Utilization of Mental Health Services by Minority Urban Adults: Psychosocial Predictors

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ABSTRACT Although most mental disorders have their first onset by young adulthood, there are few longitudinal studies of these problems and related help-seeking behavior. The present study examined some early and current predictors of the use of mental health services among African-American and Puerto Rican participants in their mid-30s. The 674 participants (52.8 % African Americans, 47.2 % Puerto Ricans; 60.1 % women) in this study were first seen in 1990 when the participants attended schools serving the East Harlem area of New York City. A structural equation model controlling for the participants' gender, educational level in emerging adulthood, and age at the most recent data collection showed significant standardized pathways from both ethnicity ($\beta = -0.28$; $z = -4.82$; $p < 0.001$) and psychological symptoms ($\beta = 0.15$; $z = 2.41$; $p < 0.05$), both measured in emerging adulthood, to smoking in the early 30s. That, in turn, was associated with certain physical diseases and symptoms (i.e., respiratory) in the mid-30s ($\beta = 0.16$; $z = 2.59$; $p < 0.05$). These physical diseases and symptoms had a cross-sectional association with family financial difficulty in the mid-30s ($\beta = 0.21$; $z = 4.53$; $p < 0.001$), which in turn also had a cross-sectional association with psychiatric disorders ($\beta = 0.30$; $z = 5.30$; $p < 0.001$). Psychiatric disorders had a cross-sectional association with mental health services utilization ($\beta = 0.65$; $z = 13.25$; $p < 0.001$). Additional pathways from the other domains to mental health services utilization in the mid-30s were also supported by the mediating role of psychiatric disorders. Results obtained from this research offer theoretical and practical information regarding the processes leading to the use of mental health services.

KEYWORDS Smoking, Physical disease, Financial difficulty, Psychiatric disorders, Mental health services utilization

INTRODUCTION

A number of studies have shown that variables such as physical symptoms are related to the utilization of mental health services.^{1–3} However, there are few longitudinal studies assessing the connection between these problems and related help-seeking behavior. The present study examined both the earlier and current predictors of the use of mental health services among African American and Puerto Rican participants in their mid-30s. Investigating the physical and psychosocial factors related to the use of mental health services is important, as many people who need treatment do not take advantage of the available services.^{4,5}

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This study is unique as it includes multiple factors and several developmental stages in a structural equation model that applies aspects of Andersen's Behavioral Model of Health Services.⁶ This model serves as the theoretical foundation for some of the pathways from predisposing factors (i.e., ethnicity and cigarette smoking), to enabling factors (i.e., financial difficulty), and need factors (i.e., psychiatric disorders) to the use of mental health services. Studies finding significant associations between ethnic, economic, and social indicators and psychiatric disorders⁷⁻⁹ are consistent with Andersen's model.⁶

A major advantage of this study is that its design permits the examination of the longitudinal relationships among predisposing factors, enabling factors, and need factors with mental health services utilization. We examine the predictors of mental health services utilization at several major developmental stages covering the lifespan from a mean age of 24 to a mean age of 36. Furthermore, we study an important, but understudied, population consisting of African Americans and Puerto Ricans living in an urban neighborhood of New York City.

Ethnicity has been found to be related to more frequent cigarette smoking.¹⁰⁻¹³ Internalizing behaviors (e.g., depression, anxiety) were associated with cigarette smoking.¹⁴ Brook and colleagues¹⁴ have found that emotional difficulties (e.g., low ego control) and internalizing behavior (e.g., depression) in early adolescence were associated with cigarette smoking from early adolescence until the early 30s.

Many studies have shown that cigarette smoking is associated with a number of physical diseases and symptoms such as lung disease, bronchitis, wheezing, and shortness of breath.^{5,15-19} Smoking can be considered as a mediator variable between ethnicity and physical diseases as well as between psychological symptoms and physical diseases.¹⁵

Physical diseases have been associated with financial difficulty and psychological symptoms.^{15,20,21} Brook and Zhang¹⁵ have reported that there was a significant pathway from earlier lung disease to later financial difficulty, which in turn was associated with later psychological symptoms (i.e., depressive mood) in their longitudinal structural equation model.

Financial difficulty plays a significant role in the prediction of later psychological symptoms^{22,23} and psychiatric disorders.²⁴ Indeed, Santiago and colleagues,²³ in a prospective study, have reported that higher levels of poverty-related stress were related to having more psychological symptoms. Selenko and Batinic²⁵ have also found that increased financial strain was related to poorer mental health. Psychological distress⁵ and psychiatric disorders,^{26,27} in turn, have been linked with the increased use of mental health services.

Psychological symptoms (e.g., depression) were associated with the perception of having poor health in patients with chronic illness.^{28,29} Indeed, Rumsfeld and colleagues²⁹ found that depressive symptoms were the strongest predictors of short-term declines in health status in patients with heart failure. However, other studies suggest that the relationship is bi-directional; that is, physical diseases [e.g., chronic obstructive pulmonary disease (COPD)] are related to psychiatric disorders.^{30,31} Indeed, Kunik and colleagues,³⁰ in a cross-sectional study, reported that the prevalence of anxiety and depressive disorders in patients who have COPD was 65 %.

Since research has shown that gender and higher levels of education are associated with the use of health services, this study controls for both gender and education.³²⁻³⁵ While studies report differences in health care utilization between African Americans and Caucasians and between Latinos and Caucasians, there have not been assessments of differences between African Americans and Latinos.^{36,37}

Still, since there may be differences between African Americans and Puerto Ricans on some of the constructs included in our proposed model, this study includes a measure of ethnicity. Lastly, age is controlled because older participants have had more opportunity to use health care services than younger participants.

Based on the literature, we hypothesize that (1) cigarette smoking will be a mediating factor between earlier psychological symptoms and later physical diseases; (2) physical diseases and symptoms will predict financial difficulty, problems, and worries, which in turn will be related to psychiatric disorders and, ultimately, the utilization of mental health services; (3) earlier psychological symptoms will be associated with later psychiatric disorders and the utilization of mental health services; (4) earlier psychological symptoms will be related to physical diseases/symptoms, which in turn will be associated with later psychiatric disorders; and (5) ethnicity will be associated with smoking, physical disease and symptoms, and psychiatric disorders, which in turn will be related to the utilization of mental health services.

METHODS

Participants

This study uses a subsample of the participants initially seen in 1990 from the Harlem Longitudinal Development Study.^{38,39} At that time, the participants attended 11 schools serving the East Harlem area of New York City. Their mean age was 14.2 years (standard deviation, SD=1.3 years). Starting in 2000–2001 (time A), we were limited to selecting a subsample because budget restrictions reduced the number of participants from whom we could collect data. This subsample includes the 674 participants who completed questionnaires in their mid-30s (i.e., the most recent wave of data collection from 2011 to 2013, time C) when their mean age was 35.9 years (SD=1.4 years). Of this subsample, 52.8 % are African American and 47.2 % are Puerto Rican, 60.1 % are female and 39.9 % are male. The current study also includes data collected when these participants were emerging adults (time A, mean age=24.4 years, SD=1.3 years) and when they were in their early 30s (time B, 2007–2010, mean age=32.2 years, SD=1.3 years).

The Institutional Review Boards (IRB) of the Mount Sinai School of Medicine and of New York Medical College approved the study's procedures for data collections in the earlier waves, and the New York University School of Medicine's IRB approved the study for the most recent two waves. Certificates of confidentiality were obtained from the National Institute on Drug Abuse for each data collection. At each wave, we obtained informed consent from all of the participants.

Measures

The three control variables were the following: (a) *gender* (female=1, male=2); (b) *educational level* in emerging adulthood [8th grade or less=1, 9th grade=2, 10th grade=3, 11th grade=4, 12th grade (or GED)=5, business or technical school=6, college freshman=7, college sophomore=8, college junior=9, college senior=10, postgraduate business, law, medical, masters, or doctoral program=11]; and (c) *age* at the most recent data collection. *Ethnicity* includes African American=1 and Puerto Rican=2.

The *psychological symptoms* domain (i.e., a set of related variables) included the following three scales measured in emerging adulthood: (a) depression⁴⁰ was an eight-item scale; e.g., “How much do you sometimes feel unhappy, sad, or depressed?” Cronbach’s alpha was 0.81. (b) Anxiety⁴⁰ was a three-item scale; e.g., “Over the last few years, how much were you bothered by feeling fearful?” Cronbach’s alpha was 0.77. (c) Interpersonal sensitivity⁴⁰ was a three-item scale; e.g., “Over the last few years, how much were you bothered by feeling easily annoyed or irritated?” Cronbach’s alpha was 0.75. For each of these three scales, the answer options ranged from “not at all (0)” to “extremely (4)” forming a 5-point Likert scale.

The *smoking* variables were the smoking frequencies reported in the early 30s: The participants were asked how many cigarettes they smoked currently. The answer options were none (0), a few cigarettes or less a week (1), 1–5 cigarettes a day (2), about half a pack a day (3), about one pack a day (4), and more than one pack a day (5).

The *physical diseases and symptoms* variable was a 3-item scale. In the mid-30s, the participants reported on the duration of three physical symptoms in the past 12 months: bronchitis, shortness of breath when you were not exercising, and wheezing or gasping. The duration of each disease or symptom in the past year was coded as follows: not in the past year (0), <1 week (1), 1–4 weeks (2), 1–3 months (3), and >3 months (4). Then, an index of physical disease and symptoms in the mid-30s was created by summing the scores for the three symptoms or diseases.

The *family financial difficulty* domain included the following three scales measured in the mid-30s: (a) Financial strain⁴¹ was an eight-item scale; e.g., “How often is it hard to live on your present income?” The answer options ranged from “never (0)” to “almost always (4)” forming a 5-point Likert scale. Cronbach’s alpha was 0.87. (b) Financial problems⁴² was a seven-item scale; e.g., “Because of the current financial situation, how true is it that you find it more difficult to pay for food?” The answer options ranged from “completely untrue (0)” to “definitely true (3)” forming a 4-point Likert scale. Cronbach’s alpha was 0.90. (c) Financial worries (original) was a five-item scale; e.g., “Because of the current financial situation, how worried are you about losing your job?” The answer options ranged from “completely untrue (0)” to “definitely true (3)” forming a 4-point Likert scale. Cronbach’s alpha was 0.84.

The *psychiatric disorders* domain included the following three scales measured in the mid-30s: (a) Major Depressive Disorder (MDD; DSM-IV TR) was assessed using an adaptation of the MINI.⁴³ The participants were asked ten questions (see Table 1). If s/he answered “yes” to one or more of the first two questions, “yes” to five or more of the first nine questions, and “yes” to the last question, the participant received a score of 1 on the measure of MDD; otherwise, the participant received a score of zero. The internal reliability of this measure was satisfactory ($\alpha=0.81$). (b) Generalized Anxiety Disorder (GAD) was assessed using an adaptation of the MINI Generalized Anxiety Disorder measure.⁴⁴ The participants were asked nine questions (see Table 1). If s/he answered “yes” to the first four questions and “yes” to three or more of the last six questions, the participant received a score of 1 on the measure of GAD; otherwise, the participant received a score of zero. The internal reliability of this measure was satisfactory (Cronbach’s alpha was 0.84). (c) Post-traumatic stress disorder (PTSD) was assessed using an adaptation of the PCL-S post-traumatic stress disorder measure.^{45,46} The participants were asked 18 questions (see Table 1). If s/he answered “yes” to the first question, “yes” to one or more of the second through the sixth questions, “yes” to three or more of the

seventh through the 13th questions, and “yes” to two or more of the last five questions, the participant received a score of 1 on the measure of PTSD; otherwise, the participant received a score of zero. The internal reliability of this measure was satisfactory (Cronbach’s alpha was 0.96). All of the data in the present study were based on the participants’ self-reports.

Mental health services utilization in the mid-30s was a single item, “In the last 5 years, how many times have you seen a doctor or other professional for some emotional or psychological problem or symptom?” Answers included none (0), once (1), twice (2), three to five times (3), six to nine times (4), and more than ten times (5). About 16 % of the participants reported having used mental health services at least once in the last 5 years.

Analytic Plan

We used Mplus (Version 6) to perform structural equation modeling (SEM).⁴⁷ Following Newcomb and Bentler,⁴⁸ we controlled for the effects of gender, educational level in emerging adulthood, and age in the mid-30s (i.e., at the most recent data collection). None of the error/residual variables were allowed to correlate. The Mplus Comparative Fit Index (CFI), the root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), chi-square value, and degrees of freedom (*df*) were used to assess the fit of the model.⁴⁹ Values between 0.90 and 1.0 of the CFI indicate an adequate fit.⁴⁷ Values below 0.10 of the RMSEA indicate an adequate fit.⁵⁰ Values below 0.05 of the SRMR indicate an adequate fit.^{51,52}

To assess mediational effects,^{53,54} we calculated the standardized total effects and total indirect effects using the Model Indirect command in Mplus. The standardized total effect equals the sum of the direct and the indirect effects of each earlier latent variable (estimated in the analysis) on mental health services utilization in the mid-30s. The total indirect effect of a latent construct on mental health services utilization is the mediated effect via the intermediate variables that are depicted in the model (see Fig. 1).

Missing Data

Of the 674 participants seen in their mid-30s, 624 were also seen in their early 30s, and 482 were also seen in emerging adulthood. The structural equation algorithm in Mplus dealt with missing data by using maximum likelihood estimation.⁵⁵

RESULTS

Table 2 presents the descriptive statistics, including the means and standard deviations (or percentages) of the dependent, independent, and control variables with comparisons by gender and ethnicity. Women were more educated than men in emerging adulthood and utilized more mental health services in the mid-30s. African-American participants were more educated than Puerto Rican participants in emerging adulthood, smoked more frequently in the early 30s, and were older in the mid-30s (the most recent data collection). Puerto Rican participants as compared to African-American participants reported more physical diseases/symptoms in the early and mid-30s and had more financial worries in the mid-30s.

We tested the measurement model as well as the structural model, controlling for the participants’ gender, their educational level in emerging adulthood, and age in the mid-30s. All factor loadings were significant ($0.56 < \beta < 0.85$, $p < .001$). The CFI

TABLE 1 Diagnostic criteria for major depressive disorder (MDD), generalized anxiety disorder (GAD), and post-traumatic stress disorder (PTSD)

MDD = "Yes" to 1 or more, questions 1–2 + "yes" to 5 or more of questions 1–9 + "yes" to question 10. <i>In the past 5 years, were you:</i>	
1. Depressed or down most of the day, nearly every day, for 2 weeks in a row?	5. Did you talk or move more slowly than normal or were you fidgety, restless or having trouble sitting still almost every day?
2. Much less interested in most things, or much less able to enjoy the things you used to enjoy, most of the time, for 2 weeks?	6. Did you feel tired or without energy almost every day?
3. Was your appetite decreased or increased nearly every day? Or did your weight increase or decrease without your trying intentionally?	7. Did you feel worthless or guilty almost every day?
4. Did you have trouble sleeping nearly every night (i.e., difficulty falling asleep, waking up in the middle of the night, early morning waking, or sleeping excessively)?	8. Did you have difficulty concentrating or making decisions almost every day?
GAD = 'Yes' to questions 1–4 + 'yes' to 3 or more of questions 5–10.	
1. Within the last 5 years, have you had a period of at least 6 months when you worried excessively or were anxious about several things?	9. Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead? Or did you attempt or plan a suicide?
<i>During this period of 6 months or more:</i>	
2. Were these worries present most days?	10. Did these experiences cause significant problems at home, at work, socially, at school or in some other important way?
3. Was it difficult to control the worries or did they interfere with your ability to focus on what you were doing?	6. Did you feel tired or weak, or were you easily exhausted?
4. Did you feel restless, keyed up or on edge?	7. Did you have difficulty concentrating or find your mind going blank?
5. Did you feel tense?	8. Did you feel irritable?
PTSD = "Yes" to question 1 + "yes" to 1 or more of questions 2–6 + "yes" to 3 or more of questions 7–13 + "yes" to 2 or more of questions 14–18.	
1. Have you ever experienced or witnessed or had to deal with an extremely stressful or traumatic event, which included actual or threatened death or serious injury (e.g., rape) to you or someone else?	9. Did you have sleep problems (difficulty falling asleep, waking up in the middle of the night, early morning waking, or sleeping excessively)?
<i>After this experience, was there a period of time (at least a month) when you were bothered by:</i>	
2. Repeated, disturbing memories, thoughts, or images of the stressful experience?	10. Loss of interest in things you used to enjoy?
	11. Feeling distant or cut off from other people?
	12. Feeling emotionally numb or being unable to have loving feelings for

TABLE 1 (continued)

3. Repeated, disturbing dreams of the stressful experience?	those close to you?
4. Suddenly acting or feeling as if the stressful experience were happening again (as if you were reliving it)?	13. Feeling as if your future will somehow be cut short?
5. Feeling very upset when something reminded you of the stressful experience?	14. Trouble falling or staying asleep?
6. Having physical reactions (e.g., heart pounding, trouble breathing, or sweating) when something reminded you of the stressful experience?	15. Feeling irritable or having angry outbursts?
7. Avoiding thinking about or talking about the stressful experience or avoiding having feelings relating to it?	16. Having difficulty concentrating?
8. Avoiding activities or situations because they remind you of the stressful experience?	17. Being "super alert" or watchful, on guard?
9. Having trouble remembering important parts of the stressful experience?	18. Feeling jumpy or easily startled?

FIG. 1 Standardized pathways (z-statistic) to mental health service utilization ($N=674$). Note 1: CFI=0.96, RMSEA=0.06, SRMR=0.04, $\chi^2=138.96$, degrees of freedom=56, $p<0.0001$. Note 2: gender, educational level in emerging adulthood, and age in the mid-30s were statistically controlled. Note 3: ethnicity (African Americans=1, Puerto Ricans=2). Note 4: mean age and its standard deviation in emerging adulthood (A)=24.4 (1.3), in the early 30s (B)=32.2 (1.3), and in the mid-30s (C)=35.9 (1.4).

was 0.96, the RMSEA was 0.06, and the SRMR was 0.04, with each measure indicating an adequate model fit ($\chi^2=138.96$, $df=56$, $p<0.0001$). Figure 1 presents the obtained structural model with the standardized coefficients (β) and z-statistics (in parentheses).

As shown in Fig. 1, the results supported the following major hypothesized pathways: first, ethnicity ($\beta=-0.28$; $z=-4.82$; $p<0.001$) and psychological symptoms ($\beta=0.15$; $z=2.41$; $p<0.05$), both in emerging adulthood, were associated with smoking in the early 30s. Smoking in the early 30s, in turn, was associated with physical diseases and symptoms in the mid-30s ($\beta=0.16$; $z=2.59$; $p<0.05$). Second, physical diseases and symptoms in the mid-30s were associated with family financial difficulty in the mid-30s ($\beta=0.21$; $z=4.53$; $p<0.001$), which in turn was associated with psychiatric disorders in the mid-30s ($\beta=0.30$; $z=5.30$; $p<0.001$). Psychiatric disorders in the mid-30s were strongly associated with mental health services utilization in the mid-30s ($\beta=0.65$; $z=13.25$; $p<0.001$). Third, psychological symptoms in emerging adulthood were also directly associated with psychiatric disorders in the mid-30s ($\beta=0.30$; $z=5.47$; $p<0.001$). Fourth, psychological symptoms in emerging adulthood were also directly associated with physical diseases and symptoms in the mid-30s ($\beta=0.19$; $z=4.02$; $p<0.001$), which in turn were associated with psychiatric disorders in the mid-30s ($\beta=0.30$; $z=5.30$; $p<0.001$), and ultimately associated with mental health services utilization in the mid-30s. Although not hypothesized, another direct pathway from psychological symptoms in emerging adulthood (mean age=24) to family financial difficulty in the early 30s ($\beta=0.37$; $z=7.90$; $p<0.001$) was found.

Table 3 presents the results of the total effect analyses. As shown in Table 3, each of the latent/manifest variables except ethnicity and smoking in the mid-30s had a significant total effect ($p<.05$) on mental health services utilization. Among them, psychiatric disorders had the greatest total effect on mental health service utilization ($\beta=0.65$; $z=13.25$; $p<0.001$) in the mid-30s. Psychological symptoms in emerging adulthood had the next greatest total effect on mental health service utilization in the mid-30s ($\beta=0.28$; $z=7.90$; $p<0.001$).

DISCUSSION

In the current research, we investigated interpersonal and intrapersonal factors associated with the utilization of mental health services using aspects of Andersen's theory of access to medical care.⁶ A structural equation model assessing aspects of

TABLE 2 Means with standard deviations or percentages and comparison tests by gender and ethnicity (χ^2 or t statistic)

	Mean (SD) or %		Gender (F = 60 %; M = 40 %)	Mean (SD) or %		Ethnicity (AA = 53 %; PR = 47 %)
	F	M		AA	PR	
Demographic variables						
Educational level in emerging adulthood	7.92 (2.37)	7.27 (2.30)	$t=3.06^{**}$	8.03 (2.29)	7.22 (2.36)	$t=3.78^{***}$
Age in the mid-30s	35.90 (1.34)	35.93 (1.49)	$t=-0.25$	36.07 (1.48)	35.74 (1.29)	$t=3.04^{**}$
Psychological symptoms						
Depression in emerging adulthood	1.85 (0.53)	1.78 (0.58)	$t=1.45$	1.79 (0.53)	1.86 (0.58)	$t=-1.79$
Anxiety in emerging adulthood	2.01 (0.79)	1.87 (0.82)	$t=2.21^{*}$	1.90 (0.77)	2.01 (0.84)	$t=-1.59$
Interpersonal sensitivity in emerging adulthood	2.80 (0.96)	2.67 (1.07)	$t=1.67$	2.76 (0.96)	2.74 (1.05)	$t=0.22$
Smoking						
Smoking in the early 30s	0.32 (0.64)	0.47 (0.71)	$t=-1.94$	0.59 (0.83)	0.23 (0.47)	$t=4.60^{***}$
Physical diseases and symptoms						
Physical diseases/symptoms in the mid-30s	1.23 (2.16)	1.11 (2.09)	$t=0.74$	0.95 (2.04)	1.44 (2.20)	$t=-3.00^{**}$
Family financial difficulty						
Financial strain in the mid-30s	2.05 (0.83)	2.04 (0.82)	$t=0.18$	2.03 (0.84)	2.07 (0.80)	$t=-0.56$
Financial problems in the mid-30s	2.37 (0.81)	2.43 (0.85)	$t=-0.92$	2.36 (0.83)	2.43 (0.82)	$t=-1.03$
Financial worries in the mid-30s	2.13 (0.83)	2.05 (0.84)	$t=1.14$	2.00 (0.80)	2.22 (0.85)	$t=-3.26^{**}$
Psychiatric disorders						
Major depressive episode in the mid-30s	17.53 %	15.99 %	$\chi^2=0.27$	15.73 %	18.24 %	$\chi^2=0.75$
Generalized anxiety disorder in the mid-30s	14.32 %	9.29 %	$\chi^2=3.78$	10.67 %	14.15 %	$\chi^2=1.88$
Post traumatic stress disorder in the mid-30s	9.88 %	8.55 %	$\chi^2=0.34$	10.11 %	8.49 %	$\chi^2=0.52$
Mental health services utilization						
Mental health services utilization in the mid-30s	0.58 (1.35)	0.29 (0.91)	$t=3.25^{**}$	0.40 (1.15)	0.53 (1.27)	$t=-1.39$

Mean age and its standard deviation in emerging adulthood = 24.4 (1.3), in the early 30s = 32.2 (1.3), and in the mid-30s = 35.9 (1.4). Answer options: *gender* (female = 1, male = 2); *ethnicity* (African American = 1, Puerto Rican = 2); *educational level* in emerging adulthood (8th grade or less = 2, 9th grade = 3, 10th grade = 4, 11th grade = 5, 12th grade (GED) = 6, business or technical school = 7, college freshman = 8, college sophomore = 9, college junior = 10, college senior = 11, postgraduate business, law, medical, masters, or doctoral program = 12); *depression* in emerging adulthood, *anxiety* in emerging adulthood, and *interpersonal sensitivity* in emerging adulthood—"not at all (1)" to "extremely (5)"; *smoking* in the early 30s—none (0), a few cigarettes or less a week (1), 1–5 cigarettes a day (2), about half a pack a day (3), about one pack a day (4), and more than one pack a day (5); *physical disease and symptoms* in the mid-30s—not in the past year (0), <1 week (1), 1–4 weeks (2), 1–3 months (3), >3 months (4); *financial strain* in the mid-30s—"never (0)" to "almost always (4)"; *financial problems* in the mid-30s and *financial worries* in the mid 30s—"completely untrue (1)" to "definitely true (4)"; *mental health services utilization* in the mid-30s—none (0), once (1), twice (2), 3–5 times (3), 6–9 times (4), and more than 10 times (5)

F Female, M male, AA African American, PR Puerto Rican

* $p < .05$; ** $p < .01$; *** $p < .001$

TABLE 3 Standardized total effects (z-statistic) of psychiatric disorders in the mid-30s, family financial difficulty in the mid-30s, physical diseases and symptoms in the mid-30s, smoking in the early 30s, psychological symptoms in emerging adulthood, and ethnicity on mental health services utilization in the mid-30s

Independent construct	Mental health services utilization in the mid-30s	
	Standardized total effects (z-statistic)	Standardized total indirect effects (z-statistic)
Psychiatric disorders in the mid-30s	0.65 (13.25)***	NA
Family financial difficulty in the mid-30s	0.19 (3.61)***	0.20 (4.69)***
Physical diseases and symptoms in the mid-30s	0.09 (1.96)*	0.16 (4.73)***
Smoking in the early 30s	0.01 (1.55)	0.01 (1.55)
Psychological symptoms in emerging adulthood	0.28 (7.90)***	0.28 (7.90)***
Ethnicity	0.01 (1.11)	0.01 (1.11)

NA not applicable
 * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$
 Mean age and its standard deviation in emerging adulthood=24.4 (1.3), in the early 30s=32.2 (1.3), and in the mid-30s=35.9 (1.4). Gender, educational level in emerging adulthood, and age in the mid-30s were statistically controlled. Ethnicity (African Americans=1, Puerto Ricans=2)

the theory supported the majority of the hypothesized pathways. First, the association of both earlier psychological symptoms and ethnicity with later physical diseases and symptoms was partially but not completely mediated by cigarette smoking. Second, physical disease and symptoms predicted family financial difficulty, which in turn was related to psychiatric disorders and, ultimately, to the utilization of mental health services. Third, earlier psychological symptoms were associated with later psychiatric disorders, which in turn were related to mental health services utilization. Fourth, earlier psychological symptoms were associated with physical diseases/symptoms, which in turn were related to later psychiatric disorders and, ultimately, to the utilization of mental health services.

Our findings contribute to the literature in four important ways. First, the analysis reports results covering several significant stages of development over a period of 12 years, beginning when the participants were in emerging adulthood (mean age 24) and continuing into their mid-30s. Second, to our knowledge, this is the first study of some of the longitudinal predictors of mental health services utilization in adulthood assessed in a sample of urban African Americans and Puerto Ricans. Third, our findings indicated that the following variables mediate the relationship between psychological symptoms in emerging adulthood and the use of mental health services: smoking, physical diseases and symptoms, family financial difficulty, and psychiatric disorders. Fourth, we investigate the relationship between physical diseases/symptoms, family financial difficulty, and psychiatric disorders and mental health services utilization in adulthood in the context of SEM. The use of SEM enables us to assess the multiple pathways from ethnicity, psychological symptoms, and cigarette smoking in emerging adulthood and in the early 30s to mental health services utilization in the mid-30s.

Overall, our findings extend aspects of Andersen's Behavioral Model of Health Services Use.⁶ In accord with Andersen's model, our findings support some of the mechanisms that operated between predisposing factors (i.e., ethnicity, psychological symptoms, and cigarette smoking) and the use of mental health services. These predisposing factors were related to the enabling factors (i.e., physical diseases/symptoms and family financial difficulty), which, in turn, were related to the need

factor (i.e., psychiatric disorders). The need factor was strongly associated with the use of mental health services.

Consistent with Andersen's model,⁶ numerous cross-sectional and longitudinal studies have found relationships between cigarette smoking and physical diseases and symptoms (e.g.,^{15–17}). Investigators also reported a relationship between earlier psychological symptoms and later physical diseases and symptoms.^{15,56} Our findings are consistent with the findings of other investigators since psychological symptoms in emerging adulthood were related to physical diseases and symptoms later in adulthood,⁵⁶ which, in turn, were related to psychiatric disorders in adulthood.³⁰ One possible mechanism for this association is that psychological symptoms might increase the risk for both cigarette smoking and physical disease.¹⁵

Our results demonstrated that physical disease/symptoms preceded family financial difficulty, which in turn was associated with psychiatric disorders. These results are in accord with previous research.^{24,57,58} One of the mechanisms by which financial difficulties may affect psychiatric disorders is perceived stress. Stress over an extended period of time is related to mental health problems such as depression.^{59,60} Indeed, Hammen and her colleagues⁵⁹ have found that chronic and acute stresses were significantly associated with depression.

African Americans as compared to Puerto Ricans smoked more often in this sample. Understanding the sources of the differences between these two ethnic groups would be an important contribution to the field. Implementing tobacco control programs that reach specific racial/ethnic groups living in the USA with culturally appropriate interventions might reduce cigarette smoking among members of those groups.

The path from psychological symptoms in emerging adulthood to psychiatric disorders in the mid-30s reflected a strong association. These results are especially striking as there was over a 12-year span between the measurement of psychological symptoms in emerging adulthood and psychiatric disorders in the mid-30s. Furthermore, our previous research reported that psychological symptoms and disorders in late adolescence were associated with psychological symptoms in emerging adulthood.⁶¹ Other investigators have also found that psychological symptoms are stable over time (e. g.,^{62,63}). A consistent family environment and/or genetic predispositions might be contributing to the significance of psychological symptoms as a predictor of psychiatric disorders. This study's path from psychological symptoms in emerging adulthood to psychiatric disorders and mental health services utilization in the mid-30s was consistent with the findings of other investigators.^{26,27,63}

Our findings demonstrated that psychological symptoms are related to physical diseases and symptoms, which, in turn, are associated with psychiatric disorders. According to Rumsfeld and his colleagues,²⁹ "depressive symptoms are the strongest predictors of short-term declines in health status in patients with heart failure." This is also consistent with the other investigators who have found that physical diseases (e.g., COPD) are related to psychiatric disorders.^{15,30,31}

Limitations and Strengths

This study has several limitations. First, the measures used in this study were based on self-report and may include some respondent bias (e.g., individuals with negative affect might over-report depressive symptoms) or the under-reporting of cigarette smoking or doctor visits for a psychological problem. However, self-reported data has been used in a number of survey studies^{64,65} and has been found to have adequate reliability and validity. Second, the findings of this study are based on African American

and Puerto Rican adults living in an urban area. This may affect the generalizability of the findings to other populations. Third, we did not include genetic measures, although there is some evidence for the relationship of genetics to psychiatric disorders and, ultimately, to mental health services utilization.⁶⁶ Future research needs to identify the underlying mechanisms of similarity in mental health services utilization between a sample of youth and their parents, as well as the interaction of genetic and environmental influences on mental health services utilization.

Despite these limitations, the study has a number of strengths and adds to the literature in several significant ways. First, unlike research that focuses on one point in time, we assess variables over a span of 12 years. The prospective nature of the data allowed us to go beyond a cross-sectional analysis and to consider the temporal sequencing of variables. As noted earlier, a major contribution of the paper is a set of findings relating earlier predictors of psychiatric disorders to the utilization of mental health services in adulthood. Finally, we used Andersen's⁶ comprehensive behavioral model as a framework to assess the relationship of the interplay of psychological and physical functioning to the utilization of mental health services.

CONCLUSIONS

Our findings document the association between psychological symptoms and the utilization of mental health services through three time periods. More specifically, the relation of psychological symptoms to mental health services utilization is partially mediated by the participants' cigarette smoking. This indicates the importance of early intervention with a focus on cigarette smoking.

This study also suggests that early psychological symptoms predict later physical disease and symptoms, family financial difficulty, psychiatric disorders, and, via this path, increased use of mental health services in adulthood. Therefore, in addition to focusing on psychological symptoms and physical diseases and symptoms, health care providers should aim to reduce psychiatric disorders during the mid-30s, which ultimately may lead to a decrease in the need for and the use of mental health services.

Furthermore, several studies have showed that the strong association between economic stress and psychological symptoms.^{25,67} From a public health perspective, the government should consider programs for helping individuals cope with their financial difficulties which might ultimately reduce the need for mental health services. In conclusion, the results obtained from this research offer theoretical and practical information regarding the process leading to the use of mental health services.

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