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Protective Mechanisms for Depression among Racial/Ethnic Minority Youth: Empirical Findings, Issues, and Recommendations

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Abstract We (1) review empirical studies that report findings regarding putative protective mechanisms when exposed to risk of depression in African American and Hispanic adolescents; (2) identify key protective mechanisms for different risk contexts that garner empirical support; (3) synthesize the mechanisms identified as protective against depression among racial/ethnic minority adolescents; and (4) discuss improved methods for advancing understanding of resilience against depression in minority youth. The studies were selected from PsycINFO searches that met the following inclusion criteria: participants between 12 and 21 years of age, inclusions of racial/ethnic minority members, examining protection through an interaction with a risk factor, and outcome measures of depression, depressed mood, or depressive symptomatology. We found 39 eligible studies; 13 of which included multiple racial/ethnic groups. The following were supported as protective mechanisms, at least preliminarily, for at least one racial/ethnic group and in at least one risk context: employment, extracurricular activities, father–adolescent closeness, familism, maternal support, attending predominately minority schools, neighborhood composition, non-parent support, parental inductive reasoning, religiosity, self-esteem, social activities, and positive early teacher relationships. To investigate protective mechanisms more comprehensively and accurately across individual, social, and community levels of influence, we recommend incorporating multilevel modeling or multilevel growth curve analyses and large diverse samples.

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Introduction

Depression has high prevalence and costs to individuals, families, and societies (Kessler et al. 2003). The World Health Organization (WHO) ranks depression as a priority condition and the fourth leading contributor to the global burden of disease, affecting more than 350 million people. While relatively rare in childhood prior to puberty, the onset of major depressive disorder (MDD) increases six-fold in adolescence and early adulthood (Hankin et al. 1998), and an estimated 20 % of adolescents will have had a depressive disorder by the time they are 18 years old (Avenevoli and Merikangas 2006). Complex interactions among social, psychological, and biological factors contribute to the development and exacerbation of depression (WHO 2012). Building our understanding of the factors influencing the trajectories of depression during the critical adolescent period should facilitate effective prevention and treatment efforts.

Research suggests heterogeneity not just in the prevalence but also in the course of depressive symptoms, as evidenced by different trajectories for different racial/ethnic groups (Costello et al. 2008). Although generally non-White youth have higher rates of depression than do White youth (Moon and Rao 2010; Van Voorhees et al. 2008), there have been some inconsistent findings, in which a greater percentage of White youth reported depressive symptoms than African American youth (Saluja et al. 2004). Nevertheless, Hispanic youth generally have the highest rates of depression among racial/ethnic minority groups, with the exception of American Indian youth, as

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well as the highest rates of suicidal ideation and attempts (Centers for Disease Control [CDC] 2012; Saluja et al. 2004). It is as yet unclear what accounts for these differences, but variations in cultural patterns likely contribute to differences in the expression of depressive symptoms. For example, Western cultures seem to emphasize psychological symptoms of depression, whereas East Asian cultures emphasize physical symptoms (Marsella 2003).

Understanding factors that protect youth from depression is essential for improving prevention. The importance of prevention is underscored by evidence that, although antidepressants, cognitive behavioral interventions, and interpersonal psychotherapy are often helpful to treat depression (Khan et al. 2012), they are effective for only 50–60 % of cases (March et al. 2004). Given findings that universal prevention programs using educational or skill-building techniques for adolescents to protect against depression have demonstrated limited effectiveness (Merry et al. 2004; Spence and Shortt 2007), interest in targeted programs is on the rise (Gladstone and Beardslee 2009). Selective or indicated prevention programs appear to be more effective than universal ones, but these require a deep understanding of risk and protective factors characterizing the groups of interest (Horowitz and Garber 2006).

Many children faced with risk factors associated with the development of depression avoid exhibiting severe symptoms. For example, about 55 % of children with an affectively ill parent will not develop an episode of major depression by late adolescence (Beardslee et al. 1998). This pattern is commonly referred to as resilience, defined as a dynamic process through which positive adaptation is achieved in spite of serious threats to adaptation or development (Luthar et al. 2000; Masten 2001). Resilience is hypothesized to involve protective mechanisms that moderate the impact of risk or adversity; that is, protective mechanisms inhibit or mitigate the effect of risk factors, such that the negative outcome is avoided or at least substantially reduced. These assets, or measurable characteristics associated with positive outcomes, become salient as protective mechanisms once adversity is substantial (Garmezy and Rutter 1985; Masten and Reed 2002). Resilience is a complex process, with psychobiological underpinnings, for example, demonstrated through psychobiological allostasis (Charnley 2004). Whereas a more detailed discussion of genetic and neurobiological aspects of resilience can be found elsewhere (Feder et al. 2009), our discussion will be limited to psychosocial resilience processes.

Further underscoring its complexity, resilience is likely context or content specific; an adolescent may be resilient when faced with one type of risk yet affected by a different type of risk (Fergus and Zimmerman 2005). Since assets may play a role in some but not other risk and outcome combinations (Crosnoe et al. 2002), efforts to identify universal protective factors are unlikely to be productive (Zolkoski and Bullock 2012). Moreover, patterns of resilience in youth may differ by demographic factors such as socioeconomic status (SES), gender, and immigration status, in addition to race/ethnicity, as well as pubertal timing (Fergus and Zimmerman 2005).

Objectives of Empirical Review

Thus far, no review has been completed of empirical findings regarding risk and protective factors that could account for variations in depression among racial/ethnic minority adolescents. These issues are important to address to inform targeted intervention efforts. Therefore, we will (1) review empirical studies that report findings regarding putative protective mechanisms when exposed to risk of depression in African Americans and Hispanics adolescents, the two most populous racial/ethnic minority groups in the USA; (2) identify key protective mechanisms for different risk contexts that garner empirical support; (3) synthesize the mechanisms identified as protective against depression among racial/ethnic minority adolescents; and (4) discuss improved methods for advancing understanding of resilience against depression in minority youth. Before reviewing this research, we will clarify the concepts of risk factors and protective mechanisms, which are used to organize the review of findings.

Risk Factors

The notion of protective mechanisms depends on the presence of some risk factors (Rutter 1987). In theory, any etiological factor could be construed as a risk factor, but most commonly this is applied to psychosocial conditions that are associated with an increased prevalence of a health condition. In this sense, risk factors for depression span from individual- to community-level factors. At the most proximal, *individual* level, these include most prominently: female gender, ethnic minority status, cognitive/behavioral vulnerabilities, stressful life events, and social skill deficits (D'Imperio et al. 2000; Gerard and Buehler 2004). *Family*-level risk factors include: parent with the health condition, socioeconomic disadvantage, single-parent family structure, and deleterious family relationships (Costello et al. 2008; Wickrama et al. 2009). *Community*-level risk factors include: poor or violent neighborhoods and peer victimization/discrimination (Hull et al. 2008; Walsemann et al. 2011). These risk factors likely have reciprocal relationships with one another; for example, having socioeconomic disadvantages as a family may lead to attending schools prone to violence and poor academic standards, which

causes more stress and lower scholastic achievement. Demographic characteristics denoting social positioning, such as racial/ethnic minority status and female gender, are associated with additional risk factors, which often predict earlier and higher rates of depression (Wickrama et al. 2009). Risk and resilience research must therefore take into account the importance of social position, social stratification (e.g., discrimination or racial segregation), and gender roles (Garcia Coll et al. 1996; Nolen-Hoeksema and Girgus 1994).

Racial/ethnic minority youth often are exposed to unique ecological factors that may require different adaptational processes than in the majority group (Rivas-Drake et al. 2008). The presence of the same risk may have different repercussions depending on race/ethnicity (Swisher and Roettger 2012). For example, Latina adolescents emphasize relationships, and family ties more strongly than other demographic groups (Garcia-Preto 2005) and may face restrictions based on traditional gender roles that differ from the majority culture in the USA (Zayas et al. 2005). Therefore, family disruptions (e.g., divorce) and conflicts arising from discrepant autonomy expectations may leave Latina adolescents especially vulnerable for depression (Crean 2008), whereas this may be less so in other racial/ethnic gender groups.

Not only does the prevalence of depression differ by gender, as girls are at least twice as likely to develop depression after age 15 as boys (Nolen-Hoeksema and Girgus 1994), but risk factors differ by gender. For example, among females only, family composition (position later in the sibling birth order, having older parents, and having at least three siblings), anxiety, poor self-concept, health problems, death of a parent, and pregnancy by age 15 predicted the onset of depression, whereas among males only, health problems at birth, serious illness, developmentally inappropriate dependency, family conflict, and parental remarriage did so (Carbonell et al. 1998).

Protective Mechanisms

As defined, resilience depends on the presence of a risk factor and a manifestation of a protective mechanism that negates the typical deleterious effect of the risk factor. The term "protective" thus implies an interaction, whereby a protective mechanism exerts a mitigating effect under high levels of adversity, such that the negative effect is reduced (Garmezy et al. 1984; Rutter 1987). Nevertheless, some researchers argue for a less restrictive definition in which direct ameliorative effects, whether risk conditions are high or low, qualify as protective (Smokowski et al. 2004; Van Voorhees et al. 2008). These proponents assert that statistical interaction terms are often associated with small effect sizes and are therefore difficult to detect and replicate (Luthar 1993; Luthar and Zigler 1991; Rutter 1987). Yet the difficulty of obtaining statistical interactions should not dictate the definition of the construct of protection, nor should it diminish its value. Variation in the meaning of "protective" and using the term inconsistently adds confusion in this literature. Moreover, the very notion of resilience is compromised when a mechanism is deemed protective regardless of threats to adaptation or development (Masten 2001). Hence, for the purpose of this review, protective will be defined as an interaction with risk.

As with risk factors, three categories of protective mechanisms are commonly delineated (Van Voorhees et al. 2008): (1) *individual*, including personal attributes and habits such as having a generally positive approach to life and being tuned into others' needs; (2) *family*, including warm, secure family relations with at least one stable person competently attuned to the child's needs or being of middle or high SES; and (3) the *social community*, outside the immediate family, including peers and other adults providing support and advice or living in safe neighborhoods (e.g., Cowen et al. 1990; Garmezy et al. 1984; Scott et al. in press).

As with risk factors, protective mechanisms may function differently depending on gender and racial/ethnic group and should therefore be examined within these contexts. For example, a mechanism might be protective for both genders, but greater for one; it might be ineffective for one gender but effective for the other; or it might have a positive effect for one gender and a negative effect for the other. For example, Vaughan et al. (2010) reported that girls have greater susceptibility to the influence of maternal support, and possibly the interpersonal domain in general as shown in Meadows (2007). Moreover, individuals' own variation in depressive symptoms was explained by variation in their own deficits in maternal support among White but not African American youth (Vaughan et al. 2010).

Review of Research

The studies included in this review were selected based on searches of PsycINFO using the following inclusion criteria: participants between 12 and 21 years of age; outcome measures of depression, depressed mood, or depressive symptoms; inclusion of either or both African American and Latino youth; and examining protection defined by an interaction of at least one putative protective factor with at least one risk factor. Search terms consisted of (depression, depressed mood, or depressive symptoms) and (protection, protective, buffer, resilience, or resilient). After the initial search, specific examples of protective mechanisms (e.g.,

religiosity and self-esteem) were searched based on the previous findings to ensure comprehensiveness.

The search resulted in 38 studies meeting the inclusion criteria. The Appendix provides details on the research design, sample demographics, measures, risk context, and results of these studies. The results are summarized in the text below organized by the three levels of protective factors. For each level, factors are discussed in order of most to least empirical support for protection. Although we did not limit the scope of risk contexts in our search criteria, all but one of the studies in this review examined psychosocial risk, the exception being age. Similarly, while we did not intentionally exclude studies with clinical samples, all of the resulting studies consisted of community samples. Given the aims of this review, we will focus on findings for African American and Hispanic adolescents, but note consistencies with and differences from White adolescents when applicable.

Individual Protective Mechanisms

Religiosity

Religiosity in the form of importance and frequency of religious service attendance was protective for Hispanic youth (Epstein-Ngo et al. 2013; Hull et al. 2008), but not African American youth (Cooper et al. 2013; Hull et al. 2008). The risk contexts studied included: neighborhood disadvantage, discrimination, personal victimization, and witnessing violence. Significant interactions emerged with all of these except discrimination (Cooper et al. 2013).

Ethnic Identity

Ethnic identity, defined as happiness and identification with ethnic group membership, protected African American (Ashburn-Nardo et al. 2007) and Mexican-American (Umaña-Taylor et al. 2011) adolescents against depression when faced with a range of adversity. However, African American and Hispanic adolescents were not protected from depression with a positive ethnic identify in several other studies (Delgado et al. 2011; Granberg, et al. 2008; McCoy and Major 2003; Polanco-Roman and Miranda 2013; Rivas-Drake et al. 2008; Tummala-Narra et al. 2014; Tynes et al. 2012; Wong et al. 2004). Risk contexts included: acculturative stress, exposure to violence at school, ingroup and outgroup prejudice, perceived discrimination, online racial discrimination, and recent weight gain.

Self-Esteem

Self-esteem, an evaluation of one's self-worth, protected Hispanic adolescents against depression, but not African American youth in the context of cumulative risk. Cumulative risk is measured as a count of the presence of a range of adverse factors such as poverty, low parental involvement, and perceived prejudice (Gerard and Buehler 2004).

Not Protective

Several putative protective factors, however, were not empirically supported. Cognitive problem-solving, coping effectiveness, scholastic achievement, gender identification, and effortful control were not protective for African American and Hispanic adolescents (Gerard and Buehler 2004; Loukas and Roalson 2006; McCoy and Major 2003; Tolan et al. 2013). In fact, cognitive problem-solving and scholastic achievement increased the risk of depressed mood among African American adolescents in one study (Gerard and Buehler 2004).

Family Mechanisms

Parent and Grandparent Support

A number of studies have examined potential protection provided by the relationship an adolescent has with his/her mother, but findings have varied. Maternal responsive authoritative parenting protected against increasing age in predicting future depressive symptoms among African American youth (Vaughan et al. 2010). Perceptions of support from mothers protected against depression among low SES African American and Mexican girls (Bámaca-Colbert et al. 2012; Kam and Bámaca-Colbert 2013; Trask-Tate et al. 2010). However, maternal presence and mother–adolescent closeness did not protect African American adolescents against depression in the context of racial discrimination (Cooper et al. 2013). Maternal closeness protected low-income urban African American early adolescents against depression in the context of victimization but only over time and at low levels of victimization in this longitudinal study (Hammack et al. 2004). Time with family did not protect against depression in this group (Hammack et al. 2004). Finally, prenatal maternal support did not protect African American teenage fathers against depression in the context of perceived stress (Williams et al. 2012).

However, contrary findings have also been reported. Father and grandparent support did not protect African American girls against depression in the context of negative life events (Trask-Tate et al. 2010), and neither did father–adolescent closeness in African American adolescents in the context of racial discrimination (Cooper et al. 2013). Parent support did not protect African American urban adolescent boys against depression in the context of stressful events (Zimmerman et al. 1999). Parental attachment and monitoring did not protect low-income African

American, Mexican, and White early adolescents against depression in the context of family conflict (Formoso et al. 2000).

Familism

Familism, defined as feelings of support and obligations, protected African American and Hispanic adolescents against depression in the context of community violence and sibling relational aggression (Kennedy and Ceballo 2013; Soli et al. 2009). However, familism did not protect Mexican-Americans in the risk context of economic hardship, discrimination, acculturative stress, family stress, or family conflict (Delgado et al. 2011; East and Weisner 2009; Umaña-Taylor et al. 2011). Family functioning, a related construct composed of effective discipline practices, family structure, and family cohesion, was not found to be protective for African American and Hispanic adolescents in the context of stressful life events (Tolan et al. 2013).

Other Family Member Support

Support from non-parental family members (e.g., older siblings, godparents, and uncles) protected Mexican-American early adolescent girls against depression (Casey-Cannon et al. 2006) in the context of paternal, but not maternal, depressive symptoms and substance use.

Social Community Mechanisms

Generalized Social Support

Social support has been shown to protect African American boys against depression in the risk context of victimization and witnessing violence, whereas girls were only protected against victimization at low levels of exposure (Hammack et al. 2004). Moreover, girls were not protected in the context of dating violence victimization in another study (Salazar et al. 2004). Although African American boys were protected in one study in the context of mental health stigma (Lindsey et al. 2010), they were not protected under exposure to violence (Paxton et al. 2004). General social relationships did not protect African American adolescents against depression in the context of stressful circumstances (Stiffman et al. 1992), but early teacher–student relationships protected boys against depression in the context of low effortful control (Wang et al. 2013).

Peer Support

Peer support did not protect against depressive symptoms in African American adolescents (Vaughan et al. 2010; Zimmerman et al. 1999) in the context of increasing age and stressful events. However, peer support protected African American older adolescents attending an alternative school for pregnant and parenting adolescents against the risk of receiving low maternal support (Davis 2002).

Activities

Non-sport extracurricular activities protected African American adolescents against depression when exposed to various forms of adversity (Hull et al. 2008; Stiffman et al. 1992). Hispanic adolescents were also protected in one of these studies (Hull et al. 2008) in the context of disadvantaged neighborhoods. However, engagement in prosocial activities (e.g., membership in athletic teams and community groups) was not found to be protective for African American and Hispanic adolescents in the context of stressful life events (Tolan et al. 2013).

Employment

Working for pay protected African American, but not Hispanic adolescents against depression when experiencing neighborhood disadvantage (Hull et al. 2008).

Neighborhood Characteristics

Neighborhoods high in Hispanic composition protected Mexican-American girls in the context of early pubertal timing (White et al. 2012). Neighborhood social interaction, trust, and cooperation did not protect African American older adolescents against depression in the context of neighborhood disorder (Chung and Docherty 2011).

Racial Composition of Schools

Attending predominantly minority schools protected African American students from depression when perceiving discrimination, but not Hispanic, Asian/Pacific Islander, and American Indian students (Walsemann et al. 2011).

Synthesis of Findings

Findings regarding protective mechanisms will be synthesized first, followed by a discussion of differences by age, gender, SES, and family structure. Although cross-study comparisons are beyond the scope of this review, a synthesis of significant findings reported for each group in these studies can provide useful insights into the state of the current research on and provide directions for future research.

Protective Mechanisms

Support for the different hypothesized protective mechanisms can be classified into three levels: (1) *well supported*, when more than half but at least two reviewed studies provided support; (2) *preliminarily supported*, when only one out of no more than two studies provided support; and (3) *not supported at present*, when neither (1) or (2) could be classified, meaning that more than half of the reviewed studies did not provide support. Table 1 provides a summary of these findings from the 39 studies. Maternal support was well supported among African American adolescents, whereas religiosity was well supported among Hispanic adolescents. Extracurricular activity participation received preliminary support among both African American and Hispanic adolescents. Only among African American adolescents were the following variables also preliminarily supported: employment, familism, attending predominately minority schools, parental inductive reasoning, social activities, and teacher relationships; likewise for Hispanic adolescents: father–adolescent closeness, maternal support/closeness, racial composition of neighborhoods, self-esteem, and non-parent support received preliminary support. The remaining variables being considered in this review were not supported in the majority of the studies reviewed here (see Table 1). The synthesis presented below emphasizes the well-supported results. As expected, there were numerous racial/ethnic differences in protective mechanisms. Religiosity, self-esteem, maternal support, father–adolescent closeness, racial composition, cognitive problem-solving, scholastic achievement, social activities, and employment yielded different results between African American and Hispanic adolescents, either when compared in the same study or in different studies.

Although appearing as a well-supported buffer for Hispanics, religiosity was not protective for African American adolescents (Epstein-Ngo et al. 2013; Hull et al. 2008). Religion has been lauded as both an essential component for African American culture and important source of support (Billingsley and Caldwell 1991; Taylor et al. 2000). Moreover, organized religious practices and subjective religious beliefs have been shown to buffer against general (Grant et al. 2000) and race-related (Bowen-Reid and Harrell 2002) stressors in the context of physical and psychological health problems. Researchers have posited that given the high levels of religious participation in African Americans, there may have been little variation to examine (Hull et al. 2008). African American youth may attribute their social problems to different sources, such as discrimination beyond their control (Baldwin et al. 1993).

Maternal support protected against depression associated with increasing age during adolescence more strongly for White than African American youth (Vaughan et al. 2010). This may be due to the fact that other risk factors for depression were not examined, such as stressful events, poverty or racial discrimination, to which African Americans are more exposed. In contrast, neighborhood disadvantage may allow extracurricular activities and employment to confer a greater sense of support and a sense of belonging for African American youth, compared to Hispanic and White youth (Hull et al. 2008). Attending predominantly minority schools protected African American students from micro-aggressions, but not Hispanic (nor Asian/Pacific Islanders or American Indians, who were also included in this study) (Walsemann et al. 2011). It may be that discrimination is greater or more detrimental for African American than other minority youth. The racial/ethnic differences in the results may also be due to small sample sizes and the heterogeneity within Hispanics and other minority populations. However, in a study examining the Hispanic composition of neighborhoods, Hispanic youth were buffered against depression in the context of early pubertal and gonadal timing (White et al. 2012). Nevertheless, the family or peer groups may be more important than the school environment for Hispanic youth.

The findings regarding ethnic identity and cognitive problem-solving among African American youth are contrary to expectations (Kiang et al. 2006; Spivack et al. 1976). Ashburn-Nardo et al. (2007) found that ingroup identity buffered African American youth from depression in the context of perceived prejudice, but another six studies examining ethnic identity failed to find significant protection. By channeling their energy on goal-directed academic activities and coping by planning instead of behavioral or emotional reactivity, adolescents are expected to exhibit fewer depressive symptoms. However, mindfulness of the pervasiveness of racism may cause cognitive dissonance and emotional distress among African American adolescents with high reasoning abilities (Garcia Coll et al. 1996). For the same reason, youths with favorable perceptions of others' view of their racial/ethnic group may increase their susceptibility to discrimination when it occurs because it is unexpected for them (Sellers and Shelton 2003).

Additionally, the associations involving scholastic achievement among Hispanic and African American youth were unexpected, since this exacerbated depression when exposed to cumulative risk (Chester et al. 2007; Resnick et al. 1997). Luthar and McMahon (1996) note that when there are opposing values between one's peer group and those of larger society, scholastic-minded minority youth may be pressured by peers to conform to group standards. The same conflicts may not exist for White youth in high-risk situations.

Table 1 Summary of the level of support for protective factors against depression among racial/ethnic minority adolescents

Protective factor (Number of studies conducted)	Well supported: more than half of studies conducted provided support	Preliminarily supported: one out of no more than two studies conducted provided support	Not supported at present: study conducted, but neither well supported nor preliminarily supported
Cognitive problem-solving (Total: 1; AA: 1; H: 1)			African American (1) Hispanic (1)
Coping effectiveness (Total: 1; AA: 1; H: 1)			African American (1) Hispanic (1)
Effortful control (Total: 1; H: 1)			Hispanic (1)
Employment (Total: 1; AA: 1; H: 1)		African American (1)	Hispanic (1)
Ethnic identity (Total: 10; AA: 6; H: 6)			African American (5) Hispanic (5)
Extracurricular activities (Total: 1; AA: 1; H: 1)		African American (1) Hispanic (1)	
Father–adolescent closeness (Total: 3; AA: 2; H: 1)		Hispanic (1)	African American (2)
Familism (Total: 6; AA: 2; H: 5)		African American (1)	Hispanic (3)
Gender identification (Total: 1; H: 1)			Hispanic (1)
Grandparent support (Total: 1; AA: 1)			African American (1)
Maternal support (Total: 7; AA: 5; H: 2)	African American (3)	Hispanic (1)	
Minority schools (Total: 1; AA: 1; H: 1)		African American (1)	Hispanic (1)
Neighborhood composition (Total: 1; H: 1)		Hispanic (1)	
Neighborhood interaction (Total: 2; AA: 2; H: 1)			African American (2) Hispanic (1)
Non-parent support (Total: 1; H: 1)		Hispanic (1)	
Parental attachment/monitoring (Total: 1; AA: 1; H: 1)			African American (1) Hispanic (1)
Parental inductive reasoning (Total: 1; AA: 1)		African American (1)	
Parent support (Total: 1; AA: 1)			African American (1)
Peer support (Total: 3; AA: 3)			African American (2)
Religiosity (Total: 3; AA: 2; H: 2)	Hispanic (2)		African American (2)
Self-esteem (Total: 1; AA: 1; H: 1)		Hispanic (1)	African American (1)
Scholastic achievement (Total: 1; AA: 1; H: 1)			African American (1) Hispanic (1)
Social activities (Total: 2; AA: 2; H: 1)		African American (1)	Hispanic (1)

Table 1 continued

Protective factor (Number of studies conducted)	Well supported: more than half of studies conducted provided support	Preliminarily supported: one out of no more than two studies conducted provided support	Not supported at present: study conducted, but neither well supported nor preliminarily supported
Social support (Total: 5; AA: 5)			African American (3)
Sports (Total: 1; AA: 1; H: 1)			African American (1) Hispanic (1)
Teacher relationships (Total: 1; AA: 1)		African American (1)	
Time with family (Total: 1; AA: 1)			African American (1)

AA African American, *H* Hispanic

Age Differences

Inconsistencies in this body of research also arise from the failure to measure or control for age differences, which have the potential to confound results. Although age may not directly cause the patterns of relationships, it may be associated with factors leading to age group differences. Adolescence was defined here to span ages 12–21, a broad developmental period during which many changes occur. Aside from the pubertal changes associated with the increase in depression rates, especially among girls (Ge et al. 2001), and the greater capacity for abstract thinking and rumination that is also associated with depression (Nolen-Hoeksema and Girgus 1994), this transition into puberty is associated with changes in the relationships with parents as well as peers (Oberle et al. 2010). In fact, the largest prevalence gap in depression between males and females appears in middle adolescence (Hankin et al. 1998), making this an important period to examine possible gender differences in protective mechanisms. This in turn could inform efforts for selective or indicated prevention and early detection programs. The age and developmental level of onset of depression is also likely to affect resilience and the effectiveness of individual, family, and social community protective factors. On an individual level, early onset of depression likely makes it especially difficult for strengths in the academic or athletic domain to offset the effects of depression (Quiroga et al. 2013). In the family domain, once youth experience depression, it may be difficult for parents to provide appropriate nurturance because they are unsure how to interpret their children's behaviors or suffer from depression themselves (Sander and McCarty 2005). Finally, on the social community level, depression early in adolescence may make it more difficult for adolescents to establish social groups, which in turn has reciprocal effects on the maintenance of depression as peers rise in salience during the adolescent and emerging adulthood years (Prior and Glaser 2006; Vujeva and Furman 2011).

Excluding one study in which age served as the risk factor under examination (Vaughan et al. 2010), 10 studies assessed age effects (e.g., Stiffman et al. 1992), 16 controlled for age (e.g., Hull et al. 2008), and five included participants within a narrow age span; the remaining eight studies did not address age in the design (e.g., Formoso et al. 2000). Half of the studies assessing age found significant protective effects. Kam and Bámaca-Colbert (2013) only found supportive parenting to be protective among middle, not but early adolescents, Soli et al. (2009) found that familism in the context of sibling relational aggression protected against depression among older but not younger siblings, and Davis (2002) found that peer support buffered against low maternal support only among older but not younger adolescents. These findings suggest that there are likely additional individual characteristics beyond age, such as ones discussed below, modulating the interaction between risk and protective mechanism.

Gender Differences

The majority of the studies reviewed here assessed gender differences. From these, less than 20 % reported significant differences between genders in the interactions between protective and risk factors (3/17). In terms of individual factors, one study found that self-esteem was significantly more protective for boys than girls in the context of cumulative risk (Gerard and Buehler 2004). Additionally, non-parent support only buffered girls against the risk of parental substance use on depression (Casey-Cannon et al. 2006). Among family factors, maternal support buffered girls more strongly than boys (Vaughan et al. 2010), whereas maternal closeness protected boys but not girls against depression (Hammack et al. 2004). The disparate findings might be due to the differences in risk context,

whereas Vaughan and colleagues used age as the sole risk factor and Hammack and colleagues examined victimization as the risk factor for depression. Sample characteristics may also contribute to the difference; the latter study examined a small sample of sixth-grade, urban African American youth, whereas the former examined a large representative sample of sixth–eighth-grade African American and White adolescents.

A few studies may have lacked sufficient power to detect gender differences in interactions between protective and risk factors (e.g., Chung and Docherty 2011; East and Weisner 2009; Polanco-Roman and Miranda 2013), but the majority of studies not reporting significant gender differences employed quite large samples (up to $N = 7863$). Whereas there is insufficient evidence to explain these differences, on the whole it seems that there are relatively few gender differences in protective mechanisms. Despite variations in depression prevalence, levels of various protective factors, and in the correlation between certain protective factors and depression (e.g., Vaughan et al. 2010) by gender, protective mechanisms appear to vary more greatly by race/ethnicity than by gender.

Gender Differences within Race/Ethnicity

Out of the 13 studies that included multiple racial/ethnic groups, five analyzed gender differences by race/ethnicity, and three of these reported significant differences. Casey-Cannon et al. (2006) found that the preliminarily supported variable of non-parent support only buffered girls, but depending on both racial/ethnic group and risk context. More specifically, Mexican-American girls benefited from more social support when fathers reported lower depression and substance use, whereas White girls benefited from more social support when fathers reported higher depression and substance use scores. Gerard and Buehler (2004) concluded that self-esteem was a significantly stronger buffer for boys than girls, but this was partially attributed to restricted variance in self-esteem among girls with high cumulative risk scores. Vaughan et al. (2010) reported that maternal support protected against depression more strongly for White than African American youth and more strongly for girls than boys. Even if gender differences arise in fewer areas than expected (e.g., for self-esteem but not extracurricular involvement), it would still be worthwhile to continue examining gender differences within race/ethnicity because female minority youth are at heightened risk of depression (Nolen-Hoeksema and Girgus 1994).

Socioeconomic Status

In addition to being a risk factor for depression regardless of race/ethnicity, low SES confers a high risk of a wide range of negative health and life outcomes (e.g., Chen et al. 2002; Newacheck et al. 2003). SES has a cumulative gradient effect on child health across physical and psychosocial domains, especially among African American and Hispanic adolescents (Chen et al. 2006; Larson et al. 2008). To better understand the risk status of the sample, it is essential that researchers control, or also examine, for SES differences.

Many of the studies reviewed here controlled for SES, and three studies addressed low SES as part of a cumulative measure of risk (Gerard and Buehler 2004; Tolan et al. 2013; Umaña-Taylor et al. 2011). Fourteen studies (e.g., Ashburn-Nardo et al. 2007; McCoy and Major 2003) neither controlled nor assessed for SES differences, although eight of these consisted of primarily low SES samples (e.g., Chung and Docherty 2011; East and Weisner 2009; Kennedy and Ceballo 2013). This may affect the findings. For example, Stiffman and colleagues reported that Whites had higher rates of depression than African American adolescents, which may be due to unmeasured demographic differences in this sample.

Family Structure

Differences in family structure intensify racial/ethnic differences in risk contexts and health outcomes, as single-parent households are associated with greater levels of depression and other psychiatric problems (Lipman et al. 2002). A quarter of the studies discussed here controlled for family structure, thereby eliminating this potential confound (e.g., Hull et al. 2008), and one study included family structure as part of a comprehensive risk measure (Gerard and Buehler 2004). The remaining studies neither controlled nor assessed for the impact family structure may have on the results (e.g., Delgado et al. 2011). Findings that family context explained 17 % of the racial differences and over 90 % of the SES variation in depressive symptoms among African American and White youth (Miller and Taylor 2012) suggest that this needs to be considered.

Methodological Issues and Recommendations

Sample Sizes

Many studies report findings based on relatively small samples (5 have $N < 100$, 14 have $N < 200$, and 28 have $N < 500$). Therefore, the majority of the studies in this review may not have enough power to detect interactions depending on the distribution of protective mechanisms in each sample. This is a common challenge in research on protective mechanisms (Luthar 1993; Luthar and Zigler 1991; Rutter 1987). Indeed, a larger portion of studies with

larger sample sizes ($N > 500$) reported significant findings (8/11) than studies with smaller sample sizes ($N < 500$; 16/27). Clearly, future research would do well to enroll large diverse samples to be able to identify protective mechanisms that may be present.

Distinguishing Between Risk and Protective Factors

Protective mechanisms are complex and therefore challenging to study. Although protective mechanisms are conceptualized as distinct from the risk context that they inhibit or mitigate, in some cases there may be overlap between the concepts. For example, neighborhood interactions, one of the protective mechanisms examined by Hull et al. (2008), overlap with the risk condition of neighborhood disadvantage. Another study (Chung and Docherty 2011) examined a protective mechanism (neighborhood social interaction) that is different, yet related, to the risk context (neighborhood disorder). Future research should clearly differentiate between risk and protective factors. A protective factor needs to be different from the absence of a risk condition.

Racial/Ethnic Differences

Foremost, more research on depression must include racial/ethnic minority adolescents in sizeable enough numbers to support analyses that can inform about them. The majority of the literature on resilience against depression includes mostly White adolescents, and although racial/ethnic minority adolescents are increasingly included as part of a diverse sample, few studies have investigated racial/ethnic differences. The majority of the studies reviewed here (67 %) included African American adolescents and half included Hispanic adolescents (nine of which compared racial/ethnic groups). However, American Indians, Asian Americans, and Pacific Islander adolescents are largely absent from research in this area, as in all research, with only few studies investigating each group (e.g., Tummala-Narra et al. 2014; Rivas-Drake et al. 2008).

Even when racial/ethnic minority groups are represented, disentangling group differences is complicated because most studies engage in "ethnic lumping" (Burgos 2006). Asian American and Hispanic adolescents, in particular, are often treated as homogenous groups, despite the cultural variability by country of origin (e.g., Burgos 2006; Moon and Rao 2010). Differences in acculturation, seldom assessed here, may also impact findings. Casey-Cannon et al. (2006) represent one of the few studies measuring acculturation and noted that 78 % of Mexican-American adolescents in the sample were born in the USA, which may explain the similarities to White participants in the findings.

Measures

Measurement of critical variables needs improvement. Although there are numerous measurement issues, we will focus on measurement of depression, religiosity, and family structure, which have raised concerns regarding their abilities to fully capture the construct of interest. First, discrepancies in depression measures across studies could produce important confounds in the data (Burgos 2006; Stiffman et al. 1992). Most of the studies here used the Beck Depression Inventory (BDI; Beck et al. 1961, 1996), the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff 1977), the Children's Depression Inventory (CDI; Kovacs 1981), the Diagnostic Interview Schedule for Children (DISC-IV; Shaffer et al. 1993), or a variation of one of these. Researchers should work on establishing a preferred highly reliable and precise measure that can be used consistently in a variety of research contexts, especially in community samples as was the case for all reviewed studies here, as evident in the Patient-Reported Outcomes Measurement Information System (PROMIS; NIH 2013) process.

Second, the religiosity measures require expansion since they are of limited applicability for non-Judeo-Christian adolescents or those who claim spirituality in the absence of an organized religious practice (Hull et al. 2008). Assessing spirituality instead, which "involves one's transcendent relationship to some form of higher power" (Thoresen 1998, p.415), would be more applicable across cultures. Creating reliable and valid measures for spirituality appears to be more difficult given disagreements about its definition (Hill and Hood 1999), but this would serve as an important complement to religion measures, if not a replacement, given the protective potential suggested by research conducted thus far.

Finally, it may be useful to construe family structure as a multicategorical instead of a dichotomous variable. By comparing the presence of two biological parents with anything else (e.g., single parents, stepparents, and adoptive parents), as most of the studies in this review have done, important differences are likely obscured. For example, although African Americans have a higher prevalence of female-headed households compared to other groups, they are also more likely than White adolescents to have large family networks living nearby (Hull et al. 2008; Miller and Taylor 2012). While not traditional among White youth and rarely considered by family structure definitions, Hispanic and African American families often incorporate extended kin into their construal of family and receive psychosocial benefits from them (Miller and Taylor 2012). More flexibility is needed in measuring the protective role family processes may play.

Risk Context

The protective mechanisms in this review have been examined for their moderation of a variety of risk contexts. Some of the noted (or lack of) effects may have more to do with the specific risk condition examined than the protective mechanism. At times this distinction is clear, but when only one specific risk context is examined, it is easy to misinterpret the potentially broader protective effects of a particular mechanism. Moreover, these studies show great variation in how they operationalize high-risk status, which has ranged from family characteristics such as parental depressive symptoms, parental substance use, and mother–daughter conflict (Bámaca-Colbert et al. 2012; Casey-Cannon et al. 2006) to stressful personal experiences such as dating violence victimization (Salazar et al. 2004) and comprehensive risk assessments including SES, schools, and neighborhood perceptions (Gerard and Buehler 2004).

Unfortunately, the same protective mechanism is rarely examined across different risk contexts, whereas this can lead to inconsistent findings when taken out of context, demonstrating that protection has some generalizability will be important. It is unclear, for example, whether the mechanisms buffering adolescents from depression when witnessing violence would also buffer adolescents in poverty, despite the expected partial overlap in these risk contexts. Gerard and Buehler (2004) addressed cumulative risk instead of a single risk context, based on the hypothesis that the accumulation of environmental risk factors jeopardizes a youth's development. As demands exceed youth's social, cognitive, and psychological resources, they compromise normative development (Call and Mortimer 2001; Evans 2003). In the same vein, the presence of one family stressor may have only a negligible effect on the rate of psychiatric disorders among children (Rutter 1979), whereas two or more risk factors increase the rates of disorders multiplicatively (e.g., Fergusson and Lynskey 1996; Pollard et al. 1999).

Moreover, chronic adversity is likely to affect depression and resilience differently from acute adversity. Whereas short-term stressors and associated fluxes in cortisol are protective in the long term by making individuals better able to adapt to adversity, chronic stress is more problematic (Feder et al. 2009). Findings indicate that chronic stress decreases hippocampal neurogenesis (the formation of new neurons), which seems important to protect against depression; both stress and corresponding problems with neurogenesis are believed to be a key component of major depression (Duman 2004; Pittenger and Duman 2008; Santarelli et al. 2003). Furthermore, chronic stress effects neuroplasticity, a fundamental mechanism of neuronal adaptation, in brain structures which have been found to be abnormal in major depression (Pittenger and Duman 2008). This should be taken into consideration when examining cumulative risk, in addition to the effect that experiencing the same risk factor over time may have compared to a variety of risk factors.

Low SES adolescents are exposed to many (largely unmeasured) risks that may be difficult to offset, for example single-parent households, racial discrimination, school dropout, and entering into family responsibilities prematurely (Chen et al. 2006; Larson et al. 2008). Given the disproportionate representation of racial/ethnic minority groups at lower SES levels, it is important to differentiate the impact from the risks associated specifically with low SES status versus race/ethnicity. However, few studies have done so (e.g., Tynes et al. 2012).

Finally, these studies would benefit from more comprehensive assessments of the participants' medical histories, as these individuals face additional barriers to resilience. Depression is highly comorbid with generalized anxiety disorder, with rates as high as 60–90 % in community populations (Moffitt et al. 2007). Individuals with depression also commonly report histories of substance use, post-traumatic stress disorder (PTSD), and chronic medical conditions such as cardiovascular disease and diabetes mellitus (Aina and Susman 2006; Breslau 2002). Some of the studies assessed other mental health problems such as anxiety, but separately from the interactions assessing the effects of depression (e.g., Tummala-Narra et al. 2014). These problems are necessary to consider since they likely exacerbate depressive symptoms. For example, by using drugs or alcohol to cope with difficulties, adolescents will not build the skills they need for future resilience or place themselves in social situations fostering positive attributes (Skrove et al. 2013).

Matching Theory with Methodology

Most of the studies reviewed here lack solid theoretical underpinnings. Even when researchers acknowledge nested, reciprocal systems encompassing internal and external influences, no specific theories reflecting such are discussed. Such theories should consider issues affecting the development of racial/ethnic minority children, such as social position (race, gender), racism and discrimination, residential and psychological segregation, promoting/inhibiting environments (e.g., school and health care), adaptive culture (traditions and legacies), child characteristics, family values, and children's developmental competencies (Maggie et al. 2010). Further research into resilience against depression would do well to examine both risk contexts and protective mechanisms at multiple levels, because biological, psychological, and social factors are integral for the development and maintenance of depression (Silk et al. 2007).

Multilevel Analyses

To successfully test theories assessing various spheres of influence affecting adolescent resilience (e.g., Bronfenbrenner's ecological systems theory), multilevel analyses need to be conducted (cf. Hull et al. 2008; Vaughan et al. 2010). Multilevel studies are crucial given the interrelation among variables and the nesting across levels of analysis. Beyond the inclusion of variables across conceptual levels of influence, variables must be measured and analyzed at the appropriate level, because the same variable may have a different meaning at another level (e.g., when neighborhood-level characteristics are analyzed alongside family-level variables), especially when intra-class correlations are larger than .05 (Julian 2009). Ignoring the sampling structure through disaggregation or aggregation of data leads to either a violation of the independence of errors assumption, possibly leading to biased regression coefficients, or losing variation such that measures of association among aggregated variables may be overestimated (Kaplan et al. 2009).

The integration of multilevel modeling with structural equation modeling (SEM) provides a methodology accounting for issues of measurement error, mediation, and simultaneity (Kaplan et al. 2009). The majority of the studies reviewed here used multiple regressions to analyze their data, in which all items are assumed to be perfectly measured with instruments with zero measurement error. In contrast, SEM takes measurement error into account and better meets test assumptions (Bollen 1989). SEM also estimates the indirect effects of the exogenous variables on all endogenous variables more precisely and allows for the reliabilities of each latent variable to be assessed (Gunzler et al. 2013). If the predictor variables do not account for changes in the outcome variables, researchers can determine whether low reliability of the measures or low correlations between the variables is responsible.

Longitudinal Multilevel Analyses

Moreover, multilevel modeling can be applied in conjunction with growth curve modeling, which is itself a hierarchical linear model (Raudenbush and Bryk 2002). In this case, level 1 represents intra-individual differences in an outcome over time; level 2 represents individual differences in change over time; and an added level 3 can represent changes over time among individuals nested in systems, such as families, neighborhoods, and schools (Kaplan et al. 2009). For example, while assuming that adolescents from the same classrooms, schools, and neighborhoods have correlated risk levels, researchers could assess the ability of, for example, self-esteem to moderate the association between poverty and depression over time, both within and across individuals.

Vaughan et al. (2010) demonstrate the use of this methodology to evaluate the within- and between-person effects of maternal and peer support on depressive symptoms. Although their conception of risk was limited to increasing age, they demonstrated that maternal support protected against depression more strongly for White than African American youth and more strongly for girls than boys. Further research could expand their conception of risk to include SES, family structure, parental history of depression, and discrimination. Such longitudinal, multilevel analyses could fill a significant gap in the resilience research. Fifteen studies reviewed here obtained measures on at least two occasions, but because only three of these followed adolescents over more than two occasions (e.g., Soli et al. 2009; Vaughan et al. 2010; Wang et al. 2013), it is unknown which protective mechanisms would remain significant across time.

Longitudinal designs are crucial in resilience research, because strict analysis of moderation requires a time differentiation between risk, protective, and outcome variables (Luthar et al. 2000). To demonstrate the moderating effects of a protective mechanism on the relationship between risk and depression, the protective mechanism must be demonstrated to precede, and be independent of, the risk context, in addition to interact with the risk context (Kraemer et al. 2008). We recommend the MacArthur approach to moderation rather than the more commonly applied Baron and Kenny approach, as the latter does not technically distinguish which of two variables is the moderator vs. being moderated (Kraemer et al. 2008). These assumptions about the positioning of the moderator and risk factors can lead to contradictory findings, since researchers may not share the same assumptions and therefore draw different conclusions.

Because resilience is a dynamic process, Luthar et al. (2000) argue that it requires a minimum of three or more measurement occasions for analyses to demonstrate whether hypothesized protective mechanisms have effects. This, combined with the cyclical nature of depression, complicates decisions about whether or not resilience processes have occurred (Silk et al. 2007). In response to differential cross-sectional and longitudinal findings, researchers note that the influence of individual attributes (e.g., problem-solving skills and self-esteem) is likely not uniform across adolescent development (Gerard and Buehler 2004). Longitudinal research can assess changes in resilient psychological states over time, as this is a dynamic process (Crane et al. 2012). Therefore, researchers must account for these developmental changes in protective mechanisms, as well as the recurrence of depressive symptoms, to assess resilience accurately.

Conclusion

We examined the applicability of a resilience framework for understanding adolescent depression by synthesizing findings about key protective mechanisms in adolescence that are salient for race/ethnicity and gender. Additionally, we recommended more sophisticated methods for applying relevant theoretical models more successfully to this area of research. Although these findings underscore its complexity, which is best regarded as part of a situation-specific, dynamic process, the resilience framework is still beneficial for the study of adolescent depression.

Many researchers are guided by inherently multilevel models, such as Bronfenbrenner's ecological systems theory (1986), but then fail to examine variables spanning across levels of influence in a multilevel fashion. By incorporating multilevel, preferably longitudinal modeling, researchers can properly assess the interrelation between variables and the nesting across levels of analysis without violating the independence of errors assumption or overestimating the association among aggregated variables (Kaplan et al. 2009). Assessing resilience longitudinally is not only desirable by providing more opportunities for protective mechanisms to demonstrate their effects (Luthar et al. 2000) and for assessing depression more accurately given its cyclical nature, but necessary to account for temporal effects (Kraemer et al. 2008).

Implications

The protective mechanisms examined here, especially self-esteem, religiosity, and maternal support, can inform interventions targeted toward African American and Hispanic adolescents at risk of depression. Indeed, in a review of targeted and universal depression interventions, Merry and Spence (2007) recommend competence-enhancement programs, such as self-esteem building and coping and social skills training to prevent depression. Moreover, they recommend conducting interventions in small groups, given the poor results of classroom-based interventions, and devoting sufficient time in the interventions to ensure the learning of new skills. In addition to developing the social and cognitive skills to better manage interpersonal relationships, parents and teachers should provide safe outlets to build social bonds and engage in meaningful extracurricular activities. Furthermore, given the comorbidity of depression with PTSD, substance use, anxiety, and personality disorders, these additional problems also require assessment and treatment. Although promising, these approaches must evidence culturally competences when applied to African American and Hispanic youth.

Researchers should also consider racial/ethnic group differences when designing targeted interventions. For example, based on the few studies currently available, religiosity and self-esteem appear important for Hispanic (and White) adolescents, whereas non-sport extracurricular activities appear to protect both African American and Hispanic (but not White) adolescents. In fact, participating in an intervention encouraging scholastic achievement, at least without also promoting other attributes or skills, may have unintended effects on depression for African American adolescents (Gerard and Buehler 2004).

In the past, programs have focused on skills that are not reinforced by the culture of the adolescent and ignored the broader problems such as unsafe neighborhoods and poverty (Luthar et al. 2000; Nightingale and Fischoff 2001). Because many interventions fail to have "real-world" effects, Albee (2005) argues that focusing on strengthening the "resistance of the host" does nothing to reduce the "noxious agents" in the environment. For this reason, prevention efforts also need to enhance children's home and school environments. In fact, sociopolitical efforts to reduce poverty will likely be necessary truly to reduce significantly negative outcomes in vulnerable youth, as this underlies many other risk factors such as violence and stressful life events. Nonetheless, the findings from this review highlight important resources for adolescents facing a variety of risks. Further research is necessary to confirm and expand upon the protective mechanisms discussed here, with a suggested emphasis based on available findings on religiosity and maternal support.

Compliance with Ethical Standards

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

Appendix

See Table 2.

Table 2 Summary of studies on protective factors against depression among racial/ethnic minority adolescents

Protective factor (Measurement)	Authors	Design	Sample constitution	Depression measure	Risk context	Findings for minority group(s)
Individual level						
Religiosity (item assessing whether religion provides direction)	Cooper et al. (2013)	Cross-sectional	$n = 4256$; 12–18 years; African American adolescents	CES-D	Discrimination (EDA)	Religious connection did not protect against depression
Religiosity (turning to religion subscale of the COPE)	Epstein-Ngo et al. (2013)	Cross-sectional	$n = 223$; 13–15 years; Hispanic adolescents	CDI	Personal victimization and witnessing violence (SECV)	Religiosity protected against depression
Religious participation (frequency of attendance)	*Hull et al. (2008)*	*Longitudinal (2 waves); multilevel*	*n = 7863; 13–17 years; 61 % White, 23 % African American, and 16 % Hispanic*	*CES-D*	*Neighborhood disadvantage (assessed via four census tract variables including the total unemployment rate)*	*Religious participation protected Hispanic, but not African American, youth against depression*
Ethnic identity (racial centrality subscale of MIBI)	Ashburn-Nardo et al. (2007)	Cross-sectional	$n = 316$; African American undergraduates	BDI	Ingroup-directed prejudice (subscale of JLS, MIBI, RBRSQ, and two racial discrimination items)	High ingroup identity protected against depression
Cultural Orientation (ARSMA-II)	Delgado et al. (2011)	Cross-sectional	$n = 246$; Mexican-American seventh graders	CES-D	Perceived discrimination (subscale on AER)	Cultural orientation did not protect against depression. No gender differences.
Ethnic identity (modified MEIM)	*Granberg et al. (2008)*	*Cross-sectional*	*n = 343; 12–14 years; African American girls*	*CDISC-IV*	*Weight gain*	*Ethnic identity did not protect against depression*
Ethnic identity (items reflecting overlap between self and ethnic group)	*McCoy & Major (2003) (Study 2)*	*Cross-sectional*	*n = 36; 18–24 years; Hispanic Americans*	*Developed for study.*	*Ingroup and outgroup prejudice articles*	*High levels of ethnic identification did not protect against depressed emotions*
Ethnic identity (MEIM)	*Polanco-Roman and Miranda (2013)*	*Longitudinal (2 waves)*	*n = 143; 18–25 years; 11 % African American, 34 % Asian, 17 % Hispanic, 29 % White, 8 % other*	*PHQ-9*	*Perceived discrimination (SRE)*	*Ethnic identity did not protect against hopelessness*
Ethnic identity (assessed with modified MIBI and MIBI-Teen)	Rivas-Drake et al. (2008)	Cross-sectional	$n = 322$; 63 % Chinese American and 37 % African American sixth graders	CDI	Discrimination (items assessing unfair treatment)	Neither public nor private regard protected African American youth against depression. Public regard protected Chinese American youth against depression
Ethnic identity (MEIM)	Tummala-Narra et al. (2014)	Cross-sectional	$n = 522$; 13–17 years; 11 % African American, 27 % Asian, 10 % Hispanic, 23 % White, 11 % multiracial adolescents	CES-DC	Post-traumatic stress (ETVTQ)	Ethnic identity did not protect against depression among African Americans, or Hispanics; only Asian Americans

Table 2 continued

Protective factor (Measurement)	Authors	Design	Sample constitution	Depression measure	Risk context	Findings for minority group(s)
Ethnic identity (MEIM)	Tynes et al. (2012)	Cross-sectional	$n = 125$; 14–19 years; African American adolescents	CDI–short form	Online racial discrimination (subscale from the OVS)	Ethnic identity did not protect against depression
Ethnic identity (affirmation subscale of EIS)	Umaña-Taylor et al. (2011)	Cross-sectional	$n = 207$; 15–18 years; Mexican-origin adolescent mothers	CES-D	Economic hardship (EHM); perceived discrimination (PDS); acculturative stress (MASI)	Ethnic identity affirmation protected against depression
Ethnic identity (items developed by MADIC)	Wong et al. (2004)	Longitudinal (2 waves)	$n = 629$; African American seventh graders	SCL-90-R; CDI	Perceived discrimination (developed by MADIC)	Ethnic identity did not protect against depression
Self-esteem (items assessing global feelings of self-worth)	Gerard and Buehler (2004)	Longitudinal (2 waves)	$n = 5070$; 11–18 years; 71 % White; 16 % African American, 13 % Hispanic adolescents	Modified CES-DC	Cumulative risk (e.g., poverty, low parental involvement, and perceived prejudice)	Self-esteem protected Hispanic, but not African American, youth against depression. Protection was stronger for boys than girls
Cognitive problem-solving (assessed via four items of approaches to problem-solving)	Gerard and Buehler (2004)	Longitudinal (2 waves)	$n = 5070$; 11–18 years; 71 % White; 16 % African American, 13 % Hispanic adolescents	Modified CES-DC	Cumulative risk (e.g., poverty, low parental involvement, and perceived prejudice)	Cognitive problem-solving served as an exacerbating risk factor among African American adolescents in the highest risk categories
Scholastic achievement (recent grades)	Gerard and Buehler (2004)	Longitudinal (2 waves)	$n = 5070$; 11–18 years; 71 % White; 16 % African American, 13 % Hispanic adolescents	Modified CES-DC	Cumulative risk (e.g., poverty, low parental involvement, and perceived prejudice)	Scholastic achievement served as an exacerbating risk factor among African American youth
Effortful control (EATQ-R short-form subscales)	Loukas and Roalson (2006)	Longitudinal (2 waves)	$n = 459$; 10–14 years; 83 % White; 17 % Hispanic adolescents	CDI	Negative family relations (FES)	Effortful control did not protect against depression
Coping effectiveness (stress and coping scale)	Tolan et al. (2013)	Longitudinal (2 waves)	$n = 341$; 11–14 years; 57.3 % African American; 43.7 % Hispanic adolescents	CDI	Stressful life events (SCS)	Coping effectiveness did not protect against depression
Gender identification (importance to identity subscale of CSS)	McCoy and Major (2003) (Study 1)	Cross-sectional	$n = 54$; 18–20 years; Hispanic American women	Developed for study	Sexist attitudes expressed by experimenters	Low levels, but not high levels, of group identification protected against depressive emotions
Family level						
Maternal support (modified IPPA)	Bámaca-Colbert et al. (2012)	Cross-sectional	$n = 271$; 12–14 years; Mexican-origin, female adolescents and their mothers	CES-D	Mother–daughter conflict (items assessing frequency of conflict)	Maternal support did not protect against depressive symptoms

Table 2 continued

Protective factor (Measurement)	Authors	Design	Sample constitution	Depression measure	Risk context	Findings for minority group(s)
Mother- and father–adolescent supportiveness and closeness (items assessing bond)	Cooper et al. (2013)	Cross-sectional	$n = 4256$; 12–18 years; African American adolescents	CES-D	Discrimination (EDA)	Neither maternal presence, mother–adolescent closeness, nor father–adolescent closeness protected adolescents against depression
Parental attachment/parental monitoring (IPPA and modified ACM)	Formoso et al. (2000)	Cross-sectional	$n = 284$, 10–16 years; 28 % Anglo American, 22 % African American, 40 % Mexican-American, 2 % native American, 1 % Asian American, 8 % "other" adolescents	CDI	Family conflict (modified MESA)	Parental attachment/parental monitoring did not protect against depression. No gender or racial/ethnic differences found
Maternal closeness (items assessing bond)	Hammack et al. (2004)	Longitudinal (2 waves)	$n = 196$; African American sixth graders	CDI	Victimization (based on MEVI)	High maternal closeness at baseline protected against more severe depressive symptoms, among boys only
Time with family (percentage of time spent with family members)	Hammack et al. (2004)	Longitudinal (2 waves)	$n = 196$; African American sixth graders	CDI	Victimization (based on MEVI)	Time with family did not protect adolescents from depression
Supportive maternal and paternal parenting	Kam and Bámaca-Colbert (2013)	Cross-sectional	$n = 170$; 11–14 and 14–17 years; Mexican-origin adolescent females	CES-D	Perceived discrimination (PDS)	Supportive maternal parenting and supportive paternal parenting protected Mexican-origin middle (but not early) adolescent females. However, high support and discrimination yielded higher depression
Maternal, paternal, and grandparent support (SSS)	Trask-Tate et al. (2010)	Cross-sectional	$n = 136$; 14–18 years; high-risk urban African American girls	PDI and Beck's CDI,	Negative life events (revised version of (LEQ)	Maternal support, but not father or grandparent support, protected against depression
Maternal support (modified API)	Vaughan et al. (2010)	Longitudinal (5 waves); multilevel	$n = 3444$; 12–16 years; 5 waves were collected at 6-month intervals beginning age 12; 41 % African American; 59 % White adolescents	SMFQ	Age	Maternal support protected against depression for African American youth; more strongly for girls than boys
Prenatal maternal support	Williams et al. (2012)	Cross-sectional	$n = 59$; 14–19 years; African American adolescent fathers	CES-D	Perceived stress (PSS)	Prenatal maternal support did not protect against depression
Parent support (PFS)	Zimmerman et al. (1999)	Longitudinal (2 waves)	$n = 173$; 15–18 years at time 1; African American adolescent boys	BSI subscales	Stressful events (items assessing stressful life events in the past 6 months)	Parent support did not protect against depression

Table 2 continued

Protective factor (Measurement)	Authors	Design	Sample constitution	Depression measure	Risk context	Findings for minority group(s)
Familism values (MACVS)	Delgado et al. (2011)	Cross-sectional	$n = 246$; Mexican-American seventh graders	CES-D	Perceived discrimination (subscale on AER)	Familism did not protect against depression. No gender differences
Family obligations	East and Weisner (2009)	Longitudinal (2 waves)	$n = 110$; 12–17 years; Mexican-American adolescents	Five items to assess depressive symptomatology	Caregiving conflict (items developed for study); family stress (FILE); family conflict (FES)	Family obligations protected against depression
Familism (MACC)	Kennedy and Ceballo (2013)	Cross-sectional	$n = 223$; Hispanic ninth graders	CDO	Community violence exposure (SECV)	Familism protected against depression
Familism (MACVS)	Umaña-Taylor, et al. (2011)	Cross-sectional	$n = 207$; 15–18 years; Mexican-origin adolescent mothers	CES-D	Economic hardship (EHM); perceived discrimination (PDS); acculturative stress (MASI)	Familism did not protect against depression
Familism values (MACVS)	Soli et al. (2009)	Longitudinal (3 years)	$n = 179$; 12–21 years (older siblings); 10–15 years (younger siblings); African American adolescents	CDI	Sibling relational aggression (SQM)	Familism protected against depression
Family functioning (CYDS)	Tolan et al. (2013)	Longitudinal (2 waves)	$n = 341$; 11–14 years; 57.3 % African American; 43.7 % Hispanic adolescents	CDI	Stressful life events (SCS)	Family functioning did not protect against depression
Non-parent extended family support (modified PSS)	Casey-Cannon et al. 2006	Longitudinal (2 waves)	$n = 290$, 12–15 years; 49 % Mexican-American; 51 % European American adolescents	BDI[s]	Parent depressive symptoms and substance use (BDI, modified DSQ and ADAS)	Non-parent extended family social support protected against depression
Parental inductive reasoning (scale developed for study)	Natsuaki et al. (2007)	Longitudinal (2 waves)	$n = 777$; 9–14 years; African American adolescents and families	DISC-IV	Neighborhood disorder at age 11 (census data), stressful life events (JHLE)	Inductive reasoning protected against depressive symptoms
Community level						
Generalized social support (rating interactions within social relationships)	*Stiffman et al. (1992)*	*Longitudinal (2 waves)*	*n = 2415; 13–18 years; 70 % African American; 30 % White adolescents*	*DIS*	*Stressful circumstances and traumatic events (items assessing stress)*	*Social relationships did not protect against depression in stressful circumstances*
Social support (SCSS and ESM data)	Hammack et al. (2004)	Longitudinal (2 waves)	$n = 196$; African American sixth graders	CDI	Witnessing and victimization from violence	Social support protected against depression, but for girls only at low levels of exposure.
Social support (SSS)	Lindsey et al. (2010)	Cross-sectional	$n = 69$; 13–18 years; African American boys	CES-D	Mental health stigma (ATSPHS)	Social support protected against depression

Table 2 continued

Protective factor (Measurement)	Authors	Design	Sample constitution	Depression measure	Risk context	Findings for minority group(s)
Social support (SSRS)	Paxton et al. (2004)	Cross-sectional	$n = 77$; 13–16 years; low-income African American adolescent boys	CES-D	Exposure to violence (SSECV)	Social support did not protect against exposure to violence
Social support (MSPSS)	Salazar et al. (2004)	Cross-sectional	$n = 522$; 15–17 years; African American girls	CES-D	Dating violence victimization (items assessing emotional, verbal, and physical abuse)	Social support did not protect against depression
Positive early teacher–student relationships (SCS)	*Wang et al. (2013)*	*Longitudinal (4 waves)*	*n = 1400; 51 % African American, 44 % White, 5 % biracial or other adolescents*	*CDI*	*Parent–adolescent conflict (FMS) and early low effortful control (EATQ-R)*	*Positive early teacher–student relationships protected against depression throughout adolescence. The moderation was stronger for boys than girls*
Peer support (SSNQ)	Davis (2002)	Cross-sectional	$n = 84$ ($n = 48$ were 14–16 years; $n = 36$ were 17–19 years); African American pregnant and parenting adolescents	Depression subscale of SC-90R	Low maternal support (subscales of (SSNQ)	Peer support protected against low maternal support among older, but not younger, adolescents
Peer support (names of closest friends at every wave and indicated how close they felt)	*Vaughan et al. (2010)*	*Longitudinal (5 waves); multilevel*	*n = 3444; 5 waves were collected at 6-month intervals beginning age 12; 41 % African American, 59 % White adolescents*	*Modified SMFQ*	*Age*	*Peer support did not protect against the development of depression*
Friend support (PFS)	Zimmerman et al. (1999)	Longitudinal (2 waves)	$n = 173$; 15–18 years at time 1; African American urban adolescent boys	BSI subscales	Stressful events (items assessing stressful life events in the past 6 months)	Friend support did not protect against depression
Non-sport extracurricular activities (item assessing participation)	*Hull et al. (2008)*	*Longitudinal (2 waves); multilevel*	*n = 7863; 13–17 years; 61 % White, 23 % African American, and 16 % Hispanic adolescents*	*CES-D*	*Neighborhood disadvantage (assessed via four census tract variables including the total unemployment rate)*	Extracurricular activities protected against depressive symptoms for Hispanic and African American youth
Social activities (number of activities participated in during the last year)	*Stiffman et al. (1992)*	*Longitudinal (2 waves)*	*n = 2415; 13–18 years; 70 % African American, 30 % White adolescents*	*DIS*	*Stressful circumstances and traumatic events (number of ongoing stressful situations)*	Social activities protected against depressive symptoms
Employment (item assessing work for pay in the last 4 weeks)	*Hull et al. (2008)*	*Longitudinal (2 waves); multilevel*	*n = 7863; 13–17 years; 61 % White, 23 % African American, and 16 % Hispanic adolescents*	*CES-D*	*Neighborhood disadvantage (assessed via four census tract variables including the total unemployment rate)*	*Employment protected African American adolescents against depression*

Table 2 continued

Protective factor (Measurement)	Authors	Design	Sample constitution	Depression measure	Risk context	Findings for minority group(s)
School sports (items assessing sport participation)	*Hull et al. (2008)*	*Longitudinal (2 waves); multilevel*	*n = 7863; 13–17 years; 61 % White, 23 % African American, and 16 % Hispanic adolescents*	*CES-D*	*Neighborhood disadvantage (assessed via four census tract variables including the total unemployment rate)*	*Participation in school sports did not protect against neighborhood disadvantage for any group*
Neighborhood interaction (item assessing whether people in neighborhood help each other)	*Hull et al. (2008)*	*Longitudinal (2 waves); multilevel*	*n = 7863; 13–17 years; 61 % White, 23 % African American, and 16 % Hispanic adolescents*	*CES-D*	*Neighborhood disadvantage (assessed via four census tract variables including the total unemployment rate)*	*Neighborhood interaction did not protect against neighborhood disadvantage for any group*
Neighborhood social interaction	Chung and Docherty (2011)	Cross-sectional	*n* = 127; 18–25 years; African American adolescents	ASR	Neighborhood disorder (items about physical disorder)	Neighborhood social interaction did not protect against depression
Engagement in prosocial activities (non-school-related items assessing activity involvement)	*Tolan et al. (2013)*	*Longitudinal (2 waves)*	*n = 341; 11–14 years; 57.3 % African American; 43.7 % Hispanic adolescents*	*CDI*	*Stressful life events (SCS)*	*Engagement in prosocial activities did not protect against depression*
Hispanic composition	White et al. (2012)	Longitudinal (2 waves)	*n* = 344; Mexican-origin fifth graders	DISC	Pubertal timing (PDS)	High neighborhood Hispanic composition protected against follow-up depressive symptoms
Racial composition of schools (percent of White students at each school)	*Walsemann et al. (2011)*	*Cross-sectional*	*n = 18,419; 11–21 years; students; 53 % Whites; 21 % African American; 17 % Hispanic; 7 % Asian/Pacific Islanders; 1 % American Indian; 1 % other adolescents*	*CES-D*	*Perceptions of discrimination (item assessing if teachers treat students fairly)*	*Attending predominantly minority schools protected African American students from depressive symptoms*

The italic rows denote studies in which multiple races were compared in terms of the risk and protective mechanism interactions. *ACM* assessment of child monitoring, *ADAS* American drug and alcohol survey, *AER* adolescents' experiences with racism, *API* authoritative parenting index, *ARSMA-II* acculturation rating scale for Mexican-Americans-II, *ATSPHS* attitudes toward seeking professional help scale, *BDI* beck depression inventory, *BSI* brief symptom inventory, *CDI* children's depression inventory, *CDIS-IV* diagnostic interview schedule for children, version 4, *CES-DC* center for epidemiology studies depression scale for children, *CSS* collective self-esteem scale, *CYDS* chicago youth development study, *DIS* national institute of mental health's diagnostic interview schedule, *DSQ* drinking styles questionnaire, *EATQ-R* adolescent temperament questionnaire-revised, *EDA* everyday discrimination scale, *EHM* economic hardship measure, *ETVTQ* exposure to violence and trauma questionnaire, *EVS* experience of violence scale, *FES* family environment scale, *FILE* family inventory of life events and changes, *FMS* family management study, *IPPA* inventory of parent and peer attachment, *JHLE* junior high life experiences survey, *JLS* johnson-lecci scale, *PHQ-9* patient health questionnaire, *LEQ* coddington's life events questionnaire, *MACCS* multiphasic assessment of cultural constructs, *MACVS* Mexican-American cultural values scale, *MADIC* maryland adolescents development in context, *MASI* multidimensional acculturative stress inventory, *MEIM* multigroup ethnic identity measure, *MESA* multicultural events schedule for adolescents, *MEVI* my exposure to violence interview, *MIBI* multidimensional inventory of black identity, *MSPSS* multidimensional scale of perceived social support, *OVS* online victimization scale, *PDS* pubertal development scale; perceived discrimination scale, *PFS* parents and friends scale, *PSS* perceived stress scale, *PSS-Fa* perceived social support-family, *RBRSQ* race-based rejection sensitivity questionnaire, *SC-90R* symptom checklist symptoms checklist revised, *SCS* school climate survey, *SECV* survey of exposure to community violence, *SMFQ* short mood and feelings questionnaire, *SQM* sibling qualities measure, *SRE* schedule of racist events, *SSECV* screening survey of exposure of community violence, *SSNQ* social support network questionnaire, *SSRS* social support rating scale, *SSS* social support scale; Social support survey

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