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The Impact of a Multidisciplinary, Integrated Approach on Improving the Health and Quality of Care for Individuals Dealing With Multiple Chronic Conditions

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This study examined the effects of using a multidisciplinary, integrated, whole-person, team advocate approach to educate and empower participants with multiple chronic illnesses and coordinate, monitor, and support their health care process. Individuals (N = 39) from Midwest hospitals participated and completed self-report instruments. Changes in participants' functioning were also measured with diagnostic measures completed by the team advocates. The results indicate that the participants' perceptions of physical functioning, physical well-being, control, self-efficacy, and life satisfaction increased. Additionally, health-related behavior changes were reported, and short-term costs were significantly lower than projected costs. Finally, the participants rated their health care services in the program as more effective than previous health care services.

Keywords: healthcare, intervention, multidisciplinary approach, chronic illnesses, quality of care

There is no doubt that traditional Western health care systems are fraught with problems, not the least of which is rapidly escalating costs. A recent study of the rising prevalence of chronic health care conditions and associated burdens to societies was commissioned by the governments of five Western-style democracies (including the United States). A major conclusion of the study was that "a focus on a small population of intensive users could have the potential of improving care for all" (Blendon, Schoen, DesRoches, & Osborn, 2003, p. 120). Likewise, the Employee Benefit Research Institute (2002) in Washington, DC, stated, "Unless . . . health benefits include incentives and tools to affect the spending patterns of high users of health care services, the total cost of providing health care benefits is unlikely to be significantly affected" (p. 1).

This "small population of intensive users" is composed of two general types of scenarios. One group contains those who represent a "one episode" or "one severe" health condition, such as catastrophic cases (e.g., marked prematurity, disseminated cancer, traumatic brain injury). The second group includes those who are recurrent high-cost utilizers, made up of individuals with multiple chronic illnesses and the expected attendant multiple primary and/or secondary psychological and socioeconomic distresses. Combined, these two groups typically compose anywhere from 3% to 6% of a given health plan's benefit members and often account for 40%–60% of overall health care plan costs.

A literature review indicates that most systematic health interventions under study have focused on the treatment of individuals dealing with a single, specific chronic illness (Kang et al., 2002;

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Oppenheimer et al., 2003; Schneiderman, Antoni, Saab, & Ironson, 2001; Watkins, Pincus, Tanielian, & Lloyd, 2003). Such studies and others in the literature have led to the validation of two important concepts that are associated with the effectiveness and appropriateness of health-related behaviors, namely a person's sense of self-efficacy and perceived locus of control (see reviews below). Recently, Sheldon (2002) suggested that a more effective, comprehensive, and universal intervention should involve an assessment for psychological and medical issues alike, with the coordination and monitoring of health care in an integrated fashion, along with education, treatment compliance accountability, and encouragement and support for comorbid individuals to become responsible for and effective at managing their own health and health care needs.

In the present study we address both the feasibility of and the outcomes achievable by just such an approach, in addressing the issue of the chronic and multiply comorbid, recurrent, intensive health care users. For example, what would such an intervention look like, and would it help those with multiple chronic illnesses to improve their physical and psychological health? If an intervention program could provide such individuals and families with sufficient support, training, and education, would it actually enable them to learn how to manage their health care needs and empower them to lead a healthier lifestyle? Can an integrated, multidimensional team approach to whole-person health help these individuals set and achieve realistic goals, so that the participants themselves perceive that their physical, psychological, and social conditions have improved? Would such an approach to education and support result in a reduction of the anticipated medical costs of the intensive users of health care services?

This program (Joyce, Kuhn, & Curtin, 1999) is one such intervention, which was developed over several years in the 1990s and initially piloted in a community hospital in suburban Chicago in 1998. The program utilizes a multidisciplinary team approach (a primary nurse advocate, a primary care physician, and a behavioral counselor) in performing a comprehensive review of each participant's obtainable physical, social, and psychological health history and records and an extensive whole-person interdisciplinary intake evaluation. From the review and evaluation of a series of whole-person (medical, emotional, behavioral, financial, social, family, and spiritual) health issues and health habits, measurable goals are developed in a collaborative fashion, along with specified time frames and responsibilities (participant and team). The intervention consists of regular face-to-face meetings with the team and the participant as well as periodic meetings with the participant's whole-person health program providers (e.g., a nutritionist, psychological counselor, financial counselor, massage therapist) and with the participant's significant others, as needed. This process is coupled with participation and compliance tracking, coordination of all health care, individual and group education, decision support, and coaching. The entire program is provided with an increase in health care benefits to participants and utilizes participant empowerment, accessing available community resources and utilizing regional specialty consultants and credentialed providers of complementary and alternative care when appropriate and beneficial. The goal is for each participant to reach his or her best achievable and maintainable level of whole-person health and relative independence from the health care system, while raising self-efficacy, health literacy, sense of personal control (locus of control), functional capacity, well-being, and life satisfaction and reducing expected recurring health care costs.

Factors Associated With Health-Related Behaviors

Self-Efficacy

The concept of self-efficacy was introduced by Bandura (1977) to reflect a person's belief in his or her ability to overcome the difficulties in performing a specific task in a particular situation. Bandura argued that judgments of self-efficacy influence choices and behaviors. These choices include acquiring new behaviors (e.g., a new exercise regimen) and inhibiting existing ones (e.g., changing one's poor diet). In addition, self-efficacy influences the amount of effort people expend in obtaining new behaviors (e.g., amount of time) and their persistence in maintaining these behaviors when they encounter obstacles (e.g., fatigue, hunger pangs). Furthermore, low levels of self-efficacy have a negative impact on people's emotional state, such as anxiety or feelings of depression when confronted with setbacks or obstacles (Bandura, 1986).

Self-efficacy has been shown to be a strong predictor of health behavior. In particular, self-efficacy has been shown to be related to exercise (Desharnais, Bouillon, & Gordin, 1986), cardiac rehabilitation (Ewart, Taylor, Reese, & Debusk, 1984; Taylor, Bandura, Ewart, Miller, & Debusk, 1985), weight loss, and quality of nutrition (Bernier & Avard, 1986; Weinburg, Hughes, Critelli, England, & Jackson, 1984). Researchers have found that self-efficacy is a significant predictor for terminating smoking practice and maintaining a nonsmoking plan as well as of the chance of relapse and length of time until relapse (Brod & Hall, 1984; Condiotte & Lichtenstein, 1981; DiClemente, 1981; Pehacek & Danaher, 1979). In addition, degree of self-efficacy predicts movement through stages in an intervention program (Prochaska & DiClemente, 1984). Given these findings, it is clear that increases in self-efficacy result in positive health behavioral changes.

Research findings on self-efficacy were important for the development of this intervention process. In particular, we hypothesized that through an advocate team process of support, training, and education, participants' familiarity with the appropriate use of the health care system would increase. Likewise, we hypothesized that participants' self-efficacy regarding their ability to adopt healthier behaviors would increase and that such belief would result in the actual long-term practice of those behaviors. Previously, researchers have found that when the self-efficacy of participants is increased, these individuals remain more likely to maintain learned health-related behaviors even though reinforcement and encouragement from health care providers is reduced (Hofstetter, Sallis, & Hovell, 1990; Maibach, Flora, & Nass, 1991; Pehacek & Danaher, 1979). Therefore, we also hypothesized that, with an increase in self-efficacy, the participants would gradually assume personal responsibility for their health-related behaviors.

Locus of Control

Locus of control is a major construct that has been interchanged and confused with self-efficacy in the literature. According to Rotter (1954), locus of control is the belief that goal attainment either is within the control of a person (internal control) or is controlled by outside factors (external control). Levenson (1974)

extended Rotter's original theory and showed that external beliefs could be divided further into two separate beliefs: chance expectations, such as luck, and control by powerful others, such as physicians, other caregivers, significant others, or even employers. Levenson (1974) concluded that people who believe that powerful others control their life behave and think differently from those who believe that events in their life occur by chance or fate.

Locus of control concepts differ from self-efficacy, which is task specific (e.g., starting and maintaining an exercise program). Locus of control is more general than self-efficacy; it is domain specific (e.g., health domain) rather than task specific and is a measurement of belief in a source of control. The fact that they are separate constructs, however, does not mean that they are independent of one another or that researchers should use one construct in place of the other in examining health behavior.

A number of researchers have investigated the relationship between locus of control and health behaviors, finding a positive association. Most of the research has focused on the role of internal (personal) control and its influence on health outcomes. Individuals indicating an internal locus of control have been shown to engage in more health-promoting behaviors. For example, internality has been positively associated with practicing breast self-examination (Quadrel & Lau, 1989), starting and maintaining an exercise program (Carlson & Petri, 1989; Slenker, Price, & O'Connell, 1985), and complying with treatment (Lewis, Morisky, & Flynn, 1978). Treatment compliance is an important issue for individuals coping with multiple health issues, as these individuals may become overwhelmed by their numerous health care needs.

Furthermore, researchers have examined the effects of patients' involvement in their health care. For example, Groessl and Cronan (2000) studied 363 individuals with osteoarthritis covered by a large health maintenance organization. The researchers found that increased patient involvement through an intervention program combining social support and education led to an increase in feelings of self-control, positive changes in self-efficacy, and decreasing helplessness, thus creating improved health status and decreased health care costs. This study found that the intervention resulted in health care costs that were 70% lower than the estimated costs listed by the U.S. Department of Health and Human Services (1992, as cited in Groessl & Cronan, 2000).

In summary, numerous intervention programs to date have focused such empowering and educational interventions on only one chronic illness at a time. However, significantly more health care costs, as well as suffering and disability, are borne by individuals dealing with multiple chronic comorbidities, and these individuals contribute disproportionately to overall health care cost escalation. Thus, health care is in need of an approach that successfully helps such individuals to effectively manage their health, health risks, and related behaviors.

Purpose and Hypotheses

Previously, researchers have usually limited their assessment to the impact of either self-efficacy or locus of control as a predictor of health behavior. We believe that health care researchers need to adopt a more comprehensive approach by examining both self-efficacy and locus of control. The purpose of this study is to investigate whether a multidisciplinary team of health advocates will impact the health-related behaviors of individuals suffering from multiple chronic conditions. This multidimensional, collaborative process allows the advocate team and the participant to focus on the physical, psychological, and social issues that impact the individual's overall functioning, as it relates to his or her health. The team reviewed all the reasonably obtainable physical and psychological medical records of each participant and conducted an extensive multidisciplinary, whole-person intake assessment, collaborating on and reviewing with the participant a series of realistic intervention objectives and goals. Each participant's integrated plan included but was not limited to goals designed for improvement in self-efficacy, education, and experience in the appropriate use of the health care system as well as whole-person, family, financial, and social well-being.

We hypothesize that with positive changes in physical and psychological functioning and with more appropriate use of the health care system, there will be a reduction in the short-term health care costs for these individuals. To evaluate these hypotheses, we pose the following questions:

1. Does an integrated, multidimensional approach to dealing with participants' multiple health care needs influence these individuals' physical functioning?
2. Does an integrated, multidimensional approach influence individuals' perception of their physical well-being?
3. Does this intervention approach affect individuals' perceptions of control?
4. Does this collaborative approach influence individuals' perception of their self-efficacy and their life satisfaction?
5. Does this intervention program influence participants' behavioral changes in health-related behaviors, such as diet and exercise?
6. Does the program effectively manage individuals' short-term costs?
7. How do participants rate their health care services in this integrated, multidimensional program, as compared to their previous health care services?

Method

Participants and Design

The participants consisted of 39 (15 men, 24 women) individuals who were enrolled in an integrated, multidisciplinary advocacy program. Individuals were invited to join the program on the basis of health care claims over the past 5 years, including total costs, the number of chronic diagnoses (e.g., nonself-limited: either likely continuous, recurring, and/or progressive), and the distribution of claims costs by year and by diagnosis. Their health care benefits were improved to encourage their commitment to this interactive process.

The mean age of the 39 participants was 52.39 (SD = 11.09; ranging from 23 to 67 years old). Their mean length of education was 14.66 years (ranging from 10 to 21 years). The majority of participants were married (n = 23; 59%), 9 were divorced (23%), 4 were single (10%), 2 were widowed (5%), and 1 was separated (3%).

Initial survey instruments, as listed below, were administered prior to the development of participants' individual plans, to establish a baseline of self-reported health for participants entering the program. The participants reported suffering from a mean of 5.65 illnesses (SD = 2.99), of which 3.80 (SD = 2.19) were chronic and 1.85 (SD = 1.58) were nonchronic. The multidisciplinary team independently evaluated the illnesses of these individuals and confirmed the individuals' perceptions of their illnesses (M = 6.58; range = 4 to 10 illnesses). Participants reported having been hospitalized a mean of 5.00 times (ranging from 1 to15 hospitalizations) and having had a mean of 3.31 operations (ranging from 0 to 14 operations). Additionally, the participants reported that their health-related problems had resulted in an average absence of 57.83 days from work over the past year (ranging from 0 to 365 days).

Materials

We used five surveys to measure participants' perceptions of their physical and psychological well-being. Participants completed the questionnaires at the beginning of the intervention process and again 1 year later. We used the SF-36 Health Survey (Ware, Snow, Kosinski, & Gandek, 1993) to measure participants' perceptions of their physical functioning (to address Question 1, listed above). We utilized the Perception of Personal Control Questionnaire (Krause & Saarnio, 1996) to measure participants' perceptions of physical health and their perceptions of personal control over their physical functioning, mental health functioning, social functioning, and personal life functioning (locus of control; Questions 2, 3, 5, and 6). We used the Self-Efficacy to Manage Disease measure (Lorig et al., 1996) to measure participants' self-efficacy in managing the effects of their conditions (Question 4). In addition, we administered a measure of life satisfaction (Lachman & Weaver, 1998; also Question 4). To examine cost effectiveness, the advocacy team completed conservative estimates of the projected short-term costs for health care for each individual, on the basis of the norms for that person's individual illnesses, as defined by the Healthcare Cost and Utilization Project (HCUP-3; 1997; Question 6). Last, we presented a Client Satisfaction Questionnaire to measure participants' level of satisfaction with the program (Question 7).

Results

It should be noted that all of the statistics in this section are based on a maximum of 39 participants. Any decrease in sample size is a result of the participants not answering all of the questions or, in the case of the Client Satisfaction Questionnaire, the result of participants not mailing back the questionnaire in the self-addressed envelope. In addition, there were no significant gender differences in the responses to the various measures; therefore, all analyses are collapsed across this factor.

Physical Functioning

Participants' responses on the SF-36 Health Survey indicated an improvement in their overall physical functioning from the time they entered the program (M = 2.46, SD = 1.022) to 1 year into the program (M = 2.85, SD = .812), $t(38) = -2.43$, $p = .020$. This scale ranged from 1 (*poor*) to 5 (*excellent*). Therefore, the intervention did result in participants perceiving an improvement in their physical functioning since beginning the program.

Perceptions of Physical Well-Being

We averaged participants' scores across five questions on the Perceptions of Personal Control Questionnaire to form a perception of physical well-being index. For this index, low scores reflect a self-perception of being unhealthy, whereas high scores indicate a self-perception of being healthier. The index ranged from 5 (*not at all healthy*) to 27 (*very healthy*). Participants perceived themselves as being physically healthier after being in the program for a year (M = 17.23, SD = 3.535) as compared to their evaluation at the start of the program (M = 15.18, SD = 4.260), $t(38) = -3.84$, $p < .001$.

Locus of Control

We averaged participants' scores across 16 questions on the Personal Perceptions of Control Questionnaire. Participants answered each question on a scale that ranged from 1 (*no control*) to 6 (*very much in control*), which resulted in a possible index score ranging from 16 to 96. To examine participants' perceptions of control, we conducted t tests. The results indicate no differences in control by others across time or control by chance across time ($ps > .10$). However, after participants had been in the program for 1 year, the change (increase) in their perceived personal control approached significance (1 year later, M = 64.46, SD = 13.498), as compared to when they initially entered the program (M = 59.97, SD = 16.029), $t(38) = -1.93$, $p = .061$.

Perceptions of Self-Efficacy and Life Satisfaction

We averaged participants' scores across six questions on the Health Locus of Control to form a self-efficacy index. For the self-efficacy index, low scores reflect participants' low levels of confidence in managing and keeping their illnesses from interfering in their ability to perform daily activities, whereas high scores indicate high levels of confidence in managing and keeping their illnesses from interfering in their ability to perform daily activities. This self-efficacy index ranged from 6 (*not at all confident*) to 60 (*totally confident*). Participants reported an increase in self-efficacy regarding their ability to manage their health care needs after being in the program for 1 year (M = 40.91, SD = 8.512), as compared to when they first entered the program (M = 35.86, SD = 11.971), $t(22) = -2.250$, $p = .04$.

Participants also reported a higher level of life satisfaction after being in the program for a year (M = 6.26, SD = 1.864), as compared to when they started the program (M = 5.35, SD = 2.102), $t(22) = -2.42$, $p < .05$. The life satisfaction scale ranged from 1 (*worst possible life you could ever imagine*) to 10 (*best possible life you could ever imagine*).

Behavioral Change

We also measured participants' changes in diet and exercise habits using the Personal Perceptions of Control Questionnaire. Both of these scales ranged from 1 (*very little exercise*; *not at all healthy*) to 6 (*very much exercise*; *very healthy*). Participants reported exercising more after being involved with the program (M = 3.64, SD = 1.287) than when they started the program (M = 2.49, SD = 1.485), $t(38) = -4.82$, $p < .001$. Participants also reported eating healthier after being involved with this multidisciplinary team (M = 4.08, SD = 1.085), as compared to when they entered the program (M = 3.69, SD = 1.151), $t(38) = -2.25$, $p = .030$.

Short-Term Costs of the Program

We investigated the financial impact of the program on the projected short-term costs for participants in the program. We completed a comparison between estimated costs, using HCUP-3 data, and actual health care costs for participants. It should be noted that we used more conservative estimates of costs/savings (low estimates) in the analysis to allow for a more rigorous comparison. This analysis yielded a significant difference in participants' actual costs for the year (M = $25,209.75; ranging from $1,325.71 to $110,422.91), as opposed to the lowest estimated costs using HCUP-3 data (M = $37,558.04; ranging from $4,264 to $216,750), $t(38) = 2.17$, $p < .01$.

Participants' Ratings of Health Care Services for the Program

Participants rated their health care services under the program as significantly more effective in helping them deal with their conditions ($M = 3.73$, $SD = .583$) than previous health care services ($M = 2.50$, $SD = .572$), $t(29) = -8.73$, $p < .001$. The Client Satisfaction Questionnaire ranged from 1 (*not at all effective*) to 4 (*very effective*). Also, as a result of the process of integrating health care, participants reported being more satisfied with their health care services ($M = 3.53$, $SD = .571$) as compared to previous health care services ($M = 2.77$, $SD = .728$), $t(29) = -4.04$, $p < .001$. The scale ranged from 1 (*quite dissatisfied*) to 4 (*very satisfied*).

Discussion

The integration of health care services via a multidisciplinary team (primary nurse advocate, physician, and psychological counselor) achieved significant improvements in the physical and psychological well-being of individuals dealing with multiple chronic illnesses. The advocate team reviewed all of the obtainable physical and psychological medical records of the participants, performed an extensive evaluation, and collaborated to develop realistic treatment objectives and personal goals. Throughout the whole-person intervention process, the health advocacy team both modeled appropriate health-related general skills and educated each participant in specific areas related to his or her individual needs. The process required the participants to prepare for and organize their appointments and challenged them to learn to effectively manage their health care needs. Additionally, this intervention program included family members and/or other significant individuals in the evaluation and care process.

In particular, this training, education, and supportive approach resulted in the participants reporting better physical functioning and feeling healthier, as compared to their evaluations at the start of the program. Although the participants did not indicate a change in perceptions of control by others or a change in control by chance over various aspects of their life, they did report an increase in personal control. In addition, the participants in this program did rate their internal control higher than control by others and control by chance. Increasing internal (personal) control was a specific goal of the program, as previous research findings indicated that individuals with an internal locus of control engage in more health-promoting behaviors.

An examination of perceptions of the participants' self-efficacy in the specific area of health indicated that this program helped participants become more confident in managing their health conditions and keeping their conditions from interfering in their ability to perform daily activities. Participants reported a positive change in level of satisfaction in their life. Additionally, the participants did increase their health-promoting behaviors in two important areas: exercise and nutrition. That is, the participants reported eating healthier and exercising more after receiving the support and education of the multidisciplinary team, along with individually tailored interventions utilizing community resources.

In conclusion, the program achieved the goal of decreasing the costs of health care for these individuals. Although these high-cost, frequent utilizers of health care services with multiple comorbidities were supported with extended benefit coverage in more appropriately utilizing both traditional and complementary health care services to meet their numerous physical, psychological, and social needs, there was a significant reduction in costs, as compared to cost estimates for these individuals' specific illnesses. Using a collaborative, interdisciplinary, whole-person approach rather than having various professionals treat artificially distinct conditions in relative isolation resulted in a significant reduction of health care costs. This intervention process also resulted in participants being more satisfied with their health care services and describing the process as more effective than previous services.

There are several future directions and initiatives that researchers need to take to further examine the effects of this intervention program. Primarily, investigators need to gather additional longitudinal measures to allow for an assessment of the sustained physical and psychological benefits of the program. Subsequently, researchers need to incorporate revised instruments into the testing of the program as newer and more precise measures are developed.

The results of this study demonstrate that health care systems would profit from adopting an integrated, multidisciplinary, whole-person approach to providing health care services to individuals with multiple chronic conditions. These individuals benefit from the supportive and educational system provided by this approach. This reflection is demonstrated in the improvements in both physical and psychological functioning, as well as an increase in satisfaction with health care services. The results also indicate that this process can result in an increase in individuals' confidence in managing their discomfort from their conditions. In addition, effectively managing health care services through an integrated treatment approach reduces costs for the health care system.

References

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84,* 191–215.

Bandura, A. (1986). *A social foundations of thought and action.* Englewood Cliffs, NJ: Prentice Hall.

Bernier, N., & Avard, J. (1986). Self-efficacy outcome and attrition in weight reduction program. *Cognitive Therapy Research, 10,* 319–338.

Blendon, R. J., Schoen, C., DesRoches, C., & Osborn, R. (2003). Common concerns amid diverse systems: Health care experiences in five countries. *Health Affairs, 22*(3), 106–122.

Brod, M. I., & Hall, S. M. (1984). Joiners and non-joiners in smoking treatment: A comparison of psychosocial variables. *Addiction Behavior, 9,* 217–221.

Carlson, B., & Petri, K. (1989). Health locus of control and participation in physical activity. *American Journal of Health Promotion, 3,* 32–37.

Condiotte, M. M., & Lichtenstein, E. (1981). Self-efficacy and relapse in smoking cessation programs. *Journal of Consulting and Clinical Psychology, 49,* 648–688.

Desharnais, R., Bouillon, J., & Gordin, G. (1986). Self-efficacy and outcome expectation as determinants of exercise adherence. *Psychological Reports, 59,* 1155–1159.

DiClemente, C. C. (1981). Self-efficacy and smoking cessation maintenance: A preliminary report. *Cognitive Therapy Research, 5,* 175–187.

Employee Benefit Research Institute. (2002, July). *Can "consumerism" slow the rate of health benefit cost increases?* (Issue Brief No. 247). Washington, DC: Author.

Ewart, C. K., Taylor, C. B., Reese, L. B., & Debusk, R. F. (1984). Effects of early postmyocardial infarction exercise testing and self-perception and subsequent physical activity. *American Journal of Cardiology, 51,* 1076–1080.

Groessl, E. J., & Cronan, T. A. (2000). A cost analysis of self-management programs for people with chronic illness. *American Journal of Community Psychology, 28,* 455–480.

Healthcare Cost and Utilization Project. (1997). A tool for identifying, tracking, and analyzing national hospital statistics. Retrieved from the Agency for Healthcare Research and Quality Web site: http://www.ahrq.gov/data/hcup/hcupnet.htm Accessed October 21, 2002.

Hofstetter, C. R., Sallis, J. F., & Hovell, M. F. (1990). Some health dimensions of self-efficacy: Analysis of theoretical specificity. *Social Science Medicine, 31,* 1051–1056.

Joyce, S. T., Kuhn, M. E., & Curtin, K. (1999). *Integrated health advocacy handbook.* Unpublished manuscript.

Kang, H., Gutin, B., Barbeau, P., Owens, S., Lemmon, C. R., Allison, J., et al. (2002). Physical training improves insulin resistance syndrome markers in obese adolescents. *Medicine and Science in Sports and Exercise, 34,* 1920–1927.

Krause, C. M., & Saarnio, D. (1996). *Personal perceptions of control.* Washington, DC: Library of Congress.

Lachman, M. E., & Weaver, S. L. (1998). The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology, 74,* 763–773.

Levenson, H. (1974). Activism and powerful others: Distinctions within the concept of internal-external control. *Journal of Personality Assessment, 38,* 377–383.

Lewis, J. M., Morisky, D. E., & Flynn, B. S. (1978). A test of the construct validity of health locus of control: Effects on self-reported compliance for hypertension patients. *Health Education Monographs, 6,* 138–148.

Lorig, K., Stewart, A., Ritter, P., Gonzalez, V., Laurant, D., & Lynch, J. (1996). *Outcome measures for health education and other health care interventions.* Thousand Oaks, CA: Sage.

Maibach, E., Flora, J., & Nass, C. (1991). Changes in self-efficacy and health behavior in response to a minimal contact community health campaign. *Health Communication, 3,* 1–15.

Oppenheimer, C. C., Shapiro, J. R., Beronja, N., Dykstra, D. M., Gaylin, D. S., Held, P. J., & Rubin, R. J. (2003). Evaluation of the ESRD managed care demonstration operations. *Health Care Financing Review, 24*(4), 7–30.

Pehacek, T. G. F., & Danaher, B. G. (1979). How and why people quit smoking: A cognitive behavioral analysis. In P. C. Kendall & S. D. Hollon (Eds.), *Cognitive-behavioral interventions: Theory research and procedures* (pp. 389–342). New York: Academy Press.

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change and smoking: Toward an integrative model of change. *Journal of Consulting & Clinical Psychology, 51,* 390–395.

Quadrel, M. J., & Lau, R. R. (1989). Health promotion, health locus of control and health behavior: Two field experiments. *Journal of Applied Social Psychology, 19,* 1497–1521.

Rotter, J. B. (1954). *Social learning and clinical psychology.* Englewood Cliffs, NJ: Prentice-Hall.

Schneiderman, N., Antoni, M. H., Saab, P. G., & Ironson, G. (2001). Health psychology: Psychosocial and biobehavioral aspects of chronic disease management. *Annual Review of Psychology, 52,* 555–579.

Sheldon, P. S. (2002). Disease management programs: The second generation. *Disease Management Outcomes, 10,* 461–467.

Slenker, S. E., Price, J. H., & O'Connell, J. K. (1985). Health locus of control of joggers and nonexercisers. *Perception of Motor Skills, 61,* 323–328.

Taylor, C. B., Bandura, A., Ewart, C. K., Miller, N. H., & Debusk, R. F. (1985). Raising spouse's and patient's beliefs perception of his cardiac capabilities following a myocardial infarction. *American Journal of Cardiology, 55,* 635–638.

Ware, J. E., Snow, K. K., Kosinski, M., & Gandek, B. (1993). *SF-36 Health Survey: Manual and interpretation guide.* Boston: Health Institute, New England Medical Center.

Watkins, K., Pincus, H. A., Tanielian, T. L., & Lloyd, J. (2003). Using the chronic care model to improve treatment of alcohol use disorders in primary care settings. *Journal of Studies on Alcohol, 64,* 209–218.

Weinburg, R. S., Hughes, H. H., Critelli, J. W., England, R., & Jackson, A. (1984). Effects of pre-existing and manipulated levels of self-efficacy on weight loss in a self- control program. *Journal of Research Perspectives, 18,* 352–358.

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