

The Adaptive Value of Feeling in Control during Midlife

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Sense of control has been identified repeatedly as an important aspect of the self: "Sense of control is a pivotal contributor to a wide variety of behaviors and to both mental and physical well-being, which are essential elements of quality of life" (Abeles 1991, 297). Much of the previous research has focused on control in childhood and old age, with little attention paid to the period of midlife (Lachman 1986; Rodin, Timko, and Harris 1985; Skinner 1996). In this chapter we adopt a life-span developmental perspective and explore the manifestations and effects of control in middle adulthood relative to early and later adulthood. First, we present a brief overview of the sense of control as operationalized in MIDUS by using a multidimensional, multidomain conception. The findings we report from multiple studies consider control in relation to age, gender, and socioeconomic status as well as in relation to adaptive functioning and outcomes, including psychological and physical well-being, social relationships, and management processes. Across studies, control is examined as an outcome, an antecedent or predictor, a moderator, and a mediator variable. The findings consistently show that many aspects of control are maintained throughout the middle years and into old age. Moreover, the evidence demonstrates that having a sense of control over outcomes in key life domains helps one to negotiate challenges and demands and to minimize the negative consequences of declines and losses associated with aging.

There is consistent evidence that believing one has some degree of control over outcomes has powerful consequences (Rodin, Timko, and Harris 1985). Moreover, there are negative effects under circumstances when control is assumed to be lacking (Rodin 1986; Seligman 1991). The benefits of control have been identified across the life span (Bandura 1997; Skinner 1997), and control beliefs appear to play a particularly important role during later adulthood when losses begin to increase relative to gains (Baltes and Baltes 1986; Brandtstadter and Renner 1990; Brim 1992; Lachman 1986; Langer and Rodin 1976; Rodin 1986; Rodin, Timko,

and Harris 1985; Rowe and Kahn 1987, 1997; Schulz, Heckhausen, and Locher 1991). Sense of control has been widely studied and operationalized in numerous ways (Abeles 1991; Rodin 1990; Skinner 1996). From the general, unidimensional conceptions of control (Rotter 1966) to multidimensional, dual-process operationalizations (Heckhausen and Schulz 1995; Levenson 1981), from global assessments (Rotter 1966) to domain-specific conceptualizations (Bandura 1997; Lachman 1986; Wallston and Wallston 1981), and from objective outcome expectancies (Weisz 1983) to phenomenological subjective perceptions (Skinner 1996), the definition of control has multiple variations.

This chapter presents an overview and integration of the MIDMAC findings on the sense of control by using several sources of data: pilot studies, the MIDUS survey, the Boston In-Depth Study of Management, and the Whitehall II study. In so doing, we address the following questions: How is the sense of control defined and assessed? What are the varied manifestations of the sense of control in midlife? How is a sense of control related to adaptive outcomes in midlife?

DEFINITION AND MEASUREMENT OF CONTROL BELIEFS

Our conceptualization and measurement perspective focus on *perceived* control rather than on objective assessments of control. The sense of control, that is, the perception that one can influence what happens in one's life, includes beliefs or expectations about the extent to which one's actions can bring about desired outcomes. Two main sources of control can be distinguished: one's own efficacy (internal control or personal mastery), and the responsiveness of the environment or other people (external control or perceived constraints; Bandura 1997). Consistent with Skinner's (1996) twofold conceptualization of control in terms of competence and contingency, we included two control subscales referred to as personal mastery and perceived constraints (Lachman and Weaver 1998b). Personal mastery is defined as one's sense of efficacy or effectiveness in carrying out goals. Perceived constraints indicates to what extent one believes there are obstacles or factors beyond one's control that interfere with reaching goals. In the MIDUS survey, we included multiple measures of perceived control that were both generalized and domain-specific. The general control measure includes twelve items, seven of which are from Pearlin and Schooler's (1978) personal mastery scale. When we factor analyzed the personal mastery scale in our pilot work, we found two factors rather than one. Because one of the subscales had only two items, we developed and tested additional items to increase the

reliability. The final version of the personal mastery subscale includes four items with a coefficient alpha of .70; the perceived constraints subscale includes eight items with a coefficient alpha of .86. The scales are moderately correlated in the negative direction ($r(2998) = -.40, p < .001$). In some cases, when there are no theoretically guided or empirically driven predictions about differential results for testing the two subscales separately, or when it is necessary for parsimony and data reduction, it is possible to combine the two subscales by recoding items in the same direction and creating a generalized, twelve-item control beliefs scale. This combined scale had a coefficient alpha of .85 in the MIDUS sample. Other conceptual distinctions have guided alternate ways to parcel the items. For example, it is possible to separate perceived constraints items into internal and external constraints subscales (Andreoletti, Zebrowitz, and Lachman 2001). In addition to personal mastery and perceived constraints, we assessed general control of life overall with one item (0–10 point scale).

The MIDUS battery also includes single-item assessments of control in six domains (work, finances, marriage, sex life, health, contribution to others) (McAvay, Seeman, and Rodin 1996; Lachman and Weaver 1998a). These domains were selected for MIDUS because they were considered key areas relevant to successful midlife development. Because of time and space constraints, we were unable to include multiple control items for each domain. Thus, the domain-specific assessments of control do not follow the same two-pronged conceptual framework just described. Instead they provide a unidimensional assessment of control for each domain. The question asks: “Using a 0–10 scale where 0 means no control at all and 10 means very much control, how would you rate the amount of control you have over your——these days?” For two of the domains, health and work, we also included more detailed assessments of control. Four additional health control items were included. For the health domain we asked participants to rate four statements on a seven-point scale, from strongly disagree to strongly agree: (a) Keeping healthy depends on things that I can do; (b) When I am sick, getting better is in the doctor’s hands; (c) There are certain things I can do for myself to reduce the risk of a heart attack; and (d) There are certain things I can do for myself to reduce the risk of getting cancer. These items were not intended to comprise a subscale and were analyzed separately.

A work control scale was composed of items from the decision authority and skill discretion scales (Karasek and Theorell 1990). The scale for decision authority was computed from the following items: Please

indicate how often each of the following is true of your job: (a) On your job, how often do you have to initiate things such as coming up with your own ideas, or figuring out on your own what needs to be done? (b) How often do you have a choice in deciding how you do your tasks at work? (c) How often do you have a choice in deciding what tasks you do at work? (d) How often do you have a say in decisions about your work? (e) How often do you have a say in planning your work environment, that is, how your workplace is arranged or how things are organized? and (f) In the past year, how often has the following occurred at your job? You control the amount of time you spend on tasks. We computed the scale for skill discretion from the following items: Please indicate how often each of the following is true of your job: (a) How often do you learn new things at work? (b) How often does your work demand a high level of skill or expertise? (c) How often does your job provide you with a variety of things that interest you? The decision/skills work control scale was computed as the mean for the skill discretion and decision authority scales (see Dauber and Lachman 2001).

AGE DIFFERENCES IN CONTROL BELIEFS

Previous studies investigating control beliefs in adulthood have concentrated on comparing young and older adults, with little consideration of the middle years; for the most part, these studies have used small, non-representative samples. In the few studies that have included middle-aged adults, findings have been inconsistent. Some studies reveal no differences in control beliefs in middle age (e.g., Andrisani 1977; Brandtstadter and Rothermund 1994; Gatz and Siegler 1981), while others report an increased sense of internal control as one moves from young adulthood to middle age (Staats 1974), and sometimes more internal control is shown for elderly adults when compared with middle-aged adults (Lachman 1985).

Previous research on age differences in control beliefs suggests different outcomes as a function of domain (Bradley and Webb 1976; Brandtstadter and Rothermund 1994; Clark-Plaskie and Lachman 1999; Heise 1990; Huyck 1991; Lachman 1991). Domains that are more salient for a particular age group may take on a greater sense of importance and therefore have greater influence (beneficial or detrimental) on the perceived sense of control for that particular domain at different points in the life span (Lachman and Bertrand 2001)). For instance, previous research suggests that the importance of the work domain typically increases in midlife, especially for men (Clark-Plaskie and Lachman 1999;

TABLE 1 Means and Standard Deviations for Control

Control Dimension	Age Group			Gender	
	Young	Middle	Old	Men	Women
Personal mastery					
Mean	5.93	5.81	5.75	5.94	5.74
SD	.89	1.08	1.08	.94	1.09
Perceived constraints					
Mean	2.62	2.72	2.93	2.60	2.85
SD	1.13	1.31	1.43	1.22	1.33
Life overall					
Mean	7.68	7.75	8.16	7.84	7.79
SD	1.78	1.91	1.94	1.75	2.00
General control (unidimensional)					
Mean	5.56	5.46	5.29	5.57	5.34
SD	.93	1.07	1.13	.99	1.08
Finances					
Mean	6.29	6.64	7.08	6.70	6.51
SD	2.49	2.40	2.67	2.38	2.60
Sex					
Mean	7.21	6.68	5.67	6.39	6.95
SD	2.51	2.92	3.63	2.84	3.10
Contribute					
Mean	6.94	7.15	7.08	6.99	7.14
SD	2.47	2.43	2.79	2.55	2.48
Child					
Mean	8.44	7.44	6.93	7.52	7.65
SD	1.86	2.39	2.98	2.46	2.49
Marriage					
Mean	7.66	7.78	8.11	7.98	7.61
SD	2.16	2.14	2.13	1.96	2.33
Health overall					
Mean	7.81	7.58	7.53	7.69	7.61
SD	1.86	1.88	1.91	1.74	2.01
Do things to stay healthy					
Mean	6.41	6.41	6.21	6.40	6.34
SD	.98	.92	1.25	.99	1.05
Do things to reduce heart attack					
Mean	6.64	6.63	6.40	6.59	6.59
SD	.84	.81	1.15	.89	.92
Do things to reduce cancer					
Mean	5.89	5.92	5.72	5.85	5.89
SD	1.31	1.29	1.39	1.29	1.35
Getting better in doctor's hands					
Mean	3.41	3.85	4.66	3.76	3.98
SD	1.87	1.98	1.92	1.95	2.00
Work overall					
Mean	6.94	6.90	7.72	7.11	7.02
SD	2.38	2.71	2.91	2.61	2.70
Skill discretion and authority at work					
Mean	3.61	3.66	3.67	3.71	3.56
SD	.65	.68	.75	.68	.66

Dimensions, by Age Group, Gender, and Education

		Education		
Less than High School		High School	Some College	Bachelor's or More
5.73		5.85	5.78	5.92
1.16		1.00	1.07	.94
3.43		2.89	2.72	2.36
1.57		1.29	1.24	1.07
7.74		7.92	7.69	7.87
2.28		1.94	1.91	1.64
4.95		5.35	5.45	5.73
1.21		1.02	1.04	.92
6.35		6.65	6.41	6.83
3.02		2.46	2.52	2.32
6.35		6.79	6.69	6.65
3.50		2.99	3.07	2.70
6.53		6.89	6.98	7.48
2.98		2.60	2.54	2.17
7.48		7.76	7.45	7.60
2.82		2.47	2.60	2.17
7.76		7.90	7.66	7.87
2.49		2.10	2.26	1.96
7.18		7.67	7.59	7.84
2.35		1.90	1.96	1.58
6.13		6.36	6.38	6.44
1.34		1.06	1.01	.86
6.22		6.61	6.58	6.70
1.38		.84	.90	.73
5.53		5.83	5.91	5.97
1.65		1.33	1.30	1.19
4.39		4.18	3.85	3.44
2.10		1.97	1.97	1.87
6.60		7.07	6.90	7.38
3.24		2.77	2.66	2.28
3.44		3.51	3.62	3.81
.78		.70	.67	.59

Howard and Bray 1988; Ryff 1989). Heise (1990) additionally contends that differences in sense of control within the work domain exist between young and middle-aged adults as a function of progress along the career path at different stages of the life course. Middle-aged workers, with their more developed networks and experiences on the job, may possess a greater sense of control over the work environment than do younger, less-seasoned workers. The MIDUS survey has allowed us to examine the sense of perceived control within specific domains of functioning and to shed light on some of the gaps in past research by investigating mechanisms that lead to more adaptive outcomes across the adult life course.

One advantage of MIDUS was that it enabled us to examine perceived control among middle-aged adults in comparison with that of younger and older adults by use of a large representative sample (Lachman and Weaver 1998a). Our findings revealed that although there were no age differences in a general sense of mastery, there were age-related increments in beliefs about external constraints; that is, older adults indicated facing more constraints than did members of the other age groups (see table 1). Interestingly, however, older adults reported greater perceived control for life overall than did the younger and middle-aged adults, despite the perception of increased perceived constraints.

MIDUS also provided an opportunity to examine perceived control within specific domains at various stages in the life span. When we compared young, middle-aged, and older adults, the findings revealed an upward age trajectory for work, finances, and marriage and a downward age trajectory for children and sex life (see table 1). With regard to the underresearched middle-aged group, we found that overall, middle-aged adults did not differ from younger adults in control over work, marriage, and life; however, they reported less control over their relationships with children and their sex life. Less control over sex life was associated with lower frequency of sexual relations. Control over children was associated with children's age. The older the children, the less control parents perceived. In the health domain, older adults generally had a lower sense of control than did the younger and middle-aged adults. Older adults reported less control over keeping healthy, avoiding a heart attack, and preventing cancer. Older adults also were more likely to believe that getting better is in the doctor's hands. The only domain in which middle-aged adults had higher control than younger adults was in the area of finances. For the domains that showed age-related increases in control, the middle-aged looked more like the younger adults than

the older adults, with the exception of finances, for which they differed from both younger and older adults. For the relationships with children and sex life domains, which showed age-related decreases over the adult age span, the middle-aged had lower control than the younger adults but higher control than the older adults. Although older adults had the highest reported level of overall control in some domains, diminished control is acknowledged. The results could indicate that the domains included in the study were more appropriate and relevant to the lives of those in midlife. Perhaps older adults are able to maintain higher levels of general control by selecting compatible domains of functioning (e.g., leisure), which were not included in the MIDUS battery. MIDUS has allowed us to examine trajectories of perceived control for young, middle, and old-aged adults, indicating that with aging, adults are able to find ways to achieve an overall balance of control in their lives, despite perceptions of increased constraints.

CONTROL BELIEFS IN RELATION TO EDUCATION AND GENDER

In addition to variations in control by age differences, we found variations in control by sex and education, although there were no interactions with age (Lachman and Weaver 1998a). In the MIDUS sample, we found that men had higher general control, with higher mastery and lower perceived constraints than women did (see table 1). This finding is consistent with past work in which men typically report an advantage regarding control (Feingold 1994). However, when looking within specific domains, we found that both men and women felt the least amount of control over their sex life and their finances and the most control over their marriage and life overall. Although women reported a higher sense of control over their sex life than did men, men reported a higher sense of perceived control over their marriage than did women. As for health, women were more likely to believe that getting better is in the doctor's hands, but there were no differences between genders in regard to the other health control variables.

When examining the influence of education on participants' perceived control, we found that higher levels of education were associated with fewer perceived constraints and greater control over health, work, finances, and making a contribution to the welfare of others. Those with more education also reported greater authority and use of skills at work. Results showed no differences in perceived control, among participants with different education levels, over sex life, children, marriage, personal mastery, or life overall. Those with more education experienced greater

control over instrumental resources, which may account for the fewer constraints that they report. However, those with less education did not report less control in interpersonal relations. The feeling of control over interpersonal resources may contribute to an overall feeling of mastery, which did not differ by education. Educational differences were found in the health domain. Those with a college education were more likely to feel that they were in control of their health and were less likely to believe that getting better is in the doctor's hands. This is consistent with findings that individuals with higher socioeconomic status are more likely to take charge of their health and to engage in more health-promoting behaviors (Lachman, Ziff, and Spiro 1994). It is not possible, given the cross-sectional data, to determine whether a person's educational level leads to a greater sense of control because of more opportunities and resources or whether those who have a greater sense of control were the ones more likely to seek advanced education. Further work is needed to explore the association between control beliefs and education.

One of the challenges of midlife and the later years is to maintain a sense of control over life in the midst of the changing balance of gains and losses (Baltes and Baltes 1990). These beliefs may play a protective role in the face of such decrements. Maintaining a sense of control may help prevent or minimize declines associated with the aging process. Moreover, these beliefs may facilitate adaptive responses to declines. These findings led us to examine how control beliefs are related to physical and mental health and the mediational processes involved.

CONTROL BELIEFS AND WELL-BEING

There has been much interest in examining well-being and control (e.g., Abeles 1991; Lachman and Weaver 1998b; Rodin 1986; Smits, Deeg, and Bosscher 1995). The findings consistently show a positive association between a sense of control and well-being (e.g., Bandura 1997; Brim 1992; Lachman 1986; Rowe and Kahn 1987, 1997; Schulz, Heckhausen, and Locker 1991; Skinner 1995). Examining the mechanisms and contexts in which multiple dimensions of control are related to adaptive or maladaptive outcomes can lead to a clearer picture of the nature of these associations. The MIDUS data set provided a rich set of biopsychosocial variables for testing hypotheses about the adaptive value of control beliefs.

A conceptual model is presented in figure 1 as a heuristic for examining the processes linking control beliefs and adaptive functioning during adulthood and old age. The model shows that sense of control has positive

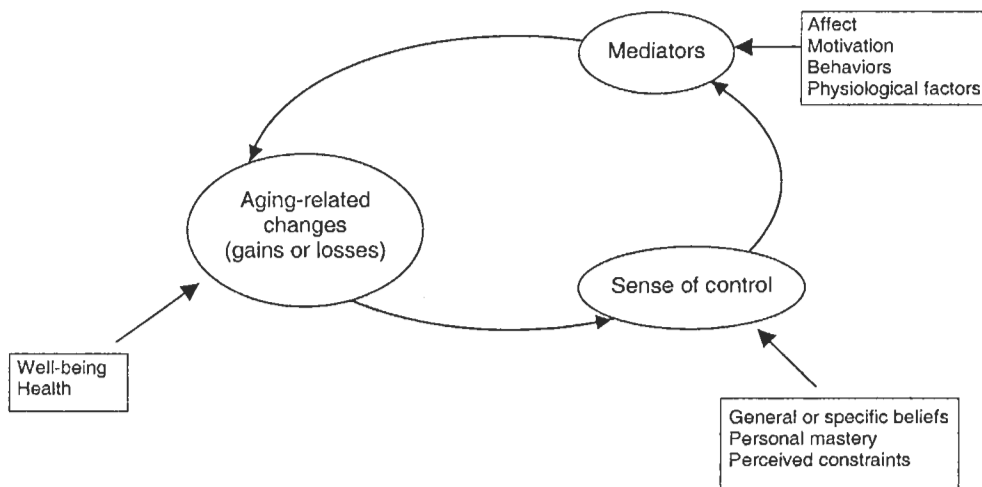


FIGURE 1. Conceptual model of the relationship between control beliefs and well-being.

effects on well-being and health through various mechanisms. These mediators can include affective, behavioral, and physiological factors. For example, control may lead to positive psychological states, such as high self-esteem and positive affect. Feeling in control may also lead to favorable neuroendocrine responses (e.g., low levels of stress hormones) as well as participation in health-promoting behaviors (e.g., exercise, healthy diet), which can minimize aging-related declines in health and promote psychological well-being. Those who believe they do not have control over outcomes would be less likely to experience positive feelings or to engage in adaptive behaviors. Consequently, health and well-being may suffer. The model is cyclical (Skinner 1997), suggesting that not only do control beliefs affect well-being but that feeling or doing well can also lead to an increased sense of control. The deterioration of a person's health could lead to further reductions in perceived control.

Recently, there has been some debate about the limits of the adaptive value of internal control beliefs (Colvin and Block 1994). Under some circumstances it is possible that control beliefs are detrimental. For example, having control may be a disadvantage if it is ultimately removed (Schulz and Hanusa 1978). In stressful situations, those with a view of the world as highly controllable and predictable may be particularly vulnerable when faced with an uncontrollable event such as widowhood (Wortman et al. 1992). However, there is also evidence that the sense of control is ultimately adaptive because it provides the motivation to cope and take action even in the face of great adversity (Taylor and Brown 1988), leading, ultimately, to greater well-being.

Given the unique qualities of the MIDUS data set, we were able to examine, across the adult life span, control beliefs in relation to a number of measures of well-being, including overall life satisfaction and depression. As expected, we found that those who had a higher sense of control had higher life satisfaction and lower depression (Lachman and Weaver 1998b).

Epidemiological studies have shown that sense of control along with social support are among the most important psychosocial predictors of morbidity, mortality, and psychological well-being in later adulthood (House, Landis, and Umberson 1988; Rodin 1986; Rowe and Kahn 1987, 1997). Less is known, however, about the relationship between control beliefs and subjective well-being during early and middle adulthood (Lachman and Weaver 1998b). Research investigations have shown a small but significant relationship between subjective well-being and health, especially in later life (Diener and Suh 1998). Education has been associated with subjective well-being (Marmot et al. 1997; Ryff and Singer 1998), but age and gender have typically shown little relationship with it (Myers and Diener 1995). Personality dispositions (e.g., neuroticism; Costa and McCrae 1994) as well as self-regulatory characteristics (e.g., control beliefs; Lachman and Weaver 1998b) have been found to show stronger relationships with subjective well-being than with sociodemographic characteristics (e.g., Staudinger, Fleeson, and Baltes 1999). However, little is known about whether these same factors are related to changes in subjective well-being.

Although, given the cross-sectional MIDUS design, we could not examine change directly, we were able to examine perceived trajectories of subjective well-being, that is, the direction of anticipated change in well-being over time (whether things are expected to get better, get worse, or stay the same). Using data from MIDUS and the pilot data collected in Germany ($N = 1000$; see Lachman, Staudinger, and Walen 2001) for a full description of the sample), we found evidence that control beliefs were related not only to subjective well-being but also to perceived trajectories of change in subjective well-being (Lachman, Staudinger, and Walen, forthcoming). This pattern was found in both the U.S. and German samples. A cluster analysis of life satisfaction that rated the past, present, and future revealed four perceived trajectories of change in subjective well-being for both samples: high stable, incremental, decremental, and present low. In the high-stable group, life satisfaction was relatively high and was expected to remain high. The incremental group saw life satisfaction as increasing from the past to the present to the

future. The decremental group was characterized by lower life satisfaction in the present relative to the past and expected decline in the future. The present low group showed lower perceived satisfaction in the present relative to the past but expected improvement in the future. An examination of demographic and psychosocial predictors revealed control beliefs to account for the most variance in well-being trajectories for both the U.S. and German samples. Those adults who had a greater sense of control were more likely to have a high level of life satisfaction and to expect it to remain high or to assume that things would get better in the future. In contrast, those who had a lower level of control had a pattern associated with perceived decline or low present level relative to the past and future.

There has been some suggestion of nation-based differences in self-reports of subjective well-being (Cantril 1965; Diener and Suh 1998). Conceptions of both global and domain-specific control have also been suggested to vary across cultures in their importance as predictors of subjective well-being (Antonovsky 1979; Little et al. 1995; Staudinger, Fleeson, and Baltes 1999). For example, Staudinger, Fleeson, and Baltes (1999) found that perceived control over work and health was more strongly related to subjective well-being in Germany than in the United States.

Our results from both the U.S. and German samples show there are individual differences in expected trajectories of perceived subjective well-being. The typologies identified by use of cluster analysis represent variations from what would have been observed by examining only group means at each time perspective. Although the largest percentages were found in the high-stable group for both samples, 32 percent of the U.S. sample and 63 percent of the German sample fell into other typologies,

TABLE 2 Correlations for Sense of Control and Health Variables

Control Variables	Health Variables			
	Acute Symptoms	Chronic Problems	Functional Limitations	Health Rating
Personal mastery	-.18	-.16	-.15	.13
Perceived constraints	.36	.30	.30	-.31
Health control	-.32	-.33	-.35	.41
Can keep healthy	-.12	-.11	-.20	.16
Doctor control	.05	.09	.12	.13
Heart attack control	-.07	-.08	-.14	.08
Cancer control	-.08	-.08	-.13	.10

Note: All correlations are significant at $p < .01$.

TABLE 3 Correlations for Sense of Control,

Variable	1	2	3
1. Age	—	-.04	.18**
2. Education	-.19**	—	-.10**
3. Waist-hip ratio	.18**	-.25**	—
4. Body mass index	.15**	-.14**	.44**
5. Can keep healthy	-.03	.12**	-.08**
6. Heart attack control	-.10**	.17**	-.10**
7. Beyond my control	.19**	-.15**	.05
8. Exercise	-.30**	.17**	-.14**

Note: Correlations for men ($N = 1257$) are presented on the top half of diagonal; for women ($N = 1273$) on the bottom half.

* $p < .05$. ** $p < .01$.

TABLE 4 Correlations for Sense of Control, Health

Variable	1	2	3
1. Age	—	-.09**	.20**
2. Grade	.29**	—	.10**
3. Waist-hip ratio	.23**	.19**	—
4. Body mass index	.14**	.16**	.55**
5. Can keep healthy	.02	.05*	-.07**
6. Heart attack control	-.06**	-.02	-.07**
7. Beyond my control	.16**	.19**	.05*
8. Exercise	-.21**	-.15**	-.14**
9. Diet	.04	.27**	.11**

Note: Correlations for men ($N = 5149$) are presented on the top half of diagonal; for women ($N = 2246$) on the bottom half.

* $p < .05$. ** $p < .01$.

indicating that perceived changes in subjective well-being are prevalent. The findings also shed light on psychosocial, health, and demographic factors that are associated with the different portraits of subjective well-being in adulthood. Nonpsychological predictors were more important with regard to trajectory type than usually is the case when predicting current subjective well-being. Cluster membership was associated with health, age, and education. Those in the stable or incremental subjective well-being trajectories were healthier, younger, and more educated.

These findings suggest that general control beliefs are strongly related to evaluative temporal patterns of the self in both Americans and Germans. Although past studies have found a robust relationship between control beliefs and concurrent well-being, the present study expands these findings to demonstrate how control relates to expected trajectories of well-being during adulthood. Having a sense of control may lead to positive affect, which helps one to appraise and respond to stress in a more

Health Behavior, and Health in the MIDUS Sample

4	5	6	7	8
.10**	.07*	-.05	.06*	-.21**
-.05	.02	.07*	-.10**	.12**
.41**	-.04	.00	.07*	-.08**
—	.03	.02	-.03	.01
-.07*	—	.60**	-.10**	.07*
-.05	.62**	—	-.08**	.09**
.05	-.13**	-.12**	—	-.09**
-.14**	.10**	.09**	-.10**	—

Behaviors, and Health in the Whitehall II Sample

4	5	6	7	8	9
.06**	.03*	.01	.01	-.08**	-.07**
.04**	-.01	-.04**	.15**	-.12**	.24**
.63**	-.02	-.05**	.001	-.13**	.09**
—	-.01	-.03	-.01	-.05**	.06**
-.04*	—	.49**	-.10**	.12**	-.09**
-.03	.48**	—	-.08**	.11**	-.15**
.04*	.01	.03	—	-.05**	.08**
-.12**	.09**	.11**	-.08**	—	-.09**
.03	-.10**	-.14**	.10**	-.09**	—

positive proactive way. Feeling in control of outcomes also gives one increased hope about the future and motivation to remain active.

CONTROL BELIEFS AND PHYSICAL HEALTH

Sense of control has also commonly been associated with positive physical health outcomes (e.g., Baltes and Baltes 1986; Cohen 1990; Menec and Chipperfield 1997) and adjustment to health problems (e.g., Reed, Taylor, and Kemeny 1993; Thompson et al. 1993). However, contradictory findings suggest that an overemphasis on seeking control can have detrimental effects on physical and mental health (Lachman and Burack 1993; Thompson, Cheek, and Graham 1988). For instance, type A personality behavior patterns and coronary heart disease have been shown to be related to a strong need for control (Strickland 1978).

In previous research, sense of control has been primarily studied in relation to subjective ratings of health. With MIDUS, however, we were able to investigate its relationship with perceived health as well as with more objective measures of health, such as number of chronic and acute

symptoms and functional limitations (Lachman and Weaver 1998b). Beliefs about control were associated with health status (see table 2, above on p. 331). Those who had a greater sense of control had fewer acute and chronic illnesses and had higher functional status.

In addition, we examined waist–hip ratio and body mass index, which have been shown to be related to cardiovascular health (Lachman et al. 2000; see above, tables 3 and 4). We used data from MIDUS and Whitehall II to test a mediational model and examined differences by gender. We expected control beliefs to affect health outcomes through their influence on health-promoting behaviors, including frequency and intensity of exercise (in both data sets) and dietary behavior (Whitehall II data). We found that control beliefs were related to waist–hip ratio in MIDUS and Whitehall samples. When a mediational model was tested, there was support for the prediction that control beliefs are related to health because of their influence on exercise and healthy diet. Those women who reported a greater sense of perceived control over general health and specifically over heart disease were more likely to engage in regular vigorous exercise. This relationship between control and waist–hip ratio was mediated by exercise behavior. For men, those who felt there were many factors beyond their control were less likely to exercise and had lower waist–hip ratios.

In Whitehall, similar results were found. Among women the belief that there are things they can do to keep healthy and among men the belief that they can control a heart attack were associated with engaging in more exercise and healthier diet. In turn, this was related to a lower waist–hip ratio. Although body mass index showed a small relationship with control beliefs, this relationship was not mediated by health behaviors. The results suggest that those who feel more in control of their health are more likely to engage in health-promoting behaviors such as exercise, which in turn affects health in terms of the waist–hip ratio. Further research is needed to articulate the mediational processes involved.

CONTROL BELIEFS, SOCIAL CLASS, AND HEALTH

Previous research examining the effects of social class on sense of control suggests that those with less education and lower income have a lower sense of control, both in terms of their own personal efficacy and the belief that powerful others control their destiny (e.g., Gurin and Brim 1984; Lachman 1985). Fewer opportunities to experience the relationship between self-motivated actions and positive outcomes may have a detrimental effect on sense of control for people within lower social

classes (Lachman and Weaver 1998b). Using the MIDUS data set, we were able to examine this relationship. Consistent with previous research (e.g., Gurin and Brim 1984; Lachman 1985), we found evidence that those who had lower incomes had a lower sense of personal mastery and a higher level of perceived constraints than did those with higher incomes (Lachman and Weaver 1998b). Nevertheless, the variability within income groups was high, and the distributions were overlapping. We were interested to examine whether these differences in control within groups would be associated with positive adaptation in terms of psychological and physical health.

Social class differences in physical health have been widely recognized. The social class gradient exists at all levels of the socioeconomic status hierarchy (Adler et al. 1994; Marmot et al. 1991), and more recent attention has been focused on the implications of psychosocial variables for social class (Adler et al 1994; Mirowsky, Ross, and Van Willigen 1996). Using data from MIDUS and two nationally representative samples selected for MIDUS pilot studies, we were able to examine the interacting and moderating influences of sense of control on social class differences in physical health and well-being (Lachman and Weaver 1998b). Although there are social class differences in control, some persons in lower social class groups show a relatively high sense of control. We found evidence to support our prediction that those in the lower social class groups who had a higher sense of control would have physical health comparable to those in the higher social classes. Control beliefs had a moderate relationship to health in the higher social class groups but a stronger relationship in the lower class groups.

There were convergent findings from the three national samples regarding social class differences in the sense of control, the relationship between control and health, and the moderating role of control beliefs. Those in lower-income groups indeed had lower levels of perceived mastery and stronger beliefs in the existence of external constraints in their lives. To some extent these differences may be realistic and reflective of the actual variations in life situations among social class groups. Just as important as these differences between groups, however, were the large within-group differences. The variability within groups was comparable, as evidenced by the standard deviations, and the group distributions were overlapping. Thus, there are some with lower incomes who have high levels of mastery beliefs and low levels of perceived constraints. At the same time, some in the higher-income groups have a low sense of control. One interesting focus for future work is to look at the possible antecedents of

control beliefs in these different social class groups. It will be interesting to investigate how some in the lower social class groups come to develop and maintain a strong sense of control, both in terms of personal mastery and low perceived constraints, in the face of economic adversity.

What about the adaptive value of the sense of control? Does it vary by social class group? Overall, the findings suggest that a high sense of mastery and a belief in low external constraints are beneficial for all social class groups. Those with higher mastery and lower perceived constraints had better health. These relationships varied somewhat by social class. There was no evidence, however, that high mastery and low perceived constraints were detrimental for the lower-income groups. Of particular interest, control was found to play a moderating role, with even greater benefit for lower-income groups. For the higher social class groups, health and well-being were generally high and showed less variation as a function of level of control than they did in the other social class groups. In contrast, for lower social class groups, level of control mattered. The results demonstrated that those in the lower social class groups who managed to maintain a high sense of control resembled their higher social class counterparts more than they did others in their own income group. Thus, control beliefs appear to serve as a buffer for the negative ramifications of low social class in regard to health and well-being. Those with a greater sense of control may be more likely to engage in health-promoting behaviors and seek medical attention or social support to prevent or alleviate health problems. Of course, it is also important to recognize that health can have an impact on control beliefs. Given that the MIDUS data are cross-sectional, we were not able to test a longitudinal or reciprocal model. Nevertheless, it is likely that those who experience health problems in midlife may as a result feel less in control of their life.

SOCIAL RELATIONSHIPS AND CONTROL BELIEFS

Recent findings, both longitudinal (e.g., Berkman 1984; Seeman et al. 1995) and cross-sectional (e.g., Cohen and Wills 1985; Rodin and Timko 1992; Taylor 1995), suggest that positive social networks increase both psychological well-being and physical health. Lachman, Ziff, and Spiro (1994) found that people reporting high levels of control had more positive health outcomes regardless of their level of social support. However, of the individuals who reported lower levels of control, those reporting higher levels of social support evidenced more positive outcomes, which suggests a buffering effect of social support for people with lower perceived control.

Recent research has begun to examine the negative aspects of social relationships such as social strain (e.g., Ingersoll-Dayton, Morgan, and Antonucci 1997; Rook 1992). Social strain has been found to be more strongly predictive of chronic physical health problems than is social support (Ewart et al. 1991; Keicolt-Glaser et al. 1984), even when controlling for prior depression and personality traits such as neuroticism and extraversion (Walen and Lachman 2000). Using the adults who were married or cohabitating in the MIDUS sample, Walen and Lachman (2000) examined the relationship between social exchanges, and well-being and health. Social support and strain were examined for the following relationships: family, friends, and spouse/partner. Each relationship domain was assessed by four questions, on the basis of a four-point scale (ranging from “not at all” to “a lot”). Items included “How much does your spouse or partner (friends, family members) really care about you?” and “How much can you rely on them for help if you have a serious problem?” The findings indicated that the partner relationship was an important predictor of well-being for both genders and that family relationships had more of an effect for women than for men. The younger and middle-aged adults were more adversely affected by strained friendship networks than were the old. Partner and family strain were the most important predictors of poor health, especially for middle-aged women (Walen and Lachman 2000). When the “big five” personality traits were included in the model, the effects of social support on health were reduced but still remained significant.

In a follow-up study, Walen (forthcoming) examined personal control beliefs in relation to social exchanges and well-being across the adult life span. Previous research has found that social support and control beliefs are consistent as key psychosocial variables predicting health in adulthood (House, Landis, and Umberson 1988; Rodin, Timko, and Harris 1985). Although social support and control beliefs are related, there has been little attempt to understand the nature of the relationship or the way in which these two variables affect health. Walen (2001) found that control beliefs mediated the relationship between social exchanges and health. The nature of the relationship varied by age and gender as well as by type of relations. The mediational model was supported for the young and middle-aged adults but not for the older adults. For middle-aged adults, partner strain, friend support, and family strain and support were related to subjective well-being and health through their effects on sense of control. The effects of friend support on subjective well-being were mediated by control for both men and women. The effects of family

support and strain on subjective well-being were mediated by control for women but not men. The effects of partner strain on subjective well-being and health were also mediated by control for women. These results show that the nature of social relationships can affect feelings of control, which in turn affect health and well-being. The effects of strain from family and partner had a particularly damaging effect on health for women, in part because stressful relationships diminish their sense of control.

CONTROL BELIEFS AND MANAGEMENT PROCESSES

Planning, as a life management process, and its relationship to perceived control have rarely been investigated (for exceptions, see Aspinwell 1997; Lachman and Burack 1993; Scholnick and Friedman 1993; Skinner 1997). Although planning can be seen as one way in which people control and manage their lives, it is not considered a necessary condition for control (Lachman and Burack 1993); in fact, it has even been suggested that too much planning can have a detrimental effect on control (Lachman and Burack 1993; Thompson, Cheek, and Graham 1988). Even so, effective planning has been shown to have positive implications for control and life satisfaction (e.g., Aspinwell 1997; Lachman and Burack 1993; Macan 1994; Skinner 1997), and previous research investigating planning and well-being, a significant correlate of control, generally supports a positive, reciprocal relationship between the two (Brandtstadter and Baltes-Gotz 1990; Burack and Lachman 1995; Eronen, Nurmi and Salmela-Aro 1997; Macan et al. 1990). Much of the past work, however, has been done with children, and few studies have considered multiple antecedents simultaneously. Therefore, MIDUS provided an ideal opportunity to advance our understanding of the relationship between planning, perceived control, and life satisfaction across adulthood, using a nationally representative sample.

Existing process models suggest antecedents and outcomes for the life-planning domain (Little 1983; Nurmi 1989; Cantor 1990). Friedman and Scholnick (1997) present a theoretical model illustrating how antecedent variables such as environment (social support, predictability), cognition (working memory, reasoning), and personality/motivation (individual personality variables, stress) impact an individual's ability to plan and the effectiveness of their planning. We investigated (a) multiple antecedents of planning styles and (b) the relationship of planning to perceived control and life satisfaction during adulthood. Further, we investigated a mediational model of planning, control, and life satisfaction (Prenda and Lachman 2001). We also examined the effect that planning had on

perceived control in midlife, when work and family roles are most demanding (Barnett 1997; Lachman and James 1997).

To enable replication and extension of results, we used two separate samples. Participants of study 1 were from the MIDUS sample. The participants of study 2 were 302 adults from the MIDUS oversample in the greater Boston area (see Prenda and Lachman 2001 for a full description of the samples).

Using the Friedman and Scholnick (1997) model as a guide, we investigated antecedents of planning from the environmental, personality, motivation, and cognitive domains. We also investigated age, sex, education, and income as predictors of future planning. These variables were controlled when testing a mediational model of control and planning in predicting life satisfaction. Environmental measures included social support (from family, friends, and spouse/partner) and predictability (“good at predicting what is going to happen to me”). Personality/motivational measures included personality dimensions and stress. Personality was assessed by use of self-description scales for the big five (McCrae and Costa 1985) personality constructs of agreeableness, conscientiousness, extraversion, openness, and neuroticism (Lachman and Weaver 1997). Stress was measured using a multidimensional measure assessing stressful events for significant others and self-stress from the domains of health, work, and family. Cognitive measures (available for study 2 only) included working memory span, assessed using the WAIS Forward and Backward Digit Span (Wechsler 1981) and a counting backward task, and reasoning, measured by the Advanced Progressive Matrices (Raven, Court, and Raven 1994) and the Schaie-Thurstone Letter Series test (Schaie 1985).

Planning was defined as the extent to which participants self-reported that they “planned for the future” as opposed to “living for today.” A five-item, continuous scale (from “a lot” to “not at all”) assessing planning was developed using the following items from the MIDI mail questionnaire: (1) “I like to make plans for the future”; (2) “I find it helpful to set goals for the near future”; (3) “I live one day at a time”; (4) “I have too many things to think about today to think about tomorrow”; and (5) “I believe there is no sense planning too far ahead because so many things can change.” Perceived control was measured with the twelve-item scale assessing participants’ perceived control (personal mastery, perceived constraints) over their current life. To assess life satisfaction, we constructed a four-item scale that assessed satisfaction with life overall, work, health, and family relationships (see Prenda and Lachman 2001 for a full description of all measures).

Multiple regression was used to assess the relationship between the identified precursor variables and future planning. Results revealed variations in planning by demographic, environmental, and personality indicators. Stressful events and cognitive factors were not significantly related to planning. Our findings revealed that sex, education, and income were positively predictive of planning for both studies. Men reported more future-oriented planning than did women, supporting findings by Burack and Lachman (1995) that women tend to be more short-term, or "list-making," planners than men. Future research considering men's and women's work and gender roles (Boswell 1981; Bouffard, Bastin, and Lapierre 1996; Mintz and Mahalik 1996; Weitz 1977) may shed some light on this finding. Work and family roles could influence men to take a more long-term, generalized planning approach, whereas women may focus more on the day-to-day logistics of raising a family and find short-term planning strategies more effective (Gilbert 1985). Those with higher education and income were more likely to plan for the future, which is consistent with past research (Nurmi 1992; Teahan 1958). Nurmi (1992) has found that more highly educated people expect negative (e.g., poor health) outcomes to be realized further off in the future. Thus, they may be more optimistic about what their future holds, which is likely to be reflected in increased future planning.

Predictability was also significantly related to future-oriented planning strategies, suggesting that uncertainty of future events may lead to decreased planning or a lack of effective planning strategies (Friedman and Lackey 1991). Personality also was found to play a role in planning. For example, those who were more conscientious and open to experience were more likely to report planning behavior. Finally, those who reported receiving more social support from friends and family were more likely to plan for the future. It is possible that significant others in their network are included in their future plans. In future research it will be interesting to examine the specific content of plans.

Another goal of the study was to examine the relationship between planning, control beliefs, and life satisfaction. Life satisfaction (a composite of well-being ratings for work, spouse, children, and in general) was positively associated with age, income, and personality. In addition, those who reported more future planning had higher life satisfaction. Moreover, an interaction between age and planning was found. Although older adults reported less future planning overall compared with that of younger age groups, the effects of planning on life satisfaction were most pronounced for older adults. Middle-aged participants, although feeling

the pressures of the more day-to-day responsibilities placed on them in their roles as parents, spouses, bosses, and children of aging parents, among others (Lachman and James 1997), behave more like the young with respect to future planning; that is, they may still see the future as open to different possibilities for which they can and do plan. Moreover, planning may be an essential management strategy in the context of increased demands and responsibilities. Older participants, who reported the least amount of future planning, may do so as a compensatory mechanism in the process of maintaining well-being. By selectively focusing on the positive and possible realities of today, elderly respondents optimize their perceptions of well-being in spite of the reality of a more limited future (Baltes and Baltes 1990; Carstensen, Isaacowitz, and Charles 1999). Nevertheless, among the elderly, those who focused on planning for the future seem to maintain the highest levels of life satisfaction. The fact that age was positively predictive of life satisfaction—that is, the older the respondent, the higher the life satisfaction—lends support for the contention that older adults who are able to balance their focus on present and future are most successful.

Finally, we investigated the mediational effects of perceived control for planning when predicting life satisfaction. As expected, those who were future-oriented planners had a higher sense of control, and those with a higher sense of control had higher life satisfaction. We also found support for the mediational model in that the effects of planning and the planning–age interaction were no longer significant predictors of life satisfaction when control beliefs were included in the model. Thus, it appears that those who plan for the future may have greater well-being because it gives them a greater sense of control over their lives. Of course, given the cross-sectional nature of the data, we could not rule out alternate directional hypotheses. Nevertheless, the results are consistent with the interpretation that planning fosters a greater sense of control, which in turn increases well-being.

The findings of this study lend support to the Friedman and Scholnick (1997) model of planning, which suggests, among other things, a significant impact of environmental and personality antecedents on planning. Perhaps most importantly, however, these results indicate that future planning is related to life satisfaction and that the nature of this relationship varies by age. Those who were more future-oriented had greater life satisfaction, and this relationship was more pronounced for older adults, as evidenced by a significant age–planning interaction. If age-related patterns of future-time perspective can be altered (Carstensen, Isaacowitz,

and Charles 1999), these findings could be useful in designing interventions to enhance outcomes for older adults. Encouraging older adults to continue to plan for the future, even in the face of its diminished temporality, may lead to a greater sense of control as well as greater life satisfaction.

These results not only lend further support for the idea that a greater sense of control is positively related to well-being but they begin to address the processes involved in planning and life management. The use of a multi-item, multidomain measure of planning may facilitate a more in-depth understanding of the planning process. Additionally, a closer examination of future planning by domain may reveal differences in planning strategies and outcomes between the middle-aged and younger participants. Although generally these data suggested no significant differences in the prevalence of future planning between the young and middle-aged groups, the domains in which they plan for the future may prove to be quite different and worthy of more thorough examination.

CONCLUSION

The MIDUS survey provided an opportunity to examine the sense of control in adulthood by using a multidimensional approach to assessment with a nationally representative sample. The sense of control has typically been studied with more highly selective volunteer samples. The MIDUS sample enabled comparisons by age, education, sex, and income. In addition, given the interdisciplinary nature of the data set, it was possible to investigate the relationship of control beliefs to other variables such as health and well-being. It was also possible to begin exploring the processes linking control to a wide range of outcomes. Control beliefs were considered as a mediator of the relationship between planning and well-being in the study of management processes. Control beliefs were found to be a moderating variable of the relationship between social class and health.

Although we were able to compare the results from the United States with those of two other Western countries, Germany and Great Britain, it is important to examine these relationships in other cultures, especially Eastern cultures. This may require inclusion of additional aspects of control such as primary and secondary control, which have been found to vary by culture. Having a strong sense of control may be less desirable and less adaptive for individuals in collective cultures such as Japan compared with those in westernized cultures (Markus and Kitayama 1991).

The present study found consistent evidence for the adaptive value of believing one is in control. Control was associated with better health and

well-being for adults of all ages. There may be situations where believing one has control could have detrimental effects. For example, when circumstances are such that one cannot influence the outcome, accepting the lack of control may prove to be more adaptive. Nevertheless, we found clear patterns indicating the importance of control beliefs for well-being and health throughout adulthood. Although control beliefs may show declines in some areas during the course of aging, one indicator of successful adaptation may be the ability to select domains of functioning in which it is possible to maximize one's ability to control outcomes (Baltes and Baltes 1990). This strategic selection of life domains in itself may be a clear manifestation of one's ability to take control of the aging process.

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REFERENCES

- Abeles, R. 1991. Sense of control, quality of life, and frail older people. In *The concept and measure of quality of life in the frail elderly*, ed. J. Birren, J. Rowe, and D. Deutschman, 297–314. San Diego: Academic Press.
- Adler, N. E., T. Boyce, M. A. Chesney, S. Cohen, S. Folkman, R. Kahn, and L. Syme. 1994. Socioeconomic status and health: The challenge of the gradient. *American Psychologist* 49:15–24.
- Andreoletti, C., L. Zebrowitz, and M. E. Lachman. 2001. Physical appearance and control beliefs in young, middle aged and older adults. *Personality and Social Psychology Bulletin* 27:969–81.
- Andrisani, P. J., 1977. Internal–external attitudes, personal initiatives, and the labor market experience of black and white men. *Journal of Human Resources* 12:309–28.
- Antonovsky, A. 1979. *Health, stress, and coping*. San Francisco: Jossey-Bass.
- Antonucci, T. C., and J. S. Jackson. 1990. The role of reciprocity in social support. In *Social support: An interactional view*, ed. B. P. Sarason, I. G. Sarason, and G. R. Pierce, 173–98. New York: John Wiley.
- Aspinwell, L. G. 1997. Planning and perceived control. In *The developmental psychology of planning: Why, how, and when do we plan?* ed. S. L. Friedman and E. K. Scholnick, 285–320. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Baltes, M. M. and P. B. Baltes. 1986. *The psychology of control and aging*. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Baltes, P. B., and M. M. Baltes. 1990. Psychological perspectives on successful aging: The model of selective optimism with compensation. In *Successful aging: Perspectives from the behavioral sciences*, ed. P. B. Baltes and M. M. Baltes, 1–34. Cambridge: Cambridge University Press.
- Bandura, A. 1997. *Self-efficacy: The exercise of control*. New York: Freeman.

- Barnett, R. C. 1997. Gender, employment, and psychological well-being: Historical and life course perspectives. In *Multiple paths of midlife*, ed. M. E. Lachman and J. B. James, 325–43. Chicago: University of Chicago Press.
- Berkman, L. S. 1984. Assessing the physical health effects of social networks and social support. *Annual Review of Public Health* 5:413–32.
- Boswell, J. 1981. The dual-career family: A model for egalitarian family politics. *Elementary School Guidance and Counseling* 15 (3): 262–68.
- Bouffard, L., E. Bastin, and S. Lapierre. 1996. Future time perspective according to women's age and social role during adulthood. *Sex Roles* 34:253–85.
- Bradley, R. E., and R. Webb. 1976. Age-related differences in locus of control orientation in three behavior domains. *Human Development* 19:49–55.
- Brandtstadter, J., and B. Baltes-Gotz. 1990. Personal control over development and quality of life perspectives in adulthood. In *Successful aging*, ed. P. Baltes and M. Baltes, 197–221. Cambridge: Cambridge University Press.
- Brandtstadter, J., and Renner, G. 1990. Tenacious goal pursuit and flexible goal adjustment. Explication and age-related analysis of assimilative and accommodative strategies of coping. *Psychology and Aging* 5:58–67.
- Brandtstadter, J., and K. Rothermund. 1994. Self-percepts of control in middle and later adulthood: Buffering losses by rescaling goals. *Psychology and Aging* 9:265–73.
- Brim, O. G., Jr. 1992. *Ambition: How we manage success and failure throughout our lives*. New York: Basic Books.
- Burack, O. R., and M. E. Lachman. 1995. The use and benefits of time management strategies in adulthood. Poster presented at the annual meeting of the American Psychological Association, New York.
- Cantor, N. 1990. From thought to behavior: "Having" and "doing" in the study of personality and cognition. *American Psychologist* 45:735–50.
- Cantril, H. 1965. *The pattern of human concerns*. New Brunswick, N.J.: Rutgers University Press.
- Carstensen, L. L., D. M. Isaacowitz, and S. T. Charles. 1999. Taking time seriously: A theory of socioemotional selectivity. *American Psychologist* 54:165–81.
- Clark-Plaskie, M., and M. E. Lachman. 1999. The sense of control in midlife. In *Life in the middle*, ed. S. L. Willis and J. D. Reed, 181–208. New York: Academic Press.
- Cohen, S. 1990. Control and the epidemiology of physical health: Where do we go from here? In *Self-directedness: Cause and effects throughout the life course*, ed. J. Rodin, C. Schooler, and K. W. Schaie, 231–40. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Cohen, S., and T. A. Willis. 1985. Stress, social support, and the buffering hypothesis. *Psychological Bulletin* 98:310–57.
- Collins, N. L., C. Dunkel-Schetter, M. Lobel, and S. C. Scrimshaw. 1993. Social support and pregnancy: Psychosocial correlates of birth outcomes and postpartum depression. *Journal of Personality and Social Psychology* 65 (6): 1243–58.
- Colvin, C. R., and J. Block. 1994. Do positive illusions foster mental health? An examination of the Taylor and Brown formulation. *Psychological Bulletin* 116 (1): 3–20.
- Costa, P. T., Jr., and R. R. McCrae. 1994. Set like plaster? Evidence for the stability

- of adult personality. In *Can personality change?* ed. T. F. Heatherton and S. L. Weinberger, 21–40. Washington, D.C.: American Psychological Association.
- Das, J. P., B. C. Kar, and R. K. Parilla. 1996. *Cognitive planning: The psychological basis of intelligent behavior*. New Delhi: Sage Publications India.
- Dauber, S. G., and M. E. Lachman. 2001. Physical appearance and perceived control over work. Manuscript. Brandeis University.
- Diener, E., and M. E. Suh. 1998. Subjective well-being and age: An international analysis. In *Annual review of gerontology and geriatrics*, ed. K. W. Schaie and M. P. Lawton, 11:304–24. New York: Springer-Verlag.
- Eronen, S., J. Nurmi, and K. Salmela-Aro. 1997. Planning oriented, avoidant, and impulsive social reaction styles: A person-oriented approach. *Journal of Research in Personality* 31:34–57.
- Ewart, C. K., C. B. Taylor, H. C. Kraemer, and W. S. Agras. 1991. High blood pressure and marital discord: Not being nasty matters more than being nice. *Health Psychology* 10:155–63.
- Feingold, A. 1994. Gender differences in personality: A meta-analysis. *Psychological Bulletin* 116:429–56.
- Friedman, M. I., and G. H. Lackey. 1991. *The psychology of human control: A general theory of purposeful behavior*. New York: Praeger.
- Friedman, S. L., and E. K. Scholnick. 1997. An evolving “blueprint” for planning: Psychological requirements, task characteristics, and social-cultural influences. In *The developmental psychology of planning: Why, how, and when do we plan?* ed. S. Friedman and E. K. Scholnick, 3–22. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Gatz, M., and I. C. Siegler. 1981. Locus of control: A retrospective. Paper presented at the American Psychological Association Convention, Los Angeles.
- Gilbert, L. A. 1985. *Men in dual-career families: Current realities and future prospects*. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Gurin, P., and O. G. Brim, Jr. 1984. Change in self in adulthood: The example of sense of control. In *Life-span development and behavior*, ed. P. B. Baltes and O. G. Brim, Jr., 6:218–334. New York: Academic Press.
- Gurin, G., and P. Gurin. 1970. Expectancy theory in the study of poverty. *Journal of Social Issues* 26:83–104.
- Hayes-Roth, B., and F. Hayes-Roth. 1979. A cognitive model of planning. *Cognitive Science* 3:275–310.
- Heckhausen, J. and R. Schulz. 1995. A life-span theory of control. *Psychological Review* 102:284–304.
- Heise, D. R. 1990. Careers, career trajectories, and the self. In *Self-directedness: Cause and effects throughout the life course*, ed. J. Rodin, 59–84. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- House, J. S., K. R. Landis, and D. Umberson. 1988. Social relationships and health. *Science* 241:540–45.
- Howard, A., and D. W. Bray. 1988. *Managerial lives in transition: Advancing age and changing times*. New York: Guilford Press.
- Hudson, J. A., B. B. Sosa, and L. R. Shapiro. 1997. Scripts and plans: The development of preschool children’s event knowledge and event planning. In *The developmental*

- psychology of planning: Why, how, and when do we plan?* ed. S. L. Friedman and E. K. Scholnick, 77–102. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Huyck, M. H. 1991. Predicates of personal control among middle-aged and young-old men and women in middle America. *International Journal of Aging and Human Development* 324:261–75.
- Ingersoll-Dayton, B., D. Morgan, and T. C. Antonucci. 1997. The effects of positive and negative social exchanges on aging adults. *Journal of Gerontology* 524:S190–S199.
- Karasek, R. A., and T. Theorell. 1990. *Healthy work: Stress, productivity, and the reconstruction of working life*. New York: Basic Books.
- Keicolt-Glaser, J. K., W. Garber, C. Speicher, G. M. Penn, J. Holliday, and R. Glaser. 1984. Psychosocial modifiers of immunocompetence in medical students. *Psychosomatic Medicine* 461:7–14.
- Lachman, M. E. 1985. Personal efficacy in middle and old age: Differential and normative patterns of change. In *Life-course dynamics: Trajectories and transitions, 1968–1985*, ed. G. H. Elder Jr. Ithaca, N.Y.: Cornell University Press.
- . 1986. Locus of control in aging research: A case for multidimensional and domain-specific assessment. *Psychology and Aging* 1:34–40.
- . 1991. Perceived control over memory aging: Developmental and intervention perspectives. *Journal of Social Issues* 47 (4): 159–75.
- Lachman, M. E., and R. M. Bertrand. 2001. Personality and self in midlife. In *Handbook of midlife development*, ed. M. W. Lachman, 279–309. New York: John Wiley.
- Lachman, M. E., and O. R. Burack. 1993. Planning and control processes across the life span: An overview. *International Journal of Behavioral Development* 162:131–43.
- Lachman, M. E., and J. B. James. 1997. *Multiple paths of midlife*. Chicago: University of Chicago Press.
- Lachman, M. E., M. Marmot, M. Shipley, and H. Walen. 2000. Control beliefs and health: Exercise and diet as mediators. Manuscript, Brandeis University.
- Lachman, M. E., U. M. Staudinger, and H. Walen. 2001. Sense of control and perceived trajectories of subjective well-being in American and German adults. Manuscript, Brandeis University.
- Lachman, M. E., and S. L. Weaver. 1997. The Midlife Development Inventory (MIDI) personality scales: Scale construction and scoring. Technical report. Brandeis University, Waltham, Mass.
- . 1998a. Sociodemographic variations in the sense of control by domain: Findings from the MacArthur studies of midlife. *Psychology and Aging* 13 (4): 553–62.
- . 1998b. The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology* 74:763–73.
- Lachman, M. E., M. Ziff, and A. Spiro. 1994. Maintaining a sense of control in later life. In *Aging and quality of life*, ed. R. Abeles, H. Gift, and M. Ory, 6–132. New York: Sage.
- Langer, E. J., and J. Rodin. 1976. The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting. *Journal of Personality and Social Psychology* 34:191–98.
- Levensen, H. 1981. Differing among internality, powerful others, and chance. In *Research with the locus of control construct*, vol. 1. *Assessment methods*, ed. H. M. Lefcourt, 15–63. New York: Academic Press.

- Little, B. R. 1983. Personal projects: A rationale and method for investigation. *Environment and Behavior* 15:273–309.
- Little, T. D., G. Oettinger, A. Stentsenko, and P. B. Baltes. 1995. Children's action control beliefs about school performance: How do American children compare with German and Russian children? *Journal of Personality and Social Psychology* 69:686–700.
- Macan, T. H. 1994. Time management: Test of a process model. *Journal of Applied Psychology* 79:381–91.
- Macan, T. H., C. Shahani, R. L. Dipboye, and A. P. Phillips. 1990. College students' time management: Correlations with academic performance and stress. *Journal of Educational Psychology* 82:760–68.
- Markus, H., and S. Kitayama. 1991. Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review* 98:224–53.
- Marmot, M. G., C. Ryff, L. Bumpass, M. J. Shipley, and N. F. Marks. 1997. Social inequalities in health: Next questions and converging evidence. *Social Science and Medicine* 44:901–10.
- Marmot, M. G., G. D. Smith, S. Stansfeld, C. Patel, F. North, J. Head, I. White, E. Brunner, and A. Feeney. 1991. Health inequalities among British civil servants: The Whitehall II study. *Lancet* 337:1387–93.
- McAvay, G. J., T. E. Seeman, and J. Rodin. 1996. A longitudinal study of change in domain-specific self-efficacy among older adults. *Journal of Gerontology: Psychological Sciences* 51B:243–53.
- McCrae, R. R., and P. T. Costa. 1985. Comparison of EPI and psychoticism scales with measures of the five-factor model of personality. *Personality and Individual Differences* 6 (5): 587–97.
- Menec, V. H., and J. G. Chipperfield. 1997. The interactive effect of perceived control and functional status on health and mortality among young-old and old-old adults. *Journal of Gerontology: Psychological Sciences* 52B:118–26.
- Miller, G. A., E. Galanter, and K. H. Pribram. 1960. *Plans and the structure of behavior*. New York: Holt, Rinehart, and Winston.
- Mintz, R. D., and J. R. Mahalik. 1996. Gender role orientation and conflict as predictors of family roles for men. *Sex Roles* 34:805–21.
- Mirowsky, J., C. E. Ross, and M. Van Willigen. 1996. Instrumentalism in the land of opportunity: Socioeconomic causes and emotional consequences. *Social Psychology Quarterly* 594 (December): 322–37.
- Myers, D. G., and E. Diener. 1995. Who is happy? *Psychological Science* 6:10–19.
- Nurmi, J. E. 1989. Development of orientation to the future during early adolescence: A four-year longitudinal study and two cross-sectional comparisons. *International Journal of Psychology* 24:195–214.
- . 1992. Age differences in adult life goals, concerns, and their temporal extension: A life course approach to future-oriented motivation. *International Journal of Behavioral Development* 15:487–508.
- Pearlin, L., and C. Schooler. 1978. The structure of coping. *Journal of Health and Social Behavior* 19:2–21.
- Prenda, K. M., and M. E. Lachman. 2001. Planning as a life management strategy in adulthood: Implications for perceived control and life satisfaction. *Psychology and Aging* 16:206–16.

- Raven, J. C., J. H. Court, and J. Raven. 1994. *Raven manual*. Section 4. *Advanced progressive matrices*. 4th ed. Oxford: Oxford Psychologist Press.
- Reed, G. M., S. E. Taylor, and M. E. Kemeny. 1993. Perceived control and psychological adjustment in gay men with AIDS. *Journal of Applied Social Psychology* 23:791–824.
- Rodin, J. 1986. Health, control, and aging. In *The psychology of control and aging*, ed. M. M. Baltes and P. B. Baltes, 139–66. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- . 1990. Control by any other name: Definitions, concepts, and processes. In *Self-directedness: Cause and effect throughout the life course*, ed. J. Rodin, C. Schooler, and K. W. Schaie, 1015. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Rodin, J., and C. Timko. 1992. Sense of control, aging, and health. In *Aging, health, and behavior*, ed. M. E. Ory and R. P. Abeles, 172–206. Newbury Park, Calif.: Sage.
- Rodin, J., C. Timko, and S. Harris. 1985. The construct of control: Biological and psychosocial correlates. In *Annual review of gerontology and geriatrics*, ed. C. Eisdorfer, M. P. Lawton, and G. L. Maddox, 3–55. New York: Springer-Verlag.
- Rook, K. 1992. Detrimental aspects of social relationships: Taking stock of an emerging literature. In *The meaning and measurement of social support*, ed. H. O. Veiel and U. Baumann, 157–69. New York: Hemisphere.
- Rothbaum, F., J. R. Weisz, and S. S. Snyder. 1982. Changing the world and changing the self. *Journal of Personality and Social Psychology* 42:5–37.
- Rotter, J. B. 1966. Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs* 80, whole no. 609.
- Rowe, J. W., and R. L. Kahn. 1987. Human aging: Usual and successful. *Science* 237:143–49.
- . 1997. Successful aging. *Gerontologist* 37 (4): 433–40.
- Ryff, C. D. 1989. In the eyes of the beholder: Views of psychological well-being among middle-aged and older adults. *Psychology and Aging* 4 (2): 195–210.
- Ryff, C. D., and B. H. Singer. 1998. Middle age and well-being. In *Encyclopedia of mental health*, ed. H. S. Friedman, 707–19. San Diego: Academic Press.
- Schaie, K. W. 1985. *Manual for the Schaie-Thurstone Adult Mental Abilities Test STAMAT*. Palo Alto, Calif.: Consulting Psychologists Press.
- Scholnick, E. K., and S. L. Friedman. 1993. Planning in context: Developmental and situational considerations. In *Planning and control processes across the life span*, ed. M. E. Lachman, 145–67. East Sussex, U.K.: Lawrence Erlbaum Associates.
- Schulz, R., and B. H. Hanusa. 1978. Long-term effects of control and predictability-enhancing interventions: Findings and ethical issues. *Journal of Personality and Social Psychology* 36 (11): 1194–1201.
- Schulz, R., J. Heckhausen, and J. L. Locher. 1991. Adult development, control, and adaptive functioning. *Journal of Social Issues* 47:177–96.
- Seeman, T. E., L. F. Berkman, P. A. Charpentier, D. G. Blazer, M. S. Albert, and M. E. Tinetti. 1995. Behavioral and psychosocial predictors of physical performance: MacArthur studies of successful aging. *Journal of Gerontology* 50A:M177–M183.
- Seligman, M. E. P. 1991. *Learned optimism*. New York: Knopf.
- Skinner, E. A. 1995. *Perceived control, motivation, and coping*. Thousand Oaks, Calif.: Sage.

- . 1996. A guide to constructs of control. *Journal of Personality and Social Psychology* 17:549–70.
- . 1997. Planning and perceived control. In *The developmental psychology of planning: Why, how, and when do we plan?* ed. S. L. Friedman and E. K. Scholnick, 263–84. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Smits, C. H., D. J. Deeg, and R. J. Bosscher. 1995. Well-being and control in older persons: The prediction of well-being from control measures. *International Journal of Aging and Human Development* 40 (3): 237–51.
- Staats, S. 1974. Internal versus external locus of control for three age groups. *International Journal of Aging and Human Development* 5:7–10.
- Staudinger, U. M., W. Fleeson, and P. B. Baltes. 1999. Predictors of subjective physical health and global well-being during midlife: Similarities and differences between the U.S. and Germany. *Journal of Personality and Social Psychology* 76 (2): 305–19.
- Strickland, B. R. 1978. Internal–external expectancies and health-related behaviors. *Journal of Consulting and Clinical Psychology* 46:1192–11.
- Taylor, S. E. 1995. *Health psychology*. 3d ed. New York: McGraw Hill.
- Taylor, S. E., and J. D. Brown. 1988. Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin* 103 (2): 193–210.
- Teahan, J. E. 1958. Future time perspective, optimism, and academic achievement. *Journal of Abnormal and Social Psychology* 57:379–80.
- Thompson, S. C., P. R. Cheek, and M. A. Graham. 1988. The other side of perceived control: Disadvantages and negative effects. In *The social psychology of health*, ed. S. Spacapan and S. Oskamp, 69–93. Newbury Park, Calif.: Sage.
- Thompson, S. C., A. Sobolew-Shubin, M. E. Galbrith, L. Schwankovsky, and D. Cruzen. 1993. Maintaining perceptions of control: Finding perceived control in low-control circumstances. *Journal of Personality and Social Psychology* 64:293–304.
- Walen, H. Forthcoming. Social exchange, control beliefs, and health in adulthood: A test of factorial invariance and an examination of a mediational model.
- Walen, H., and M. E. Lachman. 2000. Social support and strain from partner, family, and friends: Costs and benefits for men and women. *Journal of Social and Personal Relationships* 17:5–30.
- Wallston, K. A., and B. S. Wallston. 1981. Health-related locus of control scales. In *Research with the locus of control construct*, vol. 1. *Assessment methods*, ed. H. M. Lefcourt, 189–243. New York: Academic Press.
- Wechsler, D. 1981. *Wechsler adult intelligence scale, revised*. New York: Psychological Corporation.
- Weisz, J. R. 1983. Can I control it? The pursuit of veridical answers across the life span. In *Life-span development and behavior*, ed. P. B. Baltes and O. G. Brim, 5:233–300. New York: Academic Press.
- Weitz, S. 1977. *Sex roles: Biological, psychological, and social foundations*. New York: Oxford University Press.
- Wortman, C. B., C. Sheedy, V. Gluhoski, and R. Kessler. 1992. Stress, coping, and health: Conceptual issues and directions for future research. In *Hostility, coping and health*, ed. H. S. Friedman, 227–56. Washington, D.C.: American Psychological Association.