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University of Iowa

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EXPECTING GOOD THINGS AND FEELING GOOD:
A SOCIOLOGICAL APPROACH TO HEALTH INEQUALITIES

by
Matthew Anders Andersson

A thesis submitted in partial fulfillment
of the requirements for the Doctor of
Philosophy degree in Sociology
in the Graduate College of
The University of Iowa

August 2014

Thesis Supervisors: Associate Professor Jennifer Glanville
Associate Professor Steven Hitlin

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CERTIFICATE OF APPROVAL

PH.D. THESIS

This is to certify that the Ph.D. thesis of

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has been approved by the Examining Committee
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To Shari Porte

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ABSTRACT

This dissertation illuminates health inequalities by focusing on two motivational goods. One is expecting good things to happen: being optimistic, in other words. Another is feeling good, in terms of emotional well-being. While previous research has demonstrated the value of these psychological resources to understanding social inequality, basic questions remain about how and why these resources bring about health inequalities.

In Chapter Two, I use data from the 2005 Survey of Midlife Development in the United States (MIDUS) to examine interactions between optimism and autonomy at work as they relate to psychological distress and positive emotion. I utilize my results to shed light on how autonomy matters to mental health: findings are consistent with autonomy as a lack of oppression or as a “strong” social situation, rather than autonomy as an opportunity to thrive. In Chapter Three, I test hypotheses about optimism in the context of relationship- and work-based crises, using data from the 2004 General Social Survey. I find that dispositional optimism is associated with increases in self-esteem and health; its effect on these outcomes intensifies around the time of relationship crises and is stronger for women than for men. In Chapter Four, I draw and build upon a capital activation perspective to argue that emotional well-being activates education. Using a representative panel sample of middle-aged adults (MIDUS: 1995-2005), I indeed find that emotional well-being activates education, leading to especially favorable gains in health, sense of control and voluntary association involvement – or, more strikingly, to no effect of education at low levels of well-being. Moreover, an auxiliary fixed-effects analysis of activation (based on the MIDUS 1995 Identical Twins sample) replicates these findings.

In total, I find that capital activation is a powerful source of social stratification that rivals the importance of capital itself.

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CHAPTER 1 INTRODUCTION

It is unoriginal to note that individuals differ in how they act, think, and feel in given situations. Certainly, the observation that individuals vary greatly in personality is old news (McLeod and Lively 2003). However, variation in personality traditionally is understood from the standpoint of social causation: that is, as arising from structural positions, contexts and resources. What about variation in personality that is *residual* to structure? Should it merely be cast as error or as not being analytically meaningful to sociologists? Freese (2008) issued a reminder to the discipline of sociology that such variation is robust and substantial and that it carries wide-ranging implications. In this dissertation, I take this stance as a point of departure. In particular, I analyze personality as *residual* to structure, not as instantiating or merely reproducing structure. I contend that residual personality is of substantive interest and has powerful consequences for shaping disparities in life chances.

In some respects, the notion of personality-as-residual places me outside traditional sociological discourse. As Freese (2008) notes, however, this viewpoint is a quintessentially interdisciplinary stance, and one that poises me to make a powerful contribution to how the intersection between agency and structure is understood, discussed and analyzed within the realm of sociological inquiry. Although residual personality matters to life outcomes, the effect of such personality on life outcomes depends on structural resources and contexts (e.g., Adkins and Vaisey 2009; Bekkers 2006; Shanahan, Erickson, Vaisey and Smolen 2007). Thus, I advocate combining agency and structure to illuminate disparities in life outcomes.

As a way of demonstrating the importance of residual personality to life chances, this dissertation focuses on two motivational goods. One is expecting good things to happen: being optimistic, in other words (Carver and Scheier 2014; Hitlin and Elder 2007). Optimism varies net of structural circumstances and is linked to motivation and persistence in situations that matter to the self (Carver and Scheier 2014; Peterson 2000). Another is feeling good, in terms of emotional well-being (Heckman, Stixrud and Urzua 2006; Turner and Stets 2006). Emotional well-being also varies amply net of structural circumstances, and it has motivational properties, as it underlies important mindsets, perceptions and goal-oriented efforts.

In this dissertation, I examine the vital consequences of these motivational goods. For whom and under what circumstances does optimism improve life chances? To what extent is emotional well-being a driver of resource activation and thus social stratification? As a whole, then, this dissertation offers an interdisciplinary treatment of micro-macro links that draws on developmental, social and health psychology.

In Chapters Two and Three, I focus on the health outcomes of optimism. While sociological research has long recognized the importance of psychosocial resources, it often treats these resources as interchangeable and dynamic, neglecting to consider the differential durability and value of these resources for health outcomes. I focus on dispositional optimism as a uniquely durable psychosocial resource. Optimism is linked to a variety of economic, health, and social benefits. However, it remains unclear how optimism structures health inequalities and how important it is relative to other psychosocial resources. How does optimism factor into mechanisms of health inequality at work? More broadly, how unique is the contribution that optimism makes to health?

In Chapter 4, I examine the health consequences of emotional well-being by drawing upon the Weberian concept of affectual action. Outlined by Max Weber in *The Theory of Social and Economic Organization*, affectual action is a form of action grounded in emotions or feeling states. A conceptual focus on emotional well-being provides a deep critique of rational theories of educational human capital.

Optimism (Chapters Two and Three)

In many ways, optimism resides at the very core of agency. Optimism represents general expectations for personal progress and success. Ann Mische (2009) suggested recently that optimism and hope represent the “cognitive contours of (life) project formation.” As Steven Hitlin and Glen Elder (2007) point out, this makes optimism unique and more general relative to psychosocial resources such as self-efficacy, self-esteem, locus of control, or personal mastery, which focus more on one’s felt capacities and worth, and which may or may not translate to a promising future. Optimism is based in cross-situational expectations that are robust to diverse experiences. In contrast, other psychosocial resources such as sense of control and mastery may be more subject to erosion or change across life experiences.

Optimism has yet to be applied to understanding mental health under different labor conditions. Beginning with Marx, sociologists have identified the vital role that work conditions play in shaping mental health. While autonomy at work generally matters to overall mental health, it remains unclear *for whom* this association holds. For workers with psychosocial resources such as optimism, autonomy may matter much less to mental health. Or, it may matter much more, if optimism allows workers to thrive under conditions of autonomy.

In Chapter 2, then, I use data from the 2005 Survey of Midlife Development in the United States (MIDUS) to examine interactions between optimism and autonomy at work as they relate to psychological distress and positive emotion. Results show that distress is shaped by resource substitution, whereas positive emotion is best explained by an independent-effects model with no interactions. I utilize these results to shed light on how autonomy matters: findings are consistent with autonomy as a lack of oppression or as a “strong” social situation, rather than autonomy as an opportunity to thrive.

In Chapter 3, I shift my focus to life crises: America is marked by sizable rates of divorce and involuntary job loss. In weathering relationship and work crises, individuals draw upon their personal resources, which include psychosocial resources. Among these, dispositional optimism is likely to be especially durable and valuable to coping processes relative to more volatile resources such as self-efficacy or self-esteem.

Although previous investigations of optimism have spotlighted its link to social network formation and attainment and delinquency outcomes, optimism has yet to be investigated within the context of life crises and accompanying acute stress. Within crisis situations, expecting good things to happen seems to go hand-in-hand with an engaged approach to life. Although situational importance is shaped by self-related information like personal goals and identities, optimism underlies engaged coping regardless of self-relevant feedback, such as whether situations are disconfirming valued identities. Put differently, social psychologists Charles Carver and Michael Scheier (2014) essentially argue that optimism motivates persistence within situations that matter to the self without being depleted by feelings or attitudes toward the self.

To shed light on the role of optimism in life crisis situations, I examine dispositional optimism as a psychological resource that is relatively independent of the situation and the self, making it ideal for structurally disadvantaged actors and for navigating crises that diminish self-based personal resources such as self-esteem. To test hypotheses about optimism in the context of relationship- and work-based crises, I draw upon data from the 2004 General Social Survey. I find that dispositional optimism is associated with increases in self-esteem and health net of emotional stability; its effect on these outcomes intensifies around the time of relationship crises and is stronger for women than for men. Moreover, optimism is more vital to health than self-esteem during either type of crisis, suggesting it may be a uniquely durable psychological resource in the stress process.

Emotional Well-Being (Chapter 4)

As Coleman (1990) points out in *Foundations of Social Theory*, there are times when individuals seem to be irrational or acting against their own best interests. As one basis for understanding these deviations, Weber draws attention to affectual action, which is grounded in prevailing emotional conditions such as feeling states. Robert Merton (1936) essentially dismissed this type of action, however, analyzing it mainly as “error” or “bias” vis-à-vis rational action.

Today, the notion of rational action still underlies much scholarly work on education and life chances. According to a traditional human capital perspective, propounded by Gary Becker (1964) and also by Catherine Ross and John Mirowsky (2011:592), education “gives people the ability and motivation to shape and control their lives.” However, recent studies by James Heckman and other economists have

demonstrated that emotional and psychological resources are largely independent of educational attainment, which casts serious doubt on this hypothesis.

In Chapter 4, I draw and build upon a capital activation perspective to argue that emotional well-being activates education. This is because education does not in itself provide emotional well-being, and because people with greater emotional well-being demonstrate flexibility, support and persistence during problem-solving efforts. Using a representative panel sample of middle-aged adults (MIDUS RDD: 1995-2005), I indeed find that emotional well-being activates education, leading to especially favorable gains in health, sense of control and voluntary association involvement – or, more strikingly, to no effect of education at low levels of well-being. Moreover, an auxiliary fixed-effects analysis of activation (based on the MIDUS 1995 Identical Twins sample) replicates these findings even after controlling for early life-course factors such as genes and primary socialization. In total, I find that capital activation is a powerful source of social stratification that rivals the importance of capital itself.

CHAPTER 2
OPTIMISM AND AUTONOMY AT WORK:
CUMULATIVE (DIS)ADVANTAGE, LEVELING, OR INDEPENDENT EFFECTS?

Beginning with Marx, sociologists have identified the vital role that work conditions play in shaping overall mental health. Autonomy at work, for example, is a core aspect of work conditions and is linked to higher levels of mental health (Lennon 1994; Kohn and Schooler 1973; Mirowsky and Ross 2007; Schwalbe 1985). Autonomy represents latitude and discretion in one's work, as well as freedom from close surveillance and frequent intervention during one's work hours. On the one hand, autonomy represents the *presence of an opportunity* to excel or thrive at work, as workers become freer to structure their time and efforts. On the other, it also represents the *absence of oppression* or indignity at work.

While autonomy at work generally matters to overall mental health, it remains unclear *for whom* this association holds. Workers may possess resources for mental health other than autonomy. For workers with psychosocial resources such as optimism, autonomy may matter much less to mental health. Or, it may matter much more, if optimism allows workers to thrive under conditions of autonomy. Understanding variation in autonomy's effect may be just as important as understanding the effect itself. Indeed, such variation can provide further insight into how autonomy matters in the first place.

Optimism is a core psychological resource, as it represents a general expectation that good things will happen and that situations will turn out well (Hitlin and Elder 2007). Optimism is linked to seizing opportunities and gaining success in work, school and other social institutions – and to effective coping in a variety of difficult situations (Carver,

Scheier and Segerstrom 2010; Peterson 2000). Given this dual functionality, it is a key psychosocial resource to investigate alongside autonomy at work. In this study, I draw upon representative data to adjudicate between mechanisms of health inequality pertaining to optimism and autonomy at work.

Contrasting mechanisms have been proposed for explaining social and health inequalities. On the one hand, cumulative (dis)advantage involves resources building on and mutually reinforcing one another (Ross and Mirowsky 2011). On the other hand, a leveling or resource substitution mechanism involves the presence of one resource making the absence of another less consequential for well-being (Schafer, Wilkinson and Ferraro 2013). As a third possibility, it may be the case that an independent-effects model, containing no significant interactions among resources, instead prevails (Pampel and Rogers 2004).

These three contrasting mechanisms of inequality have yet to be applied to our understanding of worker mental health. If autonomy-as-opportunity matters to shaping mental health effects, then cumulative (dis)advantage mechanisms are expected to prevail, as workers with psychosocial resources such as optimism should be poised to thrive and seize upon such job-related opportunities. On the other hand, if autonomy impacts mental health simply because it represents the absence of oppression, then psychosocial resources such as optimism should matter *less* to the extent that autonomy is present, which represents a leveling or resource substitution mechanism. That is, as oppressiveness disappears, resource-based coping becomes less important to mental health. As a final possibility, optimism may be of uniform value to mental health, regardless of job autonomy.

Background

Autonomy is defined as “the opportunity to use discretion in one’s work activities” (Lennon 1994:237) or being “free from close supervision” and having “decision-making latitude” (Mirowsky and Ross 2007:386; see also Kohn and Schooler 1973:104). In effect, autonomy represents the structural opportunity at work “for perceiving one’s self as responsible for competent performance”; in its most basic sense, “it is simply to be free from continuous surveillance and frequent supervisory intervention” (Schwalbe 1985:522-23). Low autonomy at work has negative consequences for mental health (Lennon 1994; Kohn and Schooler 1973; Mirowsky and Ross 2007; Schwalbe 1985).¹

Numerous pathways have been proposed for the link between autonomy and mental health (Mirowsky 2011; Schwalbe 1985, 1988). First, autonomy provides space for attributing work performance to the self, thus allowing positive feedback to be linked to the self rather than to external factors. Meanwhile, autonomy also represents a reward or vote of confidence from one’s superiors. Also, within workplaces where employee roles vary, it serves as a status indicator. Finally, because autonomy allows one to venture off on one’s own when completing tasks, it allows one to catch mistakes before they reach the eyes of significant others in the workplace, thus preventing undue negative feedback. All of these pathways are likely to uphold general mental health through

¹ The “stress of higher status” hypothesis (e.g., Schieman et al. 2009) posits that structural resources such as autonomy and scheduling flexibility may in fact be sources of “border permeability” for higher-status individuals who hold managerial positions. That is, such resources may exacerbate job pressure and/or work-nonwork interference and increase psychological distress as a result. Schieman (2013) shed additional light on this issue, finding that autonomy and schedule control are more aptly treated as resources whereas authority and challenging work increase job pressure. Thus, it seems that autonomy per se operates as a source of psychological well-being rather than as a portal for work-nonwork spillover.

increasing positive emotions such as pride and satisfaction and also deterring negative emotions such as anxiety or uneasiness (Avey et al. 2009; Hausser et al. 2010; Pearlin and Schooler 1978; Schaufeli et al. 2009; Tausig 2013).

While autonomy at work is broadly relevant to overall mental health, workers also possess varying levels of optimism. In many ways, optimism resides at the very core of agency (Hitlin and Elder 2007). Mische (2009:698) suggested that it represents the “cognitive contours of (life) project formation.” Indeed, optimism captures the temporality of agency and the forward-looking nature of human action (Hitlin and Elder 2007; Schafer 2013), which is vital to everyday life given how deliberation often centers on the “planning and imagination of future life events” (Wilson and Gilbert 2003). Optimism represents generalized expectancies for personal progress and success, regardless of how they might come about. This makes optimism unique and more general relative to psychosocial resources such as self-efficacy, self-esteem, locus of control, or personal mastery, which focus more on one’s felt capacities and worth, and which may or may not translate to a promising future. Optimism is based in cross-situational expectations that are robust to diverse experiences (Carver et al. 2010; Lazarus 1993; Mosing et al. 2009; Pearlin 1999). In contrast, other psychosocial resources such as sense of control and mastery may be more subject to erosion or change across life experiences (Glavin 2013:116; Tausig 2013).

Optimism is especially fitting to examine alongside autonomy at work. Optimism matters in unclear situations – which are characterized by novelty, dynamism, and complexity – and these types of situations are the very essence of autonomous working conditions. Indeed, particularized habits or dispositions are only relevant to certain tasks

or routines, whereas optimism transcends this specificity to infuse a variety of social action. As such, optimism is likely to configure how autonomous situations are approached and handled on a routine basis. Optimism has been linked to mental health outcomes such as depression, anxiety, and positive affect (Carver et al. 2010; Scheier, Carver and Bridges 1994). Further, it has been shown to shape and reflect job antecedents, processes and outcomes, such as network activation, engagement at work, job satisfaction, and earned income (Andersson 2012; Carver et al. 2010). Despite this relevant research, it remains unclear how optimism shapes the mental health effects of autonomy at work.

The study of social inequality has identified two important mechanisms: cumulative (dis)advantage and leveling. In cumulative (dis)advantage, individuals or groups with resources are able to compound their fortune, and individuals without resources are likely to become entrenched in a disadvantaged situation. This means that the absence of a given resource makes the presence of another less powerful, due to multiplicative effects. This is consistent with a mechanism where certain resources cannot be harnessed or activated properly without other resources being present (DiPrete and Eirich 2006). As stylistic examples of cumulative (dis)advantage, early career success may be decisive for overall career path and visibility (Merton 1968) or neighborhood disorder can lower collective efficacy which in turn can initiate a spiral of neighborhood decline (Sampson, Raudenbush and Earls 1997).

A contrasting pathway is leveling or resource substitution. In this pathway, resources can level each other out in what is essentially a case of diminishing returns (Schafer, Wilkinson and Ferraro 2013). Put another way, resource-disadvantaged groups

are especially vulnerable to lower levels of health or attainment, and thus have more to gain in terms of these outcomes when they gain relevant resources (Pampel and Rogers 2004). For instance, individuals from high-SES backgrounds have lower financial and health-based returns to education than individuals from lower-SES backgrounds (Brand and Xie 2010; Schafer et al. 2013).

Or, in the case of independent effects, neither of the above mechanisms obtains. In such a case, a resource may represent a “strong” situation – perhaps a necessary resource – whose effects cannot be appreciably shaped or altered by other resources. This often is observed in the context of “strong” social situations that are vital or even necessary to life outcomes and thus have fairly uniform effects across individuals (e.g., the presence of emotional warmth and material resources early in the life course; Repetti et al. 2002). In independent-effects models, resources have unconditional value for life outcomes (Pampel and Rogers 2004).

Autonomy and Optimism: Three Possible Pathways

Previous research has demonstrated that optimism may improve life chances through pathways involving cumulative (dis)advantage on the one hand and leveling or resource substitution on the other. In addition, there is ample research pointing to the “unconditional” or general value of optimism regardless of other resources held. On the one hand, optimism is likely to help individuals build or capitalize on their socioeconomic advantages when lifetime income trajectories are the empirical focus (Judge and Hurst 2007; Kaniel, Massey and Robinson 2010). In contrast, resource substitution suggests that disadvantaged groups reap more rewards from optimism than do privileged groups, because they have more to gain from it. For instance, some studies

find that optimism and related psychosocial resources are more beneficial to health and well-being in the context of low education and other life adversity (Schollgen et al. 2011; Turiano et al. 2014). Finally, a variety of research also finds that optimism aids health, attainment and productive coping across a variety of circumstances, which suggests that its value to life outcomes may be more or less uniform (Carver et al. 2010; Rasmussen, Scheier and Greenhouse 2009; Solberg Nes and Segerstrom 2006).

Cumulative (Dis)advantage: Autonomy as Presence of Opportunity

In keeping with a cumulative (dis)advantage perspective on autonomy and optimism, optimism is linked to a variety of cognitive and interpersonal habits conducive to success. Cognitively, it is linked to enhanced creative thinking through positive emotion and reduced self-consciousness and self-blame. To the extent that creativity is permitted structurally by autonomous work conditions, optimism should be able to boost work performance. Interpersonally, it is linked to perceived social support, taking action, solving problems, and cognitive reinterpretation in the face of difficulty. Given these basic correlates, it is perhaps no surprise that optimism has been linked to job market success and financial success as well (Kaniel et al. 2010; Segerstrom 2007).

While autonomy at work has not been examined directly by prior optimism research, optimism has been found to aid success in other high-autonomy environments, such as the university (Brissette, Carver and Scheier 2002; Solberg-Nes, Evans and Segerstrom 2009). Specifically, students who are optimistic are more likely to stay in school and excel academically (Solberg-Nes et al. 2009). While academic environments are marked by fairly clear expectations, tasks and deadlines, they are still marked by much latitude and discretion in terms of the allocation of personal efforts and time. Thus

empirical findings obtained for school may generalize to autonomous work environments.

Optimism enables one to seize the great opportunity afforded by autonomy at work. Further, in the absence of autonomy, optimism may not exert appreciable effects, due to constrained opportunity. In total, autonomy at work in the presence of optimism may convey a double advantage, in that it would exert main effects on mental health while also unleashing superior gains from autonomy; conversely, the absence of autonomy would convey a double disadvantage. This pathway would be evidenced by positive interactions between autonomy and optimism in the prediction of mental health.

Resource Substitution: Autonomy as Absence of Oppression

In his classic writings, Marx envisioned the subjugation and close supervision of labor as a potent threat to the well-being of mankind. Since then, autonomy has been recognized as a core aspect of feeling dignified and respected as a person and as a worker (Crowley 2013; Hodson 1996, 2001; Marx 1964). Autonomy represents a fundamental human need that is present across cultures, even despite national and demographic variations in the extent to which it is valued and in the specific ways in which it is realized (Deci and Ryan 2000; Gecas 1993; Turner 1987).

In turn, optimism may serve as a potent buffer of the deleterious effects on mental health when autonomy at work is absent. In this vein, optimism is linked to buffered reactivity to social stressors (Segerstrom 2001; Terrell et al. 2010), self-care in the form of health behaviors, and lowered mental and physical stress (Carver et al. 2010; Rasmussen et al. 2009). If one believes that good things will eventually happen, one is likely to take the subjection of low autonomy in stride by a number of coping

mechanisms, such as devaluing one's job as central to one's self-concept, devaluing autonomy as integral to job satisfaction, or increasing the valuation of alternative life domains such as family or community commitments. Indeed, optimism is linked to non-kin network building and to generalized trust, both of which should propel the diversification of self outside work through friendships and organizational involvements (Andersson 2012; Uslander 2002).²

Resource Independence: Autonomy and Optimism as Independent

As a third possibility, autonomy at work may represent a “strong” situation whose effects cannot be adjusted by psychosocial resources. Put simply, for overwhelming social situations, individuality may not matter. Indeed, certain situations exert more or less uniform effects on individuals due to their hard constraints on action, motivation and cognition. For example, job loss may be “beyond” coping efforts provided by psychosocial resources (Pearlin and Schooler 1978:10). Other similar situations, notably job instability and organizational change, have been examined within stress-buffering studies, often with null findings for interaction effects (e.g., Callan et al. 1994; Cheng et al. 2013; Morris and Long 2002). Whether this obtains for autonomy and optimism is an empirical question, as extreme or inhumane lapses of autonomy may be necessary to produce such a “strong” situation. Such extreme lapses might involve violations of human rights, as seen in involuntary captivity or hostage situations. Alternatively, even

² Another resource-substitution pathway is possible, if one questions the value of optimism at work. Moskowitz and Vissing-Jorgensen (2002) suggest that entrepreneurs – perhaps the occupational epitome of autonomy – actually may suffer from optimism, in that it may impede even-handed risk appraisal (see Hmieleski and Baron 2009). One other study on optimism likewise finds excessive risk-taking behaviors in certain instances (Gibson and Sanbonmatsu 2004). A failure-based understanding of autonomy at work suggests that, to the extent that autonomy is present, a lack of optimism aids mental health by preventing failures at work; to the extent that autonomy is absent, optimism may help one cope.

moderate lapses of autonomy, as seen in many jobs in which supervision is close and discretion is limited, may be sufficient to block out any palliative effects of optimism.

Method

Nationally representative data on mental health, optimism and autonomy at work are made available by Wave 2 (2005 Wave) of the National Survey of Midlife Development in the United States (MIDUS) administered by the John D. and Catherine T. MacArthur Foundation (available on ICPSR website: <http://www.icpsr.umich.edu>).³ Wave 1 is not appropriate because it does not query optimism. The main component of MIDUS is a probability sample consisting of English-speaking, noninstitutionalized adults residing in the contiguous United States. Initial response rate at Wave 1 (1995) was approximately 70%. About 65% of the Wave 1 sample participated at Wave 2 (71% when adjusting for mortality). I restricted my sample to adults who were working for pay at Wave 2 (>19 hours/week; N=1062).

Measures

Mental Health (Psychological Distress and Positive Emotion)

Respondents filled out two six-item inventories of mental health. Within these inventories, they were asked “During the past 30 days, how much of the time did you feel...” nervous, restless or fidgety, hopeless, worthless, that everything was an effort, and so sad that nothing could cheer you up (for psychological distress; 1= none of the

³ To evaluate whether selection into Wave 2 (2005 MIDUS) substantially biased my findings, I estimated a probit equation of Wave 2 completion based on Wave 1 (1995) sociodemographic covariates and mental health, and then reestimated all equations controlling for probability of Wave 2 completion. Buffering effects became stronger and findings remained the same. While hazard analysis as a means of addressing selection bias has been criticized elsewhere (e.g., Enders 2010), it still provides a compelling case that my results are not influenced by selective retention from Wave 1 to Wave 2 of MIDUS.

time, 2 = a little of the time, 3 = some of the time, 4 = most of the time, 5 = all of the time; alpha = .87) and cheerful, in good spirits, extremely happy, calm and peaceful, satisfied, and full of life (for positive emotion; alpha = .91).⁴ Items were averaged to arrive at overall scores for psychological distress and positive emotion. Psychological distress and positive emotion correlated inversely ($r = -.57$).

Autonomy at Work

For autonomy, I take into account six available items, in which respondents rated the extent to which, at their job or main job, activity is self-initiated, they have a say in decisions about work, and they have a choice in deciding how to do their tasks, what tasks they do at work, how much time to spend on tasks, and how to plan their work environment (alpha = .85; 1= never, 3=some of the time, 5=all of the time; similar to Kohn and Schooler 1982; Lennon 1994; Mirowsky and Ross 2007; Mirowsky 2011; Theorell and Karasek 1996). No quadratic effects of autonomy were present for either mental health measure.

Optimism

Respondents completed the Life Orientation Test - Revised, which is routinely used to measure dispositional optimism (Carver et al. 2010; Scheier et al. 1994). In the MIDUS administration of LOT-R, four filler items were omitted. Items included: “In uncertain times, I usually expect the best,” “If something can go wrong for me, it will” (reverse-scored), “I’m always optimistic about my future,” “I rarely count on good things

⁴ In Study Three, this scale is referred to as “negative emotion,” which perhaps seems more correct. However, a label of psychological distress also is fitting. Indeed, Kessler and colleagues (2002) developed this very scale to measure “non-specific psychological distress.” It also is known as the K-6 and is routinely used in epidemiological research to screen for distress and to quantify susceptibility to a variety of mental illnesses.

happening to me” (reverse-scored), “I hardly ever expect things to go my way” (reverse-scored), and “I expect more good things to happen than bad” (1=disagree a lot, 3=neither agree nor disagree, 5=agree a lot; alpha = .80).

Neuroticism

Some previous research has found that effects of optimism may simply be due to a lack of disposition toward anxiety or negative emotional states. To account for this possibility, it is recommended to control for neuroticism (Carver et al. 2010; Scheier et al. 1994). Neuroticism was measured in MIDUS using trait adjectives. Specifically, respondents rated the extent to which “moody,” “worrying,” “nervous,” or “calm” (reverse-scored) described them (1=a lot, 2=some, 3=a little, 4=not at all; alpha = .74). While there is some concern that neuroticism is endogenous to psychological distress, substantive results do not differ (and estimates are highly similar) when neuroticism is excluded from models.

Work situation

While autonomy in itself is linked to higher levels of employee mental health, autonomy often is found alongside other favorable work conditions that likewise shape mental health. Therefore, it is useful to disambiguate the effect of autonomy if possible by including controls for other job resources and conditions (Glavin et al. 2011; Schieman et al. 2009). An available item measuring job authority was used (“Do you supervise anyone on this [your main] job?”, where 1=yes, 0=no; see also Pudrovskaya 2013; Schieman et al. 2009). Also, a measure of skill level was introduced (“How often does your work demand a high level of skill or expertise?”, where 1=all of the time, 3=some of the time, and 5=never; Kohn and Schooler 1982; Schieman et al. 2009).

Finally, I utilized a comprehensive scale of job demands (5 items; $\alpha = .73$; similar to Schieman et al. 2009). A measure of job demands is useful because autonomy often coincides with high work demands, making it unclear whether level of job demands underlies any observed mental health effects of autonomy. The job demands scale included items such as “How often do you work very intensively?” and “How often do you have too many demands made on you?” (1=all of the time; 3=sometimes, 5=never; items summed).

In addition to these specific aspects of work situation, the respondent’s occupational type was coded as a set of indicators for professional, managerial, sales/clerical or blue collar. Sales/clerical is the modal type and is designated as the reference category. Next, I control for average work hours per week at the respondent’s main job in order to account for time-related job demands and effort. Finally, self-employment was captured by a separate indicator (0=no, 1=yes). Results pertaining to autonomy do not differ when self-employed individuals are omitted from the analytic sample, or when an additional control for occupational prestige is introduced.

Sociodemographic Covariates

I also control for a variety of respondent demographic factors that are linked to mental health and likely to shape and reflect occupational environments. Education was surveyed by MIDUS in terms of credential points (i.e., completion of junior high, high school, GED, Associate’s degree, Bachelor’s, Master’s, or doctorate), with degree midpoints also present (e.g., 1 or 2 years of college, no degree yet). I recoded this variable so that education is measured as 0-20 years of formal instruction. Household income for the past year (\$0 - 300,000+; log-transformed) was included in all models to

distinguish mental health effects of education from those of income. Further, when individuals become employed in jobs that are not in keeping with their career plans, value placed on autonomy is somewhat lessened (Johnson, Sage and Mortimer 2012). Johnson and colleagues posit that individuals change their personal values in line with available career rewards, such as high pay.

Gender is measured as an indicator for male (0=female, 1=male). Age is measured in years; auxiliary analyses did not support the usage of curvilinear age terms. Race is measured as an indicator for whether the respondent reported being white (0=non-white, 1=white). Marital status is assessed by capturing whether the respondent was currently married at the time of the baseline interview (0=no, 1=yes). Results do not differ when a further control for cohabitation (i.e., whether the respondent was currently living with a steady partner) is introduced, or when indicators for children in the household are included.

Analytic Strategy

To determine whether and how autonomy and optimism interact to produce mental health, I estimate a series of OLS regression models. In a first model, mental health (psychological distress or positive emotion) is regressed on autonomy at work and on optimism and neuroticism. In a second model, an interaction between autonomy and optimism is specified. All models include all control variables (work situation and sociodemographic covariates). Tests for heteroskedasticity showed that models of distress required robust standard errors. Results are based on listwise analysis and do not substantively differ when multiple imputation is used.

Results

Descriptive statistics for respondents currently working for pay are given in Table A1. Respondents reported good mental health on average, evidenced by low levels of psychological distress (average of 1.5 on 5-point scale) and moderate levels of positive emotion (average of 3.4 on 5-point scale). Autonomy at work was fairly common on average (3.8 on 5-point scale) but with considerable variation present. Sales or clerical was the modal occupational type, and skill complexity was fairly high and job demands moderate on average among working respondents. Slightly less than half of respondents reported performing a supervisory role at work. Respondents reported relatively high levels of optimism and low levels of neuroticism (Carver and Connor-Smith 2010; Peterson 2000). The average respondent had some college education, was approximately 52 years old, white, married, worked slightly less than 40 hours per week and had a household income of about \$84,000 at the time of the survey.

Psychological Distress

Regression results are presented in Table A2. In the first model for psychological distress, a negative relationship between autonomy at work and psychological distress is evident (unstandardized $b = -0.054$, $p < .05$). Also in this model, optimism shows a negative relationship ($b = -0.026$) and neuroticism shows a positive relationship to psychological distress ($b = 0.332$, $ps < .01$).

To place the effect of autonomy in perspective, it can be compared to the effects of personality variables. For instance, a 2-point increase in job autonomy (e.g., from “rarely” to “most of the time”) is linked to a 0.11-point (0.21 standard deviation) decrease in psychological distress, a decrease which is on par with slight differences in personality

(about a 4-point gain in optimism on a 24-point scale, or a 1/3-point decrease in neuroticism on a 3-point scale).

In the second model, an Autonomy \times Optimism interaction is positive and significant ($b = 0.011, p = .02$). This interaction is consistent with a resource-substitution mechanism, in which optimism becomes less valuable to mental health to the extent that autonomy at work is present, and more valuable to mental health to the extent that autonomy is absent.

This mechanism is depicted in Figure A1. Here, two lines are visualized. The dashed line represents the effect of autonomy at low optimism (25th percentile: score of about 20 points), whereas the solid line denotes the effect for high optimism (75th score: score of about 28). The line for low optimism begins at a higher intercept for distress: with increasing autonomy, distress is markedly reduced. Specifically, across the domain of autonomy, psychological distress decreases by slightly more than 10 percent. In contrast, for high optimists, there is no visible effect of autonomy on distress; further, the line begins at a much lower intercept. The 95% confidence intervals, based on point predictions using the delta method (Long and Freese 2007), are depicted in gray and converge only at very high levels of autonomy. In other words, except when autonomy is very high (i.e. close to “all of the time” across all autonomy items), optimism matters to determining its effects on psychological distress.

Positive Emotion

The first model for positive emotion shows a significant, positive association with autonomy at work ($b = 0.09, p < .05$), and optimism is positively linked ($b = 0.04, p < .01$) whereas neuroticism is negatively linked ($b = -0.36, p < .01$). Job authority, in

terms of occupying a supervisory role at work, is linked to higher positive emotion on average ($b = 0.10, p < .05$), tantamount to what results from a one-point gain in autonomy. In terms of demographic effects, educated and male respondents reported lower levels of positive emotion ($ps < .05$). A 2-point gain in autonomy increases positive emotion by 0.18 points (by 0.27 standard deviations). This is comparable in effect to slight changes in personality (e.g., a 5-point gain in optimism, or a 0.5-point decrease in neuroticism).

In the second model, no Autonomy \times Optimism interaction is present ($b = 0.00, p = .99$). This is consistent with a “strong situation” or independent-effects mechanism, such that autonomy has uniform effects on positive emotion across all levels of optimism.

Discussion

By examining two mental health outcomes among employees, the current study yielded specific insights into inequality mechanisms. There was no support for a cumulative (dis)advantage perspective, while there was partial support for leveling and for independent-effects mechanisms. For psychological distress, the beneficial effect of autonomy at work was highly contingent upon optimism. Optimism and autonomy at work interacted according to a resource-substitution mechanism of health inequality, such that each resource mattered less to mental health to the extent that the other resource was present. However, for positive emotion, no interaction between optimism and autonomy was observed, which supports an independent-effects model of health inequality. Taken together, these findings suggest that optimism matters for distress-related mental health outcomes of autonomy at work but does not matter for positive mental health outcomes. In other words, these results are consistent with the argument that optimism can

powerfully help mitigate sadness, anxiety and distress due to autonomy but it cannot as readily compensate for dissipated happiness and satisfaction that a lack of autonomy usually brings.

Resource substitution is in keeping with theoretical accounts of autonomy as lack of oppression. In other words, the presence of a resource-substitution effect provides a possible clue about how autonomy ultimately matters for mental health. Perhaps it is the lack of subjection and oppression that autonomy signifies rather than the structural opportunity it provides that is more decisive for mental health. If so, this would be consistent with dignity-based and organismal perspectives on autonomy; these perspectives cast autonomy as a fundamental human need that must be coped with effectively when it is not met (Deci and Ryan 2000).⁵

Support for an independent-effects model in the case of positive emotion suggests that autonomy may be a “strong” social situation whose effects cannot easily be shaped, buffered or mitigated, as far as positive mental health is concerned. Previous research mostly links autonomy at work to a lack of distress, depression or anxiety, on the grounds that these outcomes are indicators of worker role strain or conflict between the worker role and other social roles (Hausser et al. 2010; Pearlin and Schooler 1978; Tausig 2013). However, maintaining a focus on negative mental health leaves unclear the overall relationship between structural work conditions and mental health. The World Health Organization (1946) declared that the absence of infirmity does not equate with the

⁵ Or, optimism may represent irrational foolhardiness that becomes increasingly costly for mental health with higher levels of job autonomy (see Hmieleski and Baron 2009). While this “failure” argument is in keeping with selected economic perspectives, it goes against abundant research in clinical and social psychology showing that optimists carefully and rationally weigh diverse information in other life domains such as health and generic problem-solving (Aspinwall and Tedeschi 2010; Carver and Scheier 2014).

presence of thriving. In close parallel, social-psychological research has called for the study of positive mental health, as psychological distress, anxiety disorders, depression, and other aspects of negative mental health only correlate moderately with positive mental health processes and are conceptually and empirically independent of them (Gable and Haidt 2005; Keyes 2007).

A lack of support for cumulative (dis)advantage across both mental health outcomes is informative for future theorizing about autonomy at work. Indeed, the present results are not consistent with the argument that autonomy upholds mental health due to the opportunities for success and advancement it provides. Here, however, it is useful to place mental health outcomes in the context of other outcomes. Indeed, prior research has shown that economic and financial outcomes pertinent to autonomy and psychosocial resources may operate according to cumulative (dis)advantage. For instance, optimism has been shown to amplify returns to related socioeconomic facets such as education (Judge and Hurst 2007; Kaniel et al. 2010).

A number of other directions for research are evident. First, despite controlling for a variety of basic resources related to optimism, such as demographic background, work conditions, and income, unobserved resources or skills may be driving the effects of optimism. Indeed, individuals may have concrete, difficult-to-measure reasons for feeling hopeful about their future. Thus, effects of optimism may be due in part to unobserved resources. However, it has long been noted that resources and dispositions are endogenous and their effects are difficult to separate (Bourdieu 1977; Farkas 2003). One way to begin to address this issue would be a panel design that exploits changes in work conditions, optimism or both while netting out time-invariant personal characteristics.

However, as noted previously, optimism often does not change appreciably even across many years, which would make effects difficult to demonstrate and also call into question the nature and source of such rare changes when observed.

Next, autonomy of work may be measured at the occupational or job level. At the occupational level, standardized data concerning work conditions are available as collected by independent trained observers (Kohn and Schooler 1982). At the job level, it is typical to rely upon self-report (Lennon 1994; Mirowsky and Ross 2007; Mirowsky 2011; Theorell and Karasek 1996). Job-level measurement carries the distinct advantage of capturing an individual's specific job situation, as jobs vary considerably within occupations. Moreover, perceived autonomy is likely to be more relevant than to an individual's mental health than objective labor conditions, in line with W.I. Thomas' axiom that perceived conditions are effectively real.

At the same time, self-report carries the disadvantage of being swayed by individual characteristics such as mental health or psychosocial resources. For instance, if an individual is optimistic, he or she may overestimate the level of autonomy permitted by current work, making self-reports of structural work conditions endogenous to coping orientations; or, optimists may seek task complexity within jobs (similar to Srivastava et al. 2010). This would likely lower unique variance, however, leading to conservative estimates of true effects.

An important focus within the literature on work conditions and mental health concerns the inclusion of nonemployed individuals. In the current research, questions about autonomy of work focused on the respondent's main job. However, previous surveys have queried autonomy more broadly, focusing on the autonomy of housework

among stay-at-home parents, for example (Bird and Ross 1993). Future research should seek further knowledge about how autonomous work matters among nonemployed individuals.

Finally, other resources at work should be examined. For instance, social capital at work may be a crucial next target for inquiry. Indeed, social capital at work allows one to obtain information and to seize advancement opportunities and financial rewards (e.g., Burt 2004; Ibarra 1997). Meanwhile, social support also is vital for support in low-autonomy situations, as structured interaction among coworkers is vital to recognizing and legitimating collective grievances and, with this, to constructing strategies and interpretations of work situations (Burawoy 1979; Crowley 2013). Such social capital may be especially important for employees who lack other psychosocial resources for work adjustment or getting ahead, which would represent a resource-substitution mechanism. Or, individuals who are optimistic may reap higher returns from such networks, due to their adeptness at activating and building ties, which instead would bring about cumulative (dis)advantage among workers.

CHAPTER 3
IDENTITY CRISES IN LOVE AND AT WORK:
DISPOSITIONAL OPTIMISM AS A DURABLE PERSONAL RESOURCE

Given the sizable rates of divorce and separation (Amato 2010) and involuntary job loss in contemporary America (Kalleberg 2009), crises in intimate relationships and at work are likely to befall many individuals over the life course. From a self and identity perspective, crises may be defined as situations in which meanings and beliefs attached to the self are highly disconfirmed due to impending or anticipated changes in social status (e.g., Burke and Stets 2009; Stets and Cast 2007). In weathering crises, individuals draw upon their personal resources, which include social as well as psychological resources (Pearlin 1999; Taylor and Stanton 2007). Psychological resources are facets of personality that shape and reflect coping with life circumstances (Stets and Cast 2007). They include self-esteem and personal mastery, both of which anchor one's sense of effectiveness during difficult times and underlie effective coping techniques (Caplan and Schooler 2007). However, as Pearlin et al. (1981) noted long ago, stress may lead to diminishment of self and thus to diminishment of certain psychological resources.

In this study, I introduce and examine dispositional optimism as a durable psychological resource in the navigation of relationship and work crises. In doing so, I contrast the durability of optimism with the volatility of self-esteem. Although previous investigations of optimism have spotlighted its link to social network formation and attainment and delinquency outcomes (e.g., Andersson 2012; Hitlin and Elder 2007; Kao and Thompson 2003), dispositional optimism has yet to be investigated within the context of the identity stress process.

In examining the identity stress process, this article draws a valuable nexus between psychological and sociological social psychology. Indeed, sociological social psychology has traditionally understood personality differences as resulting from ongoing social causation processes; in contrast, psychological social psychology often is interested in how stable individual differences produce different outcomes depending on situational contexts. As will become apparent in this article, self-esteem is in keeping with a sociological approach to personality, in that it fluctuates considerably due to interactional and situational processes. In contrast, as personality and social psychologists have demonstrated, levels of dispositional optimism do not change across most life situations; rather, dispositional optimism is usually durable and is activated more or less depending on different situational contexts.

Dispositional optimism is defined as a stable expectation that good things will happen across a variety of complex life situations (Carver, Scheier, and Segerstrom 2010; Solberg Nes and Segerstrom 2006). Expecting good things to happen is linked to directing attention to positive features of difficult situations and to coping with difficult situations effectively, even despite anxiety and physiological distress (Aspinwall and Tedeschi 2010; Carver et al. 2010; Scheier, Carver, and Bridges 1994). While self-based psychological resources such as self-esteem and personal mastery are volatile in the face of social stress and thus cannot steadily support effective coping (Cast and Burke 2002; Stets and Cast 2007; Yang 2006), dispositional optimism is anchored in general expectancies rather than self-beliefs.

In comprehensive models of the stress process, dispositional optimism has been found to enhance coping and health above and beyond self-esteem, emotional stability,

and other psychological resources (Carver et al. 2010; Solberg Nes and Segerstrom 2006). Despite ample theoretical and empirical knowledge pointing to optimism's role in effective coping, some research has found that the efficacy of optimism differs according to demographic group, stressor, and/or indicator of psychological or physical well-being (e.g., Benyamini and Roziner 2008; Rasmussen, Scheier, and Greenhouse 2009). Therefore, it is important to specifically examine the importance of dispositional optimism to relationship and work crisis outcomes.

This article conducts two basic empirical investigations about dispositional optimism as it relates to relationship and work crises. First, it assesses to what extent optimism may contribute to the maintenance of psychological resources that are less stable (i.e., self-based resources such as self-esteem), both generally and among those who have recently suffered a crisis. Second, in a comprehensive model of stress process outcomes, it assesses to what extent optimism may deliver stronger and more reliable contributions to perceived health status than self-esteem. Across both of these empirical aims, the contributions of dispositional optimism are differentiated by crisis domain (relationship vs. work) as well as gender.

A framework for assessing dispositional optimism's importance to relationship and work crisis outcomes is established in three parts. First, identity control theory is used to theorize the experience and outcomes of relationship and work crises, as well as the role of psychological resources. Next, psychological resources are explored in detail, with a key emphasis on the conceptual distinction between self-esteem and dispositional optimism. In particular, optimism is likely to be activated, not depleted, by identity stress

situations. Finally, to round out the conceptual framework, the role of various demographic factors in the stress process is considered.

The Stress Process: Regulating Identities in Love and at Work

An identity control perspective defines individuals as continually regulating their behavior in order to affirm or verify identity standards (Burke 1991; Burke and Stets 2009; Stets and Carter 2012). Identity standards are defined as meanings that are assigned to the self in the performance of a given role. For instance, when acting as a spouse, one may see oneself as traditionally masculine or feminine; or as responsible for providing emotional support, humor, or income; or as undertaking tasks such as shopping or doing yard work (Burke and Stets 2009). At work, one may see oneself as possessing a certain level of skill and performance ability and as trying to uphold various habits and qualities that are characteristic of one's occupation (Burke and Stets 2009; Stets 2003, 2005; Stets and Harrod 2004). In acclimating to their environments, individuals become skilled at verifying identity meanings, as the "process of achieving and maintaining congruence may become relatively efficient and automatic" (Burke 1991:839).

Crises are expected to be distressing to the extent that they interrupt the verification of salient and/or highly organized identity standards (Burke 1991; Burke and Stets 2009). In the case of crises in intimate relationships and at work, distress is likely to be very high because intimate and work-related roles tend to be fairly if not highly salient within an actor's prominence hierarchy (Burke and Stets 2009; Stryker 1980).

Meanwhile, relationship and work identities tend to be highly organized because they incorporate fine, specific skills that are distinctive to getting along with and carefully

supporting cherished individuals or negotiating substantively complex and specialized work environments (Burke and Stets 2009; Fuhse 2009; Kohn 2006).

To the extent that identity confirmation is disrupted, distress and a lowered sense of self-esteem and mastery ensue (e.g., Cast and Burke 2002; Stets and Cast 2007). Furthermore, perceived health status is bound to suffer for a number of reasons. Negative emotion and distress, especially strong emotions like anger, depression, and anxiety, incite inflammatory responses that accelerate the disease process (Stewart et al. 2009; Suls and Bunde 2005). In addition, distress lessens available cognitive resources, leading to engagement in poor health behaviors such as overeating or substance abuse (Baumeister, Vohs, and Tice 2007). Meanwhile, distress renders meaningful social interaction more difficult, which leads to the weakening of existing social support systems that indirectly bolster mental and physical health (Umberson, Crosnoe, and Reczek 2010). Given these important pathways, I conceptualize perceived health status as a comprehensive, ultimate outcome of the identity stress process. Meanwhile, following previous identity research, I conceptualize self-esteem as an intermediate outcome of the stress process. That is, it reflects the extent to which one is affirming identity meanings associated with being a partner or worker (Burke and Stets 2009; Cast and Burke 2002; Stets and Harrod 2004). Figure A2 provides a conceptual depiction of the identity stress process examined in this article.

Hypothesis 1 (Main Effect of Crises): Relationship- and work-related crises will be negatively related to self-esteem and self-rated health.

Psychological Resources: Self-Esteem and Optimism

According to Stets and Cast (2007:518), identity resources are “processes that are definable in terms of sustaining a system of interaction, including verifying the self.” Following this definition, self-esteem and dispositional optimism are both psychological resources that act as identity resources insofar as they support the verification of relationship- and work-related identities. Although self-esteem and dispositional optimism both may buffer stress (Taylor and Stanton 2007) and both are linked to positive emotion (Judge 2009; Segerstrom and Sephton 2010), they hold qualitatively different ramifications for identity stress outcomes. In particular, whereas self-esteem may deplete in response to identity stress and other self-relevant feedback, dispositional optimism refers to stable positive expectations that are not anchored in feelings about the self or its social situation (Carver et al. 2010; Geers, Wellman, and Lassiter 2009).

Current theory and research largely advocate treating dispositional factors such as dispositional optimism and emotional stability as stable psychological resources that infuse role performance and thus in turn configure trajectories of self-esteem (e.g., Erol and Orth 2011; Schetter and Dolbier 2011; Scollon and Diener 2006). Similarly, personality has been conceptualized as a personal identity that infuses the enactment of role identities such as spouse/partner or worker, thus indirectly impacting levels of self-esteem (Brooks, Swann, and Mehta 2010; Stets 2006). In support of dispositional optimism’s unique contribution to navigating the stress process, previous research has shown that dispositional optimism enhances life outcomes above and beyond self-esteem (Geers et al. 2009; Scheier et al. 1994) and other psychological resources such as emotional stability (i.e., low trait levels of negative emotion; Carver et al. 2010; Solberg

Nes and Segerstrom 2006). However, if assessed in isolation, the estimated effect of dispositional optimism on life outcomes may be spurious, in that optimism is conflated with more dynamic psychological resources (e.g., self-esteem) and/or a lack of proneness to negative affectivity (i.e., emotional stability; Rasmussen et al. 2009; Scheier et al. 1994). To help avert this methodological fault, the current study controls for self-esteem as well as emotional stability.

Although many definitions exist (Swann, Chang-Schneider, and McClarty 2007), self-esteem is typically defined as a “positive evaluation of the self” (Cast and Burke 2002:1042) that is contingent on others’ evaluations and situational outcomes (Cooley [1902] 1964; Crocker et al. 2003). Viewing the self favorably is an identity resource because positive self-views make it more likely that ensuing interactions go favorably (i.e., support meanings associated with the self; Stets and Cast 2007). Although self-esteem may remain stable across time, such stability is likely to depend on an interpersonal “opportunity structure” (Swann 1983:36) within which self- and identity meanings can reliably be verified. That is, self-esteem has been shown to fluctuate considerably due to psychosocial processes such as belongingness and social acceptance (Leary 2007; Leary, Cottrell, and Phillips 2001; Stinson et al. 2008). Therefore, self-esteem has been modeled fruitfully as a dynamic outcome of identity performance and is taken to fluctuate according to the performance of emotionally and instrumentally oriented identities (Stets and Harrod 2004; Turner and Stets 2006).

In contrast, dispositional optimism denotes an expectation that good things will happen. That is, it denotes stable and positive general outcome expectancies that are largely independent of self- and relationship-based processes (Carver et al. 2010; Solberg

Nes and Segerstrom 2006). Previous research mostly suggests that self-esteem fluctuates in response to relationship and work crises whereas optimism does not.

Psychological Resources and Intimate Relationships

Intimate relationships are taken to be mutual verification contexts wherein partners are able to reflect each other's desired feedback and in which trust, commitment, or love may therefore emerge (Burke and Stets 1999). Nonverification of spousal identities is, on average, associated with negative emotion and loss of self-esteem (Burke and Harrod 2005; Cast and Burke 2002). In addition to decrements in self-esteem, relationship conflict has been linked to declines in physical health (Kiecolt-Glaser and Newton 2001).

In the context of intimate relationships, dispositional optimists are more pleasant to be around and perceive a greater degree of support and agreement from those around them than do those with less optimistic outlooks (net of objective levels of support; Assad, Donnellan, and Conger 2007; Srivastava et al. 2006). Assad and colleagues (2007) posit that optimism is linked to cooperative problem solving within intimate relationships. Meanwhile, they investigate the possibility that being in an unsatisfying or harmful intimate relationship could lower one's sense of optimism. They find no support for this view, suggesting that optimism continues to operate independently even in intimate relationships and that it, in contrast to more dynamic personal resources such as self-esteem, is not volatile in the face of relationship setbacks (for a similar finding, see Neyer and Asendorpf 2001).

Psychological Resources and Work Performance

Work identity performance holds ramifications for self-esteem and health.

Verification of self-meanings associated with being a worker, such as meanings of effectiveness and carefulness, is linked to differences in self-esteem (Stets and Harrod 2004) and chronic negative emotion (Stets 2003, 2005; Stets and Tsushima 2001). Job strain and unemployment are related to negative psychological and physical health outcomes (Kessler, Turner, and House 1988; McKee-Ryan et al. 2005; Pearlin et al. 1981).

Evidence for the relevance of dispositional optimism to the navigation of work crises is compelling but less direct. Mueller and Plug (2006) examined linkages among scores on the five-factor measure of personality, measured at the time of high school graduation, and earnings about 30 years later. They found that neuroticism predicted lower career earnings. Using an experience sampling approach, Judge, Woolf, and Hurst (2009) found that extraverts glean greater amounts of positive emotion and lesser amounts of negative emotion from routine work-related activity.

Given how neuroticism and extraversion factor into occupational success, and how dispositional optimism is associated negatively with the former and positively with the latter (Carver and Connor-Smith 2010), these studies lead one to expect that dispositional optimism would be related to career success through enhanced performance and emotion work capabilities across time. Indeed, Kaniel, Massey, and Robinson (2010) have recently found using longitudinal data that dispositional optimists, relative to pessimists, spend less time searching for jobs, receive offers more quickly, and are more

likely to be promoted once hired. Segerstrom (2007) similarly found a prospective association between dispositional optimism and financial success.

Stets and Harrod (2004) suggest that the worker identity is centered on mastery through persistent effort, a cultural heritage that can perhaps be traced back to the Protestant work ethic. If this is the case, then dispositional optimism should aid ongoing identity verification at work by motivating persistence during difficult occupational tasks and by fostering positive emotion during times that one is not effective.

Dispositional Optimism and Engaged Coping

Within crisis situations, expecting good things to happen seems to go hand-in-hand with an engaged approach to life. In particular, previous research has linked optimism to heightened attention and vigilance during threatening or important situations (Abele and Gendolla 2007; Carver and Connor-Smith 2010; Geers et al. 2009). Although situational importance is shaped by self-related information like personal goals and salient role identities, optimism underlies engaged coping regardless of self-relevant feedback, such as whether situations are disconfirming identity standards. Put differently, optimism motivates persistence within situations that matter to the self without being depleted by feelings or attitudes toward the self (Carver et al. 2010).

Engagement during threatening life situations among optimists is likely facilitated by multiple pathways, including buffered reactivity to social stressors (Segerstrom 2001; Terrell, Ruiz, and Garofalo 2010; Vollmann et al. 2011), heightened attentional bias for positive stimuli (Segerstrom 2001), perceived social support (Srivastava et al. 2006; Vollmann et al. 2011), and by health-protective behaviors, robust immune functioning, and lowered pain and physical symptoms (Carver et al. 2010; Rasmussen et al. 2009).

Several studies have meanwhile found a positive association between optimism and self-esteem, suggesting that optimism may support self and identity processes across a variety of life circumstances. Put another way, optimism should help uphold identity performance, and thus self-esteem, while also exerting a unique effect on engagement and coping (Geers et al. 2009; Scheier et al. 1994).

Hypothesis 2 (Main Effect of Optimism): Dispositional optimism will be positively associated with self-esteem and self-rated health net of emotional stability.

In sum, previous research suggests that dispositional optimism may serve as a psychological resource in the identity stress process via two key pathways. First, its importance to identity verification and health processes should *intensify* due to engaged coping styles that are activated by identity stressors and that involve attending productively to negative information and emphasizing positive information. Second, relative to self-esteem, optimism should be *durable*: that is, it should make stronger and more consistent contributions to health processes because it is activated by, not dependent on, self-related processes.

Hypothesis 3 (Intensification of Optimism): The incidence of relationship and work-related crises will increase the positive association between dispositional optimism and levels of self-esteem and self-rated health.

Hypothesis 4 (Durability of Optimism): Dispositional optimism will be positively associated with self-rated health around the time of relationship and work crises, whereas self-esteem will not be associated with self-rated health.

Demographic Variables and Stress Process Outcomes

Gendered Stress Responses: Intimate Relationships versus Work-related Stressors

Studies that conceptualize gender as status posit that lower-status individuals (e.g., women relative to men) are less likely to experience identity verification during interaction (Cast, Stets, and Burke 1999; Stets and Harrod 2004). Following this research, it seems that in effecting verification, personal resources should be more important for those who are lower in status (Stets and Cast 2007; Yang 2006). This argument vindicates empirical research finding that optimistic self-beliefs are particularly beneficial for health among lower-status individuals (Schöllgen et al. 2011). Although women should benefit more from dispositional optimism than men, men and women report equivalent levels of dispositional optimism (Scheier et al. 1994; Vollmann et al. 2011).

Hypothesis 5 (Gendered Benefits): Women will glean larger increases in self-esteem and self-rated health from optimism than will men.

Thoits (1995) summarizes research indicating that women are more susceptible than men to negative outcomes in the wake of network events (including relationship troubles) whereas men are more susceptible than women to work-related stressors. While the genders are similar in terms of their psychological responses to the quality and quantity of social relationships (Umberson et al. 1996), women seem more vulnerable to crises that take place within their personal social networks, which may be due to their socialization into a moral sense of caring for others (e.g., Dohrenwend 1977; Gilligan 1982; but see Jaffee and Hyde 2000). Therefore, optimism may be doubly important to women as a psychological resource in the domain of personal relationships.

Hypothesis 6 (Gendered Crises): Women will exhibit larger decreases in self-esteem and self-rated health from relationship crises than will men, whereas men will exhibit larger decreases in these same outcomes from work-related crises than will women.

Hypothesis 7 (Gendered Benefits and Crises): The effects of dispositional optimism on self-esteem and self-rated health will be strongest when women experience crises in relationships and when men experience crises in work.

Other Sociodemographic Variables and the Stress Process

In addition to gender, age, education, and race are theorized to shape identity enactment, such that younger, less educated, and minority individuals are less structurally enabled in the verification of their spousal/partner and worker identities (Stets and Harrod 2004). Generally, sociodemographic situation is linked to the development of material, social, and psychological resources and to the incidence of relationship and work crises (Schnittker and McLeod 2005). Therefore, it is important to control for these sociodemographic distinctions in models of the identity stress process. Further, it is important to control for the presence of young children, as child-raising has been shown to diminish parental well-being and to conflict with relationship and/or work roles (Budig and Hodges 2010; Umberson, Pudrovska, and Reczek 2010).⁶

⁶ For models pertaining to work crises in particular, covariates further include occupation-specific indicators and occupation-specific optimism interaction terms to help rule out the possibility that findings are due to occupational forces or socialization rather than a general, cross-occupational effect of dispositional optimism. These indicators were constructed using the ISCO-88 occupational coding system. I entered an occupational main effect into the model if at least five respondents reported a given occupation. As such, the work-related models of self-esteem contain about 50 occupation-specific indicators and related interaction terms. For the ordinal logistic regressions of self-rated health, however, a reduced set of indicators and interaction terms (for 20 of the most frequently occurring occupations) had to be specified in order to achieve model convergence.

Method

To assess the role of dispositional optimism as a psychological resource in the identity stress process, I utilize the 2004 administration of the General Social Survey (GSS; Davis, Smith, and Marsden 2008). The GSS is a broad assessment of the social attitudes and behaviors of the noninstitutionalized, English-speaking U.S. population age 18 and over, based on a random sample of households. Conducted by the National Opinion Research Center (NORC) at the University of Chicago, it has been undertaken at least every other year since 1972. In 2004, all respondents were asked questions pertaining to sociodemographic characteristics, and distinct but overlapping subsamples responded to questions pertaining to self-rated health, psychological resources, and personal crises experienced within the past calendar year. Respondents who were given all pertinent questions constituted the analytic sample ($N = 490$), while there was a larger sample available for evaluating the effects of dispositional optimism on self-esteem and self-rated health by gender ($N = 765$). Because relevant variables had few missing cases, listwise deletion procedures were utilized. All descriptive statistics and estimated models are weighted by the GSS variable WTSSNR (NORC, personal communication).

Measures

Self-Rated Health (Comprehensive Outcome)

To assess perceived health status, I utilize a four-category measure of self-rated health (“Would you say your own health, in general, is excellent, good, fair, or poor?”). While this is a subjective measure, it correlates highly with more objective measures of health status and morbidity (Grol-Prokopczyk, Freese, and Hauser 2011).

Self-Esteem (Intermediate Outcome)

Some respondents completed a partial version of Rosenberg's (1965) self-esteem scale. Statements were "On the whole, I am satisfied with myself," "I feel that I'm a person of worth, at least equal to others," "All in all, I am inclined to feel I'm a failure," "I wish I could have more respect for myself," and "At times I think I'm no good at all" (1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree). Items were reverse-scored as necessary and summed to arrive at a self-esteem index ($\alpha = .71$; similar to Marcussen's [2005] partial self-esteem scale).

Dispositional Optimism

Some respondents completed a partial version of the Life Orientation Test-Revised, which is routinely used to measure dispositional optimism (Carver et al. 2010). Items included "I'm always optimistic about my future," "I hardly ever expect things to go my way," "Overall, I expect more good things to happen to me than bad," and "I rarely count on good things happening to me" (1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree; $\alpha = .62$; Kivimäki et al. 2005).

Love and Work Crises

Although the incidence of a crisis does not necessarily lead to identity disconfirmation, identity crises in intimate relationships and at work were measured based on their likely association with partner/spousal or worker identity disconfirmation (Burke and Stets 2009).⁷ To score the presence of a relationship-oriented crisis during the

⁷ Other available items on relationship crises either were not directly pertinent to spousal/partner identity issues (e.g., "having serious trouble with a friend") or, in one case, conflated relationship categories ("breaking up with a steady boyfriend or girlfriend or fiancé(e)"), making relevance to previous identity control research on divorce and marital satisfaction uncertain. Other available items on work-related problems either did not clearly indicate a loss of worker status (e.g., "a cut in pay or reduced hours," which could indicate a lifestyle or personal choice), referred to ownership rather than to work ("own business losing money or failing"), were not directly pertinent to the self (e.g., "a husband/wife/partner being fired")

previous year, I noted whether the respondent had “serious trouble with your husband/wife/partner,” “separate(d) from your husband/wife/partner,” or “obtain(ed) a divorce or separation” during the previous 12 months (0 = no crisis, 1 = presence of crisis). To score the presence of a work-oriented crisis, I noted whether the respondent had been “fired or permanently laid off,” “demoted or switched to a less favorable position,” “passed over for a promotion,” or had “serious trouble” with their boss within the previous year (0 = no crisis, 1 = presence of crisis).

Control Variables

Emotional stability is the reverse of neuroticism in that it refers to low trait levels of broadly related forms of negative affectivity such as moodiness and anxiety (Beckmann, Wood, and Minbashian 2010). As part of the module in which self-esteem was assessed, respondents were asked to characterize themselves as “A person who often feels sad and blue” (1 = a very good description, 2 = a good description, 3 = a fair description, 4 = not a very good description, 5 = not a good description at all).⁸

Age (in years) at interview ranged from 18 to 89. Education (in years) ranged from 0 to 20 or more. Sex was measured as male (0) or female (1).⁹ Race was measured in a three-category format (white, black, other). For marital status, I noted whether the respondent was currently married at the time of the interview. Income was measured on a 23-point self-reported scale of ordered brackets. These brackets ranged in designation from “Under \$1,000” to “\$110,000 or over” and ranged in width from \$1,000 to \$15,000.

or “[being] cut in pay”), or referred to possibly mild worker problems (e.g., “looking for work for as long as one month”).

⁸ Because very few respondents elected categories 1 through 3, I enter emotional stability into models as an indicator (referring to those with a self-reported lack of trait sadness [5]; 36.2 percent of weighted analytic sample).

⁹ Mean levels of dispositional optimism did not differ by sex, $t(708) = 0.17$.

For analyses, I recoded this variable into a continuous measure by substituting bracket midpoints and then applied a log transformation. The presence of children was measured as the respondent's self-reported number of children (transformed by square root).

Results

Descriptive statistics for self-rated health, psychological resources, personal crises, and sociodemographic variables are presented in Table A3. Outcome measures (self-esteem and self-rated health) had considerably high means but substantial variance. Auxiliary analyses supported the treatment of self-esteem and dispositional optimism as distinct psychological resources.¹⁰ Crises were relatively rare, with relationship crises reported by 12.0 percent of the weighted analytic sample and work crises by 11.2 percent of the sample ($ns = 52$ and 49 , respectively). Men and women were equally likely to report either type of crisis ($ts < .90$).

In these results, I use one-tailed tests of statistical significance because all hypotheses are proposed directionally and because statistical power to examine crisis outcomes is limited due to the rarity of crises as well as the coarseness of crisis and outcome measures. As this is the first study to conceptualize dispositional optimism as a uniquely durable psychological resource, doing so moreover aids in the identification of trends that can be supported or refuted by future research.

¹⁰ In the current sample ($n = 710$), self-esteem and dispositional optimism shared 36 percent common variance. To confirm that they should be treated as distinct psychological resources in the 2004 General Social Survey (GSS) data, I ran nested confirmatory factor analyses in Mplus 6.12 using the Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimator (Muthén and Muthén 2010). In the unrestricted measurement model, two covarying exogenous latent variables, optimism and self-esteem, were reflected by their corresponding scale items. This model provided a good fit to the 2004 GSS data, $\chi^2(17) = 55.71, p < .001$ (root mean square error of approximation = .057, Comparative Fit Index = .981, standardized root mean square residual = .030, weighted root mean square residual = .983). Constraining the covariance of optimism and self-esteem to one resulted in a substantial loss of fit, $\Delta\chi^2(1) = 12.47, p < .001$ (via DIFFTEST), suggesting that the constrained one-factor model should be rejected in favor of the two-factor model.

Hypothesis 1 predicted that relationship- and work-related crises would be negatively related to self-esteem and self-rated health. Relationship crises were negatively associated with self-esteem (unstandardized $b = -.90$, $p = .02$) and self-rated health ($b = -.77$, $p = .02$) net of sociodemographic variables. Similarly, work crises were linked to lower levels of self-esteem ($b = -.95$, $p = .02$), but not to lower levels of self-rated health ($b = -.31$, $p = .18$). In sum, then, Hypothesis 1 was mostly supported. Hypothesis 6 qualified the main effect of crises on well-being outcomes, stating that women would exhibit larger decreases in self-esteem and self-rated health from relationship crises than would men, whereas men would exhibit larger decreases in these same outcomes from work-related crises than would women (Models 1-2; Tables A4-A5). Gender interactions supported only the especially adverse effect of relationship crises on self-esteem for women ($b = -1.51$, $p = .04$); all other interactions did not reach significance ($ps > .24$).

According to Hypothesis 2, dispositional optimism should be positively associated with self-esteem and self-rated health net of emotional stability. Consistent with this hypothesis, optimism predicted self-esteem ($b = .64$, $p < .001$) as well as self-rated health ($b = .27$, $p < .001$) net of emotional stability and sociodemographic variables. Hypothesis 5 qualified this main effect by predicting that women would glean larger increases in self-esteem and self-rated health from optimism than would men. Indeed, gender interactions demonstrated significance for both self-esteem ($b = .13$, $p = .05$) and health ($b = .13$, $p = .05$), supporting this hypothesis (Model 3; Tables A4-A5).

Hypothesis 3 predicted that crises would intensify or increase the positive association between dispositional optimism and levels of self-esteem and self-rated

health. Optimism interacted with the presence of a relationship crisis, such that the association between optimism and self-esteem became stronger ($b = .28, p = .03$), as did the association between optimism and self-rated health ($b = .42, p < .01$), contemporaneously with relationship crises (Model 4; Tables A4-A5). However, no interactions were observed for work crises ($ps > .10$; Model 5, Tables A4-A5). Thus, Hypothesis 3 received only partial support.

Hypothesis 4 held that optimism would be positively associated with self-rated health around the time of relationship and work crises whereas self-esteem would not be associated with health. As shown in Model 6 (Table A5), optimism contributed more positively to health contemporaneously with relationship crises ($b = .34, p = .05$) whereas self-esteem did not ($b = .06, p = .34$); furthermore, optimism demonstrated a main effect on health ($b = .15, p = .04$) whereas self-esteem did not ($b = .08, p = .13$). As shown in Model 7, optimism did not contribute significantly more to health when work-related crises had occurred recently ($b = .25, p = .10$), and neither did self-esteem ($b = -.06, p = .38$). However, in this model, optimism showed a significant main effect on health ($b = .19, p = .03$) whereas self-esteem did not ($b = .11, p = .06$). Overall, Hypothesis 4 received support.

Finally, Hypothesis 7 posited that the effects of optimism on self-esteem and self-rated health would be strongest when women experienced relationship crises and when men experienced work crises. Model 6 in Table A4 shows a significant three-way interaction for relationship crises ($b = .60, p < .01$), such that the association between optimism and self-esteem is especially pronounced among women contemporaneously with relationship crises. However, the three-way interaction for health was not significant

($b = .03, p = .46$; Model 8, Table A5). No three-way interactions emerged for optimism among men who had recently suffered work crises ($ps > .26$; Model 7, Table A4 and Model 9, Table A5). Thus, Hypothesis 7 only received weak support.

Discussion

Crises were generally found to attenuate self-esteem and perceived health, which is consistent with the claim that crises are social situations characterized by high levels of identity-relevant stress. This is not to dismiss the possibility that crises may ultimately be beneficial rather than detrimental under some life circumstances (e.g., Amato and Hohmann-Marriott 2007; Wheaton and Reid 2008). However, seemingly unproblematic role exits may still entail increases in distress (e.g., Kalmijn and Monden 2006), and role negotiation and accumulation are core factors in personal adjustment (Owens, Robinson, and Smith-Lovin 2010), making psychological resources such as dispositional optimism vital to identity maintenance and accumulation even under benign circumstances.

Work crises did not seem to negatively impact perceived health status. This could be due to competing beneficial processes of role exit and negotiation or to the fact that stress at work is offset by identity accumulation in other domains. Previous research has generally found that unemployment in particular is detrimental to health outcomes. Within the current sample, unemployment was only one of the several work-related crises examined, which could help explain why a negative health effect was not observed.

Due to the fact that crises lessen dynamic psychological resources that are based in the self-concept, it was expected that the importance of durable resources such as dispositional optimism to self-esteem and perceived health would intensify during such crises. This hypothesis was supported for relationship-oriented crises but not for work-

oriented crises, generally echoing Pearlin and Schooler's (1978) original finding that personal resources are of limited utility for occupational stressors and are more efficacious for coping with relationship-based stressors.

Gender-specific theorizations of the identity stress process received mixed support and thus provide stimulating grounds for future research. In particular, models did not suggest that men are especially harmed by work-related crises in terms of self-esteem or perceived health status or that men especially benefit from optimism contemporaneously with work-related crises. In contrast, as hypothesized, women demonstrated larger decreases in self-esteem in response to relationship crises, and optimism was especially important to women for self-esteem maintenance around the time of such crises, though these same effects did not hold for perceived health status. These mixed findings highlight contentious areas of dialogue within the stress process literature. For relationship crises in particular, research has found that while network events are particularly distressing for women (Thoits 1995), men exhibit more emotional distress and heightened morbidity risk in response to marital adversity (Kiecolt-Glaser and Newton 2001). Contemporary divisions of labor situate both men and women in high-status occupations, rendering it more likely that men and women have salient worker identities and thus are similarly disturbed by work-related crises.

Of key theoretical interest, models of perceived health allowed for the simultaneous assessment of multiple psychological resources, including emotional stability and self-esteem. As hypothesized, optimism made or tended to make stronger contributions to perceived health during either type of crisis than did self-esteem. Although empirical support was stronger for relationship than work-related crises, this

finding is consistent with the key theoretical claim that dispositional optimism is a personal resource that is largely independent of the situation and the self, making it ideal for navigating the identity stress process. At the same time, emotional stability sometimes made contributions to self-esteem or perceived health comparable to those afforded by optimism, which illustrates the importance of integrating complementary aspects of personality into models of identity adjustment. In fact, emotional stability is taken to capture the avoidance domain of personality whereas optimism taps the approach domain; the approach-avoidance theory of motivation and personality posits that both domains have early temperamental origins in the life course and that both are needed to predict behavior and well-being adequately (Carver and Connor-Smith 2010; Elliot, Gable, and Mapes 2006; Hitlin, Andersson, and Elder forthcoming).

One alternative explanation for the observed durability of optimism relative to self-esteem is that optimism leads to reporting biases in self-rated health. Consistent with this counter explanation, a recent meta-analysis found that optimism exerts a larger effect on subjective health than on physical health, though both effects are highly significant (Rasmussen et al. 2009). Future research that includes a variety of health indicators will help refine theory on how and when dispositional optimism influences health more robustly than self-esteem and emotional stability. Moreover, future research should enlist a panel design in order to establish that life crises and chronic identity disconfirmation do not diminish dispositional optimism (Segerstrom 2007).

A second alternative explanation centers on the fact that substantive pathways linking self-esteem to health may differ from those linking dispositional optimism to health; in particular, although both psychological resources likely contribute to health

through positive affect and positive health behaviors (Cohen and Pressman 2006), these psychological resources may shape health processes differently in a way that is not captured by self-rated health. Meanwhile, the inclusion of full personality scales will help determine whether the durability effects found in this study (using partial scales) are due in part to methodological limitations.

In addition, identity verification during relationship and work crises will need to be assessed more directly. In the present research, the presence of a crisis was assumed to instigate identity disconfirmation. However, direct assessment of this pathway should be carried out by measuring identity meanings associated with worker and spouse identities and then examining chronic discrepancies between these meanings and situational meanings. Direct assessment is important because there may be considerable variability in the extent to which individuals experience relationship and work crises as identity-disconfirming.

CHAPTER 4
MORE THAN A FEELING:
EMOTIONAL WELL-BEING AND THE ACTIVATION OF EDUCATION

Education is correlated with an assortment of life outcomes, ranging from labor market outcomes to family structure to health and sense of control to non-kin social integration (Hout 2012). However, we know relatively little about which kinds of people are actually able to derive these outcomes from education. According to a traditional human capital perspective, recently termed a “learned effectiveness” perspective, education “gives people the ability and motivation to shape and control their lives” (Becker 1964; Ross and Mirowsky 2011:592). However, recent tests of this perspective have revealed that emotional and psychological resources are largely independent of educational attainment, which casts serious doubt on this hypothesis (Conti, Heckman and Urzua 2010; Herd 2010).

If education is not a self-sufficient form of human capital, then *how* do individuals mobilize or activate it toward various life outcomes? Drawing upon a capital activation perspective, I propose an alternative to a learned effectiveness model of education. I hypothesize that emotional well-being is necessary to activate or derive benefits from education. Using a representative panel sample of middle- to late-aged adults, I indeed find that emotional well-being activates or brings out the potential in education, leading to especially favorable gains in health, sense of control and voluntary association involvement. More important, in the absence of emotional well-being, education produces little or no improvement in these outcomes. Additional analyses, based on a separate sample of identical twins, replicate these findings.

By critiquing the learned effectiveness perspective empirically, I call into

question the notion of education as self-sufficient human capital. Even more, this critique lends important contributions to general theoretic discussions surrounding capital activation. It also provides specific contributions to models of how socioeconomic factors “transform” into health disparities, how a sense of control relates to education, and how civic engagement results from education.

Background

A traditional human capital perspective argues that general cognitive and problem-solving skills are gained incrementally through educational training (Becker 1964; Mirowsky and Ross 2003). There now is a variety of compelling evidence that education does not merely reproduce privileged social backgrounds. Rather, it seems to have independent effects after taking into account a variety of socioeconomic selection factors as well as prestige of institutions attended (Brand and Xie 2010; Huang et al. 2009; Ross and Mirowsky 1999; Schafer, Wilkinson and Ferraro 2013). Following these results, it seems that education truly to some extent “teaches people to think logically and rationally, to see many sides of an issue, and to analyze and solve problems” (Ross and Mirowsky 1999:445) and to inculcate certain skills and knowledge relevant to healthy lifestyles, civic engagement, and general problem-solving (Gesthuizen and Scheepers 2012; Hauser 2000; Putnam 2000; Snyder and Omoto 2008). This stands in contrast to views of education as credential (Bourdieu 1986:243; Collins 1979) or as spurious correlate of preexisting differences in intelligence (see also Hauser 2000; Link et al. 2008). To sum, education in its own right has causal effects on life chances, likely due to real skills it provides (Conti et al. 2010; Link et al. 2008).

But how, exactly, are these effects produced? On the one hand, they might point

to increased “learned effectiveness” with each additional year of schooling. On the other, it is possible that education endows individuals with real increases in skills but does *not* provide the emotional and motivational wherewithal to put these very skills into practice.

Indeed, it seems that emotional and motivational capacity are largely independent of education. While educational attainment is linked to various motivational habits such as industriousness and hard work, these are likely to be independent of education to a large extent and also to reflect heterogeneous treatment effects of education conditional on starting levels of these same traits (Conti et al. 2010; Duckworth and Seligman 2007). For instance, Herd (2010) shows using cohort data from the Wisconsin Longitudinal Survey that, net of preexisting intelligence levels, education adds to cognitive capital and this explains its health benefits far better than any noncognitive resources such as mastery or purpose in life attained along with education (see also Cutler and Lleras-Muney 2010). A recent qualification to this argument, however, importantly stipulates that individuals select into and persist within schooling according to personality-based factors and demonstrates this using a vector of early childhood personality covariates (Conti and Hansman 2013; see also McLeod and Fettes 2007). Within this vector, Conti and Hansman include early childhood levels of depression, anxiety, hostility, and withdrawal, all of which have been shown to be part of a latent negative emotion factor. Psychological resources such as mastery and emotional well-being seem to be largely independent of educational attainment itself. All of this research, therefore, constitutes a *prima facie* case for questioning the learned effectiveness argument.

As an alternative to a traditional human capital model, effects of education on adulthood life chances may be conceptualized as *average* effects that mask different

levels of activation (Morgan and Winship 2007). In this vein, I propose that education provides cognitive tools for problem-solving, whereas emotional well-being activates or enables these tools by facilitating problem-solving. In my analysis, this is evident as widely varying effects of education on health, sense of control, and voluntary association involvement. I focus on these three outcomes because they have theoretically explicit yet previously untested links to an activation mechanism involving emotional well-being.

Capital Activation: Theory and Previous Research

My focus on the activation of education is developed according to a capital activation perspective. Activation refers to the favorable usage of capital in a way that improves life chances. This perspective, perhaps best seen as an agglomeration of conceptually related research efforts, first delineates the different forms of capital present in social life, such as human, social or cultural capitals. For each form of capital, it asks when and why individuals in possession of capital might choose not to, be unmotivated to – or, perhaps more likely, be unable to – derive profits from that capital. As such, this perspective is particularly suited for revealing variability in returns to capital and for illuminating what Lareau and Horvat (1999) called the “jagged and uneven” nature of social reproduction due to differing degrees of success at the mobilization or activation of resources.

It is clear – from work by Lareau (2000) and Lin (2001) and others – that capital must be activated in order to yield profits. Activation is a unique and powerful step of social stratification, because people who possess similar capital do not always activate that capital in similar ways. Less clear, though, is what causes this variation in activation. Purposive or rational action is not a compelling explanation in many cases, because

individuals with clear preferences and goals surrounding activation nonetheless fail to activate. Structural factors, while they constrain activation, do not take into account real differences in personality among individuals. In this study, I show that stable differences in emotional well-being between individuals – a personality-based source of what Weber (1947) called “affectual action”¹¹ – helps to explain variation in both the use and consequences of education as a form of human capital.

Previous research has developed three principal approaches to understanding the activation of capital. The first approach, a structural approach, locates ease or difficulty of resource activation in the social structure rather than at the level of the agent. In contrast, rational and personality-based approaches implicate the agent to understand activation successes and failures. A rational perspective on activation traces variation to agentic interests and goals and is focused specifically on the deliberate or strategic choice to activate capital. Alternatively, a personality-based perspective traces activation differences to cognitive and emotional functioning that in many ways supersedes and prefigures rationality. I argue here that the latter perspective is best suited to understanding the activation of education, as in many cases individuals fail to derive benefits from education in a way that bucks rational logic, as an individual appears to be “working against his [or her] own interests” (Coleman 1990:510).

A structural perspective on activation typically is formulated either in terms of network or situational characteristics. Network features relevant to activating resources

¹¹ Nonpurposive forms of action, such as expressive and habitual action, are not undertaken with immediate goals in mind, but rather are undertaken for their own sake or out of mere habit (Small 2009:11). Weber (1947) identifies certain types of “nonpurposive” social action as being oriented toward social, moral or aesthetic goals and thus as being (*wert*)rational.

inherent to one's ties include but are not limited to density, heterogeneity and cultural norms among one's contacts (Hurlbert et al. 2000; Renzulli and Aldrich 2005; Smith 2005). In total, a network activation perspective aims at Granovetter's (1995) call to specify relationships between activated ties and the network structures from which they arise. Pertinent to situational characteristics, Lareau and Horvat (1999:38) develop a "character of moments" framework for understanding the situational factors that complicate the activation of cultural capital by parents on behalf of their children. Within this framework are the context of activation (i.e., field in the Bourdieusian sense) as well as institutional response to activation.

A rational perspective has benefitted from diverse articulations, all of them conceptually similar in that they understand actors in terms of choosing to mobilize or activate latent sources of potential within their capitals. While contextual or social influences on decision-making are emphasized to varying degrees (Pescosolido 1992:1105), a rational perspective on capital activation is based principally upon "resources...accessed and/or mobilized in purposive actions" (Lin 2001:29). Purposive or rational capital activation refers to that which draws upon potentially available resources in order to further or safeguard personal interests whether conscious or not (Bourdieu 1990; Swidler 1986), such as economic interests (Smith, Menon and Thompson 2012) or interests of personal safety and health (Hurlbert et al. 2000; McDonald and Elder 2006; Perry and Pescosolido 2012). Indeed, this activation perspective might be applied to any situation wherein the actor is reasonably treated as a "homeostatic, goal-seeking entity" (Coleman 1990:504). Rational action not only draws upon potential resources for ultimate ends of protection or advancement, but it also draws upon such resources

judiciously, in that certain aspects of resources are “selectively activated” depending upon the task at hand (Perry and Pescosolido 2012:138). For instance, Smith et al. (2012) detail a process whereby individuals “widen” their conceptions of personal networks when job searching; similar research has found that broad versus narrow activations of personal social networks depend upon needs for achievement versus affiliation with others (Brands 2013).

A personality-based perspective on activation, while perhaps meant as an alternative to rational activation, turns out effectively to be a critique of this perspective. This perspective traces variation in capital activation neither to structure nor to purposive goals or interests. Rather, it traces variation to cognitive and emotional differences between actors, and furthermore sees these personality differences as shaping the very goals and interests which individuals are likely to consider as worthwhile. To be more specific, individuals vary in their personality – their locus of control, self-esteem, dominance tendencies, chronic levels of happiness and depression, and desire to collaborate with others, for example – and all of these factors have been shown to influence how individuals build, perceive and activate resources within social contexts (Casciaro, Carley and Krackhardt 1999; Judge and Hurst 2007; Smith et al. 2012; Srivastava and Banaji 2011). If, as Coleman (1990:505) maintains, rational interests have “peaks and valleys” corresponding to fluctuating states of desire and need, then personality is a powerful force behind many of these very contours, as it determines motivation, emotion and cognition in ways that set the stage for rationality (Adkins and Vaisey 2009; Freese 2008).

Indeed, while purposive action pertains to “access[ing]...a wide range of resources that can facilitate different needs as they arise” (Perry and Pescosolido 2012:136), it does not specify the underlying dynamics of need perception and formation. Need formation is likely to be prefigured by “psychic costs” which themselves are the products of personality-based noncognitive factors (Heckman, Stixrud and Urzua 2006:3). As such, a personality-based perspective, like Pescosolido’s (1992) situated model of resource activation, goes “beyond rational action” to understand capital activation, but it does so by appealing to the particular cognitive and emotional personality systems of actors (Mischel and Shoda 1995), which contour and prefigure needs and desires and therefore purposive action. Basic personality types vary within social class, are reinforced by cumulative selection processes across the life course, and are highly independent of educational attainment (Caspi, Bem and Elder 1989; Elder, Johnson and Crosnoe 2003). As Lareau (2002:766) states, parents and children vary in “temperament,” and these variations “are useful reminders that social class is not fully a determinant of the character of children's lives.”

In positing a viable alternative to a rational model of activation, one must answer the tall order of specifying an “engine of action” (Pescosolido 1992:1106). As a promising candidate, Pescosolido recommends affectual action as a suitable engine; here, however, affectuality is understood in terms of “acquired [cultural] instinct” or “embodied history” (p. 1107). In a broader sense, Weber (1947) draws attention to “affectual action,” which is not ostensibly rational or goal-oriented but rather is impelled by prevailing “emotional” conditions such as “feeling states.” Merton (1936:901-02) had

dismissed this type of action, analyzing it mainly as “error” or “bias” vis-à-vis rational action.

Here, I argue that rather than being its own type of social action or a momentary source of bias or error, affectual action may be a constant springboard of action. That is, in terms of personality, individuals possess fairly stable “set-points” for their usual levels of happiness or depression (Lykken and Tellegen 1996; Lyubomirsky 2007; Wilson and Gilbert 2005). While some life events such as widowhood, unemployment or physical disability do lead to significant changes in emotional well-being, these changes occur relative to a within-person baseline or set-point that is fairly stable; many individuals do not experience enduring changes in well-being following many life events (Lucas 2007:77-78). This moderate within-person stability is in part due to social selection processes, as individuals tend to choose and persist within situations that reinforce their personalities and personal identities (Stets 2006; Suls and Martin 2005).

Typical levels of emotional well-being that characterize given individuals carry profound implications for motivation and action (Carver and Connor-Smith 2010; Casciaro and Lobo 2008; Elliot and Thrash 2002), in that they shape many actions in terms of flexibility, felt support and persistence. For instance, emotional well-being prefigures rationality by, to paraphrase Coleman (1990:506), inducing “selectivity of attention” that defies strict rationality: at high levels of negative emotion, “resources are perceived to be unavailable” and “goal pursuit is inhibited” whereas high levels of positive emotion induce the “perception...that...resources are accessible” and “goal pursuit is stimulated” (Casciaro and Lobo 2008:660).

While noting the veritable “breadth” of how affect configures tie activation across multiple tie types and purposes, Casciaro and Lobo focus on interpersonal affect in terms of liking or mutual affiliation. This is similar to Collins (2004) and other interactional theorists who view affect as a product of mutual identification and solidarity (for a review, see Turner and Stets 2006). In contrast, I focus here on *intrapersonal* affect or average moods as based in cross-situational personality characteristics. Put another way, I examine the emotional well-being as a form of “psychological variation” (Freese 2008) that distinguishes and meaningfully characterizes individuals.

In contrast to large swaths of sociological research that focus on emotional well-being as a dependent variable, I treat it as a fundamental factor for capital activation and social action. This makes for a quintessentially social-psychological approach to capital activation, as emotional well-being determines how individuals relate to and experience different structural resources. Indeed, the perennial interaction between persons and environments in determining behavior is the foundational premise of Lewin’s (1951) field theory of social psychology.

Activating Education

I conceptualize the activation of education in terms of two well-being processes: the *presence* of positive emotion as well as the *absence* of negative emotion (Diener and Chan 2011; Hitlin, Andersson and Elder 2013; Seligman and Csikszentmihalyi 2000; Tellegen, Watson and Clark 1999; World Health Organization 1946). Positive emotion is a broad-based tendency towards emotional states such as happiness, contentment, engagement, and joy. In contrast, negative emotion is a broad-based tendency towards emotional states such as depression, anxiety, sadness and anger. Positive and negative

emotion, while they correlate inversely, load onto separate factors and contribute uniquely to health and social outcomes (Cohen and Pressman 2006; Diener and Chan 2011; Friedman 2008; Lyubomirsky, King and Diener 2005; Roberts et al. 2007).

I propose emotional well-being in contrast to previous research that has examined labor market returns to education (e.g., Judge and Hurst 2007; Kaniel, Massey and Robinson 2010). This research has posited and found that different noncognitive personality traits such as optimism, conscientiousness, extraversion, or self-esteem shape the income trajectories that result from education. However, the effects of most personality traits on performance are highly structurally contingent, as they differ by general economic conditions and by industry, occupation, and even by firm (Barrick and Mount 1991). Furthermore, rather than representing the activation of the cognitive capital inherent in education, these effects instead likely represent hiring selection effects within the same level of education (Bowles, Gintis and Osborne 2001; Farkas 2003), which lies outside the current argument.

In contrast, I focus on emotional well-being as a general source of activation potential for diverse life outcomes outside of the labor market. Below, I outline three wide-reaching and powerful mechanisms by which education is likely to be activated by emotional well-being: flexibility of information processing, perceived social support and motivated task persistence. All three of these processes enhance the success of problem-solving. That is, while education represents learned skills, emotional well-being provides flexibility, support and persistence for activating these skills, leading to the differential activation of education (see Figure A3). While these mechanisms are not tested explicitly in the current study, they provide a compelling route by which emotional well-being

creates a favorable problem-solving mindset that is conducive to activating the potential inherent in educational human capital.

Flexibility of Information Processing

Managing health risks and becoming involved in one's community depends upon the effective handling of available social information. Positive emotion tends to broaden one's ideas for taking action, whereas negative emotion narrows one's action repertoire (Fredrickson 2009:21; Losada and Heaphy 2004). As a result, positive emotion leads to enhanced information-seeking and creativity (Fredrickson and Joiner 2002; Isen 2000), even when information is potentially distressing or challenging to one's self-views (Aspinwall and Brunhart 1996). It also produces fundamental shifts in how one frames or approaches a situation, leading to substantial gains in problem-solving performance (Ashby, Isen, and Turken 1999). In contrast, negative emotion is associated with ruminative cognitive styles that focus on particular bits of information and on the self and thus do not effectively integrate and extend knowledge (Connor-Smith and Flachsbart 2007; Mor and Winquist 2002; Solberg Nes and Segerstrom 2006).

The effects of emotion on information processing are made readily evident by meta-analyses of stress and coping. Specifically, positive emotion, whether situationally induced or treated in terms of average levels, has been linked to information seeking, proactive problem-solving, or cognitive restructuring, whereas negative emotion is instead linked to withdrawal from challenging situations or denial of difficulties (Carver and Connor-Smith 2010; Connor-Smith and Flachsbart 2007; Solberg-Nes and Segerstrom 2006; Steptoe et al. 2008).

Perceived Social Support

Perceived social support is important for sustaining healthy lifestyle changes as well as community involvement. Specifically, perceived social support has been linked by numerous studies to treatment adherence, positive health behaviors and adjustment to chronic disease in particular (for reviews, see DiMatteo 2004; Stanton, Revenson and Tennen 2007; Uchino 2006) and to the maintenance of community social integration through feelings of belongingness as well as objective tie maintenance (Cornwell and Waite 2009; Son, Lin and George 2008).

Positive emotion leads to enhanced perceptions of support, in terms of general support as well as reported social network ties (Andersson 2012a; Kok et al. 2013; Lyubomirsky et al. 2005; Steptoe et al. 2008; Xu and Roberts 2010) whereas negative emotion is linked to fewer perceived ties and greater levels of perceived hostility (Steptoe et al. 2008; Suls and Martin 2005). In addition to perceived support, emotion has independent effects on actual social integration, through the objective formation of social ties. Positive emotion furthers the exchange of greetings and gestures between individuals (Collins 2004; Turner and Stets 2006). This leads to particularized forms of mutual understanding and solidarity that result in social ties (Collins 2004; Lawler 2001). Those prone to negative emotion are likely to have a difficult time escalating interactions to solidarity and mutual identification with others (Turner and Stets 2006). Evocative effects also play a role, such that individuals who are positive tend to be better liked than those who are not (Friedman 2008). In general, emotional well-being leads to perceived as well as objective social support, creating a favorable environment for health and social outcomes.

Motivated Task Persistence

Rather than underlying a naive dismissal of challenges, positive emotion is linked to the motivated pursuit of challenging goals that affirm and nourish the self, such as staying healthy and staying socially involved (Abele and Gendolla 2007; Andersson 2012b; Aspinwall and Brunhart 1996; Carver and Connor-Smith 2010; Cohen and Pressman 2006; Solberg Nes and Segerstrom 2006). Also, it is linked to proximal motivated behaviors such as maintaining informational and social resources relevant to these goals (Connor-Smith and Flachsbart 2007; Steptoe et al. 2008). In contrast, negative emotion is linked to disengagement from self-affirming goals, and to engagement in poor health behaviors and social isolation (Hampton and Friedman 2008; Mor and Winquist 2002; Suls and Bunde 2005).

These differences reflect a well-established tendency for individuals to seek situations that are congruent with their prevailing emotional states, and to interpret these same situations in congruent terms which leads to independent, reinforcing effects on health and behavior (e.g., Carver and Connor-Smith 2010; Dunlop and Tracy 2013; Seligman 2006; Suls and Martin 2005). That is, individuals who are prone to positive emotion seek life-affirming and objectively challenging situations and then interpret these same situations in terms of positive cultural logics such as growth, mastery, redemption and opportunity even when the situations are quite straining or difficult. In stark contrast, individuals prone to negativity have been shown to precipitate adverse life events such as accidents, health problems and social isolation, and to interpret these same events on cynical or even nihilistic terms, thus perpetuating life misfortune.

Activation Hypotheses

Health

Activating education should be particularly important for managing chronic illnesses. Chronic illnesses are enduring health conditions such as cancer, diabetes, high blood pressure, respiratory diseases, and joint, back and vision problems that unfold over time and require multiple forms of problem-solving for effective management (Center for Disease Control 2008; Herd 2010). Management tasks include building and preserving relationships with health professionals, learning an array of disease-specific management techniques, devising and implementing treatment plans, knowing how and when to seek additional medical information, and, above all, comprehending and applying health instructions (Jordan, Buchbinder and Osborne 2010; Goldman and Smith 2002; Stanton et al. 2008). These tasks bear basic connections to one's learned cognitive skills and, more important, to the activation of education by emotional well-being.¹² That is, educational skills need to be applied diversely and creatively, in concert with significant others such as medical personnel, kin, and other social contacts such as coworkers and friends, and, in general, with motivated persistence.

The poor management of present chronic illnesses should lead to the accumulation of further chronic illnesses. For instance, poor health management leads to declines in functional health and ultimately to physical impairment, which in turn leads to

¹² Other research has suggested that social-psychological resources such as emotional well-being may be most important to health outcomes at *low* levels of socioeconomic status (e.g., Matthews, Gallo and Taylor 2010; Schöllgen, Huxhold, Schüz and Tesch-Römer 2011). This is because low socioeconomic status is associated with an especially high probability of material, physical and personal hardships. In turn, emotional well-being may protect health at low SES by buffering against the negative health consequences of hardships. However, research in this tradition usually relies on cross-sectional data or does not discriminate adequately between facets of SES. Treating facets separately is vital because education is theorized to have specific efficacy in health processes and in community involvement (Herd 2010; Musick and Wilson 2008; Ross and Mirowsky 1999).

other health complications associated with impaired or sedentary lifestyles, such as back, bone and joint problems, high blood pressure, diabetes, cancer, and heart and lung diseases. In addition, certain conditions when inadequately treated operate as risk factors for other conditions, such as high blood pressure elevating one's risk for heart attack or stroke, or neurological problems increasing the likelihood of substance abuse and vice-versa. Thus, previous research has found that education prevents the accumulation of chronic conditions (Hayward et al. 2000; Herd 2010; Mirowsky and Ross 2003). Here, I add to this research by stipulating that emotional well-being will activate education, leading to even lower rates of chronic disease.

Hypothesis 1 (Health): Emotional well-being and years of education will interact negatively in the longitudinal prediction of chronic health problems.

Sense of Control

Perceived control over one's life, while it is only a modest mediator of the education-health link, is important to health outcomes in its own right (Mirowsky and Ross 2007; Ross and Wu 1995). For instance, perceived control has been linked to decreased morbidity, mortality and illness in a variety of samples because it is empowering and because it curbs the immunological deficits associated with deep feelings of helplessness (Andersson and Conley 2008; Peterson and Seligman 1987). As yet, it remains unclear how education leads to a sense of control. Mirowsky and Ross (2003) posit that a sense of control is built up through continual successes at problem-solving during daily life: that is, by exercising communication and analytic skills gained through education (see also Ross and Wu 1995:722-723). However, if this is the case, then sense of control may be better viewed as an outcome of activating education rather

than of education per se. Activation is relevant to perceived control over one's life situation because it shapes the success of problem-solving efforts.

Hypothesis 2 (Sense of Control): Positive statistical interactions between emotional well-being and years of education will be observed in the longitudinal prediction of sense of control.

Voluntary Association Involvement

Education is one of the strongest predictors of voluntary associations and other forms of non-kin social involvement (Fischer 1982, 2011; Musick and Wilson 2008; Putnam 2000; Wilson 2012). Part of the reason for this association seems to be that educated individuals are better able to do a variety of tasks relevant to social involvement, such as gathering information, communicating effectively, tolerating and thoughtfully meeting the needs of others, managing organizational funds and resources, running and devising meetings and discussions, and interfacing diplomatically with public representations and agencies. In addition, educated individuals are likely to have experiential skills derived from community internships or volunteering during their undergraduate or graduate educations.

Even though education provides a variety of skills useful for community involvement, Bekkers (2005, 2006, 2010) proposes that voluntary association participation is more likely to happen as personal opportunity costs decrease. Accordingly, emotional well-being should lower the cost of voluntary involvement, as it should not only ease the activation of educational skills but also make participation more intrinsically rewarding. To date, tests of this hypothesis have been restricted to the capitals of income and religious attendance, and have focused on specific personality

dispositions rather than emotional well-being in particular, yielding mixed empirical results. As Wilson (2012) points out, capitals and social-psychological characteristics relevant to voluntary involvement tend to be conceptualized independently rather than interactively. This is at odds with the axiomatic notion that agency modifies the effects of structure and vice-versa (Adkins and Vaisey 2009; Sewell 1992). Therefore, I investigate whether emotional well-being, due to its fundamental relevance to working with complex information and building and maintaining social support, activates voluntary involvement due to education.

Hypothesis 3 (Voluntary Association Involvement): Positive statistical interactions will be observed between emotional well-being and years of education in the longitudinal prediction of voluntary association involvement.

Method

The activation of education via emotional well-being is predicted to differentially shape physical health, sense of control and voluntary association involvement over time. Relative to other facets of SES such as occupation and income, education is most likely to precede these life outcomes and thus least likely to be endogenous to them (Mirowsky and Ross 2003). However, research suggests that education may shape and reflect mental health, that emotions and physical health are interrelated, and that interactions between facets of SES and social-psychological characteristics observed cross-sectionally may be artifactual (Hampton and Friedman 2008; Kok et al. 2013; Mirowsky and Ross 2003; Schnittker 2004; Suls and Bunde 2005).

To help address all three methodological hazards, I use a lagged panel design on a middle-aged representative sample of United States adults. This design samples

individuals who already have completed their education and it examines their prospective levels of physical health, sense of control, and voluntary association involvement, thus helping to overcome reciprocal causality and spurious interactions observed cross-sectionally. In addition, the two panel observations are separated by about nine years on average, making for a meaningful test of activation effects relative to short-term panel designs that isolate what may perhaps be temporary changes in life outcomes.

Nationally representative panel data on health, well-being and social involvement are made available by the 1995-1996 and 2004-2006 National Surveys of Midlife Development in the United States (MIDUS) administered by the John D. and Catherine T. MacArthur Foundation (available on the ICPSR website: <http://www.icpsr.umich.edu>). The main component of MIDUS is a probability sample consisting of English-speaking, noninstitutionalized adults residing in the contiguous United States (referred to herein as the random-digit-dial or RDD sample). Adults were aged 25 to 74 at the time of the first interview, which took place in 1995-1996. About 70% of initially chosen RDD respondents responded to the first phase of the survey: a phone interview that gathered basic information. 87% of this phone-response RDD sample then also agreed to complete questionnaires which included items about emotional well-being, sense of control, social involvement, and detailed health measures. For the 1995 wave, data were available for $n = 3034$ RDD respondents.

At follow-up around 2005-2006, 65% of the original RDD sample participated in the phone interview (71% when adjusting for mortality).¹³ In turn, 80% of these

¹³ To examine potential effects of attrition on panel findings, I generated probabilities of MIDUS II (2004-2006) completion based on relevant MIDUS I (1995-1996) outcome measures (chronic conditions, sense of control, or voluntary association involvement) and key covariates, and then I reestimated all panel

respondents then also agreed to complete questionnaires (resulting $n = 1805$). Thus, the final RDD panel sample ($n = 1805$) was comprised of those who responded to the questionnaires in 1995 *and* 2005. After taking into account voluntary missingness for dependent variables and predictor variables (<5% of respondents for any given variable), estimation samples for lagged dependent variable models were approximately $n = 1590$.¹⁴

Measures

Number of Chronic Conditions

I invoke a count measure of health constructed from items in the questionnaire. Across these items, the respondent was asked: “In the past 12 months, have you experienced or been treated for any of the following”: respiratory conditions (e.g., asthma, bronchitis, emphysema, tuberculosis), bone or joint diseases, thyroid disease, high blood pressure, alcohol or drug problems, neurological problems, diabetes, autoimmune disorders and stroke, as well as a variety of less serious health conditions (29 total). I also took into account supplemental questions on whether the respondent reported any cancer or heart trouble (coronary heart disease or heart attack) at baseline and also whether s/he developed cancer or heart trouble between waves. Altogether, this inventory made for a rich measure of health as it combined the invaluable subjective nature of health assessment (Jylhä, Volpato, and Guralnik 2006) with an objective and extensive checklist of pathology (Hayward et al. 2000; Herd 2010).¹⁵

activation models controlling for probability of being observed. Within these models, substantive results about activation were unchanged.

¹⁴ Income had approximately 5% voluntary nonresponse. Imputing income based on covariates does not change the results.

¹⁵ Findings were the same regardless of whether raw counts or counts truncated to exclude high values were used. Also, controlling for number of minor chronic conditions (e.g., allergies, body pain,

Sense of Control

In Mirowsky and Ross' work, sense of control is queried using a brief scale. As Ross and Wu (1995:741) note, this scale is "conceptually similar" to Pearlin and Schooler's (1978) mastery scale (see also Mirowsky and Ross 2007:1341). The MIDUS perceived constraints scale makes use of five items from Pearlin and Schooler's mastery scale while adding three new items. Items on the MIDUS scale included "There is little I can do to change the important things in my life," "Other people determine most of what I can and cannot do," "There are many things in life that interfere with what I want to do," and "I have little control over the things that happen to me" ($\alpha = .88$; 1 = strongly agree, 4 = don't know, 7 = strongly disagree).¹⁶

Voluntary Association Involvement

The respondent was queried about the number of times per month s/he attended various meetings or services for religious or spiritual groups, professional groups or unions, athletic groups or associations, and any other groups or associations. When constructing an index of involvement, I differentiated between those who met once a month versus twice or more. This approach befits the observed frequency distributions, as most respondents reported meeting 0-2 times per month for each type of involvement, with large jumps observed between 0 and 1 and 1 and 2. As Putnam (2000) aptly noted,

piles/hemorrhoids, dental or sleep problems; initial number as well as change in number across the follow-up period) does not change findings. Separate models that used physical limitations during adulthood as an alternative health outcome led to similar results.

¹⁶ Because high values for the sense of control index were rare (only 5% of the panel sample averaged above 5 across all sense of control items), I lowered the ceiling of this index by recoding high average values to 5. Results do not differ if high values are not recoded (if the index ceiling remains at 7).

meeting more than twice per month is likely to carry diminishing returns for objective and subjective measures of social integration. Thus the voluntary association involvement scale as constructed ranged empirically from 0-8 at baseline and follow-up surveys (up to 2 meetings for each of four kinds of meetings). However, the follow-up index possesses non-integer values due to slightly different response options relative to baseline (i.e., less than once per month became an option for religious attendance).¹⁷

Education

Education was surveyed by MIDUS in terms of credential points (i.e., completion of junior high, high school, GED, Associate's degree, Bachelor's, Master's, or doctorate), with degree midpoints also present (e.g., 1 or 2 years of college, no degree yet).

However, education is linked to skills that are gained incrementally with each additional year of schooling (Becker 1964; Ross and Mirowsky 1999:445). Thus I recoded this variable so that education is measured as 0-20 years of formal instruction: no school or some grade school (4), eighth grade/junior high school (8), some high school (10), GED (12), graduated from high school (12), 1 to 2 years of college, no degree yet (13.5), graduated 2 year college or vocational school, or Associate's degree (14), graduated three or more years of college, no degree yet (15.5), 4 or 5 year college or Bachelor's degree (16), some graduate school (17), Master's degree (18), doctorate (20). No significant differences in activation findings result from similar alternative coding schemes or from examining returns to a college degree in particular.

¹⁷ When calculating voluntary association involvement, I required response on all four dimensions of involvement, leading to about 200 lost cases in the panel sample and 23 lost cases in the twin sample. An alternative calculation that requires only one valid response across all four items regains these cases and produces substantively identical results. Also, because many respondents only had one or two kinds of social involvement, it was important to model participation in any kind of voluntary association at follow-up using logistic regression. Results did not differ from those presented.

Emotional Well-Being

In 1995, respondents were asked to fill out six-item inventories of positive and negative emotion. Within these inventories, they were asked “During the past 30 days, how much of the time did you feel...” cheerful, in good spirits, extremely happy, calm and peaceful, satisfied, and full of life (for positive emotion; 1 = all of the time, 2 = most of the time, 3 = some of the time, 4 = a little of the time, 5 = none of the time; alpha = .91) and nervous, restless or fidgety, hopeless, worthless, that everything was an effort, and so sad that nothing could cheer you up (for negative emotion; alpha = .87). Items were reverse-coded and then averaged to arrive at overall scores for positive and negative emotion. Averages were computed for respondents who completed four or more scale items.¹⁸ Positive and negative emotion scales had about 40% common variance.

Key Covariates

In all equations, I include key covariates that have been widely recognized as important to health and social processes. Gender is measured as an indicator for male (0=female, 1=male); age is measured in years and squared as necessary to capture

¹⁸ While emotional well-being possesses moderate stability across the life course, it also changes somewhat over time. Consistent with this moderate stability, positive and negative emotion had test-retest correlations of approximately $r = 0.5$ over the ten-year follow-up period (compare to Lucas 1997; Lykken and Tellegen 1996). In additional analyses, I exploited within-person variation by regressing changes in life outcomes on changes in emotional well-being. This yielded first-differenced fixed-effects estimates; I obtained separate estimates for low and high educational groups in order to approximate an interaction of emotional well-being with education (Halaby 2004). Unfortunately, due to power issues associated with first-differencing fixed-effects techniques, I often was unable to demonstrate significant differences in coefficients between educational groups. However, trends that did emerge were consistent with an activation hypothesis, in that well-being often had larger effects on favorable life outcomes within high-education groups. These results are somewhat difficult to interpret, however, as there is no temporal ordering between life outcomes and well-being within a first-differenced model, and effects of education are inferred rather than estimated directly due to the time-invariance of educational attainment among middle- to late-aged adults. Also, differencing eliminates time-invariant aspects of personality that underlie both stability and change in emotional well-being.

significant non-linear relationships. Gender and age both figure prominently into social and health processes (e.g., Fischer 2011; Schnittker 2007). Race is measured as an indicator for whether the respondent reported being white, given other categories of black and/or African-American, Native American or Aleutian Islander/Eskimo, Asian or Pacific Islander, other, or multiracial (0=non-white, 1=white). Racial differences in health and social participation are substantial and may in part be attributable to neighborhood structure and differential allocation of social-psychological resources (Keyes 2009; Wilson 2009).¹⁹ Marital status is assessed by two interrelated indicators capturing whether the respondent was currently married at the time of the baseline interview (0=no, 1=yes) or, if not, whether the respondent was currently living with a steady partner (0=no, 1=yes). Marital involvement carries strong implications for health processes as well as non-kin social relations (Fischer and Oliker 1983; Hughes and Waite 2009).

Recent research on class-based socialization has measured parental middle-class status in terms of education and in terms of occupation type (Calarco 2011; Lareau 2011). Of these, the employment of at least one parent in a professional or managerial occupation is more important to parental middle-class status (Lareau 2011:365). An alternative definition additionally requires that one or more parents in the household have obtained a Bachelor's degree or higher (Calarco 2011:865-66). In MIDUS, those with at least one parent who was employed in a professional or managerial occupation (per ISCO

¹⁹ MIDUS respondents were predominantly white and non-Hispanic (about 90%). Further analyses that discerned between racial and ethnic categories by entering relevant indicators into models did not alter the current findings. Future research based on samples that are more racially and ethnically heterogeneous should look for activation differences according to these social categories; lack of sample diversity precluded obtaining reliable estimates for these groups.

occupational classifications) averaged 15.5 years for highest level of parental education, essentially replicating this latter definition. Thus I construct an indicator for middle-class parental social background based on whether one or more of the respondent's parents were employed in a managerial or professional occupation.²⁰ For an additional covariate, I averaged parents' levels of education when both were reported and used either value when one was missing (Ross and Wu 1995). In total, originating SES has been shown to have persistent effects on well-being across the life course (Mirowsky and Ross 2011; Sewell et al. 1969).

Labor force status is assessed by whether the respondent was working full- or part-time at baseline (0=no, 1=yes; versus all other labor force statuses). Job strain and unemployment are related to negative psychological and physical health outcomes and also reconfigure social participation due to inducements and availability of time (McKee-Ryan et al. 2005; Pearlin et al. 1981). Further, I account for whether the respondent has children, as child-raising has been shown to diminish parental well-being and to conflict with relationship and work roles, thus potentially altering health outcomes (Umberson, Pudrovska, and Reczek 2010). Meanwhile, childraising is linked to distinctive patterns of social and community involvement (Furstenberg et al. 1999; Small 2009). In keeping with parenthood research, I distinguish between having any children under 7 (0=no, 1=yes) and having any children aged 7 to 17 (0=no, 1=yes). Finally, household income for the past year (\$0 - 300,000+; log-transformed for panel models) was included in all

²⁰ In additional analyses, I defined parental social class in terms of at least one parent having a college degree. Having one parent with a college degree coincided with having one parent in a professional or managerial occupation about two-thirds of the time. Definition of social class in terms of college degree does not change any of the substantive findings.

models to distinguish effects of education from those of financial capital (Fischer 1982; Herd 2010).

In equations for sense of control, I further control for a variety of baseline health indices to ensure that sense of control is not conflated with health-specific efficacy processes (Bandura 2004). More specifically, I adjust for self-rated physical health, body mass index, activity restriction, and number of chronic conditions, all of which could conceivably influence perceived control over one's life. The self-rated health item asked: "In general, would you say your physical health is excellent, very good, good, fair or poor?" (1= poor, 3 = good, 5 = excellent). A focus on physical health is desirable in order to keep the respondent from reporting any perceived or actual emotional difficulties that are endogenous with emotional well-being. Body mass index was measured in the standard format of kilograms divided by meters squared (Crosnoe, Frank and Mueller 2008). Activity restriction was assessed by asking the respondent to what extent he or she had difficulty with various daily tasks such as lifting groceries, climbing flights of stairs, kneeling, walking, and moderate and vigorous activities (1 = a lot to 4 = not at all, for each type of activity). Activity restriction was then computed as the mean of reverse-scored items for respondents giving at least one valid item response.

In equations for voluntary association involvement, I control for self-rated physical health at baseline to address potential selection effects on health (Cornwell 2009; Helliwell and Putnam 2004).

Estimation Strategy

Chronic conditions, sense of control, and voluntary association involvement are modeled using a lagged dependent-variable (LDV) framework in which follow-up

outcomes are predicted net of baseline values and key covariates (e.g., Herd 2010; Ross and Wu 1996). For all outcomes, I fit two activation models. In the first activation model, I interact education with positive emotion; in the second model, education is instead interacted with negative emotion²¹:

$$E(Y_{2005}) = \beta_{Educ}(Educ_{1995}) + \beta_{PE}(PE_{1995}) + \beta_{NE}(NE_{1995}) + \beta_{Activation}[(Educ \times PE)_{1995} | (Educ \times NE)_{1995}] + \beta_{LDV}(Y_{1995}) + \sum_{i=6}^k \beta_i(Cov_{i1995}) + u$$

Above, $\beta_{Activation}$ represents the presence of an activation effect. For (number of) chronic conditions, which is an undesirable health outcome, favorable activation effects are represented by a negative coefficient for $Educ \times PE$ and by a positive coefficient for $Educ \times NE$ (in support of Hypothesis 1). In particular, these coefficients represent a heightening of education's health-protective effect due to emotional well-being (i.e., due to the presence of positive emotion and the absence of negative emotion). Within all chronic condition models, I specify $Education \times Age$ to capture differing effects of education on health across the life course (Ross and Wu 1996). For sense of control and voluntary association involvement, a positive coefficient for $Educ \times PE$ along with a

²¹ To address some research finding diminishing returns to happiness (e.g., Gruber, Mauss and Tamir 2011), I also considered possible curvilinear effects of positive and negative emotion conditional and unconditional on education. While no unconditional curvilinear effects emerged, two marginal curvilinear effects conditional on education emerged. To figure out whether these higher-order models provided a better fit to the data, I compared these unrestricted models to the restricted linear interaction models reported in this paper. In both cases, the linear interaction models provided a much stronger fit to the data (BIC differences > 10).

negative coefficient for $\text{Educ} \times \text{NE}$ represents favorable activations of education due to emotional well-being (Hypotheses 2 and 3).

Chronic conditions are modeled using negative binomial regression with and without an accompanying logistic process for zero inflation.²² Sense of control is modeled using ordinary least-squares (OLS) estimation as is voluntary association involvement. In all models, I request robust standard errors. A weight available for RDD respondents did not alter substantive findings.

Results

Descriptive statistics for the RDD panel sample are presented in Table A6. The average respondent carried about 2.5 chronic conditions, was in good self-rated health (about 3.5 on a 5-point scale), felt a moderate sense of control (3.4 on a 5-point scale), exhibited some voluntary involvement (just over two meetings per month), had some college education (mean = 14 years of formal education), was moderate on positive emotion (mean = 3.4 on 5-point scale) and low on negative emotion (mean = 1.5 on 5-point scale), about 45 years old at baseline, white, married, had parents with approximately a high-school-level education, worked full-time, and had a household income of about \$70,000.

In keeping with recent research finding that education and noncognitive psychological resources are largely independent, education correlates only weakly with positive and negative emotional well-being (r s about 0.1). Thus, emotional well-being is

²² I do not report results accounting for mild zero inflation, as they are empirically guided and thus ad hoc (see Long and Freese 2006 for a discussion). As such, I report results from standard negative binomial regressions, with the understanding that a variety of inflation specifications make reported conclusions stronger rather than weaker.

fairly treated here as an independent translator of educational human capital to various life outcomes. Other correlations between emotional well-being and independent variables were similarly weak (all $r_s < 0.2$).

Activation of Education

Key estimates for the lagged dependent variable models are presented in Table A7. (Remaining estimates are given in Table A8.) To visualize results, I provide figures containing predicted values of life outcomes for low and high emotion, holding all covariates at their means. For positive emotion figures, low refers to a respondent scoring around the 20th percentile and high to the 80th percentile. For the negative emotion figure, however, low and high are based on a median split, such that high represents the upper half of the distribution (top 45%) and low represents the bottom 55%. This is in keeping with the indicator-based specification of negative emotion that I use in the chronic conditions model.²³

Health (Number of Chronic Conditions)

While education showed a protective effect against chronic disease ($bs < -.023$, $ps \leq .01$), this main effect varied considerably due to emotional well-being. In particular, positive emotion tended to activate this protective effect ($b = -0.018$, $p = .07$) whereas high negative emotion diminished it relative to low negative emotion ($b = 0.053$, $p < .001$), lending support to Hypothesis 1. In visualizing education's variable effects, then, I focus on negative emotion (see Figure A4). The triangle-marked solid line in

²³ For the chronic conditions model, I specified an indicator for high negative emotion based on a median split (rather than treating negative emotion as continuous, as in all other models). Doing so yields a substantially better-fitting model (BIC difference = 5.8; for other panel models, BIC does not favor dichotomization). The better fit of the indicator-based model reflects the fact that the distinction between low and high negative emotion can sometimes be a more relevant predictor of pathology (Hampton and Friedman 2008). The continuous model yields significant results for education ($b = -0.025$, $p = .01$) and $Educ \times NE$ ($b = 0.026$, $p = .02$).

Figure A4 connects predicted rates of chronic disease for respondents high on negative emotion, bounded by a 95% confidence interval (dotted lines). In the same figure, a circle-marked line connects rates for respondents low on negative emotion. Overall, Figure A4 shows that high negative emotion flattens the effect of education essentially to zero, whereas low negative emotion activates education, giving it a strong health-protective effect. Confidence intervals no longer overlap at about 16 years of education.

Sense of Control

Education was linked to an increased sense of control across time ($bs > .025, ps < .05$). However, positive emotion greatly activated this effect ($b = .049, p < .01$) and negative emotion tended to diminish it ($b = -0.032, p < .10$), in support of Hypothesis 2. Figure A5 provides a depiction of how the effect of education varies across levels of positive emotion. The triangle-marked line is for respondents high on positive emotion at baseline, whereas the circle-marked line shows predictions for low positive emotion. Figure A5 illustrates overall that low positive emotion flattens education's effect to zero, whereas high positive emotion activates education by allowing it to produce a sense of control. Confidence intervals no longer overlap at postbaccalaureate levels of education (≥ 17 years).

Voluntary Association Involvement

Educated individuals showed higher levels of voluntary association involvement across the follow-up period ($bs > .12, ps < .01$). Positive emotion activated this effect ($b = .094, p < .01$), whereas negative emotion diminished it ($b = -.074, p < .01$), supporting Hypothesis 3. Figure A6 plots predicted values of social involvement for varying levels of positive emotion. (Plotting predictions at varying levels of negative emotion leads to

nearly identical, mirrored results.) As for sense of control, the triangle-marked line connects predicted values for respondents high on positive emotion, whereas the circle-marked line shows predictions for low levels of positive emotion. Figure A6 conveys overall that education is linked to increased voluntary association involvement across low and high positive emotion, but that its effect on involvement is much stronger when positive emotion is high. Confidence intervals diverge at some college (about 15 years of education).

Auxiliary Results: Twin Fixed-Effects Models

Even if capital activation is observed longitudinally during adulthood, it may originate in early life-course factors, such as genetic differences, unmeasured childhood socioeconomic resources, parent-child relationships, or other processes (Bourdieu 1986; Freese 2008; Kohn 1963; Lareau 2011). If this is the case, then capital activation observed during adulthood is merely a distal reflection of earlier causal forces. This is important to address not only for public policy but also for contributing to knowledge on social stratification. That is, if it can be demonstrated convincingly that activation persists net of early life-course factors, then well-being interventions during adulthood will be effective in reducing capital-based inequalities, and inequality is not as tethered to social or biological origins as some theories might suggest.

Previous research on education and life outcomes has repeatedly emphasized that most designs do not take into account early life course factors that are unobserved (such as genes or household environment) or are difficult to measure adequately even if they are “observed.” Genes contribute to intelligence, sociability, mental health and other factors that are relevant to capital acquisition and activation (Freese 2008; Guo and

Stearns 2002; Shanahan, Erickson, Vaisey and Smolen 2007; Simons et al. 2011), as do relationships with parents or primary caregivers, among other complex environmental factors (Amato and Fowler 2002; Bush and Peterson 2013; Bodovski and Youn 2010; Masten 2001; Repetti, Taylor and Seeman 2002). Thus early life course factors – whether genetic, environmental, or both – present a definite threat to obtaining unbiased knowledge of capital activation during adulthood.

In auxiliary analyses, I attempted to determine whether capital activation observed during adulthood is robust to early life-course factors. To do so, I drew upon a cross-sectional, representative sample of identical twins.²⁴ Descriptive statistics for this sample are presented in Table A6 and are highly similar to the panel sample. I differenced within pairs of identical twins, which yields fixed-effects estimates of capital activation that are unbiased by a variety of factors that do not differ between genetically identical individuals who were raised in extremely similar social environments.²⁵

²⁴ Twin pairs were recruited using a separate, two-part representative sampling design. Twins were aged 25 to 74 at the time of the first interview, which took place in 1995-1996. About 60% of initially chosen twin respondents agreed to the phone interview; 92% of this phone-response RDD sample then also agreed to complete additional questionnaires. For the 1995 wave, data were available for $n = 1764$ fraternal and identical twin respondents. After restricting the twin sample to families reporting two identical twins (due to the requirements of the within-pair differencing procedure), and after taking into account small amounts of voluntary missingness on variables (<5% per variable), approximately 300 pairs of identical twins remained for the fixed-effects analyses of education activation.

²⁵ When one desires simply to eliminate unobserved genetic and environmental heterogeneity, within-pair-differencing using identical twins is the most straightforward estimation strategy (Carlin, Gurrin, Sterne, Morley and Dwyer 2005; Griliches 1979). To estimate the twin fixed-effects models, I regressed within-pair differences in life outcomes on within-pair differences in education (Educ), positive emotion (PE), negative emotion (NE), activation terms (Educ \times PE, Educ \times NE), and key covariates that vary within twin pairs (marital status, labor force status, household income, and children in the household). For sense of control and voluntary association involvement, I also controlled for within-pair differences in self-rated physical health. Obtained coefficients are interpreted as expected changes in life outcomes given changes in predictors, just as in the interpretation of OLS coefficients (e.g., Behrman and Rosenzweig 1999). Estimation was carried out using ordinary least-squares (OLS) constrained through the origin with robust standard errors; this yields within-pair estimates identical to those obtained using generalized estimating equations (GEE) or pair-based random-effects procedures (Carlin et al. 2005).

For these analyses, I examined the same basic set of life outcomes as before (health, sense of control, and voluntary association involvement). Although individual twins did report major chronic conditions such as stroke, high blood pressure, or diabetes, *differences in number* of chronic conditions within twin pairs were usually small (0-2 conditions) and often related to minor conditions. Given this, I examined self-rated physical health instead. While chronic conditions would have provided a richer and perhaps more objective measure of health had differences within pairs been more substantial (Hayward et al. 2000; Herd 2010), differences in self-rated physical health within pairs were substantial in many cases (1-2 points on a 5-point scale) and are still likely to reflect meaningfully different levels of health, as self-rated health is linked to the incidence and severity of certain health problems and to later mortality (Idler and Benyamini 1997; Jylhä et al. 2006:467). Otherwise, I retained sense of control and voluntary association involvement measures exactly as described for the panel analyses. To interpret activation coefficients, I used one-tailed tests because activation hypotheses are directional, and also because substantive variation is limited in fixed-effects analyses, especially among highly similar individuals (Behrman and Rosenzweig 1999; Hanushek et al. 2009:361).

Within-twin-pair activation coefficients demonstrated significance for each life outcome. In particular, activation predicted self-rated physical health ($b = .051, p = .029$), as well as sense of control ($b = -.06, p = .022$) and voluntary association involvement ($b = -.177, p = .031$). More specifically, positive emotion showed an activation effect for health whereas lack of negative emotion activated education in terms of perceived control and social involvement. All fixed-effects estimates are given in Table A9. Following

these results, activation effects are still evident after taking early life-course factors into account, suggesting that the activation of education is an ongoing, dynamic process transpiring during adulthood.

Discussion

Rather than focusing on main effects of education on diverse life outcomes, as so many studies have, I focused on the differential activation of education through levels of emotional well-being. In doing so, I provided novel insights into effect heterogeneity surrounding education by focusing on later life-course returns to education (Brand 2010; Morgan and Winship 2007). Also, I offered a new perspective on how emotions matter to social stratification, as they bring about the differential activation of one's structural resources. While sociologists have understood emotions as normative reactions to events, as indicators of personal adjustment, or as based in psychophysiological processes, for example (see Stets 2010 for a review), the role of emotion in activating capital gives a new lens through which to view emotions and social inequality.

While the current methodology possesses a number of strengths for uncovering capital activation effects, these data do not strictly permit the observation of activation processes. Rather, activation is inferred in terms of varied effects of education on life outcomes. In contrast, observing the actual process of capital activation would involve gaining concrete and rich evidence for situational successes and failures at mobilizing capital (akin to Smith 2005). By observing activation directly, analysis could then discern between activation mechanisms and downstream effects of activation (Hurlbert et al. 2000). Due to data limitations, effects of activation are cast as promising evidence for the underlying presence of activation mechanisms. Future research will need to verify the

existence and operation of the proposed mechanisms of flexibility, support and persistence in problem-solving.

In addition to theorizing and demonstrating an important type of capital activation, this research contributes to specific sociological literatures on life outcomes. First, activation provides a new way of thinking about how socioeconomic factors “transform” into health risks (Link and Phelan 1995). Indeed, previous treatments of transformation have focused decidedly on reciprocal paths among structural resources and health (Lutfey and Freese 2005; Phelan, Link and Tehranifar 2010). In contrast, the activation mechanism I propose assumes that emotional differences between individuals determine how their own structural resources are transformed into health outcomes. Next, this research adds to Mirowsky and Ross’ (2003, 2007) theorization of perceived control. Rather than demonstrating a direct relationship to education, it seems that sense of control may be better conceptualized as a dynamic outcome of capital activation. That is, sense of control may result from the robust activation of education through emotional well-being, rather than from education itself. Finally, this research contributes to our understanding of voluntary association involvement by showcasing the joint importance of capitals and emotional functioning. Thus, capital-based models of participation (e.g., Wilson and Musick 1997) may be profitably blended with inquiries focusing on personal factors relevant to participation.

Overall, the longitudinal findings managed some forms of reciprocal causality by examining life outcomes prospectively and by drawing upon individuals for whom education was already complete. Even more, education is the facet of socioeconomic status least likely to be endogenous to health problems, sense of control and voluntary

association involvement, as it largely precedes these outcomes relative to other SES facets such as income or occupation (Mirowsky and Ross 2003). However, at least two key issues with reciprocal causality may remain. First, links between emotional well-being and health are likely to be continually reciprocal, which is a type of tight endogeneity that two panel observations separated by about ten years cannot address. That is, the lagged models treat variables observed in 1995 as efficient causes of 2005 outcomes, which may not be an accurate representation of any tight coupling between physical and mental health. As a separate source of endogeneity, earlier health or emotional well-being may in part be responsible for observed effects during adulthood. To help address this, I reestimated all panel models controlling for self-rated mental and physical health at age 16 (reported retrospectively in 1995). My panel results were unchanged.

While the current results are consistent with the proposition that education is activated throughout middle and late adulthood due to varying levels of emotional well-being, this is not demonstrated here in any absolute sense. Following research by Conti and colleagues (Conti et al. 2010; Conti and Hansman 2013), for instance, emotional well-being is a fairly stable personality attribute that configures not only educational attainment in the first place but also heterogeneous treatment effects of education. Therefore, the observed activation effects may actually represent heterogeneous gains in human capital during the process of schooling (see also Smith et al. 2012:2). Although this is a temporally prior pathway that predates middle to late adulthood, it also would also be broadly consistent with a capital activation argument, in that individuals with higher emotional well-being are better able to derive benefits from schooling. However,

at the same time, this is quite different from the claim that education, once earned, is activated differently across adulthood due to emotional well-being. Future research that enlists a within-person panel design should distinguish activation of resources *during* the process of educational attainment from the activation of education *after* attainment is complete.

The presence of activation effects in the identical twin fixed-effects analyses suggests that activation is not a proxy for certain primary socialization experiences or for certain genetic factors related to intelligence or mental health, for example (Freese 2008). Fixed-effects analyses of capital activation have the distinct strength of accounting for unobserved heterogeneity. At the same time, they have limited statistical power, especially in small samples of highly similar individuals, which makes these results impressive but also worthy of caution. Measurement error in education has been shown to bias estimated returns to education in previous econometric research using twin data (Griliches 1979). Also, discordance in education among highly similar individuals requires further explanation, as the model assumes any differences to be exogenous (i.e., due to naturally arising differences between twins such as vocational interests) and is biased when this assumption fails. Within-pair differences in education may perhaps be more likely given certain family backgrounds; if so, then estimated effects are more pertinent to those social origins rather than equally applicable across all social backgrounds (Behrman and Rosenzweig 1999).²⁶ In this research, twin analyses were cross-sectional and relied upon self-reported health and social outcomes. As such,

²⁶ Within-pair estimators do not account for “common family endowments” that potentially lead to observed within-pair differences on predictors and outcomes and thus may act as sources of bias (Behrman and Rosenzweig 1999:162).

longitudinal analyses based on objective health and social markers would be extremely valuable, as would designs instrumenting for educational differences using sibling reports (see Greene 2000:381-83).

Regarding models of health, chronic conditions may be underreported at low SES (Mackenbach et al. 1996), making it important to examine other objective health indicators such as biochemical and inflammatory markers (e.g., Friedman and Herd 2010). As theory on the activation of education develops, it would be useful to examine how activation pertains to different types of health situations. For example, in cases of unpreventable disease (e.g., rare cancers; Masters et al. 2012), activation may matter little to one's long-term health.

Further, I found that education's health-protective effects disappear with age (see Phelan et al. 2004:277 for a similar finding regarding mortality). This stands in contrast to other physical health outcomes for which the advantage of education seems to increase rather than lessen with age, though no age-conditioning is observed for self-rated health in particular (Ross and Wu 1996). As Ross and Wu point out, selection may sometimes produce this disappearance of protective effects in some nationally representative samples, as respondents are likely to be healthier than non-respondents, and low-education respondents are likely to be healthier than low-education non-respondents (115-16). Therefore, it will be important to examine capital activation in other representative samples to ensure robustness of the present findings.

CHAPTER 5 CONCLUSION

This dissertation focused on two motivational goods: expecting good things and feeling good. Optimism, or a general expectation that good things will happen, is linked to motivated persistence with regard to health and social goals (Carver and Scheier 2014; Hitlin and Elder 2007). However, the basic conditions of how optimism matters – how, when, and for whom – remain to be sorted out. Studies One and Two broke new ground in specifying and testing these basic contingencies. Next, feeling good, in terms of emotional well-being, captures the Weberian notion of affectual action. Among all types within Weber’s original action typology, affectual action has received perhaps the least attention by subsequent research. This is an unfortunate oversight, as much action is ultimately motivated or impelled by feeling states. By bringing this concept back into play, I provided a profound illustration of how theories of human capital may fall short in explaining how education improves life chances.

As a whole, the three studies in this dissertation suggest that expecting good things to happen and feeling good both matter to life chances. However, the theoretical and empirical thrusts of these studies went beyond this axiomatic finding to identify the basic conditions under which these motivational goods matter. The contours thus revealed by Studies One through Three provide stimulating directions for future research.

Studies One and Two affirmed basic tenets about optimism while also extending them. Within difficult situations, such as when autonomy at work is low or when a life crisis is underway, optimism seems to go hand-in-hand with an engaged approach to life. Optimism underlies engaged coping regardless of self-relevant feedback: views of the self usually suffer during difficult times and thus cannot be relied upon as an effective

coping resource. Usefully, then, optimism motivates persistence within situations that matter to the self without being depleted by feelings or attitudes toward the self (Carver et al. 2010). Engagement during threatening life situations among optimists is likely facilitated by multiple pathways, including buffered reactivity to social stressors, heightened attentional bias for positive stimuli, perceived social support, and by health-protective behaviors and robust immune functioning (Carver et al. 2010; Rasmussen et al. 2009).

Chapter 2 built upon decades of research which have shown that autonomy at work is a key resource for mental health. Consistent with prior work, autonomy showed a strong relationship to mental health in Chapter 2. However, this effect varied due to the psychosocial resource of optimism, and this effect variation underlines how intersections of resources, not simply resources taken alone, produce health inequalities. Chapter 2 contributed more broadly to studies of social inequality that have focused on resource-based pathways, and that have highlighted contrasting mechanisms of cumulative (dis)advantage and leveling or resource substitution. Chapter 2 adds to these disciplinary efforts by adjudicating between these mechanisms as they pertain to health inequalities among employed individuals. Indeed, while the cumulative (dis)advantage paradigm has been applied to understanding career success and earnings (e.g., de Araujo and Lagos 2013; Judge and Hurst 2007; Merton 1968), it has not yet been applied to worker mental health.

Chapter 3, which focused on relationship and work crisis situations, found that optimism may soften the toll of crises on mental health. Findings provided strong support for the general role of dispositional optimism in maintaining self-esteem and perceived

health amid crises in love and at work. However, analyses revealed the differing importance of optimism depending on crisis type, gender, and the interaction between these two social contexts. For instance, results suggested that dispositional optimism may be more important to the psychological and physical well-being of women than that of men. Among women, dispositional optimism may motivate cooperative and persistent action despite structural disadvantages. The importance of dispositional optimism to personal adjustment appears to be stronger for women and to intensify during crises involving the spousal or partner identity. Furthermore, optimism seems to be an especially durable psychological resource in the wake of personal crises relative to self-esteem. Through intensification and durability pathways, dispositional optimism may help safeguard—to quote Freud—“the cornerstones of our humanness.”

In Chapter 4, I argued that rather than being its own type of social action or a momentary source of bias or error, affectual action may be a constant springboard of action that, in turn, drives social stratification. That is, in terms of personality, individuals possess fairly stable “set-points” for their usual levels of happiness or depression and these set-points matter for shaping social action and thus life chances. Affectual action makes a timely addition to conversations on human capital and life chances. Merton (1936:901-02) had dismissed this type of action, analyzing it mainly as “error” or “bias” vis-à-vis rational action. Affectual action, due to its inherently emotional nature, incorporates the fact that ostensibly “rational” needs are prefigured by “psychic costs” indicated by emotional functioning (Heckman, Stixrud and Urzua 2006:3). As such, affectual action goes “beyond rational action” (Pescosolido 1992) to understand capital activation.

In particular, Chapter 4 used affectual action to formulate a capital activation critique of human capital theory. Some research has rightly viewed capital possession and activation as distinct steps in the generation of social inequality (e.g., Lareau and Horvat 1999; Lin 2001; Smith 2005). Within these previous treatments, a focus on rational action and structural contexts, while valuable for understanding many issues surrounding activation, neglects the importance of non-goal-oriented factors such as emotional states (e.g., Lareau and Horvat 1999:44; Small 2009:155). To remedy this gap, I demonstrated the capital activation potential of emotional well-being, which represents what Weber (1947) called “affectual action” due to “feeling states.”

Education is linked to a host of beneficial life outcomes, but it remains unclear which kinds of individual functioning yield these benefits. Indeed, recent econometric research has drawn into question the classic proposition that education inculcates the noncognitive wherewithal necessary to activate the cognitive skills it provides. In line with this work, my findings indeed suggest that emotional well-being must be present in order to derive benefits from education. These findings provide a compelling answer to the question of how education is mobilized to yield diverse life benefits.

Closing Remarks

Expecting good things and feeling good are two motivational goods that shape emergent life chances. However, as mentioned above, their contours – how, when, and for whom these goods deliver – are only beginning to be spelled out. This dissertation provides a number of points of departure for continuing to work out these contours.

A variety of population groups still await examination: various groups exist at intersections of age, gender, race, and class, for instance. In this dissertation, gender

served as a demographic basis for examining differences in optimism's benefits. The benefits of education were examined across population groups; however, an emergent line of work on negative selection into higher education shows that education's benefits may differ with socioeconomic background (Brand and Xie 2010; Schafer et al. 2013).

"When" was examined in the context of the workplace and in terms of life crises.

However, other institutional and life-course contingencies may also matter for determining the benefits of motivational goods. For example, optimism may matter most early on in the life course, when trajectories of attainment and health are most pliable (Elder, Johnson and Crosnoe 2003).

"How" seems relatively clear for optimism, which has a rich supporting literature attesting to its coping, social and health correlates. And while emotional well-being also has numerous correlates that should matter for unlocking the human capital inherent in education, the actual activation of education could not be observed in this dissertation due to data limitations. While the proposed capital activation argument cited flexibility, support and persistence in problem-solving as the key mechanisms of activating education, it could also be the case that emotional well-being enables higher gains from schooling *while* it is occurring. Put another way, activation of education may be observed when in fact emotional well-being enables better acquisition of human capital in the first place: rather than activating human capital, emotional well-being promotes *better* human capital.

The above are just a few examples of directions for future research. These directions, and the research limitations giving rise to them, do not by any means undercut

the value of the present research. Indeed, this dissertation highlights the simple power of expecting good things and feeling good for social stratification.

APPENDIX

Table A1. Descriptive Statistics (Currently Working for Pay; 2005 MIDUS, N=1062)

Variable	N	Mean	Std. Dev.	Min	Max
Psychological Distress	1056	1.48	0.51	1.00	4.50
Positive Emotion	1059	3.41	0.68	1.00	5.00
Autonomy	1022	3.76	0.78	1.00	5.00
Dispositional Optimism	1054	23.42	4.76	6.00	30.00
Neuroticism	1055	2.09	0.63	1.00	4.00
Skill Complexity	1020	3.77	0.99	1.00	5.00
Job Demands	1020	14.85	3.22	6.00	25.00
Work Hours/Week	1020	38.53	14.79	0.00	130.00
Supervisor	1030	44.7%			
Self-Employed	1062	17.2%			
Professional	1016	23.8%			
Managerial	1016	21.9%			
Sales/Clerical	1016	35.1%			
Blue Collar	1016	19.2%			
Education	1061	14.77	2.67	4.00	20.00
Age	1062	52.02	10.20	30.00	83.00
Household Income (\$K)	1025	83.73	64.51	0.00	300.00
Male	1062	49.7%			
White	1058	90.4%			
Married	1059	69.4%			

Note: Number of observations, means, standard deviations, and observed minimum and maximum values are presented. For binary variables, percentages are instead shown.

Table A2. Regressions of Mental Health on Autonomy at Work and Dispositional Optimism (2005 MIDUS)

Variable	Psychological Distress		Positive Emotion	
	1	2	1	2
Autonomy	-0.054*	-0.044*	0.091*	0.090*
Dispositional Optimism	-0.026**	-0.025**	0.040**	0.040**
Neuroticism	0.331**	0.335**	-0.359**	-0.360**
Autonomy × Optimism		0.011*		-0.001
Supervisor	-0.021	-0.022	0.095*	0.095*
Skill Complexity	0.005	0.004	0.003	0.003
Job Demands	0.001	0.002	-0.009	-0.009
Professional	0.032	0.029	0.021	0.021
Managerial	0.027	0.018	-0.056	-0.056
Blue Collar	-0.037	-0.043	0.096	0.096
Work Hours/Week	0.001	0.001	0.000	0.000
Self-Employed	-0.012	-0.022	-0.035	-0.034
Education	0.004	0.003	-0.021*	-0.021*
Male	0.032	0.038	-0.095*	-0.095*
Age	-0.001	0.000	0.001	0.001
White	-0.005	0.000	-0.032	-0.032
Married	0.006	0.010	0.012	0.012
HH Income (Logged)	-0.009	-0.009	-0.007	-0.007
Constant	0.757**	0.747**	4.631**	4.631**
N	919	919	921	921
Adjusted R ²	0.337	0.344	0.298	0.297

Note: All coefficients are unstandardized. For occupation type (professional, managerial, or blue collar), sales/clerical is reference type. Autonomy and optimism are centered at their means.

+ $p < .10$, * $p < .05$, ** $p < .01$ (two-tailed)

Table A3. Survey-Weighted Descriptive Statistics for Indices and Demographic Variables

	Percentage	M	SD
Self-rated health (1-4)		3.2	0.7
Self-esteem (5-20)		16.5	2.5
Dispositional optimism (4-16)		12.2	2.0
Emotional stability (1-5)		4.2	0.8
Relationship crisis	12.0		
Work crisis	11.2		
Education		14.2	2.7
Age		41.2	13.3
Income		38,261.6	29,520.3
Number of children		1.5	1.5
Female	46.9		
Black	12.9		
Other Race	7.8		
Married	55.4		

Note: N = 710. Crisis prevalence rates are based on an analytic subsample (N = 453).

Table A4. Survey-Weighted Ordinary Least Squares (OLS) Regressions of Self-Esteem on Sociodemographic and Crisis Variables

	1	2	3	4	5	6	7
Had relationship crisis	-0.15	—	—	-0.48	—	-0.24	—
Relationship crisis × female	-1.51*	—	—	—	—	-0.33	—
Had work crisis		-1.20*	—	—	-0.95**	—	-1.00*
Work crisis × male		0.45	—	—	—	—	0.10
Dispositional optimism			0.57***	0.59***	0.83***	0.59***	0.75***
Emotional stability			0.99***	1.15***	0.97***	1.17***	0.97***
Female × optimism			0.13*	—	—	-0.01	0.18
Relationship crisis × optimism				0.28*	—	-0.10	—
Relationship crisis × female × optimism					—	0.60**	—
Work crisis × optimism					-0.08		-0.06
Work crisis × male × optimism							-0.07
N	453	453	710	453	453	453	453
Adjusted R^2	0.08	0.12	0.39	0.43	0.46	0.43	0.46

Note: Models show unstandardized OLS regression coefficients of respondent's self-esteem on predictive factors (shown) and sociodemographic covariates (not shown) and were estimated with dispositional optimism centered at its mean. For all models, sociodemographic covariates include age, sex, education, race, marital status, income, and number of children. For Models 2, 5, and 7, covariates further include occupation-specific indicators and occupation-specific optimism interaction terms.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$ (one-tailed)

Table A5. Survey-Weighted Ordinal Logistic Regressions of Self-Rated Health on Sociodemographic and Crisis Variables

	1	2	3	4	5	6	7	8	9
Had relationship crisis	-.61	—	—	-.53	—	-.46	—	-.59	—
Relationship crisis × female	-.33	—	—	—	—	—	—	.23	—
Had work crisis		-.01	—	—	-.66*	—	-.61	—	-.16
Work crisis × male		-.51	—	—	—	—	—	—	-.54
Dispositional optimism			.20***	.20***	.27***	.15*	.19*	.12	.14
Emotional stability			.28	.53*	.56*	.45*	.44*	.45*	.38
Female × optimism			.13*	—	—	—	—	.06	.12
Self-esteem						.08	.11	.09	.11*
Relationship crisis × self-esteem						.06	—		
Work crisis × self-esteem						—	-.06		
Relationship crisis × optimism				.42**	—	.34*	—	.38*	—
Relationship crisis × female × optimism							—	.03	—
Work crisis × optimism					.20		.25		.31*
Work crisis × male × optimism									-.18
N	453	453	710	453	453	453	453	453	453
Pseudo R^2	0.06	0.10	0.08	0.12	0.18	0.12	0.18	0.12	0.19

Note: Models show ordinal logistic regression coefficients of respondent's self-rated health on predictive factors (shown) and sociodemographic covariates (not shown) and were estimated with dispositional optimism centered at its mean. For Models 2, 5, 7, and 9, covariates further include occupation-specific indicators and interactions with dispositional optimism.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$ (one-tailed)

Table A6. Descriptive Statistics (1995-2005 MIDUS RDD and MIDUS Identical Twins)

Variable	MIDUS RDD (1995=T1, 2005=T2) M(SD)	MIDUS Identical Twins (1995=T1) M(SD)
Chronic Health Conditions (T1; 0-27)	2.47 (2.49)	
Chronic Health Conditions (T2; 0-30)	2.66 (2.66)	
Sense of Control (T1; 0-7)	3.40 (1.13)	3.50(1.16)
Sense of Control (T2; 0-7)	3.42 (1.12)	
Vol. Social Involvement (T1; 0-8)	2.26 (1.84)	2.12 (1.77)
Vol. Social Involvement (T2; 0-8)	2.56 (2.02)	
Education (0-20)	14.23 (2.57)	13.94 (2.34)
Positive Emotion (1-5)	3.38 (0.71)	3.47 (0.71)
Negative Emotion (1-5)	1.54 (0.62)	1.49 (0.62)
Male	0.46	0.47
White	0.92	0.94
Married	0.68	0.72
With Partner	0.04	0.06
Child < 7	0.15	0.21
Child 7 to 17	0.31	0.36
Full-Time	0.65	0.72
Part-Time	0.08	0.08
Parent Middle-Class	0.30	0.30
Age (25-84)	47.00 (12.34)	43.99 (11.87)
Household Income (\$0-300, thousands)	72.74 (59.73)	76.94 (60.99)
Parents' Education (0-20 years)	12.28 (3.49)	12.45 (3.35)
Self-Rated Physical Health (1-5)	3.56 (0.93)	3.73 (0.93)
Body Mass Index (9-64)	26.80 (5.30)	
Activity Restriction (1-4)	1.51 (0.71)	

Note: For MIDUS RDD sample, Ns = 1602 to 1805 (MIDUS Identical Twins sample Ns = 574 to 696). All variables without time notations (T1 or T2) are measured at T1. Observed ranges appear in parentheses next to variable names. Means of binary variables are proportions. Means of other variables appear next standard deviations which are given in parentheses.

Table A7. Coefficients for Activation of Education (MIDUS RDD Sample: 1995-2005)

	Chronic Health Conditions		Sense of Control		Vol. Association Involvement	
	(Neg. Binomial Estimates)		(OLS Estimates)		(OLS Estimates)	
	(1)	(2)	(1)	(2)	(1)	(2)
Education (Educ)	-0.024**	-0.050**	0.026*	0.025*	0.127**	0.121**
Positive Emotion (PE)	-0.061	-0.063	0.016	0.004	0.222*	0.201*
Negative Emotion (NE)	0.040	0.050	-0.121	-0.134	-0.042	-0.073
Educ × PE	-0.018^		0.049**		0.094**	
Educ × NE		0.053**		-0.032^		-0.074**
Constant	0.748**	0.729**	2.618**	2.636**	2.491**	2.534**
R ²	—	—	0.358	0.354	0.305	0.302
Alpha	0.180	0.177	—	—	—	—
N	1586		1517		1366	

Note: All models control for sociodemographic covariates and lagged dependent variable. Unstandardized estimates are shown.

** $p \leq .01$, * $p < .05$, ^ $p < .10$ (two-tailed)

Table A8. Estimates for Key Covariates and Lagged Dependent Variables (MIDUS RDD Sample: 1995-2005)

	Chronic Health Conditions		Sense of Control		Voluntary Association Involvement	
	(1)	(2)	(1)	(2)	(1)	(2)
Education × Age	0.002**	0.002**				
Age	0.012**	0.013**	0.004	0.003	-0.004	-0.004
Age Squared			-0.001**	-0.001**		
Male	-0.066	-0.065	0.067	0.066	-0.211*	-0.214*
White	-0.124	-0.134^	-0.079	-0.080	0.100	0.090
Married	0.001	-0.002	-0.005	-0.009	0.021	0.012
With Partner	0.151	0.139	0.139	0.156	-0.697**	-0.668**
Child < 7	-0.084	-0.070	0.044	0.036	0.481**	0.455**
Child 7 to 17	-0.053	-0.051	-0.105^	-0.114^	-0.358**	-0.392**
Full-Time	-0.081^	-0.080^	0.151*	0.142*	-0.094	-0.107
Part-Time	-0.020	-0.011	0.098	0.087	-0.080	-0.091
Household Income	-0.007	-0.007	0.033	0.034	0.012	0.011
Parent Middle-Class	-0.009	-0.005	0.018	0.012	0.168	0.166
Parents' Education	-0.002	-0.002	0.003	0.004	-0.015	-0.012
T1 Outcome	0.151**	0.153**	0.444**	0.444**	0.495**	0.495**
T1 Self-Rated Health			0.101**	0.099**	-0.004	-0.003
T1 Chronic Conds			0.014	0.012		
T1 Body Mass Index			-0.001	-0.002		
T1 Activity Restrict.			-0.155**	-0.153**		

Note: Unstandardized estimates are shown.

** $p < .01$, * $p < .05$, ^ $p < .10$ (two-tailed)

Table A9. Within-Pair Constrained OLS Estimates (MIDUS Identical Twins: 1995)

	Self-Rated Physical Health		Sense of Control		Voluntary Association Involvement	
Education (Educ)	.032	.036	.007	.005	.100	.099
Positive Emotion (PE)	.339**	.325**	.218*	.202*	-.288	-.346^
Negative Emotion (NE)	.097	.096	-.522**	-.583**	.002	-.201
Educ × PE	.051 ⁺⁺		.028		.085 ⁺	
Educ × NE		-.023		-.060 ⁺⁺		-.177 ⁺⁺
Married	-.082	-.085	-.269*	-.282*	.171	.144
With Partner	.021	.034	.060	.050	.179	.159
Child < 7	.006	.007	.010	.015	-.011	.002
Child 7 to 17	.005	-.005	-.164^	-.177^	.267	.225
Full-Time	.172	.166	.007	.000	.174	.144
Part-Time	.071	.079	.051	.046	.553	.530
Household Income	2.5x10 ⁻⁶ **	2.6x10 ⁻⁶ **	9.7x10 ⁻⁷	1.1x10 ⁻⁶	4.18x10 ⁻⁷	6.5x10 ⁻⁷
Self-Rated Phys. Health	—	—	-.021	-.018	.047	.055
R ²	.101	.092	.158	.162	.044	.038
N (pairs)	294		292		264	

Note: Unstandardized estimates are shown. Dependent and independent variables are differences within pairs of identical twins.

⁺⁺ $p < .05$, ⁺ $p < .10$ (activation effects; one-tailed)

** $p < .01$, * $p < .05$, ^ $p < .10$ (two-tailed)

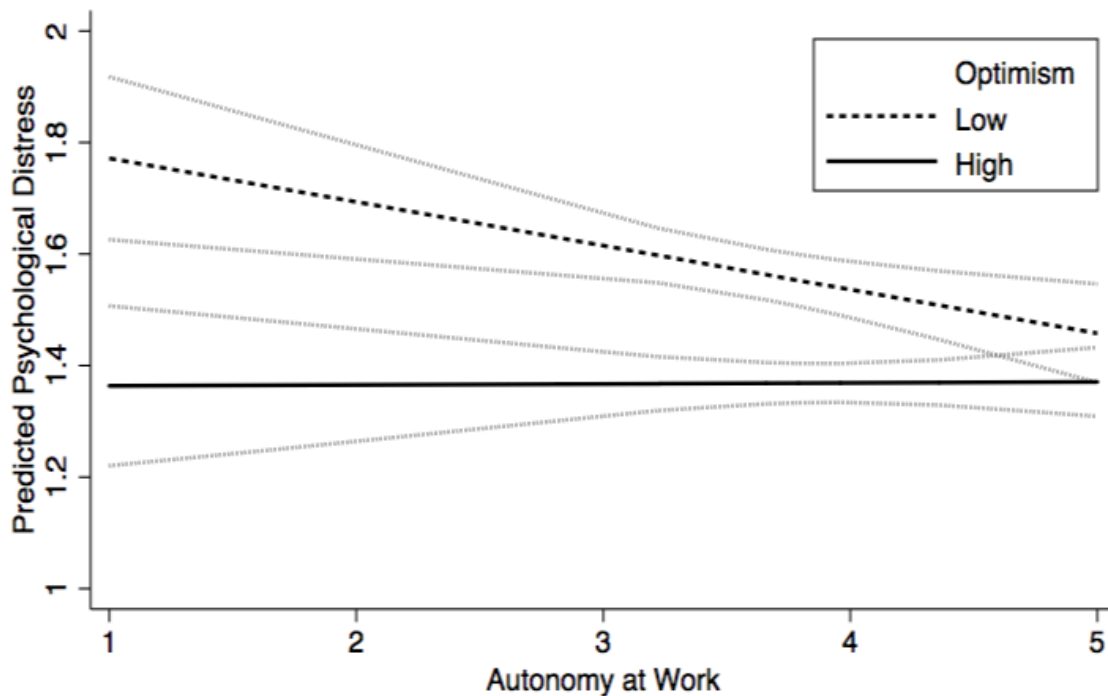


Figure A1. Effect of Autonomy at Work on Psychological Distress (2005 MIDUS).

Note: The effect of autonomy on psychological distress is depicted for low (25th %ile) versus high (75 %ile) levels of dispositional optimism. Grayed bands surrounding lines are 95% confidence intervals (delta method). All other covariates are held at their means.

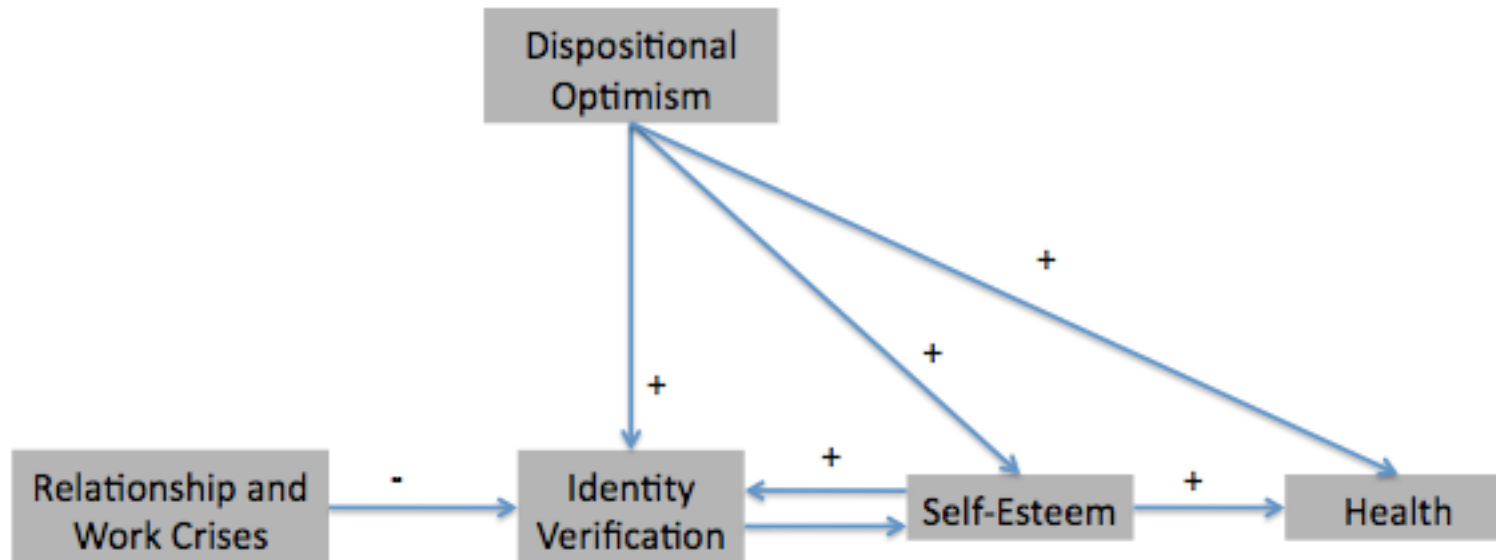


Figure A2. Conceptual Diagram of the Identity Stress Process.

Note: "Identity Verification" refers to achieved congruence between identity meanings (associated with spouse and worker identities) and situational meanings. "+" and "-" refer to expected directionalities of relationships. In this paper, self-esteem is treated as a dependent variable in models of identity verification and as an independent variable in models of self-rated health.

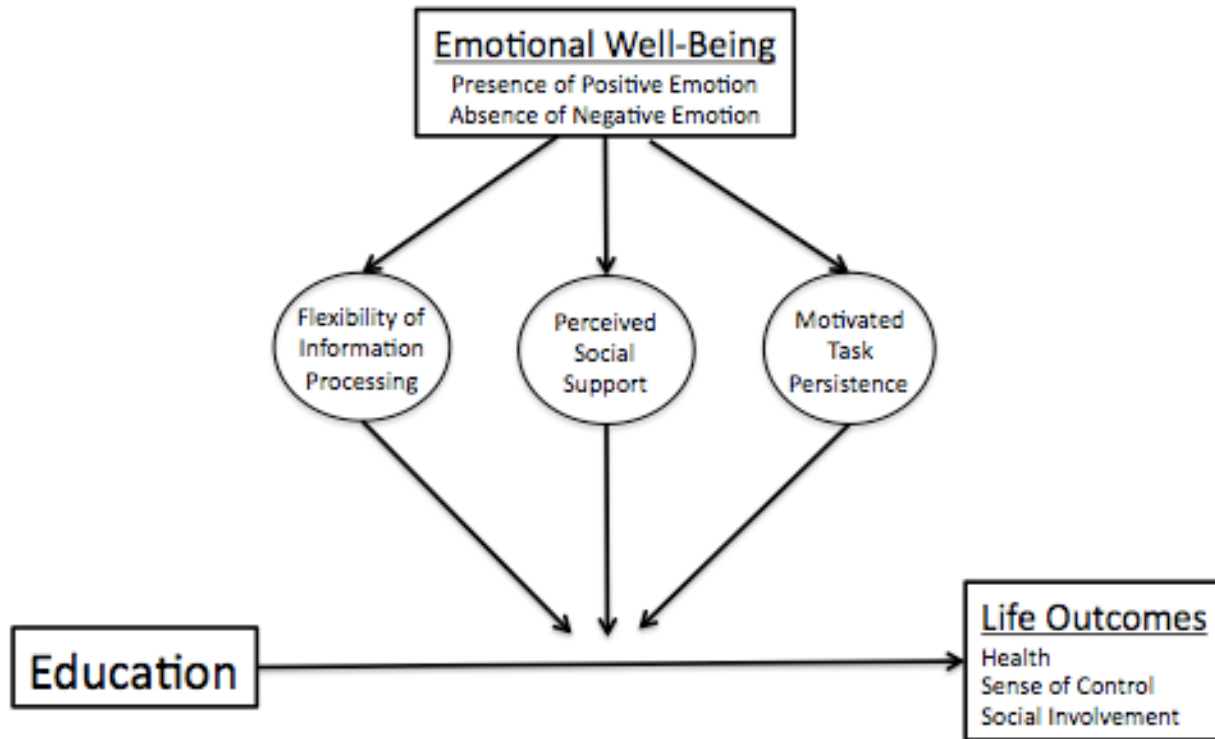


Figure A3. Activation of Education by Emotional Well-Being.

Note: Emotional well-being activates education via three key pathways: flexible information processing, high levels of perceived social support and motivated persistence in health- and socially-related goal contexts.

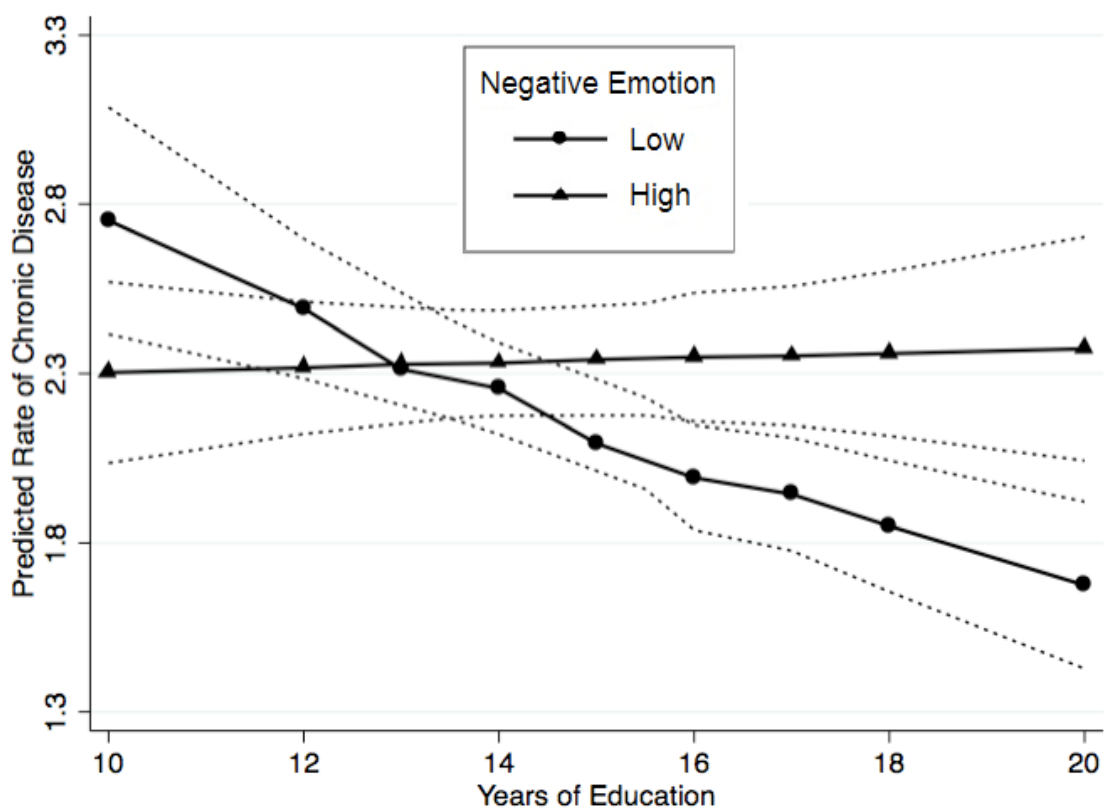


Figure A4. Predicted Rate of Chronic Disease by Level of Negative Emotion (MIDUS RDD Sample: 1995-2005).

Note: Bold lines represent predicted values, and are bounded by 95% confidence intervals (dotted lines). All covariates held at means.

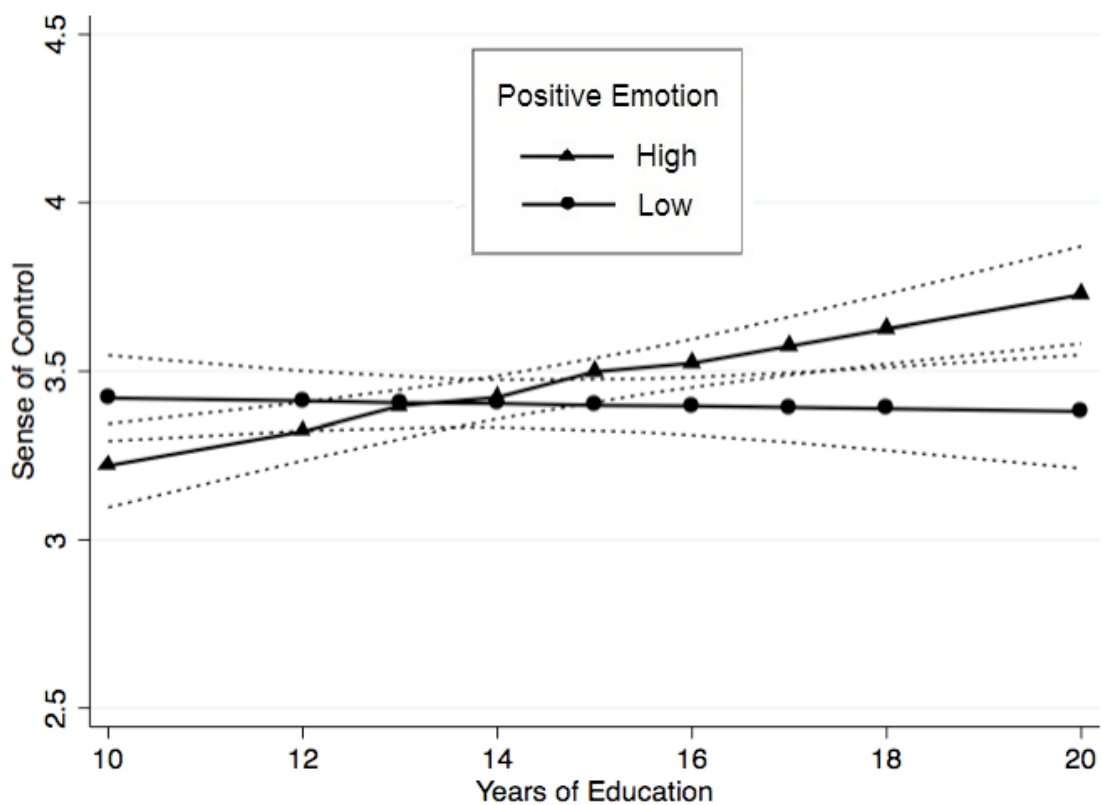


Figure A5. Predicted Sense of Control by Level of Positive Emotion (MIDUS RDD Sample: 1995-2005).

Note: Bold lines are bounded by 95% confidence intervals (dotted lines). All covariates held at means.

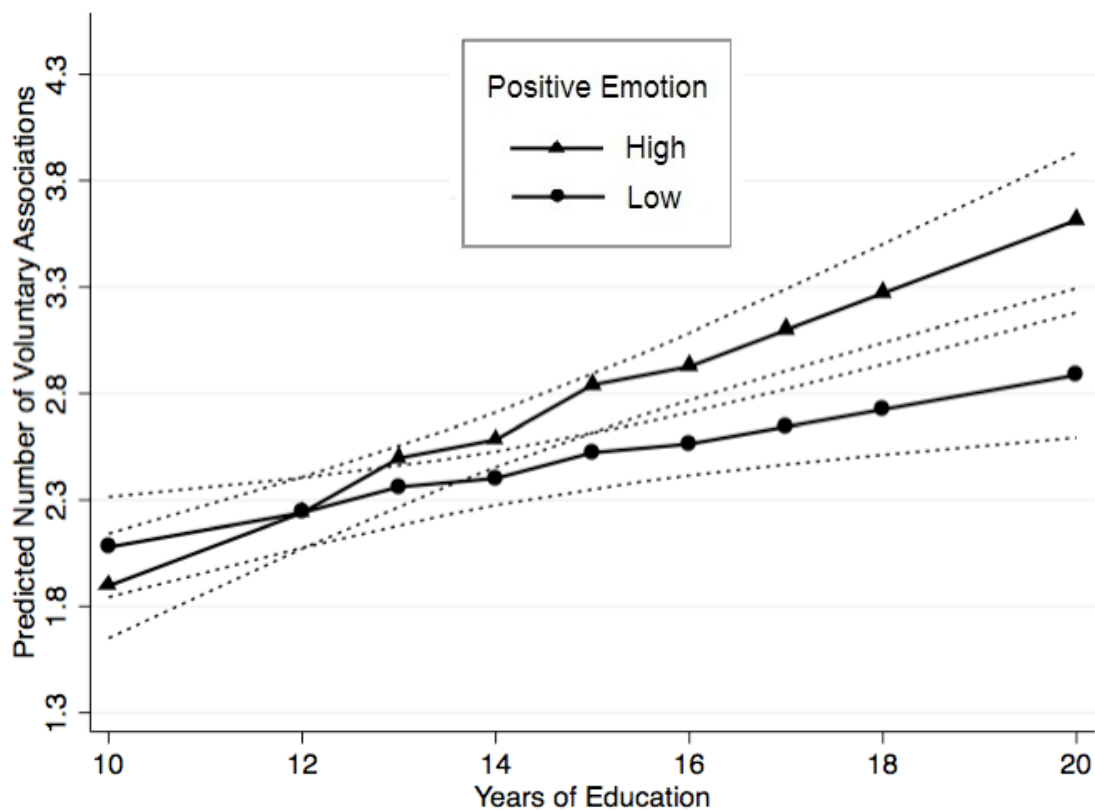


Figure A6. Predicted Voluntary Association Involvement by Level of Positive Emotion (MIDUS RDD Sample: 1995-2005).

Note: Bold lines are bounded by 95% confidence intervals (dotted lines). All covariates held at means.

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