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Psychosocial Predictors of Mental Health Service Utilization among Women During their Mid-Sixties

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Abstract

This longitudinal study examined the longitudinal pathways to the utilization of mental health services among women in their mid-sixties. Earlier educational level, psychological symptoms, cigarette use, and physical diseases, and later psychological symptoms were examined as predictors of mental health services utilization. The sample consisted of a prospective cohort of women (N=511) who were followed from young adulthood (mean age = 32) to late midlife (mean age = 65). Using structural equation modeling, the results supported a mediational model showing that earlier low educational level and greater psychological symptoms predicted increased cigarette smoking. Cigarette smoking predicted later physical diseases and symptoms. Physical diseases and symptoms were related to financial difficulty and later psychological symptoms and, ultimately, the use of mental health services.

Keywords

Health services utilization; mental health services; women in midlife

Introduction

At the present time, there is increased interest in factors promoting older women's mental and physical health ("Moving into the future with new dimensions and strategies").¹ Women's longevity exceeds that of men, on average, by approximately 5 years.² At the same time, women are more likely to suffer from chronic and debilitating illnesses, including depression.³ It is estimated that 85% of older women have a chronic disease or disability.² Women are an estimated 50 – 100% more likely than men to experience depressive disorders.⁴ Longer life spans combined with higher levels of psychiatric morbidity thus result in a greater need for mental health care services for women in late old age. This need is even more pressing among women who are tobacco users.⁵

However, there is little research examining what sequence of factors predict the use of mental health services among older women, and even less research using longitudinal data from several developmental periods. The current study was designed to address this gap by

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examining the longitudinal pathways to the use of mental health services use among women in late midlife drawing on rich longitudinal data collected over two decades of these women's lives. Identifying developmental pathways to the use of health services by women in late midlife can inform both health care policy makers, as well as health care practitioners in their efforts to tailor treatments and interventions to the specific needs of older women.

Andersen's Behavioral Model of Health Services Use⁶ was used as a theoretical framework for predicting mental health services use among women in late midlife. According to Andersen's *Behavioral Model of Health Services Use*,⁶ the following constructs determine individuals' use of health care services: (1) predisposing factors, (2) enabling resources/barriers, and (3) the need for services.

Predisposing Factors include predictors that exist before the acute need for health services use arises, but influence individuals' likelihood of service use.^{6,7,8} They include demographic characteristics and indicators of social structure.^{6,8} Predisposing factors can also include psychological characteristics,⁶ as well as relevant historical factors, such as previous illnesses and life events which predispose individuals to the use of services.⁹ In this study, predisposing factors were operationalized by the individual's educational level in 1983, her history of tobacco use (1983–1992), and indicators of earlier psychological problems (1983). *Need for services* was operationalized by physical diseases (1994–2009) and psychological symptoms in 2009. Among the *Enabling Resources*, we included the opposite of an enabling factor, a barrier to the use of services, namely, current financial difficulty. The hypothesized pathways linking these domains are depicted in Figure 1.

Educational inequality is one of the predictors of disparities in physical health.^{10,11} People with higher levels of education have consistently been found to be in better health than the less educated.^{e.g., 12} For example, lower levels of education were found to be associated with a greater likelihood of suffering from diabetes, hypertension, and cardiovascular disease.¹³ Health behaviors account for some of these disparities.¹⁴ One important health behavior intervening between low levels of education and physical disease is cigarette smoking.^{11, 14} Low levels of education and poor educational achievement are related to cigarette smoking.^{15–19}

Similarly, psychological symptoms, particularly internalizing pathology (e.g., depression and anxiety), are predictive of lower levels of physical health.^{20, 21} Especially among older people, depressive symptoms seem to influence physical well-being and functioning to a great degree.^{22, 23} For example, Penninx and colleagues (1998)²³ found that in a large study of older people, depression was predictive of a decline in physical performance four years later.

This relationship between psychological symptoms and physical ill health may also be partially mediated by smoking. For example, Orlando et al. (2001)²⁴ suggest that smoking may be driven by psychological distress in an attempt to ameliorate negative affect. Supporting this notion, Brook et al.²⁵ found that earlier internalizing problems were predictive of being an early-starting/continuous smoker. Smoking, in turn, contributes to a number of physical diseases such as cancer, cardiothoracic illness, lung disease, and

diabetes.^{26, 27–31} Smoking, thus, likely serves as a partial mediator between a low educational level, psychological symptoms, and physical disease.

Physical diseases, in turn, have been found to predict financial difficulty and psychological symptoms.^{27, 32} This might be particularly true among the elderly. For example, Williamson and Schulz³² found that among elderly outpatients indicators of ill health (objective and self-report) explained a significant amount of variance in depressive symptoms. Brook and Zhang²⁷ found that people suffering from chronic lung disease were more likely to experience financial difficulty, possibly due to their inability to work while ill.

Financial difficulty plays a significant role in the prediction of later psychological symptoms.^{33, 34} For example, Selenko and Batinic³⁵ found that increased financial strain was related to poor mental health. Williamson & Schulz (1992)³² reported that financial worries explained a significant amount of variance in depressive symptoms above and beyond self-reports and doctors' ratings of elderly out-patients' health problems. Psychological distress, in turn, predicts the increased use of mental health services.²⁶

The present longitudinal study examined the developmental pathways to the use of mental health services among women in late midlife. There is a dearth of longitudinal studies incorporating several dimensions of psychosocial and physical functioning related to the use of mental health services, especially among women in late midlife. Exploring the developmental sequence of physical and psychosocial factors predicting the use of mental health services is important, given the increasing longevity and the associated need for health care services of older women.

Hypotheses

It was hypothesized that: 1) the longitudinal pathways from earlier psychological symptoms to later physical diseases and from low educational level to later physical diseases would be, in part, mediated by cigarette smoking; 2) physical diseases and symptoms would predict family financial difficulty and psychological symptoms, which in turn would be related to the utilization of mental health services; 3) earlier psychological symptoms would predict psychological symptoms later in life and, ultimately, the utilization of mental health services.

Method

Participants and Procedure

The women in this study are part of a community-based random cohort of mothers and youths who resided in two upstate New York counties (Albany and Saratoga) in 1975. The original sampled families were chosen to be representative of families living in these counties with regard to gender, family intactness, family income, and education. There was a close match of the participants' family income, education, and family structure with data reported by the 1980 Census.

Interviews of the participants were conducted in 1983 (N=772; $\bar{X}$ age=40), 1985–1986 (N=717; $\bar{X}$ age=43), 1992 (N=719; $\bar{X}$ age=48), and in 2009 (N=511; $\bar{X}$ age=65).

Extensively trained and supervised lay interviewers administered interviews in private in 1983, 1985–1986, and 1992. In 2009, the participants were given self-administered questionnaires. Written informed consent was obtained from each participant at each wave. The Institutional Review Boards of the Mount Sinai School of Medicine and the New York University School of Medicine approved the procedures used in this research study. Additional information regarding the study methodology is available.³⁶

Each of the 511 women who participated in 2009 also participated at least twice between 1983 and 1992. The mean age in 2009 was 65.3 years, with a standard deviation of 6.2 years. Of the 511 women, 66.1% were married, 15.7% were divorced, 17.6% were widowed, and 0.6% were never married; 40% reported some college attendance in 1983. Of the 511 women, 36.7% smoked in 1983, 34% smoked in 1985–1986, 28% smoked in 1992, and 14.8% smoked in 2009.

Of the 261 women who participated in 1983 but not in 2009, 104 women died, 27 refused to participate, and 130 were lost to follow-up. The participation rate in 2009 was 76.5% of those participating in 1983, after eliminating those who died. Information about the causes of death was available for 64 (62%) of these women. The most frequently reported causes of death were: cancer other than lung cancer (45%), heart disease/vascular disease (25%), lung cancer (6%), and emphysema (5%). The 1983 smoking rate of the 511 women who remained in the study in 2009 was significantly lower than the 1983 smoking rates of the a) 157 women who were lost to follow-up and b) the 104 women who died (36.7%, 41.9%, and 50.5%, respectively; $\chi^2(2)=7.2$, $p\text{-value}=0.03$). The 511 women had significantly higher educational levels in 1983, compared with the 157 women who were lost to follow-up ($t=5.97$, $p<0.001$). The 511 women also had significantly higher educational levels in 1983, compared with the 104 women who died ($t=3.26$, $p<0.01$). There were no significant differences among those 511 women who were included, those 157 women who were lost to follow-up, and the 104 women who died on the measure of anxiety.

Measures

Measures were selected to represent predisposing factors, enabling resources/barriers, and need for services as theorized by the Behavioral Model of Health Services Use.⁶ The predisposing factors of interest were early psychological symptoms, cigarette smoking and educational level. Need for services consisted of current psychological symptoms and physical diseases. The enabling factor/barrier of interest was family financial difficulty.

Educational level in 1983—In 1983, the participants reported their highest grade or year of school they had completed by the time of the interview, which ranged from 0 to 20 years.

Psychological symptoms in 1983 (adapted)—This latent variable consisted of three manifest variables: A) Depression [5 items scored on a 5-point scale: not at all (0) to extremely (4); $\alpha=.80$; Sample item: Within the past few years, how much were you bothered by feeling low in energy or slowed down?],³⁷ B) Anxiety [4 items scored on a 5-point scale: not at all (0) to extremely (4); $\alpha=.74$; Sample item: Within the past few years, how much were you bothered by feeling nervous or shaky inside?],³⁷ and C) Interpersonal sensitivity [5 items scored on a 5-point scale: not at all (0) to extremely (4);

alpha=.71; Sample item: Within the past few years, how much were you bothered by feeling easily annoyed or irritated by others?].³⁷

Psychological symptoms in 2009 (adapted)—This latent variable consisted of five manifest variables: A) Depression [8 items scored on a 5 point scale: not at all (0) to extremely (4); alpha=.90; Sample item: Within the past five years, how much were you bothered by feeling hopeless about the future?];³⁷ B) Anxiety [3 items scored on a 5 point scale: not at all (0) to extremely (4); alpha=.85; Sample item: Within the past five years, how much were you bothered by feeling fearful?];³⁷ C) Phobic anxiety [4 items scored on a 5 point scale: not at all (0) to extremely (4); alpha=.81; Sample item: Within the past five years, how much were you bothered by feeling afraid in open spaces or on the street?];³⁷ D) Hostility [4 items scored on a 5 point scale: not at all (0) to extremely (4); alpha=.80; Sample item: Within the past five years, how much were you bothered by temper outbursts that you could not control?];³⁷ and E) Paranoid Ideation [3 items scored on a 5 point scale: not at all (0) to extremely (4); alpha=.66; Sample item: Within the past five years, how much were you bothered by feeling others are to blame for most of your troubles?].³⁷

Cigarette smoking 1983–1992—This latent variable consisted of three manifest variables. At each wave of data collection (T2–T4), the participants were asked to report on the frequency of their cigarette smoking. The frequency was rated as none (0); less than half a pack a day (1); half a pack to one pack a day (2) and; more than one pack a day (3).

Family financial difficulty in 2009—This latent variable consisted of three manifest variables: A) Financial strain [7 items scored on a 5 point scale: never (0) to almost always (4); alpha=.90, Sample item: How often is it hard to live on your present income?];³⁸ B) Financial problems [14 items scored on a 4 point scale: completely untrue (0) to definitely true (3); alpha=.90; Sample item: Because of the current economic condition, how true is it that you find it more difficult to pay for medical bills?];³⁹ C) Financial worries [5 items scored on a 4 point scale: completely untrue (0) to definitely true (3); 4-item scale; alpha=.79; Sample item: Because of the current economic condition, how worried are you about losing your job? (Original)].

Physical diseases in 1994–2009 and symptoms in 2009—This latent variable consisted of two manifest variables. In 2009, participants reported on the occurrences of 14 physical diseases in the past 15 years (1994–2009): allergies, diabetes, chronic joint or muscular pain, chronic gastrointestinal problems, chronic obstructive pulmonary disease (COPD), heart disease, asthma, chronic bronchitis, emphysema or chronic lung disease, lung cancer, thyroid problems, neurobiological/neuromotor disorders, osteoporosis, and osteopenia. Each disease was coded as “present” (1) or “not” (0). Then a cumulative index of physical diseases in 1994–2009 was created by averaging the individual variables.

In 2009, participants also reported on the duration of 19 physical symptoms in the past 12 months: allergies, sinus trouble, sore throat or colds, runny nose or sneezing, coughing spells, chest colds, bronchitis or pneumonia, shortness of breath, wheezing or gasping, hypertension, headaches, appetite loss, stomach flu or virus, gum problems, urinary problems, difficulty thinking or concentrating, trouble sleeping, trouble getting started in the

morning, and feeling so unwell that you stayed at home most or all of the day. Each disease or symptom was coded as follows: not in the past year (0), less than one week (1), one to four weeks (2), one to three months (3), more than 3 months (4). Then a cumulative index of physical symptoms in 2009 was created by averaging the individual variables.

Mental health services utilization in 2009—Participants reported the number of times they had seen a doctor or other professional for their emotional or psychological problems or symptoms in the last twelve months. Answers included none (0), once (1), twice (2), 3 to 5 times (3), 6 to 9 times (4), and more than 10 times (5). About 9% of the participants reported having used mental health services at least once in the last twelve months.

Data Analysis

A latent variable structural equation model was used to examine the empirical validity of the hypothesized pathways. To account for the influences of the participant's age and original residency in Albany or Saratoga counties on these pathways, residual variables were created by statistically partialing out the effects of age and original residency from each of the manifest variables. Using the Mplus software,⁴⁰ the residual variables were used to estimate the proposed model. The full information maximum likelihood (FIML) option in Mplus⁴⁰ was used to impute any missing data. Less than 5% of the participants had any missing data. The advantage of FIML is that the results are less likely to be biased even if the data are not missing completely at random.⁴¹ The correlation matrix of the resulting data is computed and called the partial correlation matrix. The partial correlational matrix was used as input for the SEM analysis, and three fit indices were chosen to assess the fit of the model: (1) the root mean square error of approximation (RMSEA); (2) Bentler's comparative fit index (CFI);⁴² and (3) the standardized root mean square residual (SRMR). Values between .90 and 1.0 on Bentler's CFI indicate that the model provides a good fit to the data.⁴³ Values for the RMSEA and the SRMR below .10 indicate a good fit. In order to test for mediational effects,^{44, 45} the standardized total effects and total indirect effects were calculated 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 service utilization in 2009. The total indirect effect of a latent construct on health service utilization is the mediated effect via the intermediate variables that are depicted in the model (see Figure 1).

Results

Table 1 presents the descriptive statistics, including means and standard deviations of the dependent, independent, and control variables. With regard to the measurement model, all factor loadings were significant ($p < .001$), showing that the manifest variables were satisfactory measures of the latent constructs. The RMSEA was .055; Bentler's comparative fit index⁴² was .95; and the SRMR was .045. These results reflect a satisfactory model fit. The obtained path diagram, along with the standardized regression coefficients and z-statistics, are depicted in Figure 1.

As shown in Figure 1, the results supported the following major hypothesized pathways: First, educational level in 1983 ($B = -.17$; $z = -3.78$) and psychological symptoms in 1983

($B=.16$; $z=3.33$) were negatively and positively associated (respectively) with smoking in 1983–1992. Smoking, in turn, was associated with physical diseases and symptoms in 1994–2009 ($B=.16$; $z=2.50$). Physical diseases and symptoms in 1994–2009 were associated with family financial difficulty in 2009 ($B=.24$; $z=3.81$), which, in turn, was associated with psychological symptoms in 2009 ($B=.31$; $z=5.48$), which, ultimately, was associated with mental health service utilization in 2009 ($B=.28$; $z=3.21$). Second, educational level in 1983 was inversely associated with family financial difficulty in 2009 ($B=-.23$, $z=-5.56$), which, in turn, was indirectly associated with mental health service utilization in 2009, as mediated by psychological symptoms in 2009. Third, psychological symptoms in 1983 were also directly associated with the following latent variables: a) physical diseases & symptoms in 1994–2009 ($B=.36$; $z=6.60$); b) family financial difficulty in 2009 ($B=.19$; $z=3.40$); and c) psychological symptoms in 2009 ($B=.32$; $z=5.98$). The latter variables were, in turn, directly and indirectly associated with mental health service utilization in 2009. Fourth, physical diseases and symptoms in 1994–2009 were also directly associated with psychological symptoms in 2009 ($B=.28$, $z=4.29$), which, in turn, were directly associated with mental health service utilization in 2009. Fifth, there was a direct association between physical diseases and symptoms in 1994–2009 and mental health service utilization in 2009 ($B=.13$; $z=1.86$).

Table 2 presents the results of the total effect analyses. As shown in Table 2, each latent/manifest constructs had a significant total effect ($p<0.05$, two-tailed test). Among them, psychological symptoms in 2009 ($B=.28$; $z=3.21$; $p<.001$) had the greatest total effect on mental health service utilization in 2009. Physical diseases and symptoms in 1994–2009 ($B=.25$; $z=3.69$; $p<.001$) had the next greatest total effect on mental health service utilization. Tests of the indirect effects of educational level in 1993, smoking in 1983–1992, psychological symptoms in 1983, physical diseases & symptoms in 1994–2009, and family financial difficulty in 2009 on mental health service utilization in 2009, as mediated by psychological symptoms in 2009, were all statistically significant ($p<0.05$).

Discussion

This longitudinal study contributes to the literature in important ways. In contrast to prior investigations, this study included prospective data spanning four time points collected over the course of 26 years, allowing us to map a longitudinal sequence from early predisposing factors (education, tobacco use, early psychological symptoms) to later physical diseases and symptoms and psychological symptoms (need for services), which resulted in the utilization of mental health services. An important barrier to the use of services, especially in light of the recent economic downturn, the family's financial difficulty, was also included in this model. Women in their mid-60's are an important but understudied population with regard to the use of the utilization of mental health services, although increased longevity necessitates a greater research focus on this population.

Consistent with the Andersen's Behavioral Model of Health Services Use,⁶ the results confirmed that the current need for mental health services (i.e., psychological symptoms in 2009) was the most proximal and important predictor of the use of mental health services. This finding is also in accord with investigators who reported that individuals with a

psychiatric disorder had a higher likelihood of using mental health services.^{46–49} In addition, also consistent with Andersen's model, the findings illuminate some of the mechanisms (e.g., tobacco use) by which predisposing factors (i.e., earlier psychological symptoms and educational disadvantage) are related to the need for and the use of mental health care services.

Importantly, this study supported the hypothesis that lower levels of education were related to a greater need for, and ultimately, a greater use of mental health care services. Cigarette smoking was an important mediator along this developmental pathway. It not only predicted increased later physical diseases and symptoms, but also, indirectly, influenced both later financial strain and psychological symptoms. Both cross-sectional and longitudinal studies have found relationships between cigarette smoking and symptoms of physical diseases.²⁷

Earlier psychological symptoms were also directly related to later physical diseases and symptoms in this study. This finding is consistent with the results of other investigators.⁵⁰ The research adds to the literature by demonstrating that the relationship between psychological symptoms and physical health is reciprocal. More specifically, symptoms of earlier psychological distress are related to later physical diseases, which, in turn, predict psychological symptoms. Moreover, the relationship between psychological symptoms and physical diseases is partially mediated by cigarette smoking.

Financial strain was positively related to the use of mental health services via its association with greater psychological symptoms. While financial strain had been conceptualized as a barrier to the use of mental health services, its overall positive association with service use has to be understood in the context of its relationship with psychological symptoms.

Perceived financial strain was directly related to psychological symptoms in the women. These results are in accord with previous research that has examined the association of financial stress and burden on mental health.^{51,52} One of the mechanisms by which financial difficulties affects psychological distress is stress. Exposure to stress, particularly over an extended period of time, is related to reduced mental health (e.g., depression and anxiety).^{53,54} For example, Hammen and colleagues⁵³ found that both chronic and acute stress were significantly associated with depression among women. Financial stress may undermine the individual's ability to cope, resulting in an increase in psychological symptoms.⁵⁵

In sum, this study highlighted some of the mechanisms by which earlier psychological symptoms and low educational level affect physical and mental health and, ultimately, mental health services use by women in the mid-sixties. One of the major findings was the central role that tobacco use plays in this developmental sequence.

Limitations

This study had several limitations. First, the sample was comprised of mostly White women in late mid-life. This limits the generalizability of our results. Future research should examine the associations among these constructs with more ethnically and racially diverse samples. Second, the construct mental health utilization was a manifest variable, because

there was only one indicator measuring the frequency of utilization. The study would have benefited from multiple indicators of this construct. Third, some participants were lost due to attrition. Had these non-participants been included in the analyses, it might have resulted in greater variability, which may have strengthened the results.

Implications for Behavioral Health

These findings highlight the importance of taking a lifespan perspective when examining factors related to the use of mental health services in older women. Educational level, measured at age 32, set in motion a sequence of events resulting in lower levels of mental and physical health and the need for mental health services. This study, which identified predisposing and enabling factors that shaped mental and physical health over time as part of an “illness career,”⁵⁶ has important implications for preventive health and social policy.

From a policy perspective, it is important to address the existing disparities in education that prevail in the United States. In addition, it is clear that a reduction in national rates of tobacco use must remain a public health priority. Similarly, equitable and prompt access to mental health care services for everyone is an important policy goal.

In terms of behavioral interventions, interventions with existing smokers may improve their physical condition. A reduction in tobacco use may contribute to a reduction in the disparities in physical illness and thus decrease the need for health services use over time. Health care providers treating patients with physical diseases should consider the precursors of physical diseases, as well as their possible consequences for mental health.

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CFI = 0.95; RMSEA = 0.055; SRMR = 0.045. The participants' ages and original residency in Albany County were statistically controlled. The latent variable of physical diseases & symptoms 1994-2009 refers to physical diseases in 1994-2009 and physical symptoms in 2009. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (one-tailed test).

Figure 1.
Obtained Model: Standardized Pathways (z-statistic) to Mental Health Service Utilization (N=511)

Table 1**Descriptive Statistics (N=511)**

<i>Dependent and Independent Variables</i>	Coding	Range	Mean	Standard Deviation
Mental Health Service Utilization (2009)	None (0) – More than 10 times (5)	0–5	0.24	0.86
Depression (2009)	Not at all (0) – Extremely (4)	0–4	0.89	0.74
Anxiety (2009)	Not at all (0) – Extremely (4)	0–4	0.95	0.77
Hostility (2009)	Not at all (0) – Extremely (4)	0–4	0.39	0.51
Phobic Anxiety (2009)	Not at all (0) – Extremely (4)	0–4	0.16	0.39
Suspiciousness (2009)	Not at all (0) – Extremely (4)	0–4	0.24	0.44
Financial Strain (2009)	Never (0) – Almost always (4)	0–4	1.50	0.89
Financial Problems (2009)	Completely untrue (0) – Definitely true (3)	0–3	0.83	0.66
Symptoms Due to Financial Worries (2009)	Completely untrue (0) – Definitely true (3)	0–3	0.63	0.65
Physical Diseases (1994–2009)	No(0) – Yes(1)	0–1	0.19	1.10
Physical Symptoms (2009)	None (0) – More than three months (4)	0–4	0.76	0.59
Cigarette Smoking (2009)	None (0) – More than one pack a day (3)	0–3	0.30	0.76
Cigarette Smoking (1992)	None (0) – More than one pack a day (3)	0–3	0.56	0.97
Cigarette Smoking (1985/86)	None (0) – More than one pack a day (3)	0–3	0.73	1.10
Cigarette Smoking (1983)	None (0) – More than one pack a day (3)	0–3	0.77	1.10
Depression (1983)	Not at all (0) – Extremely (4)	0–4	1.03	0.61
Anxiety (1983)	Not at all (0) – Extremely (4)	0–4	1.12	0.67
Interpersonal Sensitivity (1983)	Not at all (0) – Extremely (4)	0–4	0.95	0.56
Educational Level (1983)	Years	0–20	13.00	2.09
<i>Control Variables</i>				
Age (2009)	Years	52–85	65.24	6.21
Original Residency in Albany (1983)	No (0) – Yes (1)	0–1	0.44	0.50

Standardized Total Effects (z-statistic) of Psychological Symptoms, Family Financial Difficulty, Physical Diseases, Earlier Cigarette Smoking, Earlier Psychological Symptoms, and Earlier Educational Level on Mental Health Service Utilization for Women in the Mid-Sixties (N=511).

Table 2

Independent Constructs	Mental Health Service Utilization in 2009		
	Standardized Total Effects (z-statistic)	Standardized Total Indirect Effects (z-statistic)	
Psychological Symptoms (2009)	.28 (3.21) ***		Not Applicable
Family Financial Difficulty (2009)	.15 (2.40) **	.09 (2.61) **	
Physical Diseases and Symptoms (1994–2009)	.25 (3.69) ***	.11 (3.29) ***	
Cigarette Smoking (1983–2009)	.04 (2.02) *	.04 (2.02) *	
Psychological Symptoms (1983)	.21 (5.78) ***	.21 (5.78) ***	
Educational Level (1983)	-.05 (-2.82) **	-.05 (-2.82) **	

Note. The participants' ages and original residency in Albany County were statistically controlled.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$ (one-tailed test).