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The Profundity of the Everyday: Routinized Family Environments in Adolescence Predict Development in Young Adulthood

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Abstract

Purpose: The current study was designed to investigate the unique, long-term effects of routinized family environments during adolescence on multiple developmental domains in young adulthood for rural African Americans.

Methods: Prospective data were collected annually for 6 years from 504 rural African American youth and their parents, beginning when the youth were 16.

Results: Results indicated that youth whose primary caregivers reported more routinized family environments during adolescence reported less alcohol use, greater emotional self-regulation, lower epinephrine levels, and higher rates of college/university enrollment in young adulthood. These effects remained significant for nearly all outcomes with supportive parenting, harsh parenting, household chaos, socioeconomic risk, and sex controlled.

Conclusions: Findings substantiate the benefits of consistent, predictable family environments for healthy development and suggest that family routines constitute an important, yet underdeveloped, factor for adolescents' long-term development.

Keywords

African American; routines; family; self-regulation; alcohol use; education; epinephrine

The rural southeastern United States is one of the most impoverished regions in the country. Poverty and other aspects of disadvantage are powerful influences on children's lives, forecasting lifelong trajectories in cognitive development (1), psychosocial development (2), and physical health (3). Despite their elevated risk, many African American youth who grow up in this region exhibit positive adjustment during adolescence and into young adulthood. Identifying protective factors that contribute to the long-term development of

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rural African American and other at-risk adolescents remains pivotal to public health research and practice.

Decades of research underscore the influence of the immediate family context for adolescents' long-term development (4). To date, most of this research has focused on interpersonal (i.e., functional) aspects of the parent-child relationship, such as supportive parenting practices and overall relationship quality (4). In addition to these often-studied constructs, emerging findings from studies with adolescents (5, 6) as well as prior research with young children (7) converge to suggest that more *structural* aspects of the family environment—such as the degree of consistency, routinization, and stability in the home—may confer similar wide-reaching benefits for youth. Boyce and colleagues (8), in one of the first systematic investigations on the topic, described predictable, repeated, consistent patterns that characterize day-to-day home life—hereafter called family routines—as the fundamental "organizational units of ordinary life in families" (p. 194) that are fundamental to the health and well-being of the family and its individual members. Bronfenbrenner (9) similarly noted that healthy development necessitates an immediate environment characterized by predictability and consistency (see 10). More recently, leading developmental scientists have similarly maintained that predictability in one's environment is of foundational importance to an understanding of human development (11). Consistent with this position, research on family routines with adolescents, although limited, has found associations between the degree of routinization in the home and children's mental health, physical health, academic achievement, and delinquent behavior (5, 12, 13). Research on household chaos has also documented that disorganized and chaotic family environments forecast impaired cognitive, physiological, and psychosocial development in children (14, 15).

The benefits of routinized family environments, if confirmed, have significant implications for broadening basic and applied research with adolescents. Empirical support for the centrality of family routines for adolescent development, however, remains limited in three important ways. First, few studies of family routines have controlled for prominent parenting behaviors (e.g., support, harshness) and other family environment characteristics (e.g., chaos) that are known to influence development (6, 13, 14). Thus, it remains unclear whether predictable, well-structured family environments exert a unique effect on adolescents' development or constitute an artifact of parenting processes and/or levels of household chaos. Second, most research on family routines has concentrated on psychological outcomes with school-aged children (7, 16). Consequently, little empirical work has investigated the long-term effects of family routines during adolescence on outcomes in young adulthood, and few studies have also considered the effects of family routines on non-psychological outcomes at any life stage (for exception, see 6). Third, minority families and those of low socioeconomic status (SES) appear to be underrepresented in this research, despite their elevated risk for experiencing unpredictable, chaotic family environments (10, 17).

To address these limitations, the present study investigated the unique effects of family routines during adolescence across four young adulthood outcomes: alcohol use, emotional self-regulation, epinephrine and norepinephrine levels (biological markers of stress resulting

from sympathetic nervous system activation), and college/university enrollment at age 21. These outcomes were selected because they provide developmentally appropriate constructs in domains for which family routines have proven influential in young children (i.e., behavioral, psychosocial, physiological, and educational). Hypotheses were tested from a well-characterized sample of rural African American adolescents and each youth's primary caregiver, with six waves of data collected yearly, beginning when youth were 16. Analytic models included supportive parenting, harsh parenting, family SES risk, youth sex, household chaos, and baseline measures (as available), thereby ruling out several alternative explanations for the hypothesized association of family routines with young adults' outcomes.

Methods

Participants

The present study included a subsample of participants in a longitudinal study of African American families that began when youth were 11 years of age. All families resided in small towns and communities in rural Georgia in which poverty rates are among the highest in the nation and unemployment rates are above the national average (18). From lists that schools provided of fifth-grade students, 667 families were selected randomly for an initial assessment (see 19). Family routines were first assessed when the youth's mean age was 16 years (M = 16.00; SD = .38). For the current study, we selected individuals who had completed at least the age 16 or age 17 assessment to satisfy requirements for missing data estimation. The final study sample included 504 participants. Comparisons of these 504 youth with the 163 who were not included revealed no differences at study enrollment in parenting practices, youth sex, parental education, or other demographic variables (e.g., poverty status). Of the youth in the final sample, 54% were female. Median family income per month was $1849 ($SD$ = $2583); 46% of the families' incomes were below 100% of the poverty level, and another 21% of the families' incomes were between 100 and 150% of the poverty level.

Procedures

Six waves of data were collected on an approximately annual basis, three during adolescence (mean ages 16, 17, and 18) and three during young adulthood (mean ages 19, 20, and 21). Primary caregivers consented to their minor youth's participation in the study, and minor youth assented to their own participation. Youth 18 years of age and older consented to their own participation. African American field researchers visited families' homes to administer computer-based interviews at each wave of data collection using a standardized protocol. All assessments were conducted in private. Overnight urine voids were collected during all three waves in young adulthood. Participants were compensated $100 at each data collection wave. The study's protocol was approved by the Institutional Review Board of the university at which the research took place.

Measures

Family routines.—Primary caregivers reported on routinization in the family using seven items adapted from the Family Routines Inventory (20). Sample items, which were answered

dichotomously (1 if true, 0 if false), included, “We eat together as a family once a day,” “[Youth] goes to bed at a regular time,” and “Children in my house do regular household chores.” Items were summed, with a possible range of 0 to 7.

Supportive parenting.—Parents reported supportive caregiving practices using four items adapted from a scale that Carver and colleagues (21) developed; parents responded when youth were 16, 17, and 18 years of age. A sample item was, “[Youth] gets emotional support from me” (1 = *not at all true*; 5 = *very true*). Items were summed, and the resulting composite score was averaged across the three waves of data collection (Cronbach’s alpha ≥ .79 at all waves).

Harsh parenting.—Parents’ reports of verbally and physically harsh parenting were assessed using a four-item scale (22); parents responded to this measure when the youth were 16 and 17 years of age. A sample item was, “When [Youth] does something wrong, how often do you blow up at [him/her]?” 1 = *never*; 5 = *always*). Items were summed, and the resulting composite score was averaged across the two waves of data collection (Cronbach’s alpha ≥ .56 at each wave). Low internal consistency for measures of harsh parenting is common in the literature given low base rates of these disciplinary practices (23).

Household chaos.—Chaos and disorganization in the home was assessed using the 15-item Confusion, Hubbub, and Order Scale (24). Parents were asked to indicate as true (1) or false (0) statements about life in their homes. Examples included, “There is often a fuss going on at our home,” and “No matter what our family plans, it usually doesn’t seem to work out.” Items were summed, with a possible range of 0 to 15.

Family SES risk.—Family SES risk was computed from a six-item index of parent-reported sociodemographic factors. Six standard risk indicators were assessed (e.g., primary caregiver noncompletion of high school; family receipt of Temporary Assistance for Needy Families), with each risk factor scored dichotomously (0 if absent, 1 if present; see 19). Items were summed at each wave, with a possible range of 0 to 6. Scores at each wave were then averaged to create an assessment of mean family SES risk during the youth’s high school years.

Alcohol use.—Assessments of the frequency of past-month alcohol use, drawn from the Monitoring the Future study (25), were administered when youth were ages 19, 20, and 21. Youth were asked at each wave, “During the past month, on how many days have you had a drink of alcohol?” (0 = *none*; 5 = *twenty or more*). The mean of responses across the three waves were summed to create a composite score of alcohol use from 19 to 21 years of age.

University enrollment.—Current college/university enrollment was assessed as a demographic variable when youth were age 21. Youth were asked, “Are you currently enrolled in school or any type of educational program?” (1 = *Yes, I am currently enrolled in a four-year college or university;* 0 = *otherwise*). 21% reported enrollment in 4-year college/university at age 21.

Emotional self-regulation.—Youth's emotional self-regulation was assessed as a latent variable with three indicators: self-regulation, emotional reactivity, and hostility. Self-regulation was measured using a 17-item questionnaire (26), emotional reactivity was assessed using a six-item scale (27), and hostility was assessed using an eight-item measure (28). Sample items for self-regulation, emotional reactivity, and hostility were, respectively, "I'm able to accomplish goals I set for myself," "I operate on a short fuse when my emotions are involved," and "You have a lot of anger inside you." Responses ranged from 1 (*strongly disagree*) to 4 (*strongly agree*) for self-regulation and from 1 (*strongly disagree*) to 5 (*strongly agree*) for emotional reactivity and hostility. Items at each wave were summed and then averaged across ages 19 to 21 for each construct; the mean composite scores were used as the observed values for the latent variable. Cronbach's alphas across all waves were ≥ .91 for self-regulation, ≥.63 for emotional reactivity, and ≥.90 for hostility.

Epinephrine and norepinephrine.—The epinephrine and norepinephrine measurement protocol was based on procedures that Evans (29) developed for field studies involving children and adolescents. Details of these protocols in the current sample are reported elsewhere (19). In brief, on the day of each data collection visit participants received instructions and supplies for collecting all urine voided overnight from 8 pm to 8 am. The following morning, a research assistant visited the home and transported the urine to a university laboratory. Epinephrine and norepinephrine were assayed with high-pressure liquid chromatography with electrochemical detection; levels of each biomarker were averaged across the three assessments.

Additional measures at age 16.—To strengthen the causal hypothesis outlined in our conceptual model, we selected additional measures assessed at age 16 to be treated as baseline control variables for each of the outcomes examined. No measures at age 16 were identical to the outcome measures, so we used conceptually similar, developmentally appropriate constructs. For alcohol use, we used a similar one-item measure of past-month alcohol use. For emotional self-regulation, we used youth-reported self-control as measured by eight items from the Children's Self-Control Scale (30) (Cronbach's alpha = .71). For college/university enrollment, we used youth's orientation to schooling as measured via the efficacy subscale of the Academic Orientation Scale that Conger (31) developed (Cronbach's alpha = .80). As no biological data were available from participants prior to age 19, no baseline control for epinephrine and norepinephrine was included.

The online supplement contains a complete list of items and response options for each measure.

Results

Preliminary analyses

Table 1 displays descriptive statistics and bivariate correlations for the sample. Primary caregivers reported engaging in a mean of 4.77 of the seven routines assessed ($SD = 1.56$), with a median of 5 routines across all three waves. The bivariate correlations between family routines and developmental outcomes supported hypothesis testing and statistical modeling. Measures included as baseline control variables were all correlated with their respective

outcome. Missing data were minimal and were handled using full information maximum likelihood estimation. Models were run using Mplus 7.4 software (32).

Latent growth curve models of family routines during adolescence indicated no significant mean change over time across all families ($M = -.08$ [SE = .04]; p = ns) and no significant variability between families in rate of change over time ($\sigma^2 = .20$ [SE = .12]; p = ns). Given these results, scores were averaged so that the resulting composite score indicated mean levels of routines between youth age 16 to 18.

Hypothesis Testing

To test our hypothesis, we constructed a series of models in which alcohol use, epinephrine levels, emotional self-regulation, and university enrollment were predicted from successive blocks of variables: family routines, sociodemographic factors, and baseline control variables (Block 1), parenting variables (Block 2), and household chaos (Block 3). Alcohol use was measured as a zero-inflated Poisson distribution, given the overdispersion of zero values. Emotional self-regulation was modeled as a latent variable (all factor loadings $\lambda \geq .69$). Logistic regression was used for university enrollment.

Table 2 presents results of these analyses for all developmental outcomes. A consistent pattern emerged: Family routines demonstrated significant effects across all outcomes above and beyond the effects of other variables included in the model, including baseline control variables. Specifically, with supportive parenting, harsh parenting, family SES risk, sex, and the age 16 baseline measures controlled (i.e., Blocks 1 and 2), youth whose primary caregivers reported more family routines during adolescence reported less alcohol use during young adulthood and displayed lower epinephrine levels compared with youth from families with fewer reported routines. Family routines during adolescence were also associated positively with youth's emotional self-regulation and college/university enrollment in young adulthood. Odds ratios indicated that every unit of increase in family routines was associated with a 10% increase in the likelihood of college/university enrollment. Even after the addition of household chaos into the model (Block 3), a similar pattern of results appeared. Family routines continued to predict epinephrine levels, emotional self-regulation, and college/university enrollment; the one exception was alcohol use, which household routines no longer significantly predicted.

Significant effects associated with other predictors were sparse. With other variables in the model controlled, neither supportive parenting nor harsh parenting was associated with any other outcomes in young adulthood. For sociodemographic variables, family SES risk was negatively associated with youth's university enrollment at age 21 and, compared with young women, young men reported more alcohol use, evinced higher epinephrine levels, and were less likely to be enrolled at a 4-year college/university at age 21.

Post hoc mediation and moderation analyses

Given these significant findings, subsequent analyses were conducted to investigate (a) emotional self-regulation at age 19 as a mediator for the effects of family routines on alcohol use, epinephrine levels, and university enrollment (following procedures outlined by Hayes (33)), and (b) SES risk as a moderator of the effects of family routines on young

adult outcomes (following procedures outlined by Aiken and West (34). No indirect effects through age 19 emotional self-regulation were significant; the Family Routines × SES risk interaction term also was not significant for any outcome (tabulated results available from the first author), indicating that the effects of family routines did not vary by levels of SES risk.

Summary

In sum, the results confirmed our hypothesis that, among this sample of rural African Americans, routinized and predictable family environments during adolescence would be associated with a variety of positive developmental outcomes in young adulthood above and beyond parenting, household chaos, and sociodemographic variables.

Discussion

Much of family life involves ordinary and repetitious activities: eating meals, doing household chores, getting ready for bed, and so forth. Although commonplace and, at times, seemingly trivial, the degree of predictability and consistency (or lack thereof) in everyday family life appears to have clear implications for adolescent development. From a 6-year prospective study with multi-informant, multi-level data, the current results substantiate the benefits of predictable family environments during adolescence for multiple outcomes in young adulthood for rural African Americans. Notably, the salutary effects of parent-reported family routines during adolescence were documented across behavioral, physiological, psychosocial, and educational domains and were observed to be independent from the effects of supportive parenting, harsh parenting, SES risk, biological sex, and, in most instances, household chaos.

Findings from the current study highlight the developmental significance of routinized family environments during adolescence in addition to young childhood, where most prior research has focused (7, 35). The present findings are also consistent with prior research on the benefits of family routines on multiple domains of development, including psychological and physiological well-being (5). Given emerging research findings suggesting that excelling in the areas of education, psychosocial adjustment, and behavior adjustment can come at a cost for minority youths' physical health (36), there is a clear need for research that identifies processes that simultaneously promote psychological *and* physiological health. The present results suggest that a predictable, consistent family environment may represent such a construct.

The current results also have important implications for applied research and practice, particularly family-centered prevention endeavors. Traditionally, family-centered prevention programs have devoted little attention to family routines and chaos, focusing instead on cognitive-behavioral techniques common to parenting and couple-focused programs (37, 38). Both the current results and others (e.g., 6), however, suggest that enhancing predictability in the family environment may be as influential on children's development as enriching family members' behaviors. In addition, for children residing in chaotic, unpredictable family environments, even well-designed cognitive-behavioral interventions may be ineffective without first addressing instability in the home (39). Previous applied

research efforts focused on modifying household routines to promote children's health behaviors have documented increases in sleep duration and decreases in television viewing among young children (40).

Given non-significant mediation or moderation analyses, future research can continue to investigate mechanisms through which family routines exert this effect in young adults, as well as in persons for whom the effect of family routines is more (or less) pronounced. Future research can also consider factors that account for family routines' prediction of variability in levels of epinephrine, but not norepinephrine. Because the effects of epinephrine are brought about by the adrenal medulla, whereas norepinephrine effects are brought about by the sympathetic nervous system, these results may suggest that routinized family environments more directly shape adrenal activity than the sympathetic nervous system.

Several limitations of the study should be addressed in future research. First, family routines were not assessed prior to youth age 16, precluding examinations of the effect of routines at earlier developmental stages. Second, the lack of observational data limits cross-validation of self-report responses. Third, although statistical models controlled for earlier levels of most outcomes, causality cannot be empirically confirmed given the lack of experimental randomization. These limitations notwithstanding, the results of this study demonstrate the unique predictive significance of family routines during adolescence for rural African Americans' developmental outcomes and provide empirical support for increasing attention to family routines in basic and applied research designed to promote child and family well-being.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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IMPLICATIONS AND CONTRIBUTION

African American adolescents experiencing routinized family environments across ages 16-18 years exhibited, in young adulthood, lower alcohol use and epinephrine levels, higher emotional self-regulation, and greater likelihood of being enrolled in a 4-year university. These effects generally persisted with potential confounding variables of parenting, household chaos, and SES risk controlled.

Table 1

Correlation Matrix and Descriptive Statistics for Study Variables (N = 504)

	1	2	3	4	5	6	7	8	9	10	11	12	13
Outcomes													
1. Alcohol use	---												
2. Epinephrine	0.12												
3. Norepinephrine	−0.01	0.54											
4. Self-regulation	−0.13	0.00	0.06										
5. Emo. reactivity	0.19	−0.00	0.02	−0.53									
6. Hostility	0.22	0.07	−0.01	−0.57	0.58								
7. Univ. enroll. [a]	0.06	−0.06	−0.01	0.19	−0.13	−0.11							
Predictors													
8. Family routines	−0.14	−0.10	−0.04	0.19	−0.15	−0.15	0.16						
9. Supp. parenting	−0.06	−0.06	0.01	0.24	−0.09	−0.11	0.12	0.36					
10. Harsh parenting	0.17	0.02	0.04	−0.14	0.14	0.11	−0.06	−0.13	−0.23				
11. Household Chaos	0.08	0.02	0.05	−0.13	0.15	0.17	−0.10	−0.32	−0.32	0.33			
12. Family SES risk	−0.09	0.01	0.07	−0.10	0.04	0.09	−0.20	−0.02	−0.07	0.05	0.18		
13. Sex [b]	0.11	0.31	−0.05	−0.07	−0.11	0.07	−0.07	−0.04	−0.13	0.00	0.00	−0.01	
M	2.17	6.81	37.36	54.97	16.26	14.41	0.24	4.77	16.96	5.73	3.66	2.25	0.46
SD	2.30	4.78	21.65	7.04	3.60	5.79	N/A	1.56	2.49	1.28	2.12	1.25	N/A
Percent missing	0.00	0.60	0.60	0.00	0.00	0.00	10.51	0.00	0.00	0.00	0.00	0.00	0.00

Note. Descriptive statistics reflect pairwise deletion.

N/A = Not applicable to a dichotomous variable.

Correlations $|r| > .086$ significant at $p < .05$;

Correlations $|r| > .121$ significant at $p < .01$

[a] 1 = Currently enrolled in a 4-year college/university.

[b] 1 = Male.

Table 2.

Main effects of family routines on young adulthood outcomes

	Model 1 (n = 504)			Model 2 (n = 501)				
	Alcohol use (ages 19 – 21) [1]			Epinephrine (ages 19 – 21)			Norepinephrine (ages 19-21)	
	B (se)	B (se)	B (se)	B (β) (se)	B (β) (se)	B (β) (se)	B (β) (se)	
	Block 1	Block 2	Block 3	Block 1	Block 2	Block 3	Block 1	Results of Blocks 2 and 3 not displayed given non-significant results from Block 1
Family routines (ages 16-18)	−0.08 ** (.03)	−0.06 * (.03)	−0.06 (.03)	−0.28 (−.10) * (.13)	−0.29 (−.10) * (.14)	−0.29 (−.10) * (.14)	−0.61 (−.04) (.62)	
SES risk (age 16-18)	−0.06 (.04)	−0.07 (.04)	−0.07 (.04)	0.03 (.01) (.16)	0.03 (.01) (.16)	0.03 (.01) (.16)	1.15 (.06) (.78)	
Youth sex [2]	0.28 ** (.09)	0.28 ** (.09)	0.28 ** (.09)	2.94 (.31) ** (.40)	2.95 (.31) ** (.41)	2.95 (.31) ** (.41)	−2.04 (−.05) (1.93)	
Baseline control (age 16)	0.27 ** (.07)	0.27 ** (.06)	0.27 ** (.06)	---	---	---	---	
Supp. parenting (age 16-18)		−0.01 (.02)	−0.01 (.02)		0.03 (.02) (.09)	0.03 (.01) (.09)		
Harsh parenting (ages 16-17)		0.07 * (.03)	0.06 * (.03)		0.03 (.01) (.16)	0.03 (.01) (.16)		
Household Chaos (ages 16-18)			0.01 (.02)			−0.04 (−.02) (.11)		

	Model 3 (n = 463)			Model 4 (n = 415)		
	Emotional Self-Regulation (ages 19 – 21)			University Enrollment (age 21) [1]		
	B (β) (se)	B (β) (se)	B (β) (se)	Odds Ratio (se)	Odds Ratio (se)	Odds Ratio (se)
	Block 1	Block 2	Block 3	Block 1	Block 2	Block 3
Family routines (ages 16-18)	0.54 (.15) ** (.17)	0.44 (.13) * (.18)	0.41 (.12) * (.18)	1.15 ** (.05)	1.13 * (.05)	1.13 * (.05)
SES risk (age 16-18)	−0.25 (−.06) (.21)	−0.22 (−.05) (.21)	−0.19 (−.05) (.21)	−0.83 ** (.06)	−0.83 ** (.06)	−0.83 ** (.06)
Youth sex [2]	−0.06 (−.01) (.53)	−0.02 (−.00) (.53)	−0.02 (−.00) (.53)	0.89 (.15)	0.90 (.15)	0.90 (.15)
Baseline control (age 16)	0.67 (.51) ** (.07)	0.65 (.49) ** (.07)	0.64 (.49) ** (.07)	1.07 ** (.02)	1.07 ** (.02)	1.07 ** (.02)
Supp. parenting (age 16-18)		0.14 (.06) (.12)	0.12 (.05) (.12)		1.02 (.03)	1.02 (.03)
Harsh parenting (ages 16-17)		−0.31 (−.07) (.21)	−0.28 (−.06) (.21)		0.98 (.05)	0.98 (.05)
Household Chaos (ages 16-18)			−0.10 (−.04) (.14)			0.99 (.05)

Note.

[1]Standardized parameters are not available because alcohol use was modeled as a zero-inflated Poisson distribution.

[2]1 = *university enrollment*. 1 = *male*. Model 1 was estimated using Monte Carlo integration algorithm with restricted maximum likelihood estimation given zero-inflated Poisson distribution. Models 2 was estimated using maximum likelihood estimation and was fully constrained (no model fit indices).

*$p < .05$;

**$p < .01$

Note.

[1]1 = *Currently enrolled in university*.

[2]1 = *male*. Models 3 and 4 were estimated using maximum likelihood estimation. Model 4 was fully constrained (no model fit indices). Model 3 fit: Block 1: $\chi^2(7) = 30.429$ ($p < .01$). CFI = .96; RMSEA = .085, [.06, .12], SRMR = .027. Block 2: $\chi^2(11) = 45.89$ ($p < .01$). CFI = .94; RMSEA = .083, [.06, .11], SRMR = .028. * $p < .05$; ** $p < .01$. Block 3: $\chi^2(13) = 50.78$ ($p < .01$). CFI = .93; RMSEA = .079, [.06, .10], SRMR = .026.

*$p < .05$;

**$p < .01$.