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Early life characteristics, psychiatric history, and cognition trajectories in later life

Maria Teresa Brown
Syracuse University, mbrown08@syr.edu

Early-Life Characteristics, Psychiatric History, and Cognition Trajectories in Later Life

Maria Brown, Syracuse University

Abstract

Purpose of the Study: Although considerable attention has been paid to the relationship between later-life depression and cognitive function, the relationship between a history of psychiatric problems and cognitive function is not very well documented. Few studies of relationships between childhood health, childhood disadvantage, and cognitive function in later life consider both childhood health and disadvantage, include measures for psychiatric history, or use nationally representative longitudinal data. ***Design and Methods:*** This study uses growth curve models to analyze the relationships between childhood health and disadvantage, psychiatric history, and cognitive function using 6 waves of the Health and Retirement Study, controlling for demographics, health behavior, and health status. ***Results:*** A history of psychiatric problems is associated with lower cognitive function and steeper declines in cognitive function with age. The influence of childhood health is mediated by later-life health status and behaviors. A combined history of childhood disadvantage and psychiatric problems more strongly affects cognitive function, but cognitive declines remain consistent with those associated with psychiatric history. These effects are partially mediated by later-life demographic, socioeconomic, or health characteristics. ***Implications:*** These findings demonstrate that cumulative disadvantage and a history of psychiatric problems shape later-life cognition and cognitive decline. This evidence can enhance public understanding of the trajectories of cognitive decline experienced by groups living with disadvantage and can enable policy makers and human services providers to better design and implement preventative interventions and support services for affected populations

Key words: disparities, cognition, life course

The relationship between psychiatric problems and cognitive function in later life is not well documented (Cooper & Holmes, 1998; Maddux, Delrahim, & Rapaport, 2003), although interest has begun to grow within gerontology (Gildengers et al., 2004, 2009). Improved awareness of this relationship, and of the manner in which disadvantaged older adults are affected by it, would enable policy makers and service providers to better design and implement services for affected populations. This study explores the relationship between psychiatric problems and cognitive function or decline in later life and attempts to identify populations more likely to be affected.

Previous research explores different facets of the relationship between disadvantage and cognition in later life using a variety of data sets. Few studies include race, sex, and early-life indicators in their models, and existing studies inclusive of race, childhood status, and cognitive function do not extend into later life, employ a nationally representative sample, analyze psychiatric history, or explore these relationships across multiple years of data. This study uses nationally representative data and a modeling technique that has the potential to enhance awareness and understanding of between-group differences in cognition that are related to [end of page #1] cumulative disadvantage (Gildengers et al., 2004; Zorrilla et al., 2000). This study illuminates these differences by applying an analysis grounded in the life course perspective and by conducting a longitudinal analysis of six waves of the Health and Retirement Study (HRS) data. Self-reported childhood disadvantage is used to identify potential areas of cumulative disadvantage.

The HRS is well suited to study this relationship. It includes a representative sample of older adults whose cognitive function was measured using a modified version of the Telephone Interview for Cognitive Status (TICS). Of 16,730 individuals with valid baseline TICS scores, 2,129 indicated a history of psychiatric or emotional problems. This analysis provides insight into the degree to which psychiatric history affects cognition in specific populations of older adults and has the potential to enhance public understanding of the trajectories of cognitive decline in later life experienced by groups living with disadvantage. The study will evaluate the following hypotheses:

1. Individuals with a history of psychiatric problems will have lower initial cognitive functioning and a unique trajectory of cognitive function with age.

2. The relationship between psychiatric history and cognitive function in later life will differ based on, or will be moderated by, early-life socioeconomic characteristics.

1. Theoretical Framework

The life course perspective considers the influence of social structures on the lives of individuals across time, and the ways in which aging-related experiences vary between individuals and over time, and across cohort, sex, race, and class groups, generations within families, nations or cultures (Settersten, 1999). Aging-related experiences are joint products of human agency and social structures (Douthit & Dannefer, 2006). Social structures are conceptualized as interlocking power relations that include racial/ethnic relations, age, sex, and class (McMullin, 2000). Major areas of life course theory include considerations of variability between individuals and groups in life course experiences, such as the effects of cumulative disadvantage (Dannefer, 2003; Settersten, 1999) and cumulative inequality (Ferraro, Shippee, & Schafer, 2009). Link and Phelan (2000) theorize that social factors play a fundamentally causal role in creating social disparities in health through social selection and hierarchical stress. Theories of cumulative disadvantage recognize these structural differences and consider the effects of the life course experienced by socioeconomically disadvantaged groups. Structural disadvantage across the life course can result in poorer physical and mental health, greater functional and cognitive limitations, and poorer quality of life in old age (Dannefer, 2003; Douthit, & Dannefer, 2006). This article considers the relationship between early-life factors reflecting structural differences, such as childhood socioeconomic disadvantage, and the long-term influence of these structural differences on later-life trajectories.

2. Factors That Affect Cognition in Later Life

As the number of persons more than 65 years increases, so will the number of functionally and mentally disabled elderly, and communities will need to ensure that adequate community-based and institutional services are available for this population. Multiple sources provide data on the national prevalence of mental disabilities or disorders but do not distinguish between different categories of disabilities like life-long psychiatric problems and age-related cognitive disorders or cognitive decline (Centers for Disease Control, 2006; National Library of Medicine, 2006; United States Census Bureau, 2006). These estimates are too broad based for the purpose of this study, which aims to analyze the relationship between these two types of conditions. The current study is primarily interested in the subset of mental conditions for which data are available in the HRS: psychiatric, emotional, or nervous problems. The population affected by dementia and other cognitive disorders is projected to see consistent growth in the near future (Alzheimer's Disease Education and Referral Center, 2006). However, the HRS survey did not include specific questions about dementia diagnosis for the entire sample. Therefore, this study concerns itself with questions of cognitive function and decline, rather than with specific cognitive disorders.

2.1 Psychiatric Problems

Little information is available about older adults with a history of psychiatric problems who develop dementia (Perivoliotis, Granholm, & Patterson, 2004). Studies exploring the existence of psychosis accompanying mild cognitive impairment [end of page #2] or moderate-to-severe dementia focus primarily on dementia or aging-related depression (Chan, Kasper, Black, & Rabins, 2003; Maddux et al, 2003). Findings indicate that comorbid mental disabilities require further investigation as increasing numbers of mentally ill adults in the near future will require increased long-term care services (Maddux et al., 2003).

There are several reasons that the relationship between psychiatric history and cognitive function in later life is important. First, adults with a history of mental illness may be at higher risk for developing cognitive decline or dementia, although studies exploring the connection between these conditions have mixed results (Gildengers et al., 2004; Zorrilla et al., 2000). Second, demographic and socioeconomic factors may influence the prevalence and severity of psychiatric diagnoses (Fryers, Melzer, & Jenkins, 2003). Finally, previous research in the fields of aging and psychiatry based on small nonrepresentative samples suggests that psychiatric history is related to cognition (Gildengers et al., 2004, 2009; Wetherell, Gatz, Johansson, & Pederson, 1999).

2.2 Cumulative Disadvantage

Advocates of the life course perspective suggest that cognitive function and chronic conditions affecting cognitive function in later life are affected by cumulative (dis)advantage (Dannefer, 2003; Douthit & Dannefer, 2006; Luo & Waite, 2005), which can begin in early childhood (Borenstein, Copenhaver, & Mortimer, 2006; Luo & Waite, 2005). Thus, to understand later-life cognitive trajectories, we must take into account variables that may contribute to or may be reflective of cumulative disadvantage and cumulative inequality, such as ascribed characteristics, childhood socioeconomic status (SES), and various mid- to late-life sociodemographic and health characteristics.

Ascribed Characteristics. — Race and sex are ascribed characteristics that may contribute to cumulative (dis)advantage. The association between race/ethnicity and cognition in later life is well established (Sloan & Wang, 2005), although this association may diminish when controlling for education and other social and environmental factors (Mehta et al., 2004). Findings regarding the association between sex and cognitive decline or dementia are mixed (Edland, Rocca, Petersen, Cha, & Kokmen, 2002; Lindsay et al., 2002).

Early-Life Socioeconomic Characteristics.— Research has documented the relationship between SES and cognitive function in childhood, adulthood, and old age (Everson-Rose, Mendes de Leon, Bienias, Wilson, & Evans, 2003; Kaplan et al., 2001). Few studies examine the relationship between early-life SES and cognitive decline in old age (Borenstein et al., 2006; Everson-Rose et al), but childhood SES has been linked to adult health status and health behaviors, major depression, physical functioning in later life, and mortality (Guralnik, Butterworth, Wadsworth, & Kuh, 2006; Turrell, Lynch, Leite, Raghunathan, & Kaplan, 2007). Sources of information about childhood (dis)advantage include parental educational attainment, occupational prestige, and family SES or a composite index of these characteristics (Everson-Rose et al.; Luo & Waite, 2005).

Mid- to Late-Life Characteristics. — A variety of factors in adulthood and later life are linked to cognitive function in older adults, including education (Lindsay et al., 2002). Other factors include age, income, marital status, and some health behaviors (Herzog & Wallace, 1997). Cognitive function can be related to multiple coexisting diseases or conditions in older adults, including cardiovascular disease, stroke, hypertension, or diabetes (Blaum, Ofstedal, & Liang, 2002; Haan et al., 2003; Taylor, 2008). Because of this relationship between cognitive and physical function, cognitive function is often considered a "marker of lifelong adversity" (Moody-Ayers, Mehta, Lindquist, Sands, & Covinsky, 2005, p. 933).

Given the findings of previous research, it is expected that individuals with a history of psychiatric problems will have lower cognitive function in later life and steeper rates of cognitive decline and that these effects will be stronger for individuals who also have a history of childhood socioeconomic disadvantage.

3. Design and Methods

3.1 Data

This project explores the relationship between psychiatric history and cognition while controlling selected demographic and health status and behavior variables, using data from the Asset and Health Dynamics among the Oldest-Old study (AHEAD) and the HRS. The AHEAD sample was collected in 1993 and 1995 and was merged with the HRS in 1998 when the study was transitioned to a [end of page #3] steady-state design, introducing the Children of the Depression and War Babies cohorts in 1998 and the Early Baby Boomer cohort in 2004 (University of Michigan, 2009). This study includes data from the 1995, 1998, 2000, 2002, 2004, and 2006 data years.

Subjects who did not complete the cognition interview, or whose cognition data were provided by a proxy, were excluded from the study for that wave. Subjects were administered the cognitive items after they reached the age of 65. This resulted in a sample of 30,896 respondents, of whom 16,730 had attempted at least one valid cognition interview. Of these, 88% had two interviews, 77% had three, 67% had four, 56% have five, and 11% had six interviews. Observations missing on the dependent variable, or of "Other" race, were deleted from the sample, resulting in a final sample of 16,513 subjects and 53,900 observations.

Technically, the sample includes adults born between 1923 and 1947, but not all subjects have the same number of years of inclusion in the sample. Therefore, the attrition analysis is stratified by the year in which subjects entered the study and was conducted for study entrants in waves 1995 through 2004. *t* Tests indicate significantly lower baseline cognition scores for subjects who attrit. Ultimately, 41.2% of the sample attrits from the study. Including attrition status as a control variable during sensitivity tests introduced little change in effect sizes for the other variables, so attrition is not included in the models.

3.2 Dependent Variable: Cognition Scores

Cognitive measures reported in the HRS data were collected using a modified version of the TICS instrument. The TICS was designed based on Folstein's Mini-Mental Status Examination (MMSE), a commonly used instrument for assessing cognitive impairment in clinical settings, which could be reliably administered by telephone (Herzog & Wallace, 1997). For the HRS, the TICS was modified to measure six tasks with a maximum score of 35 points, evaluating memory and executive function and weighting fluid cognitive measures more heavily than in the original instrument (Freedman, Aykan, & Martin, 2001). The TICS was modeled after the state of the art understanding of

the dimensions of cognition in the late 1980s, and its validity has been previously documented (Zsembik & Peek, 2001).

Respondents who were coded as refusing or failing an individual task were assigned a zero on that task. In either case, the respondent is cognitively able to participate in the cognition portion of the interview but is unable or unwilling to respond to that specific item. Herzog and Wallace (1997) determined, citing previous work by Fillenbaum, George, and Blazer (1988) on nonresponse in the MMSE instrument, that self-interview subjects in the AHEAD study (who did not require a proxy to complete the interview) who are missing on an individual item or group of items in the cognition test are very likely to have refused because they are cognitively unable to do so. These imputations do not undermine the accuracy of results in the AHEAD/HRS cognition instrument (Sloan & Wang, 2005). Assigning zeroes to missing values on individual items in this project restored many "missing" subjects to the data analysis, the result being a more accurate representation of mean cognition scores, and their relationship to factors controlled for in the model, at the baseline and over time.

3.3 Independent Variables

Focal Variable: Psychiatric History. — The primary relationship measured in this project is the relationship between cognitive function and psychiatric history. The HRS inquires into psychiatric, emotional, or nervous problems, rather than specific diagnoses or categories of mental disorders. Although this measure captures a history of psychiatric, emotional, or nervous problems, I am calling it psychiatric history. Psychiatric history data were identified by two questions: "Have you ever seen a doctor for psychiatric, emotional or nervous problems?" and "Do you now get psychiatric or psychological treatment for these problems?" Subjects scoring as "don't know" or "refused" (from 1 to 31, depending on the wave) were assigned the modal value of zero. These questions were used to create three variables: past history (yes to past history but may or may not currently be getting treatment), current treatment (only subjects who report currently getting treatment), and incident cases (yes to past history after having said no in at least one previous wave). At baseline, 2,129 subjects report a past history; only 340 report current treatment at baseline. All three variables are included as time varying, in an attempt to control for cases that are prodromal to dementia onset (Wetherell et al., 1999). [end of page #4]

Ascribed Characteristics.— The ascribed characteristics used in this analysis are sex and race/ethnicity (SRE) and are baseline nonvarying variables. Subjects identifying as a race other than White or Black are excluded because there are too few cases to ensure sufficient statistical power for analysis (Moody-Ayers et al., 2005). Race/ethnicity are coded into three categories and combined with sex to create SRE variables: White males (reference variable) and females, Black males and females, and Hispanic males and females.

Early-Life Characteristics.— There are several childhood measures available in 1998 and later waves that are included as baseline nonvarying values. Measures include maternal and paternal education (less than or greater than 8 years), family SES (higher values indicate better status), and father's usual occupation. These variables are combined into a childhood disadvantage index (CDI), scaled to range from 0 (*no disadvantage*) to 1 (*most disadvantaged*) based on the number of measures to which subjects responded. Sensitivity analyses indicate that subjects missing observations on all four variables are more disadvantaged, and they are assigned a value of 1. Child health is included as a control variable. Tests confirm no interaction between CDI and psychiatric history.

Later-Life Characteristics.—Independent variables include respondent education (nonvarying), marital status, household income (continuous and time-varying variable), self-rated health, vision, hearing, chronic health conditions, currently smoking, and ever having drunk alcohol (all time varying).

3.4 Methods

This study applies growth curve modeling to compare cognition scores and to analyze trajectories of cognitive change for different groups as they advance in age. Growth curve modeling models change in the dependent variable and identifies within-person and between-person variability or cumulative inequality (Ferraro et al., 2009), in this change using covariates and control variables (Hox, 2002; Singer & Willett, 2003). Growth curve models are specifically designed for the analysis of trajectories in repeated measure longitudinal or panel data (Bollen, Christ, & Hipp, 2004; Kelley-Moore & Ferraro, 2004; McDonough & Berglund, 2003).

In this study, time is measured using chronological age (Sliwinski & Mogle, 2008). Centering age on the sample's grand mean allows the intercept to represent a respondent of average age at the baseline to determine changes in cognitive function based on the difference in age between the individual and the group (Alley, Suthers, & Crimmins, 2007) and to accommodate the inclusion of different cohorts at different time points in the study and the

assumption of within-person and between-person age effects for different cohorts. Centering age on the grand mean of the sample means that the linear age effect identified in these analyses is the age effect at the centered age (74.86 years); this slope may be different at other ages, and this difference is visible in the plotted trajectories in Figure 2.

Analysis begins with a discussion of the hierarchical growth curve models. Prediction lines are then plotted using these growth curve models (GCMs) to create cognition trajectories and illustrate the effects of psychiatric history, greater childhood disadvantage, and a combination of these circumstances on cognitive function and on cognitive decline as subjects age through the study. Preliminary analyses test for an interaction between CDI and psychiatric history. The interaction was not significant and therefore is not included in the models shown in Table 2.

4. Results

Table 1 displays the descriptive statistics for the sample. The mean age of the sample is 74.86 years. Only 13% of subjects report higher levels of childhood disadvantage, and only 6% report fair or poor health during childhood. Mean cognition for the sample is 21.09 of a possible 35 points. There are distinct differences between people with and without histories of greater childhood disadvantage. The mean cognition scores for subjects with this history are lower than for those without it. Thirteen percent of the sample reported a history of psychiatric, emotional, or nervous problems compared with 18% of subjects with a history of greater childhood disadvantage. Blacks and Hispanics make up larger proportions of subjects reporting greater childhood disadvantage, as do subjects reporting poorer health as children and as older adults. Difference of the means *t* tests (not shown) indicate that mean cognition scores differ significantly based on psychiatric history at each time point and for all age groups.[end of page #5]

Table 1. Sample Descriptives, Health and Retirement Study/AHEAD, 1995–2006

Variable	Total sample	CDI = 0	CDI = 1
Cognition scores (*M*)	21.09	21.55	18.10
Psychiatric history (%)			
History of psychiatric problems	13.05	12.26	18.15
Current psychiatric treatment	1.93	1.85	2.42
Incident cases of psychiatric problems	3.73	1.78	3.59
Sex (%)[a]			
Female	59.53	59.44	59.39
Race (%)[b]			
Black, non-Hispanic	12.35	10.28	25.77
Hispanic	6.67	5.19	16.24
CDI (*M*)[c]	0.40	0.31	1.00
CDI distribution (%)			
0	28.43	32.83	0.00
1	13.39	0.00	100.00
Poor childhood health[d]	5.84	5.59	7.47
Missing on child health	6.01	3.98	19.16
Education (%)[e]			
Less than 12 years	30.88	25.54	65.45
More than 12 years	34.64	38.13	12.04
Household income (*M*)	$40,691	43,140	24,851
Age (*M*)	74.86	70.72	71.76
Marital status (%)[f]			
Widowed	31.57	30.54	38.27
Divorced/separated	7.78	7.60	8.98
Never married	2.63	2.57	2.99
Health status and behaviors			
Subjective health (*M*)[g]	3.05	3.09	2.74
Ever had a stroke (%)	8.35	8.09	10.06
Hypertension (%)	57.86	56.88	64.17
Diabetes (%)	18.25	17.69	21.86
Heart condition (%)	29.75	29.44	31.75
Currently smoking (%)	9.68	9.59	10.29
Ever drink (%)	43.87	46.17	29.01
Vision (*M*)[h]	4.08	4.12	3.78
Hearing (*M*)[h]	3.21	3.25	3.03
Depression (*M*)[i]	1.55	1.46	2.13
Observations	53,900	46,682	7218

Notes: CDI = childhood disadvantage index.
[a]Category references males.
[b]Category references Whites.
[c]Composite index.
[d]References good, very good, and excellent child health.
[e]References 12 years of education.
[f]References married or partnered.
[g]Higher values indicate better health.
[h]Higher values indicate better function.
[i]Higher scores indicate more depressive symptoms.

Table 2 shows the hierarchical models used in this study. The overall mean cognition score of the sample, as shown in the unconditional means model, is 20.79 of a possible 35 points. This mean is well above the recommended severe impairment cutpoint of 5%, which is a score of 10 points (Herzog & Wallace, 1997). The random effects reveal significant between- and within-person variance in cognition at age 74.86, indicating that subjects have different levels of cognitive function and that cognitive function varies over time (Singer & Willett, 2003).

These models show that long-term psychiatric history is moderately and significantly correlated with cognitive function at age 74.86 and, net the effects of all variables controlled in the fully specified model, with declining cognitive function with age. Additional sets of variables attenuate this effect but do not fully explain it. Long-term psychiatric history is also related to steeper cognitive decline with age. The cognition scores of individuals with this history drop an average of 0.29 points each year compared with 0.26 points for subjects without this history.

Childhood disadvantage is also related to cognition at age 74.86 but is not related to cognitive decline as subjects age. The SRE groups and most of the later-life health status and behavior variables are also related to cognition at age 74.86. Age continues to be significantly related to cognitive decline and this effect accelerates as subjects age. These effects are attenuated by each additional set of variables, which means that each set partially explains the effect of age, and the acceleration effect of age, on cognitive decline. Random effects indicate between-person variation in cognitive function at age 74.86, which is reduced or partially explained by each additional set of variables. Cognitive function varies within individuals; a variation partially explained by age, as shown in Model 2. The rate of cognitive change differs between individuals (Singer & Willett, 2003). The values for linear change and covariance indicate that respondents with higher cognitive function at age 74.86 generally have less steep rates of cognitive decline.

Reductions in the size of the −2-log-likelihood deviance measure and the Akaike Information Criterion (shown in Table 3) suggest that each additional set of variables improves the ability to predict cognitive function and decline (Singer & Willett, 2003). The proportion of total variability in cognition resulting from between-person variability decreases with each set of additional variables, as indicated by the inter-class correlation.

The prediction lines in Figure 1 reveal between-group differences in the effect of long-term psychiatric history on cognition scores and on cognitive trajectories as subjects age. This shows how a [end of page #6]

Table 2. Hierarchical Models for Total Cognitive Function, Health and Retirement Study/AHEAD, 1995–2006

	Model 1	Model 2	Model 3[a]	Model 4[b]	Model 5[c]	Model 6[d]
Fixed effects	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
For initial level						
Intercept	20.7866***	21.0681***	21.2219***	22.8250***	22.2903***	20.9373***
History of psychiatric problems			−1.1582***	−1.1488***	−1.0083***	−0.6963***
Current psychiatric treatment			−0.3139*	−0.3730**	−0.4822**	0.3802**
Incident cases of psychiatric problems			0.2934**	0.2787**	0.2537**	0.2137*
Childhood disadvantage index				−2.3813***	−0.8171***	−0.6583***
For linear change						
Age		−0.3081***	−0.3060***	−0.2959***	−0.2782***	−0.2552***
Age^2		−0.0104***	−0.0103***	−0.0098***	−0.0098***	−0.0090***
History of psychiatric problems			−0.0046	−0.0034	−0.0109	−0.0193*
Random effects						
Between-person variation	18.8178***	17.6262***	17.2553***	12.5740***	10.3462***	9.5675***
Covariance		0.2128***	0.2095***	0.2080***	0.2183***	0.2051***
Linear change		0.0448***	0.0439***	0.0402***	0.0381***	0.0371***
Within-person variation	15.4220***	10.4153***	10.4487***	10.5193***	10.6174***	10.5723***

[a]Psychiatric history only.
[b]Early life and ascribed characteristics.
[c]Includes controls for later-life socioeconomic status.
[d]Includes controls for later-life socioeconomic status, marital status, health status, and health behaviors.
*$p < .05$. **$p < .001$. ***$p < .0001$.

history of psychiatric problems results in lower cognition scores at age 74.86 and steeper decline with age. Subjects reporting childhood disadvantage (not shown) have lower cognition scores at age 74.86 but similar rates of decline as subjects without this history.

As shown in Figure 2, a combined history of childhood disadvantage and psychiatric problems results in lower cognition scores at age 74.86, but the rate of decline for subjects with this combined history is consistent with that of psychiatric history only. Thus, a combined history of childhood disadvantage and psychiatric problems has a stronger impact on cognition in later life than psychiatric history alone.

5. Discussion

This study, grounded in the life course perspective, examines the question of whether a history of psychiatric problems contributes to differences in cognitive function and cognitive decline later in life, and if the impact of that history differs based on a history of childhood disadvantage. These analyses indicate that individuals with a history of psychiatric problems experience significantly lower cognitive function at age 74.86 and steeper rates of cognitive decline with age, net the effects of sex, race/ethnicity, early childhood disadvantage and health, later-life sociodemographics, and later-life health status and health behaviors. Subjects with a history of childhood disadvantage also have lower cognitive function at age 74.86 but show no difference in rate of cognitive decline with age. Long-term psychiatric problems exacerbate the effect of childhood disadvantage, resulting in lower cognitive function at age 74.86 and a steeper rate of decline for groups with this combined history. The

Table 3. Model Fit Information for Hierarchical Models of Total Cognitive Function, Health and Retirement Study/AHEAD 1995–2006

Model	–2LL	–2LL difference	ICC	AIC	AIC difference
Unconditional means	314278.2		0.550	314286.2	
Unconditional growth	307502.6	6775.6	0.629	307518.6	6767.6
Psych history only	307290.7	211.9	0.623	307314.7	203.9
Add early-life characteristics	303521.2	3769.5	0.546	303561.2	3753.5
Add sociodemographics	301421.6	2099.6	0.494	301473.6	2087.6
Add health status and behaviors	300512.9	908.7	0.475	300584.9	888.7

Note: -2LL = -2-log-likelihood; AIC = Akaike Information Criterion.

[end of page #7]

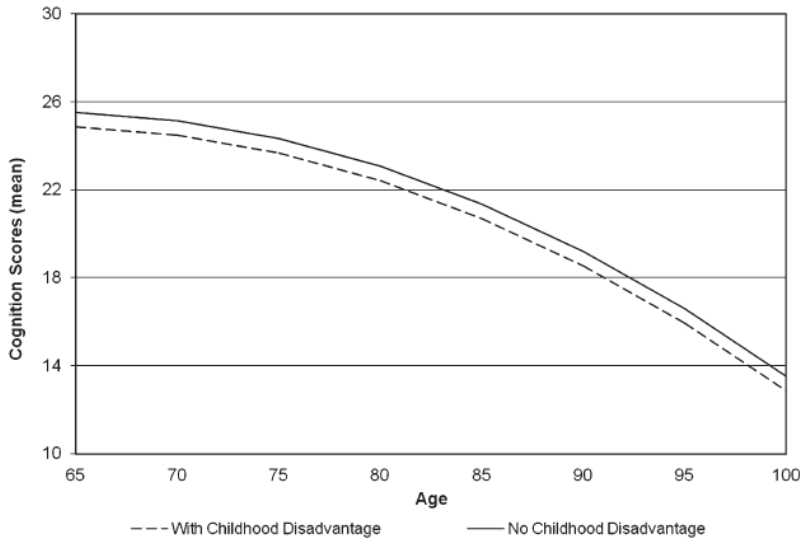

Figure 1. Declines in mean cognition scores by psychiatric history, Health and Retirement Study/AHEAD.

influence of childhood health on later-life cognition is mediated by later-life health variables. Although these models included a fairly comprehensive set of variables, some amount of variation in cognition remains unexplained.

These findings confirm earlier studies indicating a relationship between long-term psychiatric problems and later-life cognitive function (Gildengers et al., 2004; Zorrilla et al., 2000) and distinguish between age-related cognitive decline and the effects of a history of preexisting psychiatric problems. Using a more comprehensive set of variables than found in previous GCM studies of cognition (Alley et al, 2007), this analysis provides a better understanding of early-life factors affecting cognition in later life.

5.1 Limitations

The HRS data were not gathered for the purpose of tracking the predictive relationship in this study and does not include information about specific psychiatric diagnoses. Several existing studies indicate that different psychiatric disorders may have differing degrees of impact on cognitive function in later life (Gildengers et al., 2004; Kessing & Nilsson, 2003; Leinonen et al., 2004; Zorrilla et al., 2000). By excluding specific diagnoses, the HRS limits our ability to determine which types of psychiatric disorders are playing a stronger role in affecting cognition or to distinguish between acute episodes of mental illness and chronic life-long conditions. By their nature, acute episodes may

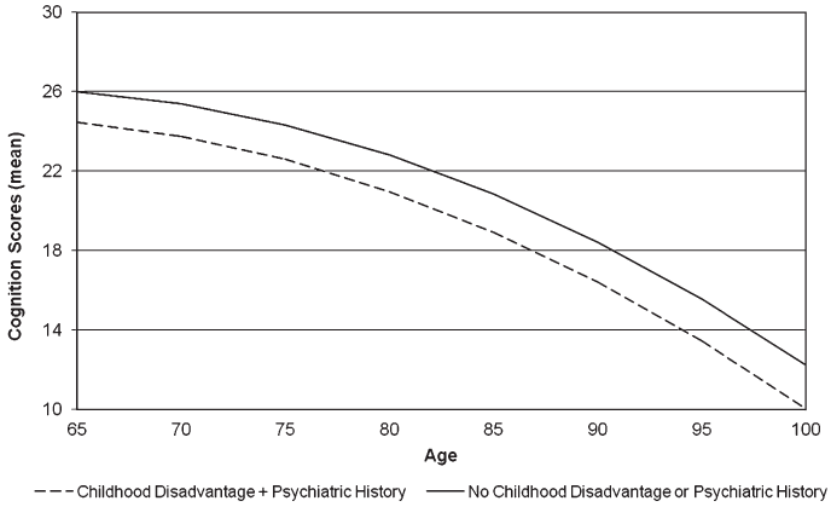

Figure 2. Declines in mean cognition scores by psychiatric history and childhood disadvantage, Health and Retirement Study/ AHEAD.

[end of page #8]

have a very different effect, if any, on cognition than would chronic psychiatric disorders. The inability to distinguish between the effects of different mental health conditions may have resulted in an overestimation of the effect size of the focal relationship in these data. Individuals with psychiatric disorders also face social stigma, which may result in the underreporting of psychiatric problems and which may affect the strength of the relationship found in these models.

Although this study is grounded in the life course perspective, the HRS data do not include life course measures such as timing, sequence or duration of life events related to the hypotheses being examined. As such, these models do not fully explore the effects of life-course disadvantage on cognitive function in later life or provide information on the effects of specific experiences in mid-life that may alter the relationship between early-life factors and later-life cognitive function. What is missing is the holistic picture of the trajectories that these individual take across the life course from childhood through adulthood and into old age. This study contains several limitations, including confounding relationships between variables in the data (Neeleman, Ormel, & Bijl, 2001) and confounding effects in the TICS instrument (Freedman, Aykan, & Martin, 2002), although previous studies have ruled out the possibility of modal effects being introduced via telephone interviews with older populations (Herzog & Wallace, 1997).

Finally, respondents whose cognition data are gathered via a proxy may be unavailable for the cognition interview for a variety of reasons, including physical illness, mental illness, or advanced cognitive decline or dementia (Sloan & Wang, 2005). Institutionalized older adults may be missing from the community-dwelling population for the same reasons. The exclusion of proxy cognition observations and the absence of institutionalized older adults results in an underestimation of cognitive impairment in this sample (Herzog & Rodgers, 1999).

Despite these limitations, the HRS data set is well suited to this study. The sample is nationally representative and large enough to lend statistical power to the models. The existence of six data waves allows for a study that spans a total of 11 years and mapping later-life cognition trajectories that are not possible when using other sources. Some of these limitations may not compromise the results. For example, mid-life factors may not

eliminate the effects of early disadvantage (Kaplan et al., 2001), which would reduce the impact of that limitation on the accuracy of these models.

5.2 Implications

Future studies should attempt to capture information explaining more of the residual within- and between-person variations in cognitive function seen in the current models, including specific diagnostic information and information on the social experiences of older adults living with psychiatric disorders. The vagueness of the psychiatric history questions in the HRS survey, and the resulting limitations of this study, point to the need for surveys that capture specific diagnoses when looking at long-term outcomes—surveys that might also capture the potential impact that mental health care could have on long-term care systems, particularly as the baby boomers age. It is time to gather specific diagnostic information about psychiatric and cognitive disorders and to provide a better understanding of the real need for psychiatric staff in long-term care systems. Without this information, providers will have difficulty understanding need, identifying service gaps, and preparing appropriate accommodations for this growing sector of the elderly population.

Overall, this study demonstrates that older adults do not develop disparities in cognitive function at age 74.86; rather, their differences are reflective of cumulative processes of disadvantage experienced across the life course. These findings provide some insight into the level of dependency we can expect for older persons with histories of psychiatric disability and suggest that early-life interventions to alleviate psychiatric symptoms, economic disadvantage, and structural inequalities could result in improved cognitive function in later life. Geriatric social workers should advocate for the expansion of psychiatric services in home- and community-based long-term care and create interventions enabling mentally ill elders to remain safely in the community (Gildengers et al., 2009). Long-term care regulations need to better accommodate older adults with a history of psychiatric problems and/or childhood disadvantage as they will need more support, and support appropriate to their psychological and cognitive needs, in order to avoid institutionalization in skilled nursing facilities. Current systems do not provide adequate resources for mentally ill older adults wishing to remain independent or to reside in assisted living facilities (ALFs) or enriched housing programs (EHPs; Becker, [end of page #9] Schonfeld, & Stiles, 2002). Proper training may allow ALFs and EHPs to retain residents that would normally be dropped because of behavioral problems and thus prevent premature institutionalization (Gruber-Baldini, Boustani, Sloane, & Zimmerman, 2004).

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