of life quality as a whole [2]. Depression in adolescents is a significant risk factor for suicide, which ranks as the second or third leading cause of death in this age group [3]. Over half of adolescent suicide victims are reported to have had a depressive disorder at the time of their death [4]. There is an escalation in the incidence of depression from childhood to adolescence; it strongly tracks into adulthood, making early detection paramount for timely intervention and prevention. Approximately one adolescent in every five suffers from some kind of psychiatric disorder [5]. Worldwide, mental health disorders contribute to 16% of the disease and injury burden among individuals aged 13–18. Half of all adult mental health disorders begin before the age of 18, yet many go undiagnosed and unrecognized, increasing the likelihood of affective disorders and other mental illnesses later in life [6]. By 19 years old, an estimated 25 % of teenagers have experienced a depressive episode, according to research [7]. Adolescence represents a time of continued maturation of the brain, especially limbic and cortical regions, which undoubtedly underlies many of the physiological and emotional changes coincident with adolescence. An emerging line of research has suggested that stressors during this critical developmental stage impact the course of this neural maturation and could contribute to the increases in psychological morbidities, such as anxiety and depression, which commonly emerge during adolescence. Various physical, psychological, and emotional changes occurring during this developmental phase may elevate an individual's sensitivity and reactivity towards stress exposure, which can lead to depression [8]. The health of young people has often been overlooked in global public health efforts due to the perception that this age group is generally healthy. However, opportunities to prevent disease and injury during adolescence remain underutilized. This study highlights the need for greater public health focus to improve adolescent well-being [9]. The negative consequences will persist well into adulthood if mental health issues were not resolved as the impairment of physical and mental health [10]. Longitudinal studies conducted on community and clinic-based populations indicate that 60–90% of depressive episodes in adolescents resolve within a year. However, follow-up research shows that 50–70% of those who recover experience new depressive episodes within five years [11]. In addition, people who experience major depression in adolescence are more likely to experience suicidal ideation, attempts, and completion as adults [12]. Identifying the risk factors for adolescent depression is a crucial first step in creating strategies to mitigate its severity, persistence, and long-term effects.

The aim of this study is to analyze the risk factors associated with the occurrence of depression among adolescents and understand, to a certain extent, the mechanisms leading to its development in these young years. The study seeks not only to identify the most significant biological, psychological, and social causes but also tries to highlight opportunities for early intervention and prevention. To find relevant articles, we conducted a systematic review of the latest works available in bibliographic databases such as PubMed, Google Scholar, and Web of Science. We used the following keywords and their combinations: “depression”, “adolescence”, “stress”,”mental health". Based on the collected data and relevant literature, this work will provide practical recommendations for professionals working in adolescent mental health and for policymakers shaping health strategies.

Gender

Depression in children is rare, with its prevalence being less than 1% in most studies [13] , and no significant gender differences are observed. However, during adolescence, there is a noticeable increase in the prevalence of mental disorders [14]. The reasons for this rise can be attributed to various factors, as adolescence is a period of intense biological and social changes [15]. These factors include the development of social skills, greater self-awareness [16] , changes in the functioning of brain circuits responsible for responses to rewards and threats, and higher levels of reported stress, particularly among girls [17]. A widely recognized finding in epidemiological studies is the marked predominance of depression in girls compared to boys (approximately 2:1) during adolescence after puberty [18]. The severity of symptoms is generally higher in females. Women with depression are more likely than men to experience prolonged or recurrent episodes, an earlier age of onset, and a reduced quality of life [19]. It is thought that hormonal changes in girls play a greater role in adolescent depression than chronological age. This indicates a strong connection between depression and the effects of puberty on the interaction between hormones and the brain [20]. At the same time, hormonal changes rarely

cause symptoms of depression on their own [21] —they are more likely to increase the brain's sensitivity to the harmful effects of stress, which may contribute to the development of the disorder [22,23]. A potential explanation for the rise in depression among pubertal girls and its continuation throughout adolescence could be the higher heritability of depression in this group, the genetic influence persisting over time, and the growing genetic variance associated with life events [24]. The gender disparity in major depression diagnoses and symptoms reaches its peak during adolescence, with the gap becoming noticeable around age 12. This difference then diminishes slightly and stabilizes throughout adulthood [25]. Two interconnected neural circuits and their regulatory mechanisms play a significant role in the increased risk of depression in adolescents [26]. One of these systems involves connections between the amygdala, hippocampus, and ventral regions of the prefrontal cortex (PFC) and is associated with the functioning of the hypothalamic-pituitary-adrenal (HPA) axis. In individuals with severe depression, activity in this system is often elevated [27]. Factors such as genetics, psychosocial stress, sex hormones, and developmental processes influence changes in this system [28] , with evidence that this circuit matures after adolescence. Furthermore, the high concentration of sex hormone receptors in this area [29] may explain why girls are more vulnerable to depression than boys. Differences in depression prevalence between sexes may also be influenced by variations in monoamine functioning. Monoamine tryptophan depletion, which temporarily reduces serotonin transmission, has been shown to increase depressive symptoms more significantly in females than in males [30].

Family-genetic factors

There is solid evidence for the familial transmission of depression [31]. Children of parents with depression have a three to four times increased risk of developing depression themselves, compared to offspring whose parents are free from the disorder [32]. The impact of parental depression has been observed spanning three generations: children from families where both parents and grandparents experienced depression were found to have the highest risk of developing psychopathology, compared to those with only depressed parents [33]. A large twin study in a Swedish population estimated the heritability of major depressive disorder to be approximately 37% [34]. Exposure to maternal depression during both prenatal and postnatal periods has been highlighted as particularly significant [33]. However, this data does not clarify whether the transmission is driven by genetic or environmental factors. Studies involving families, twins, and adoptions have established that unipolar depression is due both to genetic and environmental factors [35]. Research has focused on identifying genes that may increase susceptibility to unipolar depression. Numerous studies point to the 5-HTTLPR variant in the serotonin transporter gene as a potential risk factor, primarily in cases involving difficult life experiences or early trauma [36,37]. This association appears to be more pronounced in adolescent girls than in boys [37]. Furthermore, this gene variant has been linked to the functioning of brain circuits responsible for fear and threat responses, which are altered in depression. For example, in healthy individuals, this variant is associated with heightened amygdala activity when viewing fearful faces [28]. Early behavioral genetics research tended to partition population variance into one component ascribed to genetic factors and a second component ascribed to environmental factors, typically assuming little importance for interactions between the two components. Theoretical analyses suggested this assumption was unlikely, and empirical evidence now points to significant interactions between specific genetic variants and environmental risks [38]. In fact, the critical role of environmental factors in influencing vulnerability, along with their interactions with genetic variations, has been clearly demonstrated in the case of depression [35]. For example, research from 2021 revealed that adolescents who perceived their parents as highly critical were more likely to develop clinically significant depression over time, regardless of the treatment condition [39]. Growing evidence suggests that children's environments can impact them differently depending on their temperamental traits and varying susceptibility to environmental influences.Temperament is believed to have a genetic and biological foundation, though experiences and learning, especially in social contexts, can also shape its development and expression [40]. Negative affectivity refers to a tendency to experience negative emotions and is associated with heightened sensitivity to negative stimuli, increased caution, vigilance, physiological arousal, and emotional distress. On the other hand, positive affectivity is marked by a heightened sensitivity to rewarding stimuli, sociability, and a sense of adventure [41]. Children with negative temperaments may be particularly sensitive to factors such as parental criticism, parental depression, and family conflict, requiring greater parental support compared to those with more positive or optimistic temperaments [42]. Research has shown that youth with challenging or negative temperaments are more affected by interparental conflict, which can increase their risk of delinquent behavior and depressive symptoms during adolescence [43].

Stress and coping

Stressors are characterized as environmental events or chronic conditions that objectively threaten the physical and/or psychological health or well-being of individuals of a particular age in a particular society [44]. Depression is frequently classified as a stress-related disorder, with prevailing beliefs suggesting that stress from negative life events, including those in early childhood, plays a key role in the onset, progression, and persistence of this debilitating condition [45]. Still, such events do not always lead to depression in adolescents, though those with a strong genetic predisposition seem particularly sensitive to their effects [46]. Stressful life experiences are more strongly linked to the first episode of depression than to later recurrences, and the risk is significantly higher among adolescents who face multiple negative events compared to those exposed to only one [47]. This risk is further heightened if there is a family history of similar disorders [48]. Chronic and severe stressors, particularly those impacting relationships, appear to play a critical role in depression. Negative family dynamics [49] and peer victimization through bullying [50] are common contributors. Research shows that early life exposure to violence and stressors leads to a smaller prefrontal cortex and impaired functioning, disrupted stress responses, elevated levels of inflammatory mediators [51] and alterations in gene expression [52]. According to the stress-generation model, individuals with depression may unintentionally contribute to negative events through their own behaviors [53]. Long-term studies have provided evidence for this model, especially in the context of interpersonal relationships [54]. Personality traits [55] and a lack of interpersonal skills [56] are among the factors that may drive the creation of stressful situations. Early life adversity can serve as an indicator of ongoing exposure to negative stressors, as individuals who face challenges in childhood are more likely to encounter stressful circumstances later in life [57]. The link between stress and depression seems to be stronger in adolescents than in children, particularly among girls [58]. The exact reasons for this are unclear, but factors such as hormonal changes, the development of certain cognitive styles, cumulative exposure to stress, and heightened stress reactivity may play a role [59]. The way people respond to stress plays a crucial role in their future functioning and mental health. Stress responses can be categorized as voluntary or involuntary and as engaged or disengaged. Involuntary, often automatic, reactions largely stem from individual differences in temperament, particularly stress reactivity. Coping with stress, as part of self-regulation processes, involves deliberate and intentional efforts to manage challenging situations. Engagement coping includes approaches such as problem-solving, cognitive restructuring, positive reappraisal, and distraction. In contrast, disengagement responses involve avoidance, self-blame, emotional outbursts, and rumination [60]. The use of engaged strategies, particularly those focused on problem-solving, is associated with fewer symptoms of internalizing disorders. On the other hand, disengaged coping, involuntary engagement, and emotion-focused approaches often increase the risk of such symptoms. Particularly harmful stress responses include avoidance (both cognitive and behavioral), social withdrawal, resignation, heightened emotional reactions, venting, wishful thinking, self-blame or self-criticism, intrusive thoughts, and excessive rumination [61].

Interpersonal relationships

Interpersonal theories of depression highlight the critical role of the social environment and the formation of secure attachments. The roots of vulnerability to depression are often traced to early family environments where children's needs for security, comfort, and acceptance are unmet [62]. Families with a depressed member frequently exhibit issues such as attachment difficulties, poor communication, lack of cohesion, inadequate social support, ineffective parenting practices, chronic criticism, harsh discipline, and inappropriate parent-child dynamics that resemble peer-like relationships [63, 64]. Parenting style refers to the combination of values, goals, behaviors, and emotional approaches that parents use while raising their children [65]. Recognized as a critical family factor, parenting style has been identified as one of the most significant influences on adolescent depression [66]. Two comprehensive reviews on parental rearing and youth depression have consistently found a link between depression and a parenting style characterized by low care and high psychological control, often referred to as "affectionless control." However, the association appears to be stronger for low parental care than for psychological control [67]. Influence of parenting style extends beyond direct effects on depression, leaving a long-term impact on the development of adolescent personality and other psychological traits [68]. Parenting style has been identified as a key predictor of individual self-esteem [69]. Research indicates that negative parenting approaches (e.g., denial, authoritarianism, and excessive control) are linked to lower levels of self-esteem [70]. Furthermore, the vulnerability model suggests that low self-esteem increases the risk of developing depression. A meta-analysis of longitudinal studies confirmed a significant negative relationship between self-esteem and depression [71]. Evidence from cross-lagged longitudinal studies supports that self-esteem predicts depression, while depression does not appear to predict self-esteem [72]. Moreover, self-esteem can be viewed as

a susceptibility factor for depression, with self-esteem levels being strong predictors of depression in adolescents [73]. Additionally, factors like low parental warmth, high maternal hostility, and intensifying conflicts between parents and adolescents strongly predict increases in adolescents' internalizing symptoms [74]. Perceived rejection from peers, family, and teachers further contributes to the rise in depressive symptoms among children and adolescents [75]. Consistent with interpersonal theories, depressed youth often struggle with various aspects of their relationships with both peers and family members [76]. Perceived social support is defined as an individual's emotional perception of being supported, understood, and valued in their interactions with others [77]. Research has demonstrated that high levels of social support can enhance self-esteem and reduce depression. According to the stress-buffering model, social support benefits individuals in both low and high-stress situations, with its positive impact being more pronounced during periods of high stress [78]. A longitudinal study of Chinese adolescents found that social support moderated the relationship between stressful life events and depression, particularly during times of elevated stress [79]. Additionally, another study revealed that perceived social support reduced the impact of stressful life events on depression in female adolescents, showing that higher levels of perceived social support were associated with a weaker link between stress and depression [80]. Therefore, perceived social support serves as a critical factor in safeguarding adolescent mental health during stressful circumstances.

Sleep disturbance

Sleep disturbances are a common feature of psychiatric disorders and serve as a complementary marker of psychopathology, particularly in mood disorders [81]. Sleep deprivation can lead to pathological changes, emphasizing the importance of quality sleep for both physical and mental health [82]. During adolescence, numerous developmental changes occur, including alterations in brain gray matter volume in the frontal and parietal lobes, which increase at the onset of puberty and later decrease, potentially being influenced by sleep-related factors [83]. Adolescents often experience an increase in sleep disruptions, including insomnia and shorter sleep durations [84]. Specifically, a delay in the circadian rhythm during this stage shifts bedtimes later, making it more difficult for teens to fall asleep earlier [85]. Additionally, sleep pressure accumulates more slowly in late pubertal adolescents compared to early pubertal ones, enabling older teens to stay awake for longer periods [85]. Research shows that adolescents with insomnia are 4–5 times more likely to exhibit symptoms of depression compared to those who sleep well [86, 87]. A randomized clinical trial conducted in the Netherlands found a significant relationship between sleep hygiene, extended sleep duration, and reduced depressive symptoms. Adolescents in the sleep hygiene intervention group showed an increase in sleep hours and a decrease in depressive symptoms, unlike their counterparts who did not receive the guidelines [88]. Studies further reveal that depressive symptoms are linked to the number of hours slept [86, 89]. Moreover, disrupted sleep is a strong risk factor for non-suicidal self-injury (NSSI) and suicidal ideation. Large epidemiological studies report that adolescents with shorter sleep durations are twice as likely to experience suicidal ideation compared to those with longer sleep durations [90]. While NSSI is the strongest predictor of suicidality, sleep problems are nearly as critical [91]. For instance, in a sample of adolescents with NSSI, greater sleep disturbances were associated with more suicide attempts, even when controlling for depressive symptoms, highlighting sleep as an independent risk factor for suicidality [92]. Additionally, research has shown that adolescents who spend more time on electronic devices, regardless of whether for social media, internet use, texting, or gaming, exhibit lower psychological well-being compared to those who engage in non-screen activities like in-person social interaction, sports, homework, or attending religious services [93]. Recent studies suggest that some of the negative effects of digital media use on mental health may be mediated by sleep disruption. Established literature indicates that screen use among youth negatively impacts sleep [94] and when controlling for sleep duration and cyberbullying, the link between digital media use and mental health outcomes becomes non-significant [95]. Thus, sleep may play a critical mediating role in the relationship between digital media use and mental health.

Summary and conclusions

This study highlights the multifaceted and interconnected factors contributing to adolescent depression, emphasizing the interplay between biological, psychological, and social determinants. The findings underscore the critical role of early detection and intervention, particularly given the significant escalation of depressive symptoms during adolescence and their persistence into adulthood. The pronounced gender differences in depression prevalence and severity during adolescence suggest the need for gender-sensitive approaches to prevention and treatment, with hormonal changes, genetic factors, and environmental stressors playing pivotal roles. The influence of family-genetic factors, such as parental depression and critical parenting styles, underscores the importance of fostering supportive family environments to mitigate risk. Interpersonal

relationships also emerge as critical contributors to adolescent mental health. Dysfunctional family dynamics, including low parental warmth, and poor communication, are strongly associated with increased depressive symptoms. Furthermore, the impact of sleep disturbances on mood disorders, suicidal ideation, and self-injury highlights the urgent need to address sleep hygiene and its mediating role in mental health. The study also reinforces the importance of social support and its buffering effect against stress, particularly in high-stress situations, as a protective factor for adolescent well-being. Overall, the findings advocate for integrated strategies that address the complex and dynamic nature of adolescent depression, combining biological, psychological, and social interventions to promote long-term mental health outcomes.

Disclosure

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References

1. Karrouri R, Hammani Z, Benjelloun R, Otheman Y. Major depressive disorder: Validated treatments and future challenges. *World J Clin Cases* 2021; 9(31): 9350-9367 doi:10.12998/wjcc.v9.i31.9350

2. Jeon L, Buettner CK, Snyder AR. Pathways from teacher depression and child-care quality to child behavioral problems. *J Consult Clin Psychol*. 2014;82(2):225-235. doi:10.1037/a0035720

3. Windfuhr K, While D, Hunt I, et al. Suicide in juveniles and adolescents in the United Kingdom. *J Child Psychol Psychiatry*. 2008;49(11):1155-1165. doi:10.1111/j.1469-7610.2008.01938.x

4. Hawton K, van Heeringen K. Suicide. *Lancet*. 2009;373(9672):1372-1381. doi:10.1016/S0140-6736(09)60372-X

5. Costello EJ, Copeland W, Angold A. Trends in psychopathology across the adolescent years: what changes when children become adolescents, and when adolescents become adults?. *J Child Psychol Psychiatry*. 2011;52(10):1015-1025. doi:10.1111/j.1469-7610.2011.02446.x

6. World Health Organization (WHO). https://www.who.int/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions Access: 27/11/2024

7. Hetrick SE, McKenzie JE, Bailey AP, et al. New generation antidepressants for depression in children and adolescents: a network meta-analysis. *Cochrane Database Syst Rev*. 2021;5(5):CD013674. Published 2021 May 24. doi:10.1002/14651858.CD013674.pub2

8. Eiland L, Romeo RD. Stress and the developing adolescent brain. *Neuroscience*. 2013;249:162-171. doi:10.1016/j.neuroscience.2012.10.048

9. Gore FM, Bloem PJ, Patton GC, et al. Global burden of disease in young people aged 10-24 years: a systematic analysis [published correction appears in Lancet. 2011 Aug 6;378(9790):486]. *Lancet*. 2011;377(9783):2093-2102.

10. Cullen KR, Gee DG, Klimes-Dougan B, et al. A preliminary study of functional connectivity in comorbid adolescent depression. *Neurosci Lett*. 2009;460(3):227-231. doi:10.1016/j.neulet.2009.05.022

11. Dunn V, Goodyer IM. Longitudinal investigation into childhood- and adolescence-onset depression: psychiatric outcome in early adulthood. *Br J Psychiatry*. 2006;188:216-222. doi:10.1192/bjp.188.3.216

12. Zisook S, Lesser I, Stewart JW, et al. Effect of age at onset on the course of major depressive disorder. *Am J Psychiatry*. 2007;164(10):1539-1546. doi:10.1176/appi.ajp.2007.06101757

13. Kessler RC, Avenevoli S, Ries Merikangas K. Mood disorders in children and adolescents: an epidemiologic perspective. *Biol Psychiatry*. 2001;49(12):1002-1014. doi:10.1016/s0006-3223(01)01129-5

14. Meltzer H, Gatward R, Goodman R, Ford T. Mental health of children and adolescents in Great Britain. *Int Rev Psychiatry*. 2003;15(1-2):185-187. doi:10.1080/0954026021000046155

15. Patton GC, Viner R. Pubertal transitions in health. *Lancet*. 2007;369(9567):1130-1139. doi:10.1016/S0140-6736(07)60366-3

16. Blakemore SJ. The social brain in adolescence. *Nat Rev Neurosci*. 2008;9(4):267-277. doi:10.1038/nrn2353

17. Nelson EE, Leibenluft E, McClure EB, Pine DS. The social re-orientation of adolescence: a neuroscience perspective on the process and its relation to psychopathology. *Psychol Med*. 2005;35(2):163-174. doi:10.1017/s0033291704003915

18. Hyde JS, Mezulis AH, Abramson LY. The ABCs of depression: integrating affective, biological, and cognitive models to explain the emergence of the gender difference in depression. *Psychol Rev*. 2008;115(2):291-313. doi:10.1037/0033-295X.115.2.291

19. Kornstein SG, Schatzberg AF, Thase ME, et al. Gender differences in chronic major and double depression. *J Affect Disord*. 2000;60(1):1-11. doi:10.1016/s0165-0327(99)00158-5

20. Angold A, Costello EJ, Erkanli A, Worthman CM. Pubertal changes in hormone levels and depression in girls. *Psychol Med*. 1999;29(5):1043-1053. doi:10.1017/s0033291799008946

21. Soares CN, Zitek B. Reproductive hormone sensitivity and risk for depression across the female life cycle: a continuum of vulnerability?. *J Psychiatry Neurosci*. 2008;33(4):331-343.

22. Angold A, Costello EJ. Puberty and depression. *Child Adolesc Psychiatr Clin N Am*. 2006;15(4):919-ix. doi:10.1016/j.chc.2006.05.013

23. Goodyer IM, Herbert J, Tamplin A, Altham PM. Recent life events, cortisol, dehydroepiandrosterone and the onset of major depression in high-risk adolescents. *Br J Psychiatry*. 2000;177:499-504. doi:10.1192/bjp.177.6.499

24. Silberg J, Pickles A, Rutter M, et al. The influence of genetic factors and life stress on depression among adolescent girls. *Arch Gen Psychiatry*. 1999;56(3):225-232. doi:10.1001/archpsyc.56.3.225

25. Salk RH, Hyde JS, Abramson LY. Gender differences in depression in representative national samples: Meta-analyses of diagnoses and symptoms. *Psychol Bull*. 2017;143(8):783-822. doi:10.1037/bul0000102

26. Feder A, Nestler EJ, Charney DS. Psychobiology and molecular genetics of resilience. *Nat Rev Neurosci*. 2009;10(6):446-457. doi:10.1038/nrn2649

27. Brody AL, Saxena S, Silverman DH, et al. Brain metabolic changes in major depressive disorder from pre- to post-treatment with paroxetine. *Psychiatry Res*. 1999;91(3):127-139. doi:10.1016/s0925-4927(99)00034-7

28. Hariri AR, Drabant EM, Munoz KE, et al. A susceptibility gene for affective disorders and the response of the human amygdala. *Arch Gen Psychiatry*. 2005;62(2):146-152. doi:10.1001/archpsyc.62.2.146

29. Nelson EE, Leibenluft E, McClure EB, Pine DS. The social re-orientation of adolescence: a neuroscience perspective on the process and its relation to psychopathology. *Psychol Med*. 2005;35(2):163-174. doi:10.1017/s0033291704003915

30. Moreno FA, McGahuey CA, Freeman MP, Delgado PL. Sex differences in depressive response during monoamine depletions in remitted depressive subjects. *J Clin Psychiatry*. 2006;67(10):1618-1623. doi:10.4088/jcp.v67n1019

31. Weissman MM. Recent advances in depression across the generations. *Epidemiol Psichiatr Soc*. 2006;15(1):16-19.

32. Rice F, Harold G, Thapar A. The genetic aetiology of childhood depression: a review. *J Child Psychol Psychiatry*. 2002;43(1):65-79. doi:10.1111/1469-7610.00004

33. Goodman SH, Gotlib IH. Risk for psychopathology in the children of depressed mothers: a developmental model for understanding mechanisms of transmission. *Psychol Rev*. 1999;106(3):458-490. doi:10.1037/0033-295x.106.3.458

34. Kendler KS, Gatz M, Gardner CO, Pedersen NL. A Swedish national twin study of lifetime major depression. *Am J Psychiatry*. 2006;163(1):109-114. doi:10.1176/appi.ajp.163.1.109

35. Rice F, Harold GT, Shelton KH, Thapar A. Family conflict interacts with genetic liability in predicting childhood and adolescent depression. *J Am Acad Child Adolesc Psychiatry*. 2006;45(7):841-848. doi:10.1097/01.chi.0000219834.08602.44

36. Caspi A, Sugden K, Moffitt TE, et al. Influence of life stress on depression: moderation by a polymorphism in the 5-HTT gene. *Science*. 2003;301(5631):386-389. doi:10.1126/science.1083968

37. Uher R, McGuffin P. The moderation by the serotonin transporter gene of environmental adversity in the etiology of depression: 2009 update. *Mol Psychiatry*. 2010;15(1):18-22. doi:10.1038/mp.2009.123

38. Rutter M, Moffitt TE, Caspi A. Gene-environment interplay and psychopathology: multiple varieties but real effects. *J Child Psychol Psychiatry*. 2006;47(3-4):226-261. doi:10.1111/j.1469-7610.2005.01557.x

39. Rapp AM, Chavira DA, Sugar CA, Asarnow JR. Incorporating family factors into treatment planning for adolescent depression: Perceived parental criticism predicts longitudinal symptom trajectory in the Youth Partners in Care trial. *J Affect Disord*. 2021;278:46-53. doi:10.1016/j.jad.2020.09.028

40. Rothbart MK, Ahadi SA, Evans DE. Temperament and personality: origins and outcomes. *J Pers Soc Psychol*. 2000;78(1):122-135. doi:10.1037//0022-3514.78.1.122

41. Watson D, Clark LA. Negative affectivity: the disposition to experience aversive emotional states. *Psychol Bull*. 1984;96(3):465-490.

42. Belsky, J. (2005). Differential susceptibility to rearing influence: An evolutionary hypothesis and some evidence. In B. Ellis & D. Bjorklund (Eds.), Origins of the social mind: Evolutionary Psychology and Child Development (pp. 139−163). NY: Guildford.

43. Davies PT, Windle M. Interparental discord and adolescent adjustment trajectories: the potentiating and protective role of intrapersonal attributes. *Child Dev*. 2001;72(4):1163-1178. doi:10.1111/1467-8624.00340

44. Grant KE, Compas BE, Stuhlmacher AF, Thurm AE, McMahon SD, Halpert JA. Stressors and child and adolescent psychopathology: moving from markers to mechanisms of risk. *Psychol Bull*. 2003;129(3):447-466. doi:10.1037/0033-2909.129.3.447

45. Larrieu T, Sandi C. Stress-Induced Depression: Is Social Rank a Predictive Risk Factor?. *Bioessays*. 2018;40(7):e1800012. doi:10.1002/bies.201800012

46. Hariri AR, Mattay VS, Tessitore A, et al. Serotonin transporter genetic variation and the response of the human amygdala. *Science*. 2002;297(5580):400-403. doi:10.1126/science.1071829

47. Lewinsohn PM, Allen NB, Seeley JR, Gotlib IH. First onset versus recurrence of depression: differential processes of psychosocial risk. *J Abnorm Psychol*. 1999;108(3):483-489. doi:10.1037//0021-843x.108.3.483

48. Jones L. Responding to the needs of children in crisis. *Int Rev Psychiatry*. 2008;20(3):291-303. doi:10.1080/09540260801996081

49. Restifo K, Bögels S. Family processes in the development of youth depression: translating the evidence to treatment. *Clin Psychol Rev*. 2009;29(4):294-316. doi:10.1016/j.cpr.2009.02.005

50. Hawker DS, Boulton MJ. Twenty years' research on peer victimization and psychosocial maladjustment: a meta-analytic review of cross-sectional studies. *J Child Psychol Psychiatry*. 2000;41(4):441-455.

51. Essex MJ, Shirtcliff EA, Burk LR, et al. Influence of early life stress on later hypothalamic-pituitary-adrenal axis functioning and its covariation with mental health symptoms: a study of the allostatic process from childhood into adolescence. *Dev Psychopathol*. 2011;23(4):1039-1058. doi:10.1017/S0954579411000484

52. Murgatroyd C, Patchev AV, Wu Y, et al. Dynamic DNA methylation programs persistent adverse effects of early-life stress [published correction appears in Nat Neurosci. 2010 May;13(5):649]. *Nat Neurosci*. 2009;12(12):1559-1566. doi:10.1038/nn.2436

53. Rudolph KD, Hammen C, Burge D, Lindberg N, Herzberg D, Daley SE. Toward an interpersonal life-stress model of depression: the developmental context of stress generation. *Dev Psychopathol*. 2000;12(2):215-234. doi:10.1017/s0954579400002066

54. Daley SE, Hammen C, Burge D, et al. Predictors of the generation of episodic stress: a longitudinal study of late adolescent women. *J Abnorm Psychol*. 1997;106(2):251-259. doi:10.1037//0021-843x.106.2.251

55. Nelson DR, Hammen C, Daley SE, Burge D, Davila J. Sociotropic and Autonomous Personality Styles: Contributions to Chronic Life Stress. *Cognitive Ther Res.* 2001;25:61-76. doi:10.1023/A:1026426832222.

56. Herzberg DS, Hammen C, Burge D, Daley SE., Davila J, Lindberg N. (1998). Social competence as a predictor of chronic interpersonal stress. *Personal Relationships.* 1998;5(2):207–218. doi:10.1111/j.1475-6811.1998.tb00168.x.

57. Turner HA, Turner RJ. Understanding variations in exposure to social stress. *Health (London)*. 2005;9(2):209-240. doi:10.1177/1363459305050586
58. Rudolph KD, Hammen C. Age and gender as determinants of stress exposure, generation, and reactions in youngsters: a transactional perspective. *Child Dev*. 1999;70(3):660-677.doi:10.1111/1467-8624.00048

59. Zahn-Waxler C, Shirtcliff EA, Marceau K. Disorders of childhood and adolescence: gender and psychopathology. *Annu Rev Clin Psychol*. 2008;4:275-303.doi:10.1146/annurev.clinpsy.3.022806.091358

60. Compas BE, Connor JK, Saltzman H, Thomsen AH, Wadsworth M. Getting specific about coping: effortful and involuntary responses to stress in development. In: Lewis M, Ramsey D, eds. Soothing and stress. New York: Cambridge University Press, 1999:229 –56.

61. Compas BE, Connor-Smith JK, Saltzman H, Thomsen AH, Wadsworth ME. Coping with stress during childhood and adolescence: problems, progress, and potential in theory and research. *Psychol Bull*. 2001;127(1):87-127.

62. Bowlby J. By ethology out of psycho-analysis: an experiment in interbreeding. *Anim Behav*. 1980;28 Pt 3:649-656. doi:10.1016/s0003-3472(80)80125-4

63. Rapee RM. Potential role of childrearing practices in the development of anxiety and depression. *Clin Psychol Rev*. 1997;17(1):47-67. doi:10.1016/s0272-7358(96)00040-2

64. Kaslow NJ., Deering CG, Racusin GR. Depressed children and their families. *Clin Psychol Rev*. 1994; 14(1):39–59. doi:10.1016/0272-7358(94)90047-7.

65. Perris C, Jacobsson L, Lindström H, von Knorring L, Perris H. Development of a new inventory assessing memories of parental rearing behaviour. *Acta Psychiatr Scand*. 1980;61(4):265-274. doi:10.1111/j.1600-0447.1980.tb00581.x

66. Liu Y, Merritt DH. Examining the association between parenting and childhood depression among Chinese children and adolescents: A systematic literature review. *Child Youth Serv. Rev.*2018;88:316-332. doi:10.1016/j.childyouth.2018.03.019.

67. Alloy LB, Abramson LY, Smith JM, Gibb BE, Neeren AM. Role of parenting and maltreatment histories in unipolar and bipolar mood disorders: mediation by cognitive vulnerability to depression. *Clin Child Fam Psychol Rev*. 2006;9(1):23-64. doi:10.1007/s10567-006-0002-4

68. Gorostiaga A, Aliri J, Balluerka N, Lameirinhas J. Parenting Styles and Internalizing Symptoms in Adolescence: A Systematic Literature Review. *Int J Environ Res Public Health*. 2019;16(17):3192. Published 2019 Sep 1. doi:10.3390/ijerph16173192

69. Yao MZ, He J, Ko DM, Pang K. The influence of personality, parental behaviors, and self-esteem on Internet addiction: a study of Chinese college students. *Cyberpsychol Behav Soc Netw*. 2014;17(2):104-110. doi:10.1089/cyber.2012.0710

70. Hou Y, Zhao J, Yang X, Zhang X.. Family APGAR and self-esteem as mediators between parenting styles and life satisfaction among medical undergraduates. *Chinese Journal of School Health.* 2018; 39(1): 71–75. doi:10.16835/j.cnki.1000-9817.2018.01.021

71. Sowislo JF, Orth U. Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychol Bull*. 2013;139(1):213-240. doi:10.1037/a0028931

72. Orth U, Robins RW, Trzesniewski KH, Maes J, Schmitt M. Low self-esteem is a risk factor for depressive symptoms from young adulthood to old age. *J Abnorm Psychol*. 2009;118(3):472-478. doi:10.1037/a0015922

73. Orth U, Robins RW, Roberts BW. Low self-esteem prospectively predicts depression in adolescence and young adulthood. *J Pers Soc Psychol*. 2008;95(3):695-708. doi:10.1037/0022-3514.95.3.695

74. Sagrestano LM, Paikoff RL, Holmbeck GN, Fendrich M. A longitudinal examination of familial risk factors for depression among inner-city African American adolescents. *J Fam Psychol*. 2003;17(1):108-120.

75. Nolan SA, Flynn C, Garber J. Prospective relations between rejection and depression in young adolescents. *J Pers Soc Psychol*. 2003;85(4):745-755. doi:10.1037/0022-3514.85.4.745

76. Puig-Antich J, Lukens E, Davies M, Goetz D, Brennan-Quattrock J, Todak G. Psychosocial functioning in prepubertal major depressive disorders. I. Interpersonal relationships during the depressive episode. *Arch Gen Psychiatry*. 1985;42(5):500-507. doi:10.1001/archpsyc.1985.01790280082008

77. Lakey B, Cassady PB. Cognitive processes in perceived social support. *J Pers Soc Psychol.* 1990; 59(2): 337–343.doi:10.1037/0022-3514.59.2.337

78. Cohen S, Wills TA. Stress, social support, and the buffering hypothesis. *Psychol Bull*. 1985;98(2):310-357.

79. Cheng C. Role of percieved social support on depression i Chinese adolescents: a prospective study examining the buffering model. *J Appl Soc Psychol.*1997;27(9):800-820. doi:10.1111/j.1559-1816.1997.tb00660.x

80. Ouyang M, Gui D, Cai X, et al. Stressful Life Events and Subjective Well-Being in Vocational School Female Adolescents: The Mediating Role of Depression and the Moderating Role of Perceived Social Support. *Front Psychol*. 2021;11:603511. Published 2021 Feb 19. doi:10.3389/fpsyg.2020.603511

81. Franzen PL, Buysse DJ. Sleep disturbances and depression: risk relationships for subsequent depression and therapeutic implications. *Dialogues Clin Neurosci*. 2008;10(4):473-481. doi:10.31887/DCNS.2008.10.4/plfranzen

82. Kabrita CS, Hajjar-Muça TA, Duffy JF. Predictors of poor sleep quality among Lebanese university students: association between evening typology, lifestyle behaviors, and sleep habits. *Nat Sci Sleep*. 2014;6:11-18. Published 2014 Jan 13. doi:10.2147/NSS.S55538

83. . Buchmann A, Ringli M, Kurth S, et al. EEG sleep slow-wave activity as a mirror of cortical maturation. *Cereb Cortex*. 2011;21(3):607-615. doi:10.1093/cercor/bhq129

84. Tarokh L, Saletin JM, Carskadon MA. Sleep in adolescence: Physiology, cognition and mental health. *Neurosci Biobehav Rev*. 2016;70:182-188. doi:10.1016/j.neubiorev.2016.08.008

85. Crowley SJ, Wolfson AR, Tarokh L, Carskadon MA. An update on adolescent sleep: New evidence informing the perfect storm model. *J Adolesc*. 2018;67:55-65. doi:10.1016/j.adolescence.2018.06.001

86. Roberts RE, Duong HT. Depression and insomnia among adolescents: a prospective perspective. *J Affect Disord*. 2013;148(1):66-71. doi:10.1016/j.jad.2012.11.049

87. Sivertsen B, Harvey AG, Pallesen S, Hysing M. Mental health problems in adolescents with delayed sleep phase: results from a large population-based study in Norway. *J Sleep Res*. 2015;24(1):11-18. doi:10.1111/jsr.12254

88. Dewald-Kaufmann JF, Oort FJ, Meijer AM. The effects of sleep extension and sleep hygiene advice on sleep and depressive symptoms in adolescents: a randomized controlled trial. *J Child Psychol Psychiatry*. 2014;55(3):273-283. doi:10.1111/jcpp.12157

89. Raniti MB, Allen NB, Schwartz O, et al. Sleep Duration and Sleep Quality: Associations With Depressive Symptoms Across Adolescence. *Behav Sleep Med*. 2017;15(3):198-215. doi:10.1080/15402002.2015.1120198

90. Joseph VA, Kreski NT, Keyes KM. Sleep deprivation and suicide risk among minoritized US adolescents. *BMC Psychiatry*. 2023;23(1):638. Published 2023 Aug 31. doi:10.1186/s12888-023-05074-3

91. Haghish EF, Nes RB, Obaidi M, et al. Unveiling Adolescent Suicidality: Holistic Analysis of Protective and Risk Factors Using Multiple Machine Learning Algorithms. *J Youth Adolesc*. 2024;53(3):507-525. doi:10.1007/s10964-023-01892-6

92. Nguyen TP, Lerch S, Maggetti A, Reichl C, Tarokh L, Kaess M. The relationship between sleep disturbance and self-harming behaviours in high-risk clinical adolescents. *J Psychiatr Res*. 2023;158:81-87. doi:10.1016/j.jpsychires.2022.12.034

93. Twenge JM, Martin GN, Campbell WK. Decreases in psychological well-being among American adolescents after 2012 and links to screen time during the rise of smartphone technology. *Emotion*. 2018;18(6):765-780. doi:10.1037/emo0000403

94. Hale L, Kirschen GW, LeBourgeois MK, et al. Youth Screen Media Habits and Sleep: Sleep-Friendly Screen Behavior Recommendations for Clinicians, Educators, and Parents. *Child Adolesc Psychiatr Clin N Am*. 2018;27(2):229-245. doi:10.1016/j.chc.2017.11.014

95. Kerr S, Kingsbury M. Online digital media use and adolescent mental health. *Health Rep*. 2023;34(2):17-28. doi:10.25318/82-003-x202300200002-eng