

Natural Mentors, Mental Health, and Risk Behaviors: A Longitudinal Analysis of African American Adolescents Transitioning into Adulthood

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Abstract In this study, we tested whether having a natural mentor affected the growth trajectory of health outcomes among adolescents transitioning into adulthood (5 years post-high school). Participants in this study included 615 African American emerging adults. Outcomes assessed in this study included depressive symptoms, sexual risk behavior, and substance use. We hypothesized that participants who possessed natural mentors would demonstrate greater declines over time across all outcome variables in comparison to their counterparts who did not possess natural mentors. Using Hierarchical Linear Modeling, we found that having a natural mentor was related to less depressive symptoms and less sexual risk behavior over time. The results suggest that natural mentors may protect youth from the negative outcomes associated with the risks they face. Implications of the results for prevention are discussed.

Keywords Natural mentor · Resilience · Transition to adulthood · African American emerging adults

Introduction

When adolescents graduate from high school, they are faced with a number of major life changes. Parental influences tend to decrease and access to resources may shift. During this emerging adulthood period, individuals may experience frequent changes in residence, roles, responsibilities, relationships, employment, and education (Osgood et al. 2005). Arnett (2000) suggests that the period

of emerging adulthood is a time characterized by high levels of personal freedom, low levels of social responsibility, and heightened participation in several risk behaviors. Arnett notes, for example, that substance use and sexual risk behavior occur at higher rates during emerging adulthood than during adolescence. In their study of a large nationally representative sample, Cullen et al. (1999) found that adolescents transitioning out of high school increased their alcohol consumption, tobacco use, and participation in unprotected sexual intercourse. The Centers for Disease Control and Prevention (2002) report that older teens and young adults experience higher rates of sexually transmitted infections (STIs) in comparison to older adults and are at heightened risk of contracting the human immunodeficiency virus (HIV) due to their increased involvement in high-risk sexual behaviors (e.g., multiple sex partners, unprotected sexual intercourse, having high-risk sexual partners).

Researchers suggest that adolescent females are at significant risk of developing depression as they transition into adulthood. Rao et al. (1999) conducted a 5-year longitudinal study assessing the risk of new onset and recurring depression in adolescent females transitioning to adulthood. During the 5 years of the study, 37% of the females experienced their first episode of major depression suggesting that rates of new onset depression may be particularly elevated during this transitional period. Females are twice as likely as males to experience depression during the periods of late adolescence and emerging adulthood (Nolen-Hoeksema 2001), however, the role of depression in suicide makes depression in males a critical concern, as well.

Researchers have found that depression may be a major determinant of suicide risk among male youth (Cavanagh et al. 2003; Gould and Kramer 2001). Furthermore,

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researchers report increased suicide rates among males as they progress through adolescence into early adulthood (Conner and Goldston 2006). Thus, although males may not demonstrate an increase in depression as they transition into adulthood, those males who do experience depression may be at increased risk of suicide because the transitional stress may exacerbate the effects of depression on suicide risk. Despite increased risk of negative outcomes during the period of emerging adulthood, it is important to note that not all emerging adults succumb to the negative outcomes associated with the risks they face. Resilience theory is useful for conceptualizing why some youth are able to display healthy adjustment in the face of risk.

Resilience Theory

Resilience theory emerged as researchers became increasingly interested in understanding why some youth who experience adversity are able to overcome this adversity and display positive developmental outcomes. In studies of resilience, researchers consider factors that may predict healthy development among at-risk youth (Fergus and Zimmerman 2005; Luthar and Cicchetti 2000). Resilience models consist of risk factors and promotive factors (i.e., compensatory or protective factors) that interact to reduce negative outcomes or promote more positive outcomes (Fergus and Zimmerman 2005). As opposed to deficit-focused models, resilience models focus on how individuals' assets (internal factors) and resources (external factors) can be developed or enhanced to promote healthier outcomes. Notably, these promotive factors may not have identical effects on all youth outcomes and are defined by their ability to counter or protect youth from negative outcomes associated with risk. Findings from resilience studies point to a number of potential promotive factors that contribute to positive youth outcomes such as parental monitoring (Fergus and Zimmerman 2005). One promotive factor that has emerged from these studies is social support.

Social Support Theory

The results of numerous studies indicate a positive relationship between social support and psychological and physical well-being (Rhodes and Lakey 1999). One way in which social support has been hypothesized to affect well-being is by reducing the negative effects of stress on health outcomes (i.e., stress-buffering; Cohen et al. 2000; Lin and Peek 1999; Turner 1999). Researchers have found that social support resources may be protective for youth, especially during times of stress, and may contribute to more positive mental health outcomes (Hussong 2000; Newman et al. 2007). Researchers who have studied the relationship between social support and depression have

consistently identified an inverse association between these two variables (Newman et al. 2007; Pierce et al. 2000).

After reviewing the social support literature, Lin and Peek (1999) concluded that the "simplest and most powerful indicator of social support appears to be the presence of an intimate and confiding relationship" (p. 243). This relationship could be with a peer, a parent, or a nonparental adult. In fact, Munsch and Blyth (1993) found that adolescents in their study reported receiving similar levels of support from nonparental adults as they received from their mothers, and often reported receiving higher levels of support from nonparental adults than from their fathers. These findings suggest that a relationship with a nonparental adult may be a key source of social support for youth and thus, may provide youth with additional resources that help protect them from negative outcomes associated with risks they face. Specifically, researchers have found that having an important nonparental adult to go to for support, guidance, and encouragement may mitigate risk and contribute to positive adolescent outcomes (DuBois and Silverthorn 2005b; Zimmerman et al. 2002). Researchers have found that these types of relationships with nonparental adults have been predictive of fewer internalizing and externalizing behavior problems (DuBois and Silverthorn 2005b; Rhodes et al. 1992, 1994) and more positive school attitudes and achievement (Klaw et al. 2003; Zimmerman et al. 2002) among at-risk youth.

Natural Mentors

Supportive relationships with nonparental adults are often referred to as mentoring relationships. A mentoring relationship is a social connection between a more experienced (and typically older) mentor and a less experienced mentee. Although researchers have not come to a clear consensus regarding the definition of a mentor, most researchers agree that support, guidance, and encouragement are central components of a mentoring relationship (Levinson et al. 1978; Rhodes et al. 1992; Zimmerman et al. 2002). Though the term *mentor* typically refers to formal mentoring programs such as Big Brothers Big Sisters, it is vital to note that mentoring relationships can emerge in a variety of contexts. In fact, findings from a descriptive study on mentoring revealed that most adults (83%) who reported involvement in mentoring relationships were involved in informal as opposed to formal mentoring relationships (McLearn et al. 1998).

Informal (natural) mentoring relationships are often developed between youth and nonparental family or community adults from a youth's pre-existing social network and are not intentionally introduced through a formal program. Given that these relationships form naturally, informal mentoring relationships may be longer lasting

than formal mentoring relationships (Zimmerman et al. 2005). This may be a significant advantage of natural mentoring relationships in light of findings that longer-lasting mentoring relationships have been linked to more positive youth outcomes (Grossman and Rhodes 2002; Klaw et al. 2003; McLearn et al. 1998).

Additionally, it is useful to note the significance, both currently and historically, of natural mentoring relationships within the African American community. Mentoring programs such as Big Brothers Big Sisters began to emerge in the early 1900's (Baker and Maguire 2005), however, as many other social institutions of the time, these mentoring programs primarily served White youth. Despite their exclusion from formal mentoring programs, Edelman (1999) suggests that African American youth were afforded opportunities to form natural mentoring relationships within their extended families and communities. Historically, African American extended kin and community members have played large roles in the upbringing of African American youth (Stewart 2007), thus providing increased opportunities for the formation of natural mentoring relationships. These findings indicate that natural mentoring relationships may have played, and may continue to play, a critical role in the development of African American youth. Yet, few researchers have studied the effects of natural mentoring longitudinally or over the transition to adulthood.

Findings of the natural mentor studies conducted to date suggest that relationships with natural mentors can contribute to more positive youth outcomes. Rhodes and colleagues (1992, 1994) found that African American and Latina adolescent mothers who possessed natural mentors reported more positive mental health outcomes than those without natural mentors. Zimmerman et al. (2002) found that natural mentors offset negative peer influences on adolescent problem behaviors and school attitudes among urban, African American youth. Klaw et al. (2003) reported that adolescent mothers who maintained a relationship with a natural mentor during their transition to motherhood were 3.5 times more likely to graduate high school than adolescent mothers who did not have a natural mentor. Limitations of these studies include the use of small, nonrepresentative samples, and cross-sectional study designs which did not allow researchers to assess for the long-term effects of mentoring on youth outcomes. Though Klaw et al. (2003) incorporated a longitudinal design, it only included two time points. DuBois and Silverthorn (2005b) found that participants who reported a natural mentoring relationship were more likely than their counterparts without mentors to have favorable psychosocial outcomes. Although they made use of a large nationally representative sample, the wide age range (18–26) of participants in the study and the retrospective nature of the

mentoring question (participants were asked if they had possessed a natural mentor at anytime since the age of 14) are notable limitations of their study.

Current Study

In the current study, we tested whether having a natural mentor in participants' senior year of high school affected the growth trajectory of psychosocial outcomes during the transition to adulthood (5 years post-high school). Considering the risks associated with this transitional period, we hypothesized that adolescents entering into adulthood may benefit from the support and guidance that a natural mentor can provide. Psychosocial outcomes assessed in this study included depressive symptoms, sexual risk behavior, and substance use. We hypothesized that participants who possessed natural mentors in their senior year of high school would demonstrate no growth or less steep growth in these outcome variables in comparison to their counterparts who did not possess a natural mentor in their senior year of high school. Additionally, we hypothesized that natural mentor presence would moderate the relationship between stress and depressive symptoms among study participants over time.

Socioeconomic status (SES) was entered as a control variable in our analyses given its potential association with study outcome variables. We also controlled for gender, age, and maternal and paternal support in an effort to isolate the potential effects of mentoring relationships on mental health and health behavior trajectories. Lastly, age at first sexual intercourse was controlled for in the growth model for sexual risk behavior because younger age at first sexual intercourse has been found to be predictive of later sexual risk behavior (Coker et al. 1994).

Methods

Participants

Participants in this study included 615 African American emerging adults taken from the fourth wave (the participants' senior year of high school) of an eight-wave longitudinal study of high school dropout in a large, high-poverty, Midwestern city. Participants were not interviewed for 1 year post-high school and then were interviewed annually for 4 years. This study was conducted using data collected during the participants' senior year of high school and four waves of data collected over the following 5 years.

Participants of the first wave of study data (freshman year of high school) included 850 youth from four public high schools. These 850 youth who agreed to participate in

the study represented 92% of all eligible participants. Study inclusion criteria included an eighth-grade GPA of 3.0 or lower, and not diagnosed with an emotional or developmental disability based on school records. Participants in the fourth wave of data (senior year of high school) included 770 youth (90% response rate from original wave-1 sample). The sample was approximately 80% African American, 17% White, and 3% Biracial. The attrition rate from the first wave to the fourth wave did not differ between African American and White youth. Given our interest in the role of natural mentors in the lives of African American youth, and the comparatively smaller percentages of White and Biracial participants, we elected to conduct our analyses only using data collected from the African American participants in this study.

Our sample included 615 African American emerging adults. Throughout the 5 years following participants' senior year of high school, less than 18% of participants were enrolled in a community college and less than 9% were enrolled in a 4-year college/university at any time point. During the final year of data collection (5 years post-high school) 15% of participants had obtained an associate's degree and less than 2% of participants had obtained a bachelor's degree. According to data from the US Census (2000), the neighborhoods in which the participants resided had an average median neighborhood yearly income of \$24,775 (SD = \$13,239). Slightly over half of the sample was female ($n = 323$), and the average age of participants at wave 4 (12th grade) was 17.51 (SD = 0.63). Comparative analyses between the 615 African American participants included in this study and the 66 African American participants from wave 1 who did not participate in data collection at wave 4 indicated no significant gender, age, or SES differences.

Procedure

This study received approval from both the Institutional Review Board at the University of Michigan and the staff at the schools where data were collected. Participant

consent and parental (passive) consent for minors were obtained prior to study participation. Participants completed 50–60 min, face-to-face, structured interviews. Interviews were conducted by six male and female, African American and White interviewers. When possible, participants and interviewers were matched by race and gender. Questions pertaining to substance use and sexual behavior were asked using paper-and-pencil self-report questionnaires that were administered following the interview. During the fourth wave of data collection, participants were interviewed at their school; participants who had dropped out of school were contacted and interviewed at home or at another location. In all subsequent years of data collection, participants were interviewed either in their homes or community settings.

Measures

The measures are presented in accordance with the manner in which the data were entered in our data analytic plan to study change over time where we included intra-individual measures (time variant) and inter-individual measures. Intra-individual measures, presented first, include all outcome variables, as well as time-varying control variables (i.e., maternal and paternal support). Inter-individual measures include our main predictor variable (presence of a natural mentor), and other variables entered as control variables at Level-2 (i.e., gender, age, SES, age at first sexual intercourse). Table 1 includes means, standard deviations, and Cronbach alphas for all study outcomes for each wave of the study.

Intra-Individual Measures: Level 1

Depressive Symptoms Six items from the Brief Symptom Inventory were used to assess for participants' depressive symptoms (Derogatis and Spencer 1982). These items asked about the frequency with which participants have felt uncomfortable during the past week due to symptoms of depression (e.g., feelings of worthlessness, feeling no

Table 1 Means, standard deviations (SD) and Cronbach alpha (depressive symptoms) for all outcome measures

	Depressive symptoms Mean (SD)	Alpha	Sexual risk behavior Mean (SD)	Cigarette use Mean (SD)	Alcohol use Mean (SD)	Marijuana use Mean (SD)
Time point						
Time 1 (12th grade)	1.81 (.93)	0.86	-.04 (2.37)	1.66 (1.24)	1.62 (1.12)	1.97 (1.75)
Time 2 ^a	1.75 (.71)	0.83	-.11 (2.19)	1.76 (1.23)	1.90 (1.31)	2.01 (1.88)
Time 3	1.67 (.69)	0.83	-.17 (2.19)	1.82 (1.40)	2.04 (1.45)	1.98 (1.87)
Time 4	1.73 (.70)	0.83	-.13 (2.22)	1.87 (1.33)	2.20 (1.54)	2.13 (1.93)
Time 5	1.72 (.72)	0.84	-.14 (2.19)	1.97 (1.51)	2.20 (1.57)	2.12 (2.02)

^a Data was not collected for 1 year post high school and then was collected for 4 consecutive years (Times 2–5)

interest in things, feeling hopeless about the future). Response options on a Likert scale ranged from 1 (not at all uncomfortable) to 5 (extremely uncomfortable). This scale has demonstrated high internal consistency and test–retest reliability (Derogatis 1977).

Sexual Risk Behavior Three items were used to create a composite sexual risk behavior measure: frequency of sexual intercourse within the last year, number of sexual partners within the last year, and frequency of condom use within the last year (Fergus et al. 2007). The frequency of condom use variable was reverse coded so that higher scores on any of these three variables reflected higher risk behavior. Participants who reported not having sexual intercourse in the previous year were assigned the lowest risk score for the frequency of condom use variable. These measures had different response categories, so they were standardized before being added together.

Substance Use Cigarette, alcohol, and marijuana use were assessed by the frequency of use within the past 30 days. Response choices ranged from 1 (0 times) to 7 (40 or more times) for alcohol and marijuana use and from 1 (not at all) to 7 (two packs or more per day) for cigarette use. These items were previously used to assess substance use in the Monitoring the Future Study (Johnston et al. 1988).

Stress The 14-item Perceived Stress Scale (Cohen et al. 1983) was used to measure participants' experiences with stress. Respondents were asked to indicate how frequently they have experienced different feelings or exhibited certain behaviors within the previous month. Items included "In the last month, how often have you felt that you had so many problems that you could not deal with them?" and "In the last month, how often have you found that you could not deal with all the things that you had to do?" Response options ranged from 1 (never) to 5 (very often). This measure has demonstrated adequate test–retest and internal reliability (Cohen et al. 1983). Participant responses to these 14 items were summed and averaged to yield an average stress score.

Parental Support Participants were asked about both maternal and paternal support. The same five items were used to assess support from each parent (Procidano and Heller 1983). Items included "I have a deep sharing relationship with my mother/father," and "I rely on my mother/father for emotional support." Response options ranged from 1 (not true) to 5 (very true). Answers on the five items were summed and averaged to yield maternal and paternal support variables. Participants who indicated

they did not have contact with the parental figure in question were assigned a score of 0 for this variable.

Inter-Individual Measures: Level 2

Natural Mentor To assess whether or not participants had a natural mentor, they were asked, "Is there an adult 25 years or older who you consider to be your mentor? That is, someone you can go to for support and guidance, or if you need to make an important decision, or who inspires you to do your best?" If participants said yes, they were asked, "What is his/her relationship to you?" Participants who identified an immediate family member as their mentor were asked the first question again, but specifically asked about someone other than an immediate family member or person who raised them. Participants who identified a mentor who was not a parent, step-parent, or person who raised them qualified as having a natural mentor. We used this data to create a dichotomous natural mentor variable (0 = no mentor, 1 = mentor).

Age at First Sexual Intercourse Participants were asked how old they were the first time they had sexual intercourse (we did not specify if the intercourse was consensual or nonconsensual). Responses were grouped into five age categories: 11 and younger ($n = 85$), 12 ($n = 67$), 13 ($n = 118$), 14 ($n = 78$), and 15 and older ($n = 21$). These five response categories (coded 1–5) were reverse coded so that higher scores indicated lower ages at first intercourse. Participants who reported never having had sexual intercourse were assigned a score of 0 for this variable.

Demographics Demographic variables collected in this study included age, gender, and SES. Participant age was calculated based on the birth date (month/year) provided by participants in wave 1. Gender was coded to detect potential interaction terms (female = 1, male = -1). Participants were asked about their parents' occupation; prestige scores were assigned based on 20 occupational classifications (Nakao and Treas 1990a, b). When participants indicated that both parents had occupations, the higher of the two prestige scores was used. Scores ranged from 29.28 (private household work) to 64.38 (professional). The mean occupational prestige score was 39.9 ($SD = 9.8$), which represented blue-collar employment. The distribution of prestige scores was positively skewed ($D(615) = 7.01, p < 0.001$).

Data Analytic Strategy

We used hierarchical linear modeling (HLM) to create growth curves for all of the psychosocial outcomes in this

study (Raudenbush and Bryk 2002). HLM conceptualizes two levels of analysis: Level 1 consists of individuals' observed development over time determined by a set of individual parameters, and Level 2 consists of measurable characteristics of individuals (e.g., presence of a natural mentor in individual's life) that may predict variance in individual growth over time (Bryk and Raudenbush 1987). After entering the data into the HLM program, we proceeded to complete two sets of analyses for each outcome variable (depressive symptoms, sexual risk behavior, cigarette use, alcohol use, and marijuana use).

First, we estimated fully unconditional models for all outcome variables. These analyses partitioned the total variance in each outcome variable into intra-individual variance and inter-individual variance and allowed us to calculate the intraclass correlation coefficient (ICC) associated with each outcome variable. The ICC indicates whether participants differ in growth trajectories for an outcome and the proportion of variance that lies across participants (Raudenbush and Bryk 2002). By including time-varying covariates (e.g., linear, quadratic, cubic terms), we were able to determine which shape of change best fit the data for each outcome (fixed effects) and whether or not individuals varied in these growth patterns (random effects).

The second set of analyses involved adding our main Level-2 predictor (the presence of a natural mentor) to all slopes that varied randomly to determine how much this variable helped to explain differences in growth across individuals. In the model with depressive symptoms as the outcome variable, we included stress as a time-varying predictor variable and modeled mentor presence on the stress slope to determine if the relationship between stress and depressive symptoms varied depending on mentor presence. An array of control variables that may have helped to explain the variance across individuals were also added to these slopes. These variables included age, gender, and SES. Age at first intercourse was included as a control variable in the model for sexual risk behavior. Additionally, we included both maternal and paternal support as time-varying control variables in all models.

Results

Natural Mentors

Sixty-three percent of participants reported having a natural mentor ($n = 386$). Slightly over half ($n = 206$) of those who reported having a natural mentor identified a family member as their natural mentor. Familial mentors consisted of aunts, uncles, grandparents, cousins, and older siblings. Non-familial mentors ($n = 180$) consisted primarily of

god-parents, god-siblings, parents' boyfriends or girlfriends, and friends' parents. A small number of participants ($n = 27$) identified natural mentors who may have formed mentoring relationships with participants in more conventional contexts (e.g., ministers, teachers, counselors).

HLM Analyses

Unconditional Model for Depressive Symptoms

Results of this analysis indicated that the linear term best represented the average change in depressive symptoms between 12th grade (initial status for this study) and 5 years post-high school ($t = -2.17$, $df = 614$, $p < 0.01$). Additionally, this linear term reflected a general decrease in depressive symptoms over time (coefficient = -0.021). Participants varied in both initial status ($\chi^2 = 1,317.29$, $df = 614$, $p < 0.01$) and their pattern of change ($\chi^2 = 1,009.29$, $df = 614$, $p < 0.01$). The reliability estimates for both initial status (0.56) and the linear growth term (0.42) were acceptable. The ICC denoted that 50% of the variance in changes in depressive symptoms over time was across individuals.

Final Model for Depressive Symptoms

Table 2 contains the final results for the depressive symptoms model. Higher levels of maternal ($t = -6.02$, $df = 2,070$, $p < 0.01$) and paternal ($t = -3.08$, $df = 2,070$, $p < 0.05$) support predicted fewer depressive symptoms. Whereas, higher levels of stress predicted more depressive symptoms ($t = 4.95$, $df = 521$, $p < 0.01$). Using a one-tailed test, we found a weaker relationship between stress and depressive symptoms over time among participants with mentors ($t = -1.77$, $df = 521$, $p < 0.05$). Females demonstrated a stronger relationship between stress and depressive symptoms over time ($t = 2.06$, $df = 521$, $p < 0.05$).

Concerning the linear growth term, we found that participants who had a natural mentor presented greater decreases in depressive symptoms over time ($t = -2.15$, $df = 521$, $p < 0.05$). We also found that females demonstrated greater increases in depressive symptoms over time ($t = 3.02$, $df = 521$, $p < 0.01$). Additionally, we found a gender by mentor interaction ($t = -1.95$, $df = 521$, $p = 0.05$). Figure 1 illustrates the gender by mentor interaction for depressive symptoms, suggesting that natural mentor presence positively affected both male and female participants, however, these effects were manifested in different ways. Females with natural mentors had less steep increases in depressive symptoms over time in comparison to females without natural mentors, whereas males with natural mentors

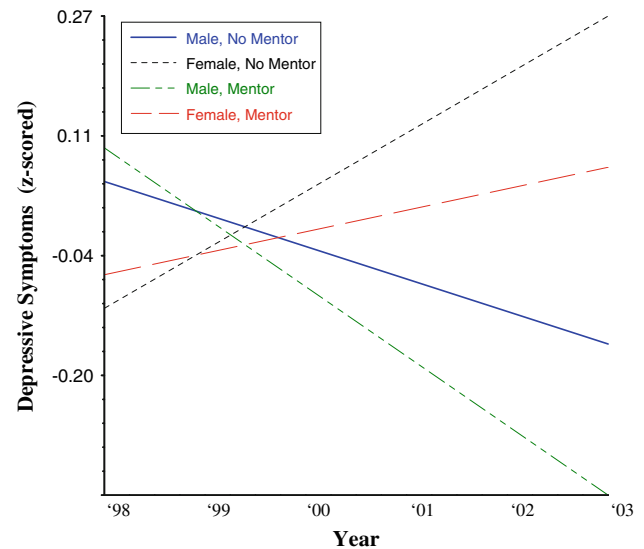
Table 2 Fixed effects model for depressive symptoms

Fixed effect	Coefficient	<i>t</i> (521)	<i>p</i> -value
Mean initial status			
Intercept	0.053	0.546	0.585
Mentor	0.054	0.633	0.527
Gender	-0.148	-0.714	0.475
Age	-0.006	-0.162	0.872
SES	-0.054	-1.257	0.209
Gender × mentor	0.112	1.300	0.194
Mean linear growth			
Intercept	0.022	1.134	0.258
Mentor	-0.053	-2.150	0.032
Gender	0.057	3.016	0.003
Age	0.014	1.240	0.216
SES	-0.003	-0.259	0.796
Gender × mentor	-0.048	-1.953	0.051
Stress			
Intercept	0.270	4.951	0.000
Mentor	-0.036	-1.777	0.076
Gender	0.058	2.060	0.040
Age	0.056	1.780	0.075
SES	0.033	1.225	0.222
Gender × mentor	-0.021	-1.051	0.294
Maternal support			
Intercept	-0.183	-6.019	0.000
Paternal support			
Intercept	-0.080	-3.081	0.003

had steeper decreases in depressive symptoms over time in comparison to males without a natural mentor. Random effect results indicated that the variance in initial levels of depressive symptoms ($\chi^2 = 840.76$, $df = 521$, $p < 0.01$) and the linear growth term ($\chi^2 = 738.90$, $df = 521$, $p < 0.01$) were not completely explained by this model.

Unconditional Model for Sexual Risk Behavior

Results of this analysis indicated that the quadratic model best represented the mean change in sexual risk behavior over time. The coefficients associated with the linear ($t = -1.07$, $df = 602$, *ns*) and quadratic ($t = 0.97$, $df = 602$, *ns*) growth terms were not statistically significant, however, the results indicated that participants varied across initial status ($\chi^2 = 1,159.86$, $df = 602$, $p < 0.01$), their linear pattern of change ($\chi^2 = 677.06$, $df = 602$, $p < 0.01$), and their quadratic pattern of change ($\chi^2 = 628.09$, $df = 602$, $p < 0.01$). These findings were indicative of growth terms operating in opposite directions (cross-effects) for study participants (i.e., there was not a uniform pattern of growth among participants, rather one or multiple groups of participants may have been demonstrating an increase in

**Fig. 1** Growth in depressive symptoms for males and females as a function of possessing a natural mentor

sexual risk behavior over time while one or multiple groups of participants were demonstrating a decrease in sexual risk behavior over time). All of the reliability estimates were acceptable (initial status = 0.55; linear growth term = 0.20; quadratic growth term = 0.16). The ICC indicated that 57% of the variance in changes in sexual risk behavior over time was across individuals.

Final Model for Sexual Risk Behavior

The final fixed effect results for the sexual risk behavior model are displayed in Table 3. Higher levels of maternal support ($t = -2.68$, $df = 1,908$, $p < 0.01$) predicted less sexual risk behavior. Younger age at first sexual intercourse predicted more sexual risk behavior in 12th grade ($t = 5.35$, $df = 491$, $p < 0.01$). The presence of a natural mentor was associated with less sexual risk behavior in 12th grade ($t = -1.96$, $df = 491$, $p = 0.05$). Participants who had a natural mentor demonstrated greater linear decreases in sexual risk behavior ($t = -2.11$, $df = 491$, $p < 0.05$), however, the quadratic term indicated that participants with a natural mentor demonstrated a change in growth over time ($t = 2.36$, $df = 491$, $p < 0.05$). Figure 2 displays the differences in sexual risk behavior growth for participants depending on whether or not they had a natural mentor. This model did not completely explain the variance in initial status ($\chi^2 = 709.90$, $df = 491$, $p < 0.01$), the linear parameter ($\chi^2 = 485.91$, $df = 491$, $p < 0.05$), or the quadratic parameter ($\chi^2 = 471.08$, $df = 491$, $p < 0.05$) indicating that other variables may help explain individual differences in growth patterns of sexual risk behavior over time.

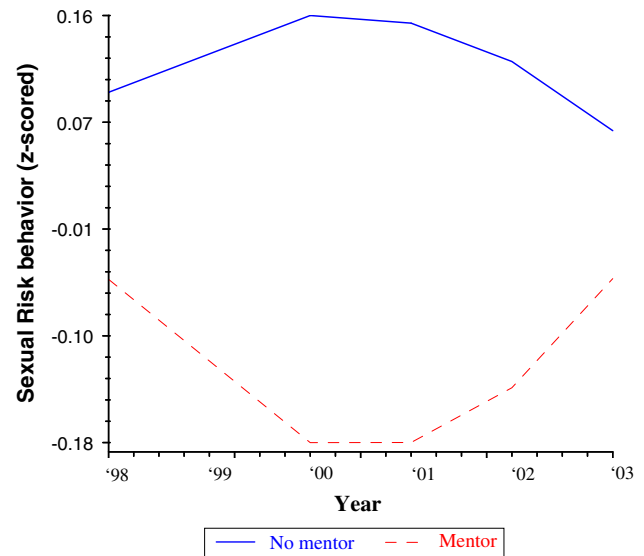
Table 3 Fixed effects model for sexual risk behavior

Fixed effect	Coefficient	<i>t</i> (491)	<i>p</i> -value
Mean initial status			
Intercept	0.120	1.563	0.118
Mentor	−0.176	−1.959	0.051
Gender	−0.070	−1.472	0.142
Age	0.013	0.268	0.789
SES	0.011	0.267	0.789
Age at 1st intercourse	0.247	5.354	0.000
Mean linear growth			
Intercept	0.035	0.625	0.532
Mentor	−0.152	−2.112	0.035
Gender	0.042	1.159	0.247
Age	−0.068	−1.794	0.073
SES	−0.008	−0.233	0.816
Age at 1st intercourse	−0.058	−1.657	0.098
Mean quadratic growth			
Intercept	−0.009	−0.826	0.409
Mentor	0.034	2.361	0.019
Gender	−0.011	−1.481	0.139
Age	0.008	1.002	0.317
SES	−0.003	−0.478	0.632
Age at 1st intercourse	0.009	1.312	0.190
Maternal support			
Intercept	−0.072	−2.684	0.008
Paternal support			
Intercept	−0.030	−1.099	0.272

Unconditional Model for Substance Use

Cigarette Use The linear model best represented the average growth in cigarette use ($t = 1.92$, $df = 611$, $p < 0.05$). This linear term reflected an average increase in cigarette use over time (coefficient = 0.032). Participants varied in initial status ($\chi^2 = 1,924.04$, $df = 611$, $p < 0.01$) and their pattern of change ($\chi^2 = 907.45$, $df = 611$, $p < 0.01$). The reliability estimates for both initial status (0.70) and the linear growth term (0.36) were satisfactory. According to the ICC, 66% of the variance in changes in cigarette use over time was across individuals.

Alcohol and Marijuana Use The quadratic model best represented average growth in both alcohol and marijuana use. Both alcohol and marijuana use increased linearly (linear coefficient = 0.05 and 0.018, respectively), however, demonstrated a deceleration in growth over time (quadratic coefficient = −0.011 and −0.013, respectively). Variance across participants in initial status and growth parameters existed in both models: alcohol use, initial status ($\chi^2 = 1,323.07$, $df = 610$, $p < 0.01$), linear growth ($\chi^2 = 743.89$, $df = 610$, $p < 0.01$), quadratic

**Fig. 2** Growth in sexual risk behavior as a function of possessing a natural mentor

growth ($\chi^2 = 628.95$, $df = 610$, $p < 0.01$); marijuana use, initial status ($\chi^2 = 1,582.48$, $df = 610$, $p < 0.01$), linear growth ($\chi^2 = 767.19$, $df = 610$, $p < 0.01$), quadratic growth ($\chi^2 = 676.97$, $df = 610$, $p < 0.01$). Reliability estimates for alcohol use (initial status = 0.61, linear growth = 0.35, quadratic growth = 0.24) and marijuana use (initial status = 0.66, linear growth = 0.31, quadratic growth = 0.21) were adequate. Sixty-two percent of the variance in changes in alcohol use and 67% of the variance in changes in marijuana use were across individuals.

Final Model for Substance Use

None of the Level-2 predictors explained variance in initial status or growth in cigarette or alcohol use. Increased levels of maternal support predicted less marijuana use ($t = -2.87$, $df = 2,018$, $p < 0.01$, coefficient = −0.084). In addition, females reported less marijuana use in 12th grade ($t = -2.11$, $df = 519$, $p < 0.05$, coefficient = −0.167). Having a natural mentor did not predict changes in initial status or growth in any of the substance use models. The variances in initial levels and growth term parameters for cigarette, alcohol, and marijuana use were not completely explained by their respective models.

Additional Analyses

We conducted all of the abovementioned analyses including both genders and then separately for males and females. The results of the analyses completed separately by gender did not yield any new findings. We also modeled the effects of familial vs. non-familial natural mentors in an

effort to eliminate the possibility that our findings might be explained by this distinction. Results of this analysis were not significant.

Discussion

Our findings support the hypothesis that natural mentoring relationships contribute to resilience in a sample of African American adolescents transitioning into adulthood. Although we did not find an association between mentor presence and substance use, our findings regarding the potential long-term promotive effects of natural mentors on depressive symptoms and sexual risk behavior suggest that supportive nonparental adults in youth's lives are a vital resource to help them overcome the risks they face as they transition into adulthood. These findings are congruent with previous research regarding the potential of natural mentoring relationships to influence several outcomes, but fail to serve as a global protective factor for all youth outcomes (DuBois and Silverthorn 2005b; Zimmerman et al. 2002).

Depressive Symptoms

We found support for our hypothesis that natural mentors moderate the relationship between stress and depressive symptoms. Supportive relationships with nonparental adults may provide youth with additional social resources to help them cope more effectively with stress associated with life changes that occur as adolescents graduate from high school and enter the adult world (Carbonell et al. 2005). Furthermore, natural mentoring relationships may contribute to youth's sense of worth and foster a more positive self-appraisal, which may in turn make them less vulnerable to the effects of stress, resulting in fewer depressive symptoms (Rhodes 2005).

Consistent with the literature on gender differences in depression (Nolen-Hoeksema 2001), we found growth trends of depressive symptoms varied between males and females. Females reported an increase in depressive symptoms while males reported a decrease during the transition to adulthood. Although growth trends differed between males and females, we found potential promotive effects of natural mentors for both genders. Notably, mentor presence was not associated with differences in depressive symptoms at participants' initial status (12th grade), but was associated with healthier growth trajectories. Given that perceived stress increased over time, particularly among female participants, this finding provides further support for our hypothesis that natural mentoring relationships moderate the relationship between stress and depression. Thus, the insulating effects of natural

mentoring relationships on emerging adults' psychological health are more pronounced when adolescents graduate from high school and begin to experience increased levels of transitional stress.

Sexual Risk Behavior

In support of our hypothesis, we found that participants who reported having a natural mentor demonstrated less sexual risk behavior during their senior year of high school and linear decreases in sexual risk behavior over time. Although these linear decreases tapered off and increased back to 12th grade levels, sexual risk behavior remained higher among the group of participants who did not have a natural mentor. In fact, participants who did not have a natural mentor demonstrated a temporary increase in sexual risk behavior immediately after high school before they began a gradual decrease in sexual risk behavior. These findings suggest that relationships with natural mentors may be particularly beneficial in preventing sexual risk behavior in the 2 years immediately following high school. These 2 years may be a critical time as emerging adults experience a sharp increase in independence and a coinciding decrease in adult supervision (Arnett 2000).

Our results suggest that the guidance of a supportive nonparental adult may help emerging adults navigate their intimate relationships and make healthy decisions. Additionally, natural mentors may model effective decision-making processes more generally, helping youth to develop their own problem-solving and sexual decision-making skills (Rhodes 2005). These mentoring processes may contribute to positive behavioral outcomes among youth experiencing additional risks associated with the transition to adulthood.

Substance Use

Presence of a natural mentor did not explain any individual variation in substance use (i.e., cigarette, alcohol, marijuana use). This finding did not support our hypothesis. Past research on the effects of natural mentoring relationships on substance use are, however, somewhat mixed. Zimmerman et al. (2002), for example, found that adolescents with natural mentors were less likely to smoke marijuana, but they did not find an association between the possession of a natural mentor and alcohol use. DuBois and Silverthorn (2005b) failed to find any potential mentor effects on mentees' substance use. They suggest that natural mentors may not reduce mentees' substance use because natural mentors may unintentionally model substance use, particularly alcohol and cigarette use which are not unlawful for adults. Another explanation for our null finding is that some

forms of substance use are highly normative among emerging adults, and thus may be extremely difficult to influence through natural mentoring relationships (DuBois and Silverthorn 2005b). Notably, we found cigarette, alcohol, and marijuana use all increased as adolescents transitioned into adulthood, possibly reflecting an increased acceptance of these behaviors during this developmental period.

Study Limitations and Strengths

Several limitations and strengths of our study should be noted. Detailed information about natural mentors and natural mentoring relationships were not studied. Researchers have documented the role of relationship characteristics such as relationship closeness in predicting youth outcomes (DuBois and Silverthorn 2005a). In our study, participants were only asked about the presence of a natural mentor and the mentor's role in the participant's life (e.g., aunt, teacher). More detailed information about the relationship would have allowed for the identification of characteristics beyond mentor presence that may have predicted more positive psychosocial trajectories among the participants in this study. In addition, more in-depth assessment of the mentor relationship would allow a more detailed evaluation of the intermediate processes (e.g., increased social-emotional or cognitive development) thus, illuminating the pathways through which mentors influenced youth outcomes. Similarly, this study did not assess natural mentor behavior. Although findings from this study suggest that natural mentors exerted a mainly positive influence on their mentees, it is quite possible that through negative behavior modeling, natural mentors also may have negatively influenced their mentees (Zimmerman et al. 2005). Natural mentors who used substances, for example, may have unintentionally modeled this negative behavior. Analyses including natural mentor behavior may have helped to explain this study's null findings regarding natural mentors and substance use.

Additionally, we did not collect data on participant characteristics that may have been related to mentor presence and mentee outcomes (Zimmerman et al. 2005). It is possible that more socially skilled and resourceful youth were more likely to both have a mentor and have more positive psychosocial trajectories. Controlling for participant characteristics would have helped to isolate potential mentoring effects on youth outcomes. Furthermore, understanding why, how, and when mentees seek out and utilize natural mentoring relationships may have helped to explain our findings. In the current study, for example, we may have found that mentees were less likely to turn to mentors for help with decisions about substance use.

Although this study was innovative in its longitudinal approach to studying the potential effects of natural

mentoring relationships, it is useful to note that participants were only asked about the presence of a natural mentor during their senior year of high school. Thus, we cannot be certain whether natural mentors were present in participants' lives prior to this time or in the years following high school. Yet, we found that over half of the natural mentors identified in this study were youth's family members, and a large percentage of non-familial mentors were either god-family or family members' friends. Given the roles of these mentors in participants' lives, it is not unreasonable to speculate that the majority of natural mentoring relationships identified in this study were enduring relationships with adults who had a long history of involvement in youth's lives. In addition, whether or not these mentoring relationships existed prior to or following participants' senior year of high school, the findings of this study indicate that having a natural mentor during this critical time period was likely a vital resource in helping youth to successfully navigate their transition to adulthood. If natural mentors are able to help youth develop self-esteem, coping strategies, and problem-solving and decision-making skills, then these are benefits that mentees can take with them and incorporate into their adult lives after their relationships with their natural mentors terminate (if they do, in fact, terminate). The findings of the current study support the possibility of long-lasting positive effects associated with natural mentoring relationships among African American emerging adults that may persist even if these relationships are discontinued.

In addition, our measure of sexual risk behavior may be somewhat limited. Although we included variables (e.g., frequency of intercourse, frequency of unprotected intercourse) that have been widely used to assess sexual behavior in adolescents and young adults (Capaldi et al. 2002; Fergus et al. 2007), these variables may not necessarily reflect risk behavior for individuals involved in committed, monogamous relationships. While few study participants (less than 7%) married during the 5 years following high school, study participants increasingly reported being in serious relationships throughout these 5 years. Assuming these relationships were monogamous and they were not with high-risk sexual partners, frequency of intercourse and frequency of unprotected intercourse may not have increased participants' risk of contracting HIV or other STIs. Nevertheless, participants were not asked about their own or their partners' level of commitment to these relationships (i.e., whether or not these relationships were monogamous) and relationships among adolescents and young adults tend to be unstable (Fergus et al. 2007). Also, we do not know if participants were in relationships with high-risk sexual partners (e.g., intravenous drug users, men who had unprotected sex with other men), wherein more frequent unprotected intercourse

would increase participants' risk of contracting HIV or other STIs.

Other study limitations include a reliance on self-reported data and the use of a nonrepresentative sample. Although there is a risk of respondent bias when using self-report measures, this risk was reduced in two ways. First, a paper-and-pencil format was used to collect sensitive information about sexual behavior and substance use. This format may have lessened the occurrence of socially desirable responses. Second, the longitudinal study design made consistent bias across time points less likely, especially considering that there may have been a regression to the mean over time. This study's sample consisted of urban, African American adolescents from low-income neighborhoods with eighth grade GPAs at or below 3.0. Although the uniqueness of this sample limits the generalizability of study findings, this is a group of adolescents who are often the focus of social policies and interventions. Thus, insights into how natural mentoring relationships may influence this population may be particularly relevant.

Lastly, our study only focused on the presence or absence of negative adolescent outcomes. Although it is important to determine the potential of natural mentors to protect at-risk youth from negative outcomes, it is also important to determine if natural mentors may foster the development of positive youth outcomes such as leadership and achievement motivation (Scales 2003). Thus, studies that include an assessment of both positive and negative youth outcomes are needed (Lerner et al. 2006) to allow researchers to determine if natural mentors are helping youth to avoid negative outcomes, fostering the development of positive outcomes, or both.

Despite these shortcomings, this study contributes to the literature on natural mentoring in several ways. First, this is one of the only studies to examine the potential influence of natural mentoring relationships on adolescent outcomes longitudinally and during the transition to adulthood. The collection of study data at a single point in time cannot detect more subtle effects over time or delayed effects of mentors. Whereas the findings from the current longitudinal study are indicative of potential long-term effects of natural mentoring relationships and are suggestive of a causal relationship between having a natural mentor and emerging adults' psychosocial outcomes. Second, we controlled for several possible alternate explanations for our results. The fact that our findings stood up to gender, age, SES, and parental support effects, for example, suggests that the findings for natural mentor effects were not spurious. Third, our sample focused on urban, African-American youth from low-income neighborhoods who are often underrepresented in the literature.

Implications

The results of this study highlight the potential of natural mentors to contribute to youth resilience. Our results are particularly meaningful considering that interventions focused on preventing and reducing depression among adolescents and young adults have not demonstrated long-term effects (Andrews et al. 2002; Spence et al. 2005). Furthermore, African American adolescents and young adults are disproportionately affected by STIs such as HIV (Rangel et al. 2006), thus, our findings regarding the potential promotive effects of natural mentors on African American emerging adults' sexual risk behavior are especially relevant. Our findings suggest that incorporating strategies to increase opportunities for natural mentoring relationships to develop within interventions designed to prevent depression or sexual risk behavior may be beneficial. In addition, interventions that create settings that include intergenerational interactions to achieve a common goal may facilitate the formation of long-lasting natural mentoring relationships. Youth Empowerment Solutions for Peaceful Communities (YES), for example, is a violence-prevention program that enlists local youth and neighborhood adults to work together on community improvement projects (Franzen et al. 2009). Efforts to educate parents about the potential promotive effects of natural mentors may also be a useful prevention strategy. If parents were more aware of the potential of these relationships to improve their children's well-being, they may become more invested in creating opportunities for their children to interact with other adults. Furthermore, encouraging extended family members and fictive kin to become involved in youth's lives may also promote the formation of natural mentoring relationships.

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