Perceived Control as a Buffer in the Use of Health Care Services

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Gerontologists are increasingly interested in the notion of perceived personal control because such perceptions can be threatened by age-related changes such as declining health and the loss of loved ones. Although a great deal is known about the central role of perceived control in healthy, successful aging, less is known about its potential role in specific contexts such as the use of health services. Our study examined the link between perceived control and patterns of health service use among older individuals with arthritis. We assessed perceived control during an interview, using both a domain-specific and a global measure, and considered health service use in the subsequent year. Even after statistically adjusting for age and morbidity, individuals who perceived low levels of control subsequently were found to use more health services than their high-control counterparts; they visited their physicians more often, had more laboratory tests, and stayed longer in the hospital. This was true, however, only for individuals who had also reported that their arthritis restricted the things they were able to do. Various interpretations are considered, including the possibility that patients with low perceived control are inefficient users of health services or that patients with high perceived control experience a deficiency in health care.

Recent advances in health psychology suggest that psychological or personality factors can be instrumental in the promotion of health and well-being (e.g., Friedman & Booth-Kewley, 1987; Taylor, 1995). In particular, perceived personal control, one’s perceived ability to influence outcomes/events in the environment, has been shown to relate to health (e.g., Rodin & Salovey, 1989; Rodin, Timko, & Harris, 1985) and survival (Chipperfield, 1993; Menec & Chipperfield, 1997; Rodin & Langer, 1977). It is also regarded as a critical factor in adjustment to disease (e.g., Taylor, 1983) and is central to healthy, successful aging (e.g., Rodin, 1986b; Baltes & Baltes, 1990). Elderly individuals are said to be “doubly vulnerable” to the effects of uncontrollability (Rodin, 1986b, p. 150), because beliefs in control over outcomes are threatened by age-related changes in physiology (e.g., reduced functional capacity, immune system capacity) and the social environment (e.g., loss of financial capacity, loss of loved ones). According to Rodin (1986a), it is of the utmost importance to study perceived control among those older individuals who are ill.

Building on previous research in the area of perceived control, health, and aging, we examined a group of older individuals with arthritis. Persons who have severe arthritis often struggle with even the simplest tasks of day-to-day life, such as tying a shoelace or preparing a cup of tea. These daily struggles can pose continual and profound threats to a sense of personal control. Thus, individuals with arthritis may represent a pivotal subgroup within which to study the role of perceived control.

Conceptual/Methodological Issues in the Study of Perceived Control

In its simplest conception, perceived control can be regarded as a stable, enduring, trait-like quality or as an unstable, situation-specific characteristic. However, the complexity of defining and measuring this concept becomes apparent when reviewing the voluminous perceived-control literature that has emerged over the past two and a half decades. This complexity is demonstrated in Skinner’s (1996) attempt to synthesize and impose an integrative framework within which to organize the more than 100 control-related terms identified by researchers and theoreticians. For our purposes, we define perceived control as the perceived ability to influence outcomes/events, and we assess it with both a global and a domain-specific measure.

Researchers have often studied control among people with a common diagnosis, thereby reducing sample heterogeneity that might arise due to condition-specific variations in the frequency and intensity of threats to perceived control. Perceptions of control have been studied, for example, among individuals with impaired fertility (Mendola, Tennen, Affleck, McCann, & Fitzgerald, 1990), heart attack (Affleck, Tennen, Pfeiffer, & Fifield, 1987), diabetes (Band & Weisz, 1990), HIV (Thompson, Nanni, & Levine, 1994), and cancer (Carver et al., 1993; Weisz, McCabe, & Dennig, 1994). Much of this work has explored the link between perceived control and physical/mental well-being. A smaller body of literature has considered outcomes such as the seeking of health information/services (e.g., Brown & Granick, 1983; Krause, 1988; Wallston, Maides, & Wallston, 1976; Quadrel & Lau, 1989).

The goal of our study was to contribute to this smaller body of knowledge by examining the relationship between perceived control and utilization of health services such as physician visits. Given that the dramatic escalation of health care costs is likely to continue as we enter the 21st century, we need to identify the psychological factors that predict the seeking of care. Moreover, it is exceedingly important to understand the psychological factors predicting older individuals’ use of health care services because of the enormous growth of this population and the corresponding increase in chronic conditions that require care.

Perceived Control and Use of Health Services

The findings that emerge in studies of psychological/person-
ality factors and health-related behavior are not always consistent. Little support for a linkage between locus of control and health care utilization has been found in large-scale analyses that simultaneously assess the relative roles of multiple predictors of health care utilization (e.g., Eavas, Rowe, Diehr, & Branch, 1984; Wolinsky, Coe, Miller, Prendergast, Creel, & Chavez, 1983). This work, which is guided by Andersen and Newmann’s (1973) conceptual model of “predisposing,” “enabling,” and “need” factors, reveals that need factors, such as health status, are typically the most powerful predictors of health status, are typically the most powerful predictors (Benzeval & Judge, 1994; Wolinsky et al., 1983), whereas predisposing factors, including the belief in an internal locus of control, are relatively unimportant. These findings are consistent with results from several other studies that have not found internal control to be related to retrospective self-reports of physician visits (Goldsteen, Counte, & Goldsteen, 1994; Strain, 1991) or the volume and use of hospitalizations (Goldsteen et al., 1994; Hunter, Linn, Harris, & Pratt, 1980).

In contrast, several studies do find empirical support for a negative relationship between perceived control and use of health services (e.g., Brown & Granick, 1983; Krause, 1988). For example, in a study of 437 seniors, those individuals with an external locus, as measured by Rotter’s Locus of Control Scale, reported significantly fewer visits to the doctor than did those with an internal locus (Brown & Granick, 1983). In Bohm’s study (as cited in Rodin et al., 1985), the use of medications was lower and physician visits were less frequent among persons high on global control compared with their low-control counterparts. These studies, then, found that fewer health services were used by individuals who have a strong personal sense of control.

Taken together, the existing results provide only weak evidence for a negative relationship between perceived control and use of health services. Moreover, the findings that do support a negative relationship may, at first, seem counterintuitive. Rather, a positive relationship might seem more plausible if a sense of control actually facilitates behavioral responses/actions aimed at improving situations (Taylor, 1983). In fact, in the domain of health, high-control individuals have been shown to be more likely than their low-control counterparts to seek and act upon health information (Quadrel & Lau, 1989; Wallston et al., 1976). Logically, it would seem that this more proactive and assertive behavioral style of high-control individuals should promote higher use of health care resources, suggesting a positive, not a negative, relationship.

On the other hand, a negative relationship is entirely congruent with several findings from the general perceived control literature. For example, a heightened dependency on physicians has been found among individuals with an external, compared with an internal, locus (Rahtz, Joyce, & Paul, 1989). Likewise, relative to their high-control counterparts, individuals who reported a lack of control over maintaining their health reported a greater perceived need for physician assistance (Struthers, Chipperfield, & Perry, 1993). Low-control individuals may also have fewer social network resources, which could explain why they have been found to be less likely than their high-control counterparts to mobilize support in times of need (Revicki & Mitchell, 1985).

In addition to being less able to mobilize support, low-control individuals may possess less extensive coping repertoires. Whereas the high-control individual suffering from arthritis might practice a variety of self-treatments such as exercise, yoga, and heat therapy, the low-control individual might perceive few alternatives to formal care. Thus, the low-control individual may not possess the mechanisms for seeking alternative action, thereby turning immediately to the formal health care system and creating an over reliance on formal mechanisms. Finally, unlike their high-control counterparts, who may delay seeking care because it reflects a “giving away” of control, low-control individuals may have little reticence about seeking formal care. To them, seeking care may not be viewed as relinquishing control, or alternatively, “giving away” control may not be aversive.

To summarize, the prediction of a negative relationship between perceived control and use of health services has a logical basis to the extent that low-control individuals indeed have less extensive social networks and coping repertoires; less concern over relinquishing control; and/or a heightened dependency on physicians. Moreover, there are several factors that may explain why the relationship between perceived control and use of health care has not always emerged in prior studies. As Mechanic (1979) pointed out, the absence of such a relationship may be due to “the way issues are conceptualized, the nature of the measures used, the ways in which data are aggregated, and the manner in which analyses are performed” (p. 87). With regard to past analytic approaches, it is possible that the reliance on main effect models may have obscured a relationship between perceived control and use of services.

The Case for Interaction Models

Krause’s (1988) study nicely illustrates the need to examine interaction models in which perceived control is assessed in combination with other variables. In his study, individuals with an internal locus made fewer physician visits than those with an external locus, but only under conditions of stress. Thus, perceived control may act as a “buffer,” playing a relatively more predominant role under stressful conditions. This buffer model is further supported by the finding from Fowers’ (1994) study of cardiac patients: lower levels of psychological distress were associated with an internal locus of control under conditions of high life stress, but not under low stress.

Stress is the most notable type of negative condition that has been explored in connection with perceived control (e.g., Fowers, 1994; Krause, 1988; Roberts, Dunkle, & Haug, 1994). However, perceptions of control have also been assessed under other highly salient, negative conditions including functional impairment (Zautra, Reich, & Newsom, 1995) and disease severity/poor prognosis (Helgeson, 1992). Moreover, a consistent body of findings has emerged in which perceived control can be seen as playing a buffering role, moderating the effects of these other negative conditions on well-being. For example, Helgeson’s study of 96 cardiac patients demonstrated that the perception of control had more positive effects on adjustment to chronic illness for patients with a poor prognosis, compared to patients with a good prognosis.

The Present Study

The present study examined the use of health services among older individuals suffering with arthritis. Our specific interest was in the interaction between perceived control and arthritis-
related restriction. Restriction was assessed by individuals' self-reports of the extent to which their arthritis restricted the things they were able to do. Because restriction reflects a level of daily challenge, it is likely to be highly salient and is possibly even stress-producing. The relevance of daily challenge is highlighted by the finding that "daily hassles" have more profound negative health consequences than acute life episodes (e.g., Delongis, Coyne, Dakof, Folkman, & Lazarus, 1982). The value of examining restriction is further suggested by its positive relationship to the use of medical services (Hampson, Glasgow, & Zeiss, 1994).

We predicted an interaction between perceived control and restriction, such that more health services were expected to be used by individuals who lacked a sense of personal control, relative to their high-control counterparts, but only if their restriction level was high. Other factors (e.g., health, age) were considered because, through their association with perceived control or restriction, they could explain any higher tendency to use services that might emerge. For example, higher utilization among restricted individuals lacking a sense of control could be due simply to poorer health associated with restriction or lack of control.

Our study differed from much of the earlier work in several ways. First, we used both a general locus of control measure and a domain-specific measure of "consequence-related" control (Thompson et al., 1994). In particular, domain-specific perceptions were assessed in the context of control over arthritis-related problems, the focus being on the consequences of arthritis. Second, the study employed independent health-utilization measures obtained from the records of "one of the most successful" health registries in North America" (Frohlich et al., 1994). Finally, access to these data permitted the prospective assessment of health utilization for one year, making the design of the study longitudinal.

**METHOD**

The measures for this study were taken from two sources: a survey and a health registry. Self-report measures were obtained through a provincial survey conducted in 1991 by a national network of excellence, the Canadian Aging Research Network (CARNET). Health utilization measures were obtained from the health registry maintained by Manitoba Health. This registry, which documents each patient contact with the health care system, contains data on all Manitoba residents covered under the universal health-insurance system.

**Canadian Aging Research Network (CARNET) Survey**

Details on the CARNET study, including the instruments, sample selection, and refusal rates, can be found elsewhere (Chipperfield & Segall, 1996; Menec, Chipperfield, & Perry, 1999; Penning & Strain, 1994; Zimmer & Segall, 1992), and therefore, only a brief overview is provided here. A potential listing of participants was generated from the Manitoba Health Registry using a random selection procedure and stratifying by age (65-74, 75-84, 85+), gender (male, female), and sample site (a major urban center [Winnipeg] and eight smaller communities). Participants were contacted to request their involvement; these requests resulted in personal in-home interviews being conducted with 592 men and 814 women who were between 65 and 104 years old. The CARNET study participants were compared with 1986 Census data on Manitoba seniors (Statistics Canada, 1987; Zimmer & Segall, 1992) and were found to be representative of the population in terms of gender and age. For CARNET participants who consented to the release of health information, their health records (e.g., number of physician visits) were merged with their interview data.

**Present Sample**

The present analyses focused on seniors who, during the interview, identified arthritis as their most serious health condition (n = 316). Excluded were individuals who did not have health utilization data for a full one-year period following the interview (n = 26); refused to release their health records (n = 48); and failed to respond to the perceived control measure (n = 2). Thus, the analyses were restricted to 240 adults between the ages of 66 and 98 years.

**Variables**

Demographic variables.—During the interview, respondents provided information on their age (M = 75.34, SD = 6.42); gender (82 men; 158 women); education (Mdn = 9.00, SD = 3.25); living arrangements (lives alone, n = 105; lives with others, n = 135) and presence of a spouse (no spouse, n = 120; spouse, n = 120). Education was determined from the reported years of completed education. Living arrangements and presence of a spouse were determined by asking about others residing in the home.

Morbidity.—Responses regarding the presence or absence of specified health conditions (e.g., heart trouble, stroke, high blood pressure, kidney trouble, cancer, diabetes) formed the basis of a morbidity index. The list of conditions was presented after asking, "Can you tell me if you have had any of the following problems within the last year or if you are still having after effects from having had them earlier?" This index was created by summing the number of conditions which, on average, was four (M = 3.65, SD = 2.23, range = 1-13, Cronbach's alpha = .61).  

Perceived control.—Two measures of control were used, the first of which was based on Levenson's Locus of Control items. Participants responded on a 5-point scale to five internality items. A weak Cronbach's alpha coefficient (.58) emerged for these items, and attempts to increase the alpha using an item-deletion procedure were unsuccessful. Moreover, the intercorrelation matrix for the internality items revealed low correlations (.09 to .28), with the exception of two items that significantly correlated at .50; those items were, "I get what I want by hard work" and "Life is determined by my actions." Thus, for the present purposes, these two items were retained and summed to create a measure of internality with a possible range of 1 to 10. Only five individuals scored below 5; thus, their scores were recoded to "5" to reduce the effects of outliers (M = 8.30, SD = 1.19, range = 5-10).  

The second indicator of perceived control was a domain-specific measure. This was obtained by asking respondents, "When you experience difficulties because of your arthritis, do you feel that you are in control?" Responses, initially scored on a 7-point scale (0 = in control; 6 = helpless), were later reversed
such that high scores reflected high perceived control ($M = 4.7$, $SD = 1.74$).

**Level of restriction.** — Level of restriction was measured by responses to the following question: “How often during the past year has your arthritis restricted the kinds of things you do?” Responses were initially scored on a 3-point scale with 0 = “never,” 1 = “sometimes,” and 2 = “always” ($M = 1.18$, $SD = 0.72$).

**Utilization.** — Health service utilization data were available for a one-year period following the CARNET interview, allowing for the creation of three dependent measures. First, physician visits consisted of the number of office visits as recorded by physicians ($M = 9.96$, $SD = 8.34$). Second, laboratory tests (e.g., blood tests, X-rays) consisted of a count of all tests ($M = 18.28$, $SD = 17.63$). Because such test procedures are initiated by physicians, no laboratory tests were conducted for individuals who had not visited their physicians resulting, therefore, in some scores of zero. The third utilization measure, length of hospital stay, reflected the number of days between hospital admission and discharge date ($M = 3.06$, $SD = 9.97$). In a few cases, individuals remained in the hospital beyond the one-year period of follow-up. For these individuals, the last day of the one-year period was used as the discharge date, helping to reduce the effect of outliers. Respondents who were not hospitalized were coded as having zero days in the hospital.

**Results**

Preliminary analyses involved an examination of correlations among a variety of factors (i.e., morbidity, age, gender, education, presence of spouse, presence of housemate) and the key independent variables (i.e., restriction, perceived control, internal locus of control) and dependent variables (i.e., physician visits, laboratory tests, length of hospital stay). Morbidity and age were the only factors that correlated significantly with any of the key variables. In particular, restriction increased with advancing age, $r = .16$, $p < .05$, and increasing morbidity, $r = .35$, $p < .0001$; perceived control decreased with increasing morbidity, $r = -.35$, $p < .0001$. Morbidity also correlated positively with physician visits, $r = .28$, $p < .0001$, and laboratory tests, $r = .34$, $p < .0001$, and length of hospital stay increased with age, $r = .22$, $p < .001$. In short, because age and morbidity were the only variables to correlate significantly with the key independent and dependent variables, these were included in all subsequent analyses.

**Internal Locus (IC)**

Using the SAS Version 6 GLM procedure (SAS Institute, Inc., 1989), regression analyses were conducted to examine the role of internal control (IC), restriction, and their interaction on the three separate health service utilization measures. As shown in Table 1A, restriction was a significant predictor of physician visits and days in the hospital. That is, higher levels of restriction predicted more physician visits ($B = 11.62$) and longer stays in the hospital ($B = 15.53$). Of more relevance was the significance of the predicted interaction between internal control and restriction that was found for physician visits and days in hospital. The nature of this interaction is discussed in more detail following a description of the findings for the domain-specific perceived control measure.

**Domain-Specific Perceived Control (PC)**

Identical regression analyses were conducted, replacing the “internal control” (IC) with the domain-specific “perceived control” (PC) variable. The interaction findings were consistent with those reported for the internality measure. That is, the predicted interaction between perceived control and restriction emerged as significant in all three analyses of the utilization measures (Table 1B).

**Alternative analysis.** — An alternative analysis was conducted due to concerns about the skewness of the distribution for domain-specific perceived control. Because half of the respondents scored at the highest point on the scale, a modified two-level variable was created, distinguishing between those respondents scoring at the top of the scale ($n = 125$) and those reporting less control ($n = 115$). For simplicity, “high” and “low” control were used as descriptive labels. For this analysis, a collapsed restriction variable was also created, distinguishing between those respondents who were never restricted ($n = 152$).

| Table 1. Summary of Regression Results for the Predictors of Health Utilization Variables |
|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
|                                        | Physician Visits                        | Lab Tests                              | Days in Hospital                       |
|                                        | $B$          | $t$          | $B$          | $t$          | $B$          | $t$          |
| A. Internal Control (IC)               |                                        |                                        |                                        |
| Age                                    | 0.04         | 0.46         | 0.04         | -0.22        | 0.35         | 3.35***      |
| Morbidity                              | 0.69         | 2.79**       | 2.15         | 4.13***      | -0.09        | -0.28        |
| Internal Control (IC)                  | 0.23         | 0.27         | -1.42        | -0.78        | 0.88         | 0.79         |
| Restriction (R)                        | 11.62        | 2.35*        | 11.25        | 1.09         | 15.53        | 2.45*        |
| IC × R                                 | -1.20        | -2.03*       | -0.96        | -0.78        | -1.56        | -2.05*       |
| B. Perceived Control (PC)              |                                        |                                        |                                        |
| Age                                    | 0.04         | 0.50         | -0.01        | -0.04        | 0.36         | 3.46***      |
| Morbidity                              | 0.62         | 2.40*        | 1.97         | 3.62***      | -0.29        | -0.88        |
| Perceived Control (PC)                 | -0.35        | -1.02        | -0.73        | -1.03        | -0.97        | -2.26*       |
| Restriction (R)                        | 9.82         | 3.72***      | -16.79       | 3.04**       | 9.33         | 2.78**       |
| PC × R                                 | -1.01        | -3.39***     | -1.69        | -2.71**      | -0.88        | -2.32*       |

*p < .05; **p < .01; ***p < .001.
and those who were restricted "sometimes" or "always" (n = 88). For convenience we again adopted the labels of "low restriction" and "high restriction.".

Using these modified variables, a perceived control (low, high) by restriction (low, high) 2 × 2 ANCOVA was conducted. The results revealed significant perceived control–restriction interactions [F(1,234) = 5.53, p = .020, for physician visits; F(1,234) = 6.38, p = .012, for laboratory tests; and F(1,234) = 4.32, p = .039, for hospital stays]. Thus, the findings from these analyses corroborated the regression findings that are reported in Table 1B.

Control by Restriction Interaction

Because the same interaction pattern was found for both control measures, only patterns for the domain-specific measure are presented graphically. The interaction patterns are illustrated by the least-squared covariate-adjusted means from the ANCOVA analysis for physician visits (Figure 1), laboratory tests (Figure 2), and hospital days (Figure 3). In keeping with our premise, these figures may suggest that the impact of perceived control is stronger under higher levels of restriction.

In order to understand this interaction more fully, we further examined the subgroup of individuals who were highly restricted (i.e., the top line in each graph), comparing those with low- and high-control. Applying the Least Significant Difference (LSD) procedure to the covariate-adjusted means, the pairwise comparisons for low- and high-control individuals were found to be significant for each of the three utilization measures (p < .02). In particular, compared to their low-control counterparts, high-control individuals had at least four fewer physician visits (Figure 1), nine fewer laboratory tests (Figure 2), and five and a half fewer hospital days (Figure 3).

Using Keppel's formula, as is suggested by Tabachnick and Fidell (1983), the proportion of variance accounted for by the control–restriction interaction was calculated. The variance accounted for was small in statistical terms, ranging from 2% to 3%. Seemingly weak interactions can, however, have considerable practical significance. This is illustrated by our estimated costs for hospital stays, conducted only for those individuals characterized by high restriction (n = 88). An average estimated daily cost of $612.68 was derived by dividing the total cost of hospital stays for Manitoba residents in 1991–1992 (i.e., $677 million) by 1,104,989, the total number of days spent in hospital by Manitoba residents in 1991–1992 (Shanahan, Loyd, Roos, & Brownell, 1994). The average daily cost (i.e., $612.68) was multiplied by the mean number of hospital days for those with high (3.55 days) and low (8.73 days) control. Using the cost of a hospital stay as a measure of practical significance, we found that, on average, approximately $5,348.70 was being spent for an individual who had a low level of perceived control and approximately $2,175.00 for one who had a higher level of perceived control.

DISCUSSION

Seniors who perceived low levels of control subsequently visited their physician more often, had more laboratory tests,
and stayed longer in hospital than their high-control counterparts. This was true, however, only for those who reported being restricted by their arthritis. The higher use of these health services by those lacking a personal sense of control was generally consistent across two disparate measures of control. Moreover, the relationship was statistically significant, even when holding constant differences in age and morbidity, suggesting that the higher use of health services was not simply due to older age or poorer health status among individuals who lacked a sense of personal control.

**Conceptual Interpretive Frameworks**

Various conceptual frameworks could be applied to interpret our findings, two of which seem particularly instructive. First, the interaction in which low perceived control predicted health service use, but only under negative conditions, is entirely consistent with Krause’s (1988) findings and the previously discussed “buffer” model. It is even possible that restriction, the negative condition in our study, imposed stress, thereby implicating stress as an underlying explanatory mechanism. To the extent that arthritis-related restriction produced stress and a sense of control relieved the stress, this could indeed explain a reduced need to seek formal services by those individuals who, although restricted, felt in control.

The second model that may be valuable for interpreting our findings comes from Thompson’s work on low-control environments, which offer very little opportunity for actual control (Thompson, 1993; Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, & Cruzan, 1993). Thompson proposes that actual opportunities for control can be eroded by conditions such as disability and financial constraints and that perceptions of control have the greatest impact under such conditions. To the extent that highly restricted individuals in our study had less actual opportunity to exert control in their day-to-day lives, our findings would be consistent with the premise that perceived control has the greatest impact when opportunities for actual control are thwarted. In fact, what may be a unifying feature in the various types of negative situations described in the literature (e.g., disease severity, poor prognosis, functional impairment) is that they all offer little opportunity for objective control.

The findings in our study are consistent with both Krause’s and Thompson’s perspectives, perspectives that are neither mutually exclusive nor logically incompatible. Restriction could create an environment with very little actual opportunity to control outcomes, and such an environment could, at the same time, be stressful. Regardless of the mechanism, our findings imply that it is only under such negative conditions that perceptions of uncontrollability predict the use of health services. Under these conditions then, a lack of control may produce a general inefficiency in the management of health care, leading to more physician visits, more laboratory tests, and longer hospital stays.

**Alternative Interpretations**

A possible alternative interpretation of our findings is that individuals with a strong sense of control failed to detect or acknowledge health problems, consequently leading to relatively low rates of health service use. This would be consistent with delays in seeking treatment for symptoms of cancer reported among “autonomous” women (Fisher, 1967; Hammerschlag, Fisher, DeCosse, & Kaplan, 1964). Such an interpretation would imply not that a lack of control produces overuse or inefficiency in the management of care, but that a perception of control produces a deficit in the receipt of care. Very different implications obviously follow from such competing interpretations.

Another plausible interpretation focuses not on the patient, the health service consumer, but on the health service provider. Most of the previous discussion assumes that utilization of health services is “patient driven”; however, it is plausible that utilization is “physician driven.” Just as physicians’ treatment decisions are guided by beliefs about the severity of their patients’ conditions, their decisions may be guided by beliefs about their patients’ feelings of control. To illustrate, if, during the patient-physician encounter, the physician detects a lack of perceived control on the part of the patient, the physician may schedule a subsequent visit that would otherwise not be recommended. It is possible then, that in our study physicians encouraged the use of services among patients who they believed were lacking a sense of control. Although this interpretation focuses on the role of the physician, perceived control nonetheless remains a factor explaining health care use.

**Financial Implications**

There are multiple interpretations for the present findings; however, the financial implications are clear. More health care dollars are being spent on individuals who lack a sense of control, demonstrating how statistically small effects can have profound practical implications. The point of the financial illustration is not to focus attention solely on health care costs. Doing so would ignore the real possibility that actions to reduce health care expenditures could erode health and impose unfortunate delays in seeking treatment. Thus, before such findings can be used to generate cost-saving recommendations, it is imperative to determine whether the higher use of health resources among individuals lacking a sense of control reflects patient-driven, ineffective management of care, or something quite different.

**Strengths and Limitations**

One of the clear strengths of our study is the measures of health service utilization that were acquired from an extremely comprehensive medical records database. These measures do not rely on memory of past behavior, thereby avoiding recall bias. Their reliability is also enhanced because physicians are paid through this system and are motivated to report each contact. Finally, the measures are obtained unobtrusively, providing objective indices of utilization (Roos, Roos, Fisher, & Bubolz, 1989).

On the other hand, our reliance on a single item to measure domain-specific control is not ideal. Unfortunately, large-scale, multipurpose studies are often restricted in their inclusion of multiple-item scales. Nonetheless, single-item measures that are characterized by high face validity can have good predictive validity. An excellent example of the predictive validity of a single-item measure is the simple question that asks respondents to rate their health on a 5-point scale. This single-item measure of self-rated health has been shown to predict mortality better than other, more extensive measures of health (Mossey & Shapiro, 1982). Just as people can easily rate their health, they can rate their perceptions of control. This is exemplified by the success that other researchers have had using single-item measures of perceived control within specific domains (e.g., Hedgeson, 1992; Reed, Taylor, & Kemeny, 1993; Taylor,
Helgeson, Reed, & Skokan, 1991).

Another strength of our study was the access to a large, randomly selected sample of older individuals and the corresponding ability to generalize. It is critical, however, to acknowledge the boundary on the generalizability of our findings because the sample for our analysis was restricted to a homogeneous group of seniors who had arthritis and who regarded it as their most serious health condition. Although serving the important function of reducing sample heterogeneity that might arise due to the condition-specific variations in the frequency and intensity of threats to control, this approach clearly limits generalizability. Thus, generalizations beyond this subgroup of the population would be inappropriate.

**Future Directions**

Much could be gained by a careful analysis of older individuals who, paradoxically, retain a sense of control despite exposure to such negative conditions as stress or functional restriction. These individuals are of particular theoretical interest (Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, & Cruzen, 1993). A systematic study of this unique group of individuals may provide insights into the mechanisms that allow individuals to maintain a sense of control in the face of negative conditions. For example, an analysis of their behaviors and strategies may reveal the routes these people adopt in favor of seeking formal health care. In turn, this line of research could promote the design of control-enhancing interventions that may ultimately reduce health care costs and enhance the overall quality of later life.

Future studies should also continue to examine systematically the role of age in the use of health services. Interestingly, in our study, age was not found to be related to physician visits or laboratory tests. This might seem somewhat surprising in light of the prevalence of chronic diseases that require continual treatment in later life (Taylor, 1990). It might also imply that the anticipated magnitude of growth in future health care costs has been overstated. Of course, some skepticism is always recommended when interpreting predictions based on individuals who presently comprise the “older” population. The cultural, technological, and economic forces operating today will produce a qualitatively different upcoming “older” generation, relative to its predecessor. Thus, what is currently true about the relationship between age and use of health services may change tomorrow.

Continued work in this area may also help isolate factors that exert a minimizing role in the seeking of health services. For example, the motivation to engage in health-related behaviors may change as people near the end of their lives because such behaviors are viewed as futile in relation to future health status (van Doorn & Kasl, 1998). Alternatively, as individuals grow older, they may adopt a broader array of strategies to deal with their health problems. They may, for example, lower their personal expectations for good health, thereby downgrading their perceived need for health care. Our current work in the area of primary- and secondary-control strategies (Chipperfield, Perry, & Menec, 1999; Menec, Chipperfield, & Perry, 1999) suggests that a careful analysis of age-related control-enhancing strategies may provide some insights into the relationships between perceived control, health, and use of health services.

**Summary**

This study convincingly demonstrated a link between perceived control and health service utilization. Our findings, however, allow us only to speculate about why or how perceived control could influence the use of health services. Do these findings imply inefficiency in the use of health services by patients with low control or a deficit in the receipt of health services by patients with high control? Do they reflect a process that is directed by the health service consumer or the health service provider? These questions must be answered before we can meaningfully interpret a relationship between perceived control and health service utilization.

Although such psychological variables as perceived control have been found to have a statistically small effect in the use of health services, even small effects can have profound practical implications. The benefits of studying such psychological factors as perceptions of control have not been given serious consideration in attempting to understand the use of health care resources. The concrete benefit of such psychological factors is that they are potentially modifiable. To the extent that this is true, it may be possible to reduce health care costs through control-enhancing interventions. Moreover, the potential modifiability of perceptions of control has implications for improving the quality of later life.

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The Department of Psychiatry and Behavioral Sciences at Stanford University School of Medicine is seeking a full-time Assistant Professor (Research). This is a non-tenure track appointment and is coterminous with funding. The position will be based in the Aging Clinical Research Center at the Veterans Affairs Palo Alto Health Care System. The successful candidate will be responsible for the development and conduct of a geriatric mental health research program focusing on the interaction of biological, genetic, psychosocial and cognitive factors in the progression of patients with dementias and other types of cognitive impairment. The candidate should have a documented interest in and experience with integrating biological and psychological approaches to cognitive decline in normal and pathological aging.

Additionally, the individual will be expected to take an active part in teaching of Stanford medical students and psychiatry residents in gerontological mental health research and consulting with University and VA-based investigators on gerontological mental health research projects. Finally, the individual in this position will provide patient and staff education. A demonstrated ability to attract extramural research support is required. Applicants must have demonstrated expertise in relevant clinical training, teaching, and/or research publications.

Applicants must hold a Ph.D. or equivalent degree in psychology. Stanford University is committed to increasing representation of women and members of minority groups on its faculty and particularly encourages applications from such candidates. Applicants should forward a curriculum vitae and the names of five referees to Dr. Jerome Yesavage, Chairman of the Search Committee, c/o Department of Psychiatry and Behavioral Sciences, Stanford Medical Center, 401 Quarry Road, Stanford, CA 94305-5550.