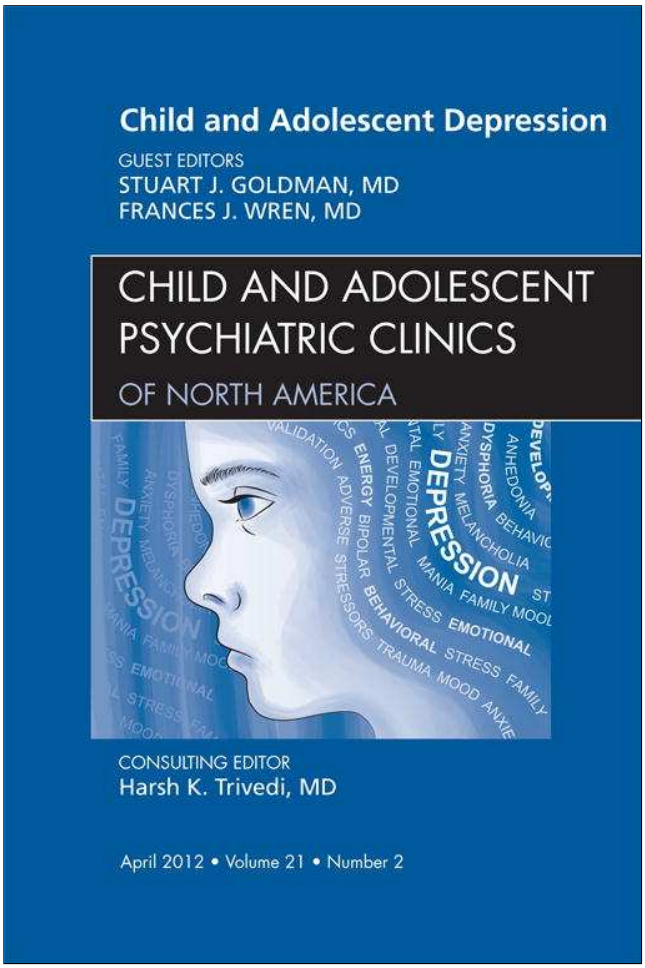

Developmental Risk of Depression: Experience Matters

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KEYWORDS

• Depression • Risk • Resiliency • Youth • Prevention

Key Abbreviations: Developmental Risk of Depression

ACE	Adverse childhood experiences
CNS	Central nervous system
CWS	Coping With Stress course
HPA	Hypothalamic–pituitary–adrenal
MDD	Major depressive disorder
NCS	National Comorbidity Survey
PRP	Penn Resiliency Program
SES	Socioeconomic status
subACC	Subgenual region of the anterior cingulate cortex

Youth depression is a problem of major proportions, with 1-year prevalence rates of about 2% in childhood, and ranging from 4% to 7% in adolescence.[1] According to the National Comorbidity Survey (NCS),[2] the lifetime prevalence of major depressive disorder (MDD) in adolescents aged 15 to 18 years is 14%, and an estimated 20% of adolescents will have had a depressive disorder by the time they are 18 years old.[3,4] Although depression is a treatable disorder, most depressed youth do not receive treatment for depressive symptoms or disorder,[5] and even though successful treatments for youth depression have been explored, such as antidepressants, cognitive behavioral interventions, and interpersonal psychotherapy, such treatments have been found effective for only about 50% to 60% of cases under controlled research conditions.[6] Overall, although treatment for youth depression is important

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and can be beneficial, many who receive treatment for depression do not respond, have residual symptoms, or experience relapses of disorder.[7–10]

Similar to adult depression, adolescent depression frequently is persistent and recurring.[3,4,11] Twelve percent of children will relapse within 1 year, 40% will relapse within 2 years, and 75% will experience a second episode within 5 years.[12,13] Adolescent depression is associated with negative long-term functional and psychiatric outcomes, including impairment in school, work, interpersonal relationships, and substance abuse.[14–20] Of particular note is the association between adolescent depression and suicidal behavior. Suicide is the third leading cause of death in adolescents.[21] Over a 1-year period, 13.8% of adolescents in the United States reported seriously considering suicide, 10.9% had made suicidal plans, and 6.3% reported making a suicide attempt.[22] Moreover, up to 70% of youth who completed suicide had multiple comorbid psychiatric disorders, with the risk of suicide completion increasing as the degree of comorbidity increased.[23,24] Depression is the most common mental disorder associated with suicide.[25–27] For example, in the review paper by Gould and colleagues,[28] 49% to 64% of adolescent suicide victims were found to have a corresponding depressive disorder.

Given the prevalence of youth depression and the limitations of current treatment options, it follows that efforts to prevent the onset of youth depression are warranted. Prevention approaches have the potential to reach a large number of youth and may be more acceptable than seeking treatment for many youth. This is in part because prevention can be rendered in nonclinic settings that are more acceptable to youth, such as schools, and also because receiving prevention services does not require identifying oneself as ill. Efficacious preventive efforts are developed from the understanding of risk and protective factors for youth depression. That is, understanding risks for depression onset, and the role of environmental factors in promoting resilience in children and adolescents, identifies targets for programs that focus on youth depression. In this article, we focus on discussing risks for depression onset and the role of environmental factors in promoting resilience in children and adolescents.

RISKS FOR DEPRESSION

Risks for depression can be grouped into two classes:

1. Those specific for depression, such as having a depressed parent
2. Those nonspecific risk factors that affect a wide range of psychiatric outcomes including depression (eg, poverty, child abuse).

It should be noted that it is a constellation of adversities that leads to poorer outcomes, as multiple risk factors have more impact than does any single risk factor.[29–32]

Specific Risk Factors

Specific risk factors are those factors that have been associated with increased risk for youth depression in empirical investigations. Specific risk factors for adolescent depression include[33,34]:

- A family history of depression
- Prior experience of depression
- A negative cognitive style
- Bereavement.

Family history of depression

In the case of youth depression, one of the strongest factors for the development of depression is having a parent with a depressive illness.[35,36] Depression is remarkably common among parents.[33] According to an Institute of Medicine report, at least 15 million children are living with a depressed parent. In addition, because many parents who recover from an episode of depression continue to experience subclinical levels of depressive symptomatology, many children are repeatedly exposed to depression, and to associated disruptions in parenting.[37]

Disorders of offspring of depressed parents Offspring of depressed parents are at a two- to fourfold increased risk of developing depressive disorders, and more than half of the parents bringing their depressed adolescents for services themselves have current mood disorders.[35] Research in the past 20 years suggests that children who grow up with depressed parents have more internalizing disorders such as depression and anxiety, more externalizing disorders such as conduct disorder and attention deficit disorder,[38] more cognitive delays and academic difficulties, and more social difficulties.[35] Thus, many depression prevention efforts in youth have targeted either those with symptoms or those whose parents have depression.

Over the past 12 years, data have accumulated on several longitudinal samples of depressed parents and their offspring[39–42] Weissman and colleagues have followed a sample of the offspring of depressed and nondepressed parents (n = 47) over the course of 20 years, such that all of the offspring are now adults and have their own children.[40] At the last assessment, rates of diagnoses of depressive disorders, as well anxiety and substance use disorders, were threefold in the now adult offspring compared to the comparison group.[43] Moreover, the authors found that offspring were at the greatest risk for depression between the ages of 15 and 20.[43]

Genetic influences on depression Recently, much more work has been done in the area of genetics and what specifically confers risk of depression from parent to child. Overall, this research suggests that various kinds of family history of depression contribute to an increased risk for depression in the face of stressful life events. Specific genes have been identified as key in the transmission of depression from parent to child, such as the presence of two short alleles in 5-HTTLPR polymorphism in context of chronic stress (girls),[44] the gene *BDNF*,[45] and homozygous carriers of the *T* allele (MTHFR allele). Unfortunately, a number of recent meta-analyses of the 5-HTTLPR polymorphism have failed to replicate many of these findings.[46,47] The lack of replication points to an overarching problem plaguing these genetic studies. Often, these studies look at one specific or "candidate" gene and its role in the presentation of various diseases and disorders. However, disorders rarely result from the expression of a single gene.

Genetic-environmental influences on depression The unique genetic influences of *individual* genes may be modest, but when coupled with environmental influences, the contribution of heritable factors provides us with invaluable information about which individuals are most at risk. The gene–environment interaction is especially potent when it comes to determining outcomes of those who are at risk for depression. Applying this model to the heritability of depression, a child who inherits a certain genetic makeup from a depressed parent has the raw materials for developing depressive symptoms, but only when certain environmental effects come

into play does the combination of gene and environment create the finished product, namely a depressive disorder. The impact of the environment on the expression of certain genes depends on the degree to which:

1. An individual is exposed to a particular environment
2. An individual's behavior influences the environment
3. An individual's behavior is itself subject to genetic influences.

In an extensive literature review, Kendler and Baker[48] noted that, although genes do influence the environment, for example, in the areas of life stress and parenting, the degree of influence is modest, with heritability estimates generally ranging from 15% to 35%.

Prior experience of depression

Although many factors, such as a family history of depression and a particular genotype, interact to form a depressive disorder, one risk factor for a depressive episode is a depressive episode itself. Having a prior history of depression increases the probability that another depressive disorder will develop. In fact, Lewinsohn and colleagues found that 45% of adolescents with a history of depression developed another episode of depression between the ages of 19 and 24.[49] Moreover, in a 10- to 15-year longitudinal study conducted by Weissman and colleagues, individuals who had adolescent-onset major depressive disorder (MDD) were two times more likely to develop a depressive disorder in adulthood than those with no history of depression.[18] In addition, although a history of depression increases the risk of developing another depressive disorder, those with subsyndromal symptoms of depression are also at increased risk for developing depression, even if they do not have a full-blown disorder.[49]

Depressogenic cognitive style

A number of studies have demonstrated that how a child interprets the world and the way in which he or she responds to it will affect the likelihood of developing depression.[50–52] Several cognitive explanations regarding risk of depression have been examined, such as Beck's model, which emphasizes underlying beliefs and ways of interpreting various life events (eg, depression in parents, parenting). Such perceptions of the world are often critical and extremely pessimistic, potentially leading to feelings of hopelessness and lack of self-worth, and consequently to depression. It has also been hypothesized that biases in attention or selective attention to negative events contribute to a depressogenic cognitive style, a processes that is thought to be partly heritable.[53,54]

A number of studies have bolstered such cognitive theories, demonstrating the pervasive nature of having a depressive cognitive style. Garber and Flynn,[50] for example, found that maternal depression history was positively associated with depressive cognitions in adolescent offspring, specifically hopelessness, low self-worth, and a negative attribution style. Children (aged 6–14 years) who exhibited depressogenic inferential styles were more likely to report elevated depressive symptoms after an increase in their parent's depressive symptoms than children who did not have depressogenic inferential styles.[51] Lau and colleagues found a heritability component in a depressogenic attribution style in that, although social factors clearly influence attribution style, such as feedback and modeling processes, children and adolescents may also inherit a certain attribution style from their parents.[53] Likewise, Gibb and colleagues[54] found that children of depressed parents may inherit a genetic risk factor for developing depression by way of the 5-HTTLPR alleles when

paired with a negative inferential style. *Kovacs and Lopez-Duran, in Contextual Emotion Regulation Therapy: A Developmentally-Based Intervention for Pediatric Depression,* have identified positive and negative affectivity as contributing to depressogenic cognitive style.

Bereavement

As stated, a depressogenic cognitive style may predispose a child or adolescent to certain risk factors in the way they interpret various life stressors and adversities. One of the more traumatic stressors that can occur in a child's life is the loss of a parent.[55] Parentally bereaved youth have been found to have a host of functional impairments, in addition to depression, such as suicidal ideation, and post-traumatic stress disorder.[34] Studies have shown that children who had psychiatric diagnoses prior to the death of a parent are likely to fare worse than those who had no prior diagnosis.[56] Moreover, children are likely to have more psychopathology after a parent's death if the parent died traumatically, especially by suicide, or if the surviving parent has higher levels of psychopathology.[56] Cerel and colleagues[57] compared a group of bereaved children and adolescents (aged 6–17 years) to a group of depressed youth, and to a community sample of youth. They found that bereaved children were more likely to demonstrate elevated depressive symptoms than the community sample, but were not as impaired as the clinically depressed group.[57] The authors point out, however, that even though the elevated depressive symptoms in the bereaved children were somewhat modest, these children are still at risk for a number of disorders, including depression, due to a number of risk factors that may accompany a parent's death, such as parental depression and loss of income.[57]

Nonspecific Risk Factors

A comprehensive approach to the prevention of depression involves addressing both specific and nonspecific risk factors. Nonspecific risk factors are associated with increased risk for a range of disorders, including depression. Nonspecific risk factors that are documented to increase rates of youth depression include[33]:

- Poverty
- Exposure to violence
- Life stressors
- Social isolation.

In fact, reducing the burdens of poverty, exposure to violence, child maltreatment, and other forms of family instability may play an important role in the reduction of depressive disorders in youth.[33] It is important to note that some of these adverse life experiences, such as poverty, will have varying degrees of adverse effects depending on the length of exposure, as current life stressors tend to have less of an adverse impact than do lifetime stressors. In other words, living in poverty for a number of years is, on average, worse than living in poverty for 6 months.

Poverty

Exposure to poverty has been associated with many negative outcomes. Specifically, a recent study of a subsample of the US National Collaborative Perinatal Project examined the relation between lower socioeconomic status (SES) in families of young children and later rates of depression.[58] Lifetime risk for depression was related to occupational level of the parents at birth. Subjects with parents of lower SES backgrounds had significantly increased lifetime rates of depression.

In a recent longitudinal study spanning 21 years, Najman and colleagues[59] looked at the effect of exposure to poverty on long-term mental health and found that children who were exposed to family poverty were more likely to report depression and anxiety in adolescence and young adulthood. Specifically, poverty experienced when the individuals were 14 years old was the single greatest predictor of depression and anxiety in adolescence and young adulthood.[59] These findings point to the importance of examining multiple risk factors when exploring the prevention of adverse mental health outcomes, as certain age groups appear to be particularly vulnerable to a variety of risk factors.

Abuse/Violence

The link between childhood abuse, violence, and depression has long been established. A history of childhood sexual abuse has been found to be a particularly potent predictor of depression in adolescence.[60] Aslund and colleagues found that, overall, maltreatment had a strong association with adolescent depression, and on further analysis, found that maltreatment interacted with the 5-HTTLPR promoter region to predict greater risk of depression.[61] Specifically, girls, but not boys, who were homozygous for the short allele of the 5-HTTLPR promoter region were at greater risk for depression in the face of maltreatment.[61] In light of findings such as these, Harkness and colleagues postulated that abuse in childhood may sensitize individuals to the effects of adverse life events, thus accounting for the increased risk for depression in such individuals when confronted with other life stressors.[62] They use the concept of "stress sensitization" to explain their findings that adolescents with trauma history, as compared to those with no trauma history, had lower levels of threat when confronted with independent life events. Individuals with a history of abuse were more likely to develop a depressive episode in the face of a life event than were individuals without a history of abuse. The authors suggest that the maltreated individuals required lower levels of acute life events to trigger the onset of the depressive episode due to the persistent chronic stress in years prior.[62]

In a prospective longitudinal study of 676 maltreated children and 520 non-abused and non-neglected control subjects, Widom and colleagues[63] found a significant relation between child physical abuse and increased risk for lifetime MDD, and between child neglect and increased risk for current MDD. Similarly, MacMillan and colleagues found that in a community sample, women who were physically abused as children had significantly higher lifetime rates of major depression than did women with no history of abuse.[64] Gibb also looked at a community sample and found that children who experienced emotional abuse from their parents or verbal victimization from their peers underwent changes in their inferential styles and had increases in depressive symptoms.[65] The authors suggest that children who undergo emotional/verbal abuse may learn to see certain events in a negative light, and over time may generalize this pessimistic outlook to other life events, potentially contributing to an overall depressogenic cognitive style. While the exact mechanisms remain unclear, selective central nervous system (CNS) remodeling and sensitization of the hypothalamic–pituitary–adrenal (HPA) axis have been suggested. For a more detailed discussion, please see *Singh and Gotlib: Developmental Risk I: Depression and the Developing Brain in this publication.*

Life stressors

As is the case with low SES, children whose parents divorce are often exposed to a number of adverse life events. Children may experience increased family conflict, lack of family cohesion, and less supportive parenting.[66] In a study involving college

students whose parents divorced when they were between the ages of 8 and 18, parental divorce was significantly related to current depression in the students who reported parental divorce, as opposed to students whose parents were still married.[66] Kelly, in a meta-analysis, discusses the fact that children whose parents divorce are more likely to witness a reduction in household income and resources to which they may otherwise have had access.[67] As stated earlier, low SES poses a risk for youth depression, and therefore it may be that the financial consequences of divorce contribute to this population's increased risk for depression. Moreover, Kelly found that it may not be the actual divorce that predicts child adjustment, but rather the degree of marital conflict to which the children are exposed. Consequently, children and adolescents whose parents divorce need to be monitored for a variety of adverse consequences, especially if the divorce was extremely conflictual and there was resulting household and financial instability.[67]

Social and family disruptions have also been implicated as risk factors for depression in children and adolescents. Gilman and colleagues found that frequent location changes before age 7 predicted depression onset by age 14.[68] Frequent location changes were not associated with depressive symptoms in adulthood, only in childhood; however, low SES did have a lasting impact into adulthood in this population, further demonstrating the need for poverty intervention in such vulnerable populations.[68]

Social isolation

Clearly a child or adolescent's social environment is an important factor in his or her overall well being, and like social disruption from relocations or parental divorce, social isolation or disengagement can be just as devastating. Joiner and colleagues demonstrated this in their study looking at lack of pleasurable engagement, loneliness, and the onset and recurrence of depression in adolescents.[69] They found that lack of pleasurable engagement was significantly related to the onset of depressive disorder, and hypothesized that this lack of pleasurable engagement may represent the core of loneliness for these individuals. The authors make the important point that this variable may be especially salient for youth, as they are in a developmental stage when engagement with peers in social activities is especially critical. Interestingly, lack of pleasurable social engagement was predictive of mood disorders (ie, depression), whereas it was not predictive of nonmood disorders. This distinction is important in that it demonstrates the unique vulnerabilities of those at risk for depression in childhood and adolescence.[69]

Brain imaging for social isolation–depressive link A recent study by Masten and colleagues[70] attempted to demonstrate the connection between social isolation and risk for depressive disorder using brain imaging techniques. They looked at the subgenual region of the anterior cingulate cortex (subACC), a region that has been linked to depression as well as heightened sensitivity to peer rejection in adolescence.[70] Adolescents who showed greater activity in the subACC region during social exclusion were more likely to have reported depressive symptoms a year later. The authors proposed that this heightened brain activity may act as a neural marker for depression during adolescence and may, in part, explain the sensitivity to peer rejection that is often observed in adolescence.[70]

Impoverishment as risk for depressed populations Another important aspect of social isolation or exclusion is that on a broad scale, it leaves certain populations especially vulnerable to depression.[33] For instance, many impoverished communities do not have access to the treatment and resources they may need due to factors such as

racial discrimination, poverty, language barriers, and geographic isolation.[33] Although individuals who are socially isolated are at risk for developing depression, it is important to remember that entire communities are also at risk due to a compilation of adverse life events and stressors.

Adversity index

As stated, there are often certain groups of people that will be exposed to multiple risk factors due to their surrounding environment. Poverty, by itself, is a risk factor for depression but, by being exposed to poverty, an individual will likely experience additional risk factors, such as abuse and violence.[71] This is important as risk factors are additive, and it is the compilation of risk factors that confers the most risk.[30] It is the general consensus that psychopathologic risk is far greater when multiple factors are taken into consideration, as isolated risk factors tend to confer relatively low risk by themselves.[72,73] For instance, the Adverse Childhood Experiences (ACE) Study found that children who were exposed to a number of adverse experiences were more likely to have negative outcomes in adulthood than children who were exposed to fewer adversities.[74] In an earlier study, Sameroff and colleagues calculated a multiple risk score such that a family could receive a score ranging from 0 (no risk) to 8 (high risk) and were subsequently divided into a low-risk group, a moderate-risk group, and a high-risk group. Analyses showed that multiple risk was significantly associated with poorer outcomes among preschoolers, such that the more risk factors (higher risk), the worse the outcome.[73] Likewise, Espejo and colleagues found that youth who had been exposed to a number of adverse life events and who also had a history of anxiety disorder were more likely to have a severe depressive episode after a stressful event compared to youth who had experienced none or only one adverse life event.[75]

RESILIENCE AND PROTECTIVE FACTORS

Although the presence of both specific and nonspecific risk factors does indicate an increased risk for youth depression, it is important to remember that not all children and adolescents who are exposed to these risk factors develop disorder. In fact, many children who are exposed to risk factors for depression also have protective factors and exhibit resilience, which means that they have characteristics that decrease the likelihood of developing depression.[33] A classic 1988 paper by Beardslee and colleagues found that teen resilience was characterized by considerable self-understanding, a deep commitment to relationships, and the ability to think and act separately from others, specifically their parents.[76]

Since then there has been a wide expansion in the understanding of resilience and a rich array of different dimensions including self-reflection, spirituality, formation of caring relationships, and ability to understand others' worlds.[77–82] The resiliency literature has noted that there are several specific factors that universally contribute to childhood resilience.[33] These factors include[83]:

- Connection and attachment to caring adults
- Positive family systems
- Normal cognitive development (IQ)
- Adequate self-regulatory systems
- Positive outlook
- Motivation for achievement.

All of these dimensions are important to consider in a comprehensive assessment. Recently, Beardslee proposed that self-reflection and self-understanding are the felt, conscious manifestations of the larger process of self-regulation.[84]

Finally, there has been progress both in greater precision in measuring diagnoses and in some instances, in linking risk and resilience factors to underlying mechanisms. In this section, we discuss various dimensions in which progress has been made in the resilience field, such as:

- Certain gene–environment interactions
- Positive relationships
- Participation in activities
- Ability to successfully self-regulate.

Gene–Environment Interaction

Kim-Cohen and colleagues discuss an important shift in resilience research in that more research is being devoted to gene–environment interactions.[85] Certain individuals may be at risk for depression in the context of adverse life events due to various genes they have, such as the 5HT transporter polymorphism; however, this also means that certain individuals who face these same adverse life events, but who do not carry the same genes, may be resilient despite the apparent environmental risk.[85] Specifically, Cicchetti and colleagues[86] found that maltreated adolescents reported fewer internalizing symptoms if they had two of the 5HTT long allele, as opposed to two of the short allele, indicating that their genetic makeup may have promoted resilience in the face of maltreatment.

Offspring resilience to parental depression

It is now known that having a parent who is depressed is the single greatest risk factor for youth depression, and therefore in terms of prevention, it is important to elucidate what makes certain offspring resilient in the face of parental depression. In a specific study of children of depressed parents,[76] the authors studied a subset of resilient youth whose parents had experienced depression. The authors found that, within the youth, several factors contributed to resilience, including a focus on accomplishing age-appropriate developmental tasks, on relationships, and on understanding their parents' illness. Three dimensions of understanding a parents' illness were identified.

First Dimension: Youth were able to describe observable behaviors associated with the illness (withdrawn behavior or frequent crying).

Second Dimension: Although they often indicated that they wanted to cure their parents, they were aware that they could not, but that they could take certain concrete actions to help them.

Third Dimension: They took actions based on their cognitive knowledge. By observing their parents, they found that resilience was associated with a commitment to parenting and relationships, despite the depression.

In a more recent study, Brennan and colleagues found that, in a sample of offspring of depressed mothers, a number of mother–child interaction variables contributed to resilience in these youth. Specifically, they found that low levels of psychological control, high levels of maternal warmth, and low levels of maternal over involvement interacted with maternal depression to predict resiliency, meaning that the youth had no current Axis I disorders, no current symptoms or history of disorder, and had no current social functioning difficulties.[37]

Relationships

Resiliency researchers point to the early environment as especially important in creating resilience to various stressors and adversities.[80] Sensitive periods early in development, if they include responsive and supporting caregivers, can promote the

development of various neural pathways in the young child that may play a role in buffering the individual from various life stressors.[87] These early supportive relationships with caregivers are especially important in environments in which a child is exposed to extreme or chronic stress, and it has been found that, not only do these supportive relationships *buffer* against negative effects of stress, but may in fact *reduce* the harmful effects.[80,88]

Relationships in later adolescence may also confer protection against depressive symptoms.[89] Desjardins and colleagues,[89] not surprisingly, found that adolescents who were relationally victimized had higher levels of depressive symptoms compared to adolescents who had not been relationally victimized. However, among those adolescents who had been relationally victimized, those with high levels of paternal emotional support reported lower levels of depressive symptoms. Interestingly, however, they also found that the victimized adolescents reported an increase in depressive symptoms when they reported high levels of maternal and peer support.[89] Helsen and colleagues also found that some form of parental support in adolescence seemed to buffer against symptoms, such that parental support was found to mediate the relation between peer support and emotional problems.[90] Specifically, adolescents who reported high levels of peer support were less likely to have emotional problems if they also reported high levels of parental support (as compared to those who reported low levels of peer support). A similar study by Young and colleagues[91] found that anticipated peer support was a protective factor for adolescents developing depressive symptoms when they also reported high levels of parental support. However, in adolescents who reported low levels of parental support, anticipated peer support did not act as a protective factor.[91] Although not empirically tested in this study, it is quite possible that current and past parental support enabled youngsters to actively engage with peers and receive support whereas in the absence of parental support, youngsters may have been preoccupied with the relationship that the parents were not open to peer support.

Activity

One area of resilience related to social relationships and support that has been found to play a role in the protection of children and adolescents from developing psychopathology is activity involvement and social interaction.[92] Babiss and colleagues examined the relationship between activity involvement and depression in adolescents.[93] They looked specifically at sports participation and found that as sports participation increased, depression and suicidal ideation decreased. Moreover, this relationship was mediated by self-esteem and social support, supporting the resiliency literature that has named these two factors as important mechanisms in which youth are protected against depression.[33] For instance, Kaufman and colleagues[94] demonstrated that maltreated adolescents were less likely to develop depression if they had a supportive relationship with an adult.

Self-Regulation

A number of studies have begun to look at how a child's ability to regulate his or her emotions and behaviors contributes to the risk for depression. In some cases, when a child is unable to self-regulate, his or her risk for depression increases whereas when a child is able to successfully regulate his or her emotions and behaviors, the child may be resilient, even in the face of other risk factors.[95–97] Silk and colleagues examined a number of possible self-regulation mechanisms by which children are protected against depression.[95] Children's emotion regulation skills, as well as other family predictors of emotion regulation (eg, maternal nurturance, parent–child

relationship quality), were all found to be associated with positive adjustment in the children, despite their risk for depression via maternal depression.[95] Silk and colleagues also found that the sleep patterns of children who were at high risk for depression due to a parent having depression appear to act as a buffer against developing a depressive disorder.[95] Among the at-risk children, those who took less time falling asleep and spent more time in stage 4 sleep were less likely as young adults to be depressed. The authors propose that sleep patterns may provide resilience against depression because sleep processes are thought to play a part in self-regulation, a well-documented resilience factor.[95] For a more detailed discussion of the role of sleep, see article elsewhere in this issue.

SUMMARY

An understanding of risk and resiliency drives the development of prevention programs for youth depression, and enables researchers to make careful choices about the prevention strategies they use. A key early stage of prevention research involves understanding specific and nonspecific risk and protective factors, as prevention efforts that work benefit from a focus on decreasing risk factors and enhancing protective factors for a particular disorder. Research and clinical implications of advancements in this area are reviewed in the text that follows.

Research Implications

In the past several decades, research on the prevention of youth depression has blossomed, and as a result, much more is known about ways to maximize the efficacy of prevention efforts. That is, because more is known about risk and protective factors for depression, more is known about the variables to target, the timing of interventions, and the samples that will be most likely to benefit from depression prevention efforts. To date, researchers who have studied the effects of preventive interventions on depression in youth generally have based their prevention strategies on cognitive–behavioral or interpersonal approaches.[98] These approaches have been found to be helpful in the treatment of depression,[99] and recently have been evaluated to determine whether they may be useful in preventing youth depression.

Currently, there are a number of promising prevention strategies that are based on depression risk research. For example, Clarke and colleagues developed the Coping With Stress (CWS) course, a manual-based psychoeducational group program targeting at-risk adolescents with depressed parents.[100] A four-site effectiveness study led by Judy Garber[101] is being conducted using a variant of the CWS program developed by Clarke and colleagues.[102] The Penn Resiliency Program (PRP)[103] is perhaps the most widely evaluated depression prevention program for youth.[104] It was developed to target cognitive and behavioral risk factors for depression in school-aged children. Based on cognitive behavioral therapy, PRP is a school-based program that teaches participants the connection between life events, their beliefs about those events, and the emotional consequences of their interpretations. A number of intervention programs for children of depressed parents have incorporated the family system as an integral target of intervention. For example, Compas and colleagues assessed the efficacy of a family cognitive–behavioral preventive intervention aimed at preventing depression in the offspring of parents with a history of depression.[105] Beardslee and coworkers also have developed family-based, public health interventions for families when parents are depressed: a clinician-based program and a lecture program.[106] Both approaches emphasize a cognitive orientation, focus on building strengths and resilience in youth and their parents, and highlight the importance of treatment for parental depression. This work has been

used in countrywide programs in Europe and Central America and has been adapted for use with single-parent African American families, Latino families, and for use in Head Start and Early Head Start.[107–109] Unlike other researchers examining the prevention of youth depression in teens identified based on their elevated depressive symptoms or family history of depression, Sandler and colleagues[110] focused on preventing negative outcomes in children at risk based on difficult life circumstances, including parental divorce and bereavement.

Clinical Implications

Research on risk and protective factors for youth depression should inform our clinical efforts as well. When meeting with children and families, clinicians must conduct a comprehensive assessment that views children in the multiple contexts they exist in and details past and current development difficulties, symptoms, and past and current diagnoses. In addition, a full assessment of strengths and resources in individuals and families is essential. It is in fact the presence of strengths and resources (eg, a parent's willingness to seek treatment for a child, the child's willingness to engage in treatment) that influence outcome.

It may seem obvious that the assessment of broader risk factors is important for a different reason. A child who goes to school hungry has much more difficulty learning. Some social policies have attempted to address the limited resources in both early childhood and educational programs, including a focus on providing adequate nutrition for children in need.[111] This work has met with some success but much more remains to be done. In the same way, if a child is subjected to a difficult environment (eg, a depressed, unemployed parent who is drinking), then treatment efforts must consider the effects of the adverse environments on that child's functioning. Overall, understanding the multiple dimensions of risk is central to the development of successful intervention strategies. Also, understanding the multiple dimensions affected by either depression or risks for depression heightens awareness of possible strategies for intervention by combining individual and family-based approaches or combining treatment for depression with a focus on exercise and building social relationships.

Finally, given what we know about the natural history of childhood and adolescent depression, the likelihood of recurrence, and the profound impairments that accompany youth depression, we believe in the importance of long-term follow-up, even after an episode has been resolved. Regularly scheduled follow-ups, even in the absence of illness, are now the norm for many pediatric diseases; such follow-ups allow for more rapid recognition and response. In the case of youth depression, research advances in our understanding of risk factors enable us to target treatment and prevention efforts, and to take steps to ensure the long-term success of children and families.

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