Journal of Gerontology: SOCIAL SCIENCES
1996, Vol. 51B, No. 4, S217–S220

BRIEF REPORT

Age and the Sense of Control Among Older Adults

Fredric D. Wolinsky[1,2,3] and Timothy E. Stump[3]

[1]Saint Louis University School of Public Health, St. Louis, Missouri.
[2]Indiana University School of Medicine and [3]Regenstrief Institute for Health Care, Indianapolis.

Older adults are expected and frequently found to report less control than younger adults. In this study, we decompose this negative relationship between age and sense of control using nested multivariable linear regression models that serially introduce sociodemographic characteristics, socioeconomic factors, health status, and subjective religiosity and religious beliefs in a sample of 1,051 older adults attending the general medicine clinics of a major medical center. The results indicate that the effect of age is suppressed in the bivariable model. In the final multivariable model, educational attainment has the largest relative effect (i.e., beta; .253), followed by age (–.210), mental health (.174), subjective religiosity (.113), being an African American (–.100), perceived health (.082), and being Catholic (.068). Future research should focus on the inflection point in the relationship between age and the sense of control that apparently occurs at about 50 years of age.

THE relationship between age and the sense of control has long been the subject of theoretical speculation and empirical scrutiny (Rodin, 1986a, 1986b; Rodin, Timko, and Harris, 1985). Despite their increasing heterogeneity (Rowe and Kahn, 1987), older adults are expected and frequently found to report less control than younger adults. Although many mechanisms may be involved, three broad categorical explanations have been identified (Rodin, 1986a). One suggests that the relationship stems from the increased number and intensity of socially meaningful, negative experiences (e.g., spousal loss, retirement, and the fear of institutionalization). Another explanation suggests that the relationship results from the deterioration of health status, both functional (e.g., ADL capacity) and biomedical (e.g., immunologic competence). The third explanation suggests that the relationship reflects older adults' increased contact with health professionals, who prefer manageable patients more easily treated in dependency-enhancing situations (e.g., compliant, deferential, or institutionalized patients).

As alluded to above, the empirical evidence of the relationship between age and the sense of control has been less than consistent (Lachman, 1986). Mirowsky (1995) has suggested two reasons for this. The first is that many previous studies have used some combination of resticted age ranges, different sampling procedures within age-grades, nonrandom selection methods, and small sample sizes. The second reason involves bias in the sense of control measures that may be related to age, such as acquiescent response bias. To overcome these difficulties, Mirowsky (1995) relied on statewide and national survey samples that contained an 8-item sense-of-control measure that balanced the number of instrumental and fatalistic statements (Mirowsky and Ross, 1991). The effect of age was serially decomposed by controlling for sociodemographic (i.e., female gender and minority status) and socioeconomic (i.e., low educational attainment and low income) factors, as well as health status (i.e., poor physical function) which have been shown to be negatively related to the sense of control (Mirowsky and Ross, 1983, 1984, 1989, 1990). Those data demonstrated that age (cubed years since reaching age 18) was substantially related to the sense of control, and that the strength of this relationship was diminished, but not eliminated, by adjusting for physical impairment and educational attainment.

Although Mirowsky's (1995) research is a stellar example of theoretical and statistical sophistication, there are five reasons why it needs replication. First, the number of older adults (i.e., those 50 or more years old) was relatively small. Indeed, only 26 of the Illinois respondents and 47 of the national respondents were 80 or more years old. Thus, the critical upper end of the age and sense-of-control relationship was estimated with the fewest number of observations, and is therefore most sensitive to sampling error issues (including influential outliers; see Selvin, 1991). Second, the only indicator of health status was a 7-item measure of physical limitations. This ignores health perceptions and mental well-being, which may be far more important in decomposing the age and sense-of-control relationship, especially given their known relationships with mortality (Idler and Kasl, 1991). Third, although undesirable life events, such as marital dissolution, have been shown to reduce the sense of control (Pearlin et al., 1981), these were not considered. Fourth, contact with health professionals was not considered either, even though it is one of the competing explanations underlying the age and sense-of-control relationship (Rodin, 1986a). Fifth, religious involvement was also not considered, despite the fact that it has been shown to reduce the negative effect of stressful events on a variety of outcomes, including the sense of control (Krause and Tran, 1989). Thus, although Mirowsky's (1995) results are both thoughtful and provocative, further investigation of the relationship between age and the sense of control among older adults is warranted. The purpose of this Brief Report is to describe a comparable effort to decompose the relationship between age and the sense of control in a large, clinical sample of older adults by serially introducing sociodemographic char-

acteristics, socioeconomic factors, a broader array of health status measures, and indicators of subjective religiosity and religious beliefs.

METHODS

Sampling. — Using face-to-face interviews, data were collected in the general medicine clinics of a large urban teaching hospital as part of a randomized controlled trial to assess the effects of a computerized reminder system on physician-initiated discussion and completion of advance directives (for details see Dexter et al., 1996; Stump et al., 1995; Wolinsky and Stump, in press). Patients were eligible for inclusion if their age or medical diagnoses placed them at risk for acute deterioration of their clinical condition (i.e., all individuals aged 75 years or older [5%], or aged 50 to 74 years with evidence of coronary artery disease, congestive heart failure, chronic obstructive pulmonary disease, stroke, malignancy, chronic renal insufficiency, or chronic liver failure [95%]). Enrollment was limited to those who kept *scheduled* visits during the period November 1993 to August 1994. A total of 1,859 *potentially* eligible patients were identified from weekly lists generated by the computerized record-keeping system. Of these, 450 never kept any scheduled visits. Another 150 were declared ineligible because they did not speak English, were deaf, lived in a nursing home, were prisoners, or failed a cognitive screening test (Pfeiffer, 1975). That left 1,248 eligible patients, of whom 1,051 were successfully interviewed, for an overall response rate of 84 percent. Among the 197 eligible patients who were not interviewed, 156 (12%) refused to participate, and 41 (3%) were missed.

Dependent variable. — The sense-of-control index used in this study was developed by Mirowsky and Ross (1991). It asks respondents to agree or disagree with eight statements: (1) I am responsible for my own successes; (2) I can do just about anything I really set my mind to; (3) my misfortunes are the result of mistakes I have made; (4) I am responsible for my failures; (5) the really good things that happen to me are mostly luck; (6) there's no sense planning a lot — if something good is going to happen, it will; (7) most of my problems are due to bad breaks; and, (8) I have little control over the bad things that happen to me. The first four statements reflect claiming control over outcomes and are coded –2, –1, 0, 1, and 2 for strongly disagree, disagree, don't know, agree, and strongly agree, respectively. The last four statements reflect denying control over outcomes and are reverse-coded. Although balancing the number of statements claiming vs denying control cancels the agreement bias associated with age and low education, and improves the measure's validity, it diminishes internal-consistency-based estimates of its reliability (Bohrnstedt and Carter, 1971). Furthermore, Mirowsky and Ross (1991, in press) have shown that exploratory factor analyses mistakenly identify claiming and denying control as separate factors, although more appropriate confirmatory methods incorporating a valence construct properly identify all eight items as forming a valid measure of the sense of control. The sense-of-control index averages the eight response scores (in our sample; $M = .40$; $SD = .41$).

Independent variables. — Age was measured in years ($M = 63.85$; $SD = 9.52$). The sociodemographic characteristics included dichotomous markers for gender (65.6% were women), race (55.0% were African Americans), and marital dissolution (53.8% were divorced or widowed). Socioeconomic status was measured by years of educational attainment ($M = 9.33$; $SD = 2.82$), and a dichotomous marker for perceived income level (8.6% reported being "comfortable"). The physical function (10 items; $M = 42.30$; $SD = 27.66$), mental health (5 items; $M = 66.18$; $SD = 27.45$), and perceived health (5 items; $M = 43.64$; $SD = 21.80$) subscales from the 36-item Short-Form Health Survey (SF-36; McHorney, Ware, and Raczek, 1993), whose transformed scale values range from 0 (worst) to 100 (best), were used to measure health status. Subjective religiosity and religious beliefs were measured by an ordered five-category self-assessment of subjective religiosity (1 = not at all, 5 = extremely; $M = 3.43$; $SD = 1.09$), and dichotomous markers for believing in life after death (73.6% did) and being Catholic (5.7% were).

Statistical issues. — Responses to one or more of the eight sense-of-control items were missing for 72 respondents (6.9%). To maintain complete balance between claiming and denying control, respondents with any missing data were excluded. As a safeguard against nonresponse bias, however, average responses based on the number of sense-of-control items answered were used to reestimate the models (not shown). Those results are equivalent, indicating that no detectable response bias occurred. An additional 18 respondents were excluded because of missing data on one or more of the independent variables. Multiple linear regression is used to decompose the relationship between age and the sense of control in a series of nested models.

RESULTS

Table 1 contains the standardized regression and R^2 coefficients obtained from five nested multiple linear regression models. Model 1 includes only age, which has a negative effect size comparable to that found in Mirowsky's (1995) national sample. Additional models (not shown), however, indicate that the linear measure of age used here fits the data better than any other transformation, including the cubed term used by Mirowsky (1995). When the sociodemographic characteristics are introduced in Model 2, there is a modest improvement in R^2 that is attributable to gender (women report a greater sense of control), but the effect of age is unaltered. Race and marital dissolution have no effect. Introducing the socioeconomic factors in Model 3 substantially increases R^2, and this is attributable to educational attainment. Its positive effect on the sense of control is nearly double the relative size of age's negative effect, which was substantially reduced by the presence of educational attainment in the equation. This is also comparable to the results obtained from Mirowsky's (1995) national sample. Income has no effect, and the significance of the gender difference is eliminated.

Table 1. Standardized Regression Coefficients Obtained from Five Models Predicting the Sense of Control (N = 961)

Independent Variables (Range)	Model 1	Model 2	Model 3	Model 4	Model 5
Age (50–96)	−.178***	−.186***	−.122**	−.192***	−.210***
Gender (Women)		.099**	.045	.045	.015
Race (African Americans)		−.038	−.047	−.083**	−.100**
Marital dissolution (Yes)		.032	.022	.034	.038
Education (0–19)			.279***	.271***	.253***
Comfortable income (Yes)			.038	.019	.019
SF-36 Physical Function (1–100)				−.033	−.043
SF-36 Mental Health (1–100)				.180***	.174***
SF-36 Perceived Health (1–100)				.081*	.082*
Religiosity (1–5)					.113***
After-life beliefs (Yes)					.058
Catholic (Yes)					.068*
R^2	.032***	.045***	.119***	.158***	.180***

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

Model 4 introduces the health status measures and results in a moderate increase in R^2. This increment is attributable mostly to mental health, but also somewhat to perceived health. Those in better health report a greater sense of control. The effect of age is restored to its previous level in the presence of the health status measures, and African Americans now report a significantly lesser sense of control. When the subjective religiosity and religious beliefs variables are introduced in Model 5, there is a modest increase in R^2. This increment is attributable mostly to subjective religiosity, but also somewhat to religious affiliation. Those who report being more religious or Catholic also report having a greater sense of control. None of the effects of the other variables in Model 5 are appreciably altered from their values in Model 4.

Discussion

There are four key findings in this study. First, the relationship between age and the sense of control is negative, strong, and linear. Older adults have less sense of control than younger adults. Although Mirowsky (1995) reported that the best measure of age was the cube form of the number of years past age 18, the linear effect of age found here is reconcilable. That is, if the under 50 years old age-grades (where no relationship with the sense of control is evident) are deleted from Mirowsky's (1995) Figure 1, the relationship between age and the sense of control among the remaining age-grades (i.e., 50 years old or more) is linear. Thus, the difference in the functional form of the relationship between age and the sense of control likely results from there not being any respondents less than 50 years old in this study. This suggests that investigation of the inflection point at 50 years of age in Mirowsky's (1995) data may identify the particular mechanism(s) responsible for the overall relationship between age and the sense of control.

The second key finding is that educational attainment has the strongest relationship with the sense of control, even in this poorly educated sample. Enhanced problem-solving abilities and the habit of meeting problems head-on, which are the principal benefits of education, increase the sense of control. Adjusting for educational attainment substantially reduces the effect of age, because age is negatively correlated with education (r = −.214). The third key finding is that it is not physical function that is related to the sense of control, but mental health, and to a lesser extent, perceived health. What is most important to note, however, is that introducing mental (and perceived) health restores the relationship between age and the sense of control. This occurs because although age is negatively correlated with education, age is positively correlated with both mental (r = .290) and perceived (r = .325) health. Thus, if only education is used as a covariate (as was done by Mirowsky [1995]), the relationship between age and the sense of control is biased downward.

Finally, although introducing measures of subjective religiosity and religious beliefs did not appreciably alter the relationship between age and the sense of control, it did provide further evidence that these are important factors in the sense of control among older adults (Krause and Tran, 1989). Indeed, despite the crudity of the subjective religiosity and religious preference measures (Williams, 1994), both had significant, positive relationships with the sense of control. This was expected, inasmuch as these measures (as well as the belief in life after death, which was marginally insignificant; p = .058) reflect increasing predictability about uncontrollable events that is thought to enhance one's sense of control (Rodin, 1986a).

Before turning to the implications of these findings for the three broad, categorical explanations of the negative relationship between age and the sense of control (i.e., more undesirable life events, deteriorating health status, and increased contact with health professionals), two major study limitations warrant mention. The first involves the restricted array of indicators available to tap each explanation, which makes choosing among them all the more difficult. Marital dissolution was the only undesirable life event that could be included. Although a number of functional health status scales were used, no biomedical measures were available. And it was not possible to calibrate a dose-response relationship of contact with health professionals, because by definition, all respondents had recently seen their physician. The second limitation involves the use of a clinical sample. It is possible that both the strength and functional form of the relationship between age and the sense of control is different

among diseased patients seeking health care than it is among a random sample of community-dwelling persons.

Those limitations notwithstanding, these findings have important implications for the three broad, categorical explanations of the negative relationship between age and the sense of control. On the one hand, they suggest a fourth explanation in which that relationship is unexplained by more undesirable life events, deteriorating health status, or increased contact with health professionals. That is, when all is said and done, the magnitude and significance of the age and sense-of-control relationship is not meaningfully decomposed. This suggests an appreciable unique relationship, perhaps one that reflects older adults' increasing proximity to death. On the other hand, these results provide the most support for the deteriorating health status explanation, inasmuch as the introduction of the health status scales in Model 4 provides the greatest increment in R^2 after adjusting for educational attainment. The least support is provided for the undesirable life events explanation because the effect of marital dissolution was not significant. And although no direct test of the increased contact with health professionals explanation was possible, the rather robust effect of age on the sense of control among a sample with high levels of provider contact is not consistent with that theory.

ACKNOWLEDGMENTS

This research was supported by grants from the National Institutes of Health (R37 AG-09692) and the Agency for Health Care Policy Research (R01 HS-07632). The opinions expressed here are those of the authors and do not necessarily reflect those of the funding agencies, academic, research, or governmental institutions involved.

Address correspondence to Dr. Fredric Wolinsky at the School of Public Health, Saint Louis University Health Sciences Center, 3663 Lindell Blvd., St. Louis, MO 63108-3342. Internet: wolinsky@wpogate.sluvca.slu.edu

REFERENCES

Bohrnstedt, G.W. and T.M. Carter. 1971. "Robustness in Regression Analysis." In H.L. Simon (Ed.), *Sociological Methodology 1971*. San Francisco: Jossey-Bass.

Dexter, P.R., T.E. Stump, W.M. Tierney, and F.D. Wolinsky. 1996. "The Psychometric Properties of the SF-36 Health Survey Among Older Adults in Clinical Settings." *Journal of Clinical Geropsychology* 2:225–237.

Idler, E.L. and S. Kasl. 1991. "Health Perceptions and Survival: Do Global Evaluations of Health Status Really Predict Mortality?" *Journal of Gerontology: Social Sciences* 46:S55–S65.

Krause, N. and T.V. Tran. 1989. "Stress and Religious Involvement Among Older Blacks." *Journal of Gerontology: Social Sciences* 44:S4–S13.

Lachman, M.E. 1986. "Personal Control in Later Life: Stability, Change, and Cognitive Correlates." In M.M. Baltes and P.B. Baltes (Eds.), *The Psychology of Control and Aging*. Hillsdale, NJ: Erlbaum and Associates.

McHorney, C.A., J.E. Ware, and A.E. Raczek. 1993. "The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs." *Medical Care* 31:247–263.

Mirowsky, J. 1995. "Age and the Sense of Control." *Social Psychology Quarterly* 58:31–43.

Mirowsky, J. and C.E. Ross. 1983. "Paranoia and the Sense of Powerlessness." *American Sociological Review* 48:228–239.

Mirowsky, J. and C.E. Ross. 1984. "Mexican Culture and Its Emotional Contradictions." *Journal of Health and Social Behavior* 25:2–13.

Mirowsky, J. and C.E. Ross. 1989. *Social Causes of Psychological Distress*. New York: Aldine.

Mirowsky, J. and C.E. Ross. 1990. "The Consolation Prize of Alienation." *American Journal of Sociology* 95:1505–1535.

Mirowsky, J. and C.E. Ross. 1991. "Eliminating Defense and Agreement Bias from Measures of the Sense of Control: A 2 × 2 Index." *Social Psychology Quarterly* 54:127–145.

Mirowsky, J. and C.E. Ross. In press. "Fundamental Analysis in Research on Well-Being: Distress and the Sense of Control." *The Gerontologist*.

Pearlin, L.I., M.A. Lieberman, E.G. Menaghan, and J.T. Mullan. 1981. "The Stress Process." *Journal of Health and Social Behavior* 22:337–356.

Pfeiffer, E. 1975. "A Short Portable Mental Status Questionnaire for the Assessment of Organic Brain Deficit in Elderly Patients." *Journal of the American Geriatrics Society* 10:433–441.

Rodin, J. 1986a. "Aging and Health: Effects of the Sense of Control." *Science* 233:1271–1276.

Rodin, J. 1986b. "Health, Control, and Aging." In M.M. Baltes and P.B. Baltes (Eds.), *The Psychology of Control and Aging*. Hillsdale, NJ: Erlbaum and Associates.

Rodin, J., C. Timko, and S. Harris. 1985. "The Construct of Control: Biological and Psychosocial Correlates." *Annual Review of Gerontology and Geriatrics* 5:3–55.

Rowe, J.W. and R.L. Kahn. 1987. "Human Aging: Usual and Successful." *Science* 237:143–149.

Selvin, S. 1991. *Statistical Analysis of Epidemiological Data*. New York: Oxford University Press.

Stump, T.E., P.R. Dexter, W.M. Tierney, and F.D. Wolinsky. 1995. "Measuring Satisfaction with Physicians Among Older and Diseased Patients in a Primary Care Municipal Outpatient Setting." *Medical Care* 33:958–972.

Williams, D.R. 1994. "The Measurement of Religion in Epidemiologic Studies: Problems and Prospects." In J.S. Levin (Ed.), *Religion in Aging and Health: Theoretical Foundations and Methodological Frontiers*. Thousand Oaks, CA: Sage.

Wolinsky, F.D. and T.E. Stump. In press. "A Measurement Model of the SF-36 in a Clinical Sample of Disadvantaged, Older, Black and White Men and Women." *Medical Care*.

Received November 10, 1995
Accepted April 12, 1996