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Optimism and Resources: Effects on Each Other and on Health over 10 Years

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Abstract

Dispositional optimism may be associated with growth of social and status resources by virtue of optimists' greater persistence and better performance. Conversely, resource growth may give people a more positive view of their future and increase optimism. Changes in dispositional optimism and resources over 10 years were examined in former law students ($N = 61$). More optimistic first-year law students made more money 10 years later, but income did not predict later optimism. More optimistic students did not have larger social networks 10 years later, but increases in social network size predicted increased optimism. These changes predicted mental and physical health. Dispositional optimism was less stable than many personality traits ($r = .35$), potentially because it is responsive to resource change.

Keywords

optimism; resources; personality continuity and change; social network; social support; income; status; health

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Dispositional optimism, the generalized expectancy for good rather than bad to happen in the future, is associated with a broad range of positive outcomes, including better performance, higher likelihood of goal attainment, better mental health, and better physical health. Optimists' advantage in well-being seems to come in part from their characteristic approach orientation to managing both stressful problems and stress-induced emotions, that is, their coping style (Solberg Nes & Segerstrom, 2006). This active approach likely accounts for optimists' resilience to stressful or negative events (Carver & Scheier, 1999).

Optimists also enjoy higher well-being than pessimists in the absence of stressors. Although the mechanisms for this advantage are less well characterized, it is likely that the same active orientation that leads optimists to be resilient to stress also leads to greater well-being in the absence of stress. One important characteristic of dispositional optimists is that they persistently and effectively pursue goals, both in the lab and in naturalistic settings (Aspinwall & Richter, 1999; Carver, Blaney, & Scheier, 1979; Scheier & Carver, 1982; Segerstrom & Solberg Nes, in press; Solberg Nes, Segerstrom, & Sephton, 2005). By doing

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so, optimists are more likely to accumulate resources over time. Accumulation of resources such as money, friendship, skill, and status is thought to be accompanied by better health (e.g., Hobfoll, 1989). Epidemiological evidence supports this proposal, as both socioeconomic status (SES) and social network size robustly predict mental and physical health and longevity (House, Landis, & Umberson, 1988; Gallo & Matthews, 2003). Therefore, resource accumulation and growth is a likely mechanism by which optimism benefits physical and mental health.

Human resources are many and diverse, but status and social resources are particularly important. Status resources such as seniority, leadership, money, and possessions and social resources such as relationships with friends, family, and romantic partners typically dominate measures of both resources and goals (i.e., intentions to acquire resources) (Diener & Fujita, 1995; Emmons, 1989; Hobfoll, 1998). Some short-term evidence suggests that optimists are more successful than pessimists in pursuing both status and social resources. For example, college success and graduation are important for attaining higher status, both in terms of the contribution of educational level *per se* to SES and the implications of college graduation for employment status and income. Optimists perform better in college and are less likely to drop out (Chemers, Hu, & Garcia, 2001; Solberg Nes, 2004), so they may also be more likely to achieve higher professional status in the future. Likewise, optimists actively pursue social relationships, have more friends and longer friendships, and are more popular compared with their more pessimistic counterparts (Brisette, Scheier, & Carver, 2002; Geers, Reilley, & Dember, 1998; Nurmi, Toivonen, Salmela-Aro, & Eronen, 1996). Others react more positively to interactions with optimists than to interactions with pessimists (Carver, Kus, & Scheier, 1994; Lepore & Ituarte, 1999; Rääkkönen, Matthews, Flory, Owens, & Gump, 1999). It therefore appears that optimism could lead to long-term accumulation of both status and social resources.

Conversely, resource accumulation or loss could lead to changes in optimism. People acquiring more resources have good reason to expect better futures. For one thing, having resources provides a buffer against resource loss. Getting in a car accident and having to pay a \$1,000 insurance deductible hurts, but less so when there is \$11,000 in the bank than when there is \$1,100. Furthermore, resource losses can compound; initial loss can deplete resources and make one vulnerable to further loss (Hobfoll, 1998; Wells, Hobfoll, & Lavin, 1999). Having fewer resources could make one feel more vulnerable to negative events in the future, that is, more pessimistic.

Likewise, more resources may provide one with a sense of more potential positive events in the future, that is, more optimism. More income may translate into more potential vacations, more friendships may portend more potential celebrations, and so on. Benefits can even cross over resource categories: For example, HIV seropositive women with more socioeconomic resources were more likely than those with fewer resources to report positive changes in their social relationships as a result of HIV. Furthermore, socioeconomic resources appeared to mediate the relationship between optimism and positive social changes in this sample, suggesting that optimism can create an upward spiral of resources (Updegraff, Taylor, Kemeny, & Wyatt, 2002).

Dispositional optimism, as its name implies, is generally stable, with test-retest *rs* of .58 - .79 over periods lasting from a few weeks to 3 years (Atienza, Stephens, & Townsend, 2004; Lucas, Diener, & Suh, 1996; Scheier & Carver, 1985; Scheier, Carver, & Bridges, 1994). However, these correlations reflect overlapping variance of only 33-62% between two administrations. Even considering the internal reliability of the measure of dispositional optimism, the Life Orientation Test (typically .70 - .80; e.g., Scheier et al., 1994), these correlations reflect the potential for change as well as stability. In a direct test of the

proposition that changes in life circumstances can lead to changes in optimism, Atienza et al. (2004) examined changes in optimism over 1 year as a function of problems at work and in relationships among adult women. As problems at work and with their spouses increased, women's optimism scores dropped; conversely, as problems decreased, optimism scores increased. To the degree that "problems" indirectly reflected resource loss and gain, these findings support the notion that optimism is influenced by available resources. Developmentally, more childhood resources, including status (family finances) and social resources (parental warmth and approval), predict more adult optimism (Heinonen, Rääkkönen, & Keltikangas-Järvinen, 2005; Korkeila et al., 2004).

This evidence demonstrates that over fairly short periods of time – weeks to months – there can be a reciprocal relationship between optimism and resources that could lead to better psychological and physical health. However, benefits to health, particularly physical health, may depend on long-term resource accumulation and growth; that is, transient resources may not be sufficient to affect long-term health outcomes. Furthermore, changes in dispositional optimism are more likely to be observed over long periods of time, since traits generally change more substantially over a span of years or decades than weeks or months (Fraley & Roberts, 2005). This is specifically true of optimism: The lowest reported test-retest correlation for the LOT, $r = .58$, was reported after a 3-year delay and was markedly lower than the 4-week test-retest correlation, $r = .76$, reported on a parallel sample (Lucas et al., 1996).

The present study complements the short-term findings with a long-term analysis of changes in optimism and resources in a group of law students initially studied as they started law school (Segerstrom, Taylor, Kemeny, & Fahey, 1998). At a 10-year follow-up, change in their levels of optimism was examined in light of their social and status resources acquired while graduating from law school and beginning their early careers. Additionally, the study explicitly tests the premise that changes in optimism and resources can affect mental and physical health. The primary hypotheses of the study were that initial optimism would predict greater resource growth and that greater resource growth would contribute to increases in optimism and, additionally, that any upward spiral of optimism and resource growth would have positive implications for mental and physical health.

In addition, differences between optimism and pessimism were explored. Some evidence suggests that optimistically phrased items of the LOT (e.g., "I always look on the bright side of things") are distinct from pessimistically phrased items (e.g., "Things never work out the way I want them to") (Kubzansky, Kubzanky, & Maselko, 2004; Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992; Robinson-Whelen, Kim, MacCallum, & Kiecolt-Glaser, 1997), although this may be in part a methodological artifact related to item extremity (McPherson & Mohr, 2005; Røysamb & Strype, 2002). Optimistic items are more highly correlated with measures reflecting behavioral approach, such as extraversion; pessimistic items are more highly correlated with measures reflecting behavioral inhibition, such as neuroticism (Carver, Sutton, & Scheier, 2000; Marshall et al., 1992). To the degree that specific goals and resources are normatively motivated by approach or avoidance, or to the degree that they are more readily achieved by approach or avoidance, optimism and pessimism may have different relationships to resources.

Method

Participants

Participants were 61 former law students with a mean age at follow-up of 35 years (range = 30–47). The majority (54%) were white, with the remainder of the sample Hispanic, Chicano/a, or Latino/a (8%), Asian American (13%), black or African American (12%),

Pacific Islander (3%), multiracial (5%) or other (5%). There were roughly equal proportions of men (48%) and women (52%). Analyses controlling for age, sex, and minority race did not yield substantively different results and so demographics were not included in the models reported here. This was a demographically diverse sample, but in other ways was homogeneous; for example, in terms of length and type of career. This homogeneity, while limiting generalizability in some respects, also provided reasonable control for these factors in examining resource growth, particularly status.

Procedure

Of 99 law students enrolled 10 years previously in a study of adjustment to starting law school (Segerstrom et al., 1998), two left law school during the original study and one was known to be deceased at follow-up. Of the 96 remaining possible participants, contact information for 90 was obtained through alternate contacts given at original enrollment (e.g., friends or parents), state bar organizations, or web-based attorney searches. Questionnaires, along with cover letters, consent forms, and requests for updated contact information, were mailed to these 90 possible participants. One (1%) explicitly declined to participate and 28 (31%) failed to return the questionnaire, yielding a response rate of 68% for the follow-up. Those participating did not significantly differ from those not participating on any of the measures collected during the original study that were pertinent to the present study (e.g., optimism, psychological symptoms; all $t \leq 0.64$, all $p > .50$). Participants were paid \$75 after returning their questionnaires.

Measures

Dispositional optimism—The Life Orientation Test (LOT; Scheier & Carver, 1985) was administered before starting law school and at follow-up. The follow-up version included additional items from the revised LOT (Scheier et al., 1994). When both versions were scored, the original and revised LOT correlated .94, so the original scoring was retained to maintain continuity. The primary impetus for revision of the LOT was removal of items that may have inflated correlations with emotion-focused coping strategies; because coping was not the focus of this report, use of the original LOT is appropriate. Alpha reliability for the LOT was .85 at baseline and .86 at 10-year follow-up.

To explore whether optimism and pessimism had distinct correlates, where a significant relationship with the LOT was found, it was followed by exploratory analyses using optimism and pessimism subscales. The optimism and pessimism subscales were not entered together, as the purpose of the analysis was not to measure the effect of each after controlling for their shared variance, but to explore whether one subscale mirrored the total optimism effect to a larger degree than the other. Alpha reliability for the subscales was .83 for optimism and .80 for pessimism at baseline and .78 for optimism and .83 for pessimism at follow-up. Optimism and pessimism correlated $-.54$ at baseline and $-.59$ at follow-up.

Status resources—Status resources were measured at follow-up. The most common measure of status, socioeconomic status, can include such indices as educational attainment, job status, and income, only some of which varied across this sample. Although two participants did not graduate from law school, they obtained other graduate degrees, so level of education was the same across the sample. In terms of type of employment, 89% of the sample was employed at least part-time and 82% of the sample was practicing law. Of those who were unemployed, most left the work force voluntarily (e.g., to be at home with children). Because education and employment did not vary considerably across the sample, status at 10-year follow-up was measured on two dimensions that did vary: annual income from work and the number of people under the participant's supervision at work. Annual

income was always examined after controlling for number of hours worked to accommodate degrees of employment.

Social resources—Social resources were measured during the first semester of law school and at follow-up. Three aspects of social resources were measured: social network size, number of supportive others, and satisfaction with social support. Social network size was measured with the Social Network Index (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997), which yields the total number of people with whom the participant has contact at least once every two weeks in 12 different social roles (e.g., parent, friend, church or temple member). Social support was measured with the Social Support Questionnaire - 6 (Sarason, Sarason, Shearin, & Pierce, 1987), which yields the number of people available to provide support and satisfaction with that support. Items primarily refer to acceptance and emotional support (e.g., “Who accepts you totally, including both your worst and your best points?”) The Social Support Questionnaire – 6 was administered during the first semester of law school and at follow-up; the Social Network Index was administered only at follow-up.

Psychological symptoms—Symptoms were measured with the Symptom Checklist-90-R (Derogatis, 1975). The general symptom index (GSI) reflects the extent to which the respondent has experienced symptoms related to a number of mental health issues, including depression, anxiety, somatization, hostility, and interpersonal sensitivity. The Symptom Checklist-90-R was administered before starting law school and at follow-up.

Physical health—Chronic physical health symptoms were measured with the Monthly Health Review (Jenkins, Kreger, Rose & Hurst, 1980), a checklist designed for use with healthy participants. Participants were asked whether they had problems with any of 30 physical symptoms on more than half the days of the month, excluding days on which symptoms occurred within an episode of acute illness. Most checklist items refer to pain (headache, stomach pain, neck pain, back pain), respiratory symptoms (stuffy nose, wheezing, shortness of breath), and gastrointestinal symptoms (nausea, abdominal cramps, diarrhea). The item used in analysis asked participants with reference to their chronic physical health symptoms, “All together, how many days in the past month did the problem(s) keep you feeling ‘below par’?” This variable was positively skewed and so was log-transformed before analysis. The Monthly Health Review was administered before starting law school and at follow-up.

Results

Dispositional optimism: Stability and change over time

The LOT showed both some stability and some change over time. Test-retest correlation was .35 ($p < .01$; see Table 1). Similar results were obtained for the subscales: optimism, .33 ($p < .01$); pessimism, .31 ($p = .01$). Figure 1 shows the mean item scores for the total scale at baseline and follow-up. There was a small mean increase in LOT scores over time, $t(60) = 2.11$, $p < .05$. However, for the most part, scores did not change substantially. The majority (54%) of the sample had absolute mean item score changes of less than 0.5, another third (34%) had absolute mean item score changes of less than 1.0, and a minority (12%) had absolute mean item score changes equal to or more than 1.0. Consistent with the mean shift, most of these changes were in the optimistic direction.

Optimism and resource gain

Does dispositional optimism result in resource growth? Table 2 shows regression results for social and status resources at 10-year follow-up. In the case of social resources, results

control for resources at baseline. Because social network size was not previously measured, its closest correlate, number of supportive others, was used to control for previous values.

For status resources, there was evidence that more optimistic law students had higher incomes 10 years later after controlling for hours worked. The unstandardized beta weight for dispositional optimism when regressed on annual income indicated that each mean item increment in optimism at the start of law school (e.g., from a mean item score of 3 to 4) was associated with a \$32,667 increment in annual income 10 years later ($SE = 15,268$). When the total score was divided into optimism and pessimism subscores, the effect appeared to be driven more by an absence of pessimism ($B = \$31,971$, $SE = 16,782$) than the presence of optimism ($B = \$11,218$, $SE = 16,258$). However, these coefficients did not significantly differ ($t(54) = -1.76$, $p > .05$). Dispositional optimism did not predict number of supervisees.

For social resources, dispositional optimism did not appear to predict resource growth; if anything, more optimistic law students tended to have smaller social networks 10 years later after controlling for social resources during law school.

Resource gain and optimism

Do resources result in changes in optimism? To answer this question, dispositional optimism at follow-up was regressed on dispositional optimism at baseline and each resource at follow-up. Table 2 shows results of these regression models.

Of the status resources, although dispositional optimism predicted higher annual incomes (see above), the reverse was not true. Annual income had no relationship to change in dispositional optimism. However, number of supervisees was related to an increase in dispositional optimism. Each additional supervisee was associated with a mean item increment of .07 ($SE = .03$) in dispositional optimism. When the total score was divided into optimism and pessimism subscores, there was a larger effect of number of supervisees on absence of pessimism ($B = .09$, $SE = .04$) than on presence of optimism ($B = .06$, $SE = .04$). However, these coefficients did not significantly differ ($t(51) = -1.12$, $p > .05$).

Of the social resources, social network size was most strongly related to increases in dispositional optimism. Each additional social network member was associated with a mean item increment of .022 ($SE = .007$) in dispositional optimism. Dividing the total score into optimism and pessimism subscores, social network size was related to increases in both optimism ($B = .027$, $SE = .008$) and lack of pessimism ($B = .015$, $SE = .008$), with no significant difference between optimism and pessimism coefficients ($t(58) = 0.56$, $p > .05$).

It is possible that social resources were stable over time and so the relationship between social resources and optimism at follow-up represents an effect of high, stable resources rather than resource growth. To explore this possibility, previous number of supportive others was added to the regression (see Table 2). After adding this control, social network size was, if anything, a better predictor of change in optimism. Therefore, increases in dispositional optimism appear to be most closely related to social network growth after the first semester of law school.

Finally, because number of supervisees contributes to the calculation of social network size, the independent contributions of number of supervisees and the number of people in the rest of the social network were tested by entering the two together (see Table 2). Both variables significantly and independently predicted change in dispositional optimism.

Optimism, resources, and health

The final set of analyses examined the degree to which optimism and resources were related to changes in psychological and physical symptoms. Mean levels of psychological symptoms did not change over time, $t(60) = -1.05$, *ns*, and neither did mean levels of physical symptoms, $t(60) = 0.01$, *ns* (see Table 1). Individual differences in psychological symptoms were moderately stable across 10 years (test-retest $r = .34$), but individual differences in physical symptoms were unstable ($r = .02$).

Optimism models tested the effects of optimism at baseline and follow-up and change in optimism (i.e., optimism at follow-up after including optimism at baseline in the model) on symptom change (i.e., symptoms at follow-up after controlling for symptoms at baseline). Resource models similarly tested the effects of resources at follow-up and change in resources on symptom change.

Table 3 shows the results for psychological symptoms. There was no prospective relationship between optimism at baseline and later symptoms, but concurrent optimism was associated with symptoms. This was primarily an effect of increased optimism over time, as the effect of optimism change was slightly greater than for the concurrent effect. Therefore, optimism appeared to change in parallel with psychological symptoms. There were no significant effects of resources on psychological symptoms, but the tendency was for status resources to be positively associated with symptoms and for social resources to be negatively associated with symptoms.

Optimism and pessimism subscales were both associated with psychological symptoms. For example, each scale increment in optimism at follow-up was associated with a decrease of .081 mean symptoms ($SE = .044$); each scale increment in lack of pessimism was associated with a decrease of .130 mean symptoms ($SE = .048$), with no difference between optimism and pessimism coefficients ($t(58) = -0.86$, $p > .05$). A deviation of .130 from the median norm of this scale (Derogatis, 1975) is equivalent to a change of 10 percentile points (i.e., from the 50th percentile to the 60th percentile), so the magnitudes of these associations are potentially meaningful. Changes in optimism and pessimism subscales (i.e., each subscale at follow-up, controlling for the corresponding subscale at baseline) were both statistically significant predictors of symptoms, with no significant difference between the effects ($t(58) = -0.65$, $p > .05$).

Table 4 shows the results for physical symptoms. As for psychological symptoms, change in optimism over time paralleled change in physical symptoms, such that increases in optimism predicted decreases in symptoms. However, unlike psychological symptoms, baseline optimism also prospectively predicted decreases in symptoms, so that people who were most optimistic before starting law school had fewer days on which they were affected by chronic health symptoms 10 years later. Resources, particularly social resources, were also better predictors of physical than of psychological symptoms. All three measures of social resources were associated with fewer days of chronic physical symptoms. Controlling for baseline resources reduced the effects, but there were still small to moderate effects of change in social resources on change in physical symptoms. Status resources were generally not associated with physical symptoms, although there was a tendency for number of supervisees to be associated with fewer days of physical symptoms.

Optimism and pessimism subscales were both significant concurrent predictors of physical symptoms, and this was true of both the simple concurrent effect (i.e., optimism and pessimism at follow-up and change in physical symptoms) and change from baseline (i.e., changes in optimism and pessimism from baseline to follow-up and change in physical symptoms). Furthermore, the magnitude of the effects was similar for optimism and

pessimism, with no significant differences. For example, each scale increment in optimism at follow-up was associated with a decrease of .70 log days (approximately 2 days) of physical symptoms ($SE = .17$), whereas each scale increment in lack of pessimism was associated with decrease of .67 log days of physical symptoms ($SE = .21$), with no significant difference between the effects ($t(58) = 0.76, p > .05$).

A final analysis tested one possible mediational path among optimism, resources, and symptoms. Baseline optimism prospectively predicted change in one resource, annual income, but annual income was not significantly related to symptoms (and the direction of its effect was opposite from one that would be consistent with moderation of the optimism-psychological symptoms effect). Therefore, there were no plausible baseline optimism - resource change - symptom change mediated models. However, social network size was related both to increases in optimism and decreases in health symptoms, and increased optimism was also related to decreases in health symptoms. Therefore, change in optimism could mediate the effect of social network size on physical symptoms. Table 4 shows the effect of controlling for change in optimism on the relationship between network size and physical symptoms. The relationship was no longer significant after controlling for change in optimism, and change in optimism accounted for about 50% of the effect of social network size (which went from $r^2 = .075$ to $r^2 = .035$). Therefore, the salutogenic effect of a larger social network was in part due to its effect on optimism.

Discussion

Experimental and short-term naturalistic evidence indicates that optimistic expectancies lead to more persistent, effective, and successful goal pursuit (Aspinwall & Richter, 1999; Carver et al., 1979; Scheier & Carver, 1982; Segerstrom & Solberg Nes, in press; Solberg Nes et al., 2005). Because people who expect positive futures are more persistent and successful in pursuing their goals, they should also be more successful in accumulating resources over time. In turn, people who accumulate resources have reason to believe in more positive futures, that is, to be more optimistic. This study of former law students indicates that dispositional optimism results in long-term resource growth and that resource growth increases optimistic beliefs. More optimistic law students acquired more status resources in the intervening decade in the form of higher salaries. Law students whose social networks grew more and who developed more extensive supervisory roles at work over the same 10-year time span became more optimistic.

There was asymmetry between social and status resources in their relationship to optimism. Optimism predicted increases in one status resource, income, but not social resources such as social support or social network size. Optimists' higher incomes are consistent with findings that socially valued traits such as attractiveness, happiness, and even height are associated with higher salaries (Frieze, Olson, & Russell, 1991; Judge & Cable, 2004; Lyubomirsky, King, & Diener, 2005). In this case, it is likely that optimists are more valued both for their optimism *per se* and because they are more meritorious: better and more persistent problem-solvers and workers.

On the other hand, the qualities of persistence and efficient problem-solving did not lead optimists to have more social contacts or social support over time. One possibility is that optimists are more successful at professional than social goals, but this explanation seems unlikely in the face of evidence that optimists are socially advantaged (Brissette et al., 2002; Carver et al., 1994; Geers et al., 1998; Lepore & Itauarte, 1999; Nurmi et al., 1996; Rääkkönen et al., 1999). A second possibility is that optimists merely maintained a social advantage over pessimists from baseline. Dispositional optimism was associated with both a larger number of socially supportive relationships and more satisfaction with social support

at baseline (Segerstrom, 2001). These students were not starting their social lives from scratch after graduation, as they were their professional careers, so there may have been less of an opportunity to observe differential growth in social resources. In another context, such as moving to a new city, optimists may have an observable advantage over pessimists in reconstituting a local social network. A third possibility is that undifferentiated measures of social networks do not reveal the social advantages enjoyed by optimists, which may have to do with how long their relationships last and the depth of those relationships rather than how many relationships they have at any given time (Geers et al., 1998). Early and middle adulthood usually sees reductions in social network size that decrease quantity but increase quality, with positive consequences for social satisfaction (Löckenhoff & Carstensen, 2004).

Although optimism did not predict social network growth, social network growth did predict increases in optimism, and although optimism did predict higher income, higher income did not predict increases in optimism. This asymmetry suggests that although optimists have more resources than pessimists, not all of those resources lead to further optimism. The question of whether money leads to happiness or well-being has received substantial attention, with most researchers concluding that it does not when there is enough money available to avoid financial worries (e.g., Carver & Baird, 1998; Diener & Seligman, 2004). That is, there are substantial diminishing returns to income when considering psychological health. It is likely that all of these participants had adequate income to avoid financial worries (range = \$25,000 – 500,000 for full-time workers) and not restrict their ability to envision positive outcomes in their futures, so additional income did not lead to increases in optimism.

On the other hand, there is something about social resources that facilitates the ability to envision a positive future. There are likely a number of important needs that money cannot meet but that other, more flexible resources can. Self-determination theory (Deci & Ryan, 2000) posits that psychological well-being arises from meeting psychological needs that include belonging, or connection to others; and competence, or ability to succeed in valued domains. These needs roughly correspond to social and status resources, but not all resources within the two categories may meet these needs. In the social domain, it may be more important to have more connections to others (i.e., larger social network size) than to have others who support you (i.e., more social support); in fact, there is some evidence that supporting others is healthier than receiving support (Bolger, Zuckerman, & Kessler, 2000; Brown, Nesse, Vinokur, & Smith, 2003). In the status domain, it may be more important to have others who facilitate your ability to succeed than to achieve a financial marker of that success. In fact, although income did not predict optimism growth, number of supervisees did.

There were no significant differences in the ability of optimistically and pessimistically phrased items from the LOT to predict or be predicted by resources. Although pessimistically phrased items tended to be more closely related to status resources (income, number of supervisees) and optimistically phrased items tended to be more closely related to social resources (network size), these were not significant differences, and effect sizes for these differences were small (e.g., $r = .07$ for network size to .23 for income). One possible conclusion is that resources can be acquired through a variety of strategies characteristic of either optimism or lack of pessimism. Another possible conclusion is that a personality cognate other than neuroticism and extraversion is most relevant for the relationship between optimism resources: Conscientiousness also correlates with dispositional optimism, is not differentially correlated with optimistically and pessimistically phrased items, and is associated with goal persistence and achievement (Digman, 1990; Segerstrom, Castaneda, & Spencer, 2003).

Changes in optimism and resources, particularly social resources, had implications for changes in both psychological and physical health. There was also evidence that the effects of social network growth on health were in part due to increased optimism. However, relating change in optimism to change in resources creates something of a chicken-egg problem, since the two should increase in tandem over long periods of time such as that in the present study. It is most reasonable at the present time to posit that the upward *spiral* of optimism and resources accounts for the improvement in chronic physical symptoms over the 10-year follow-up; future multi-wave designs or experimental analogues could help disentangle the causal relationships to the degree that they can be disentangled.

Dispositional optimism showed significantly lower test-retest reliability in this study than in other studies employing shorter intervals and was also less stable than other personality traits such as neuroticism, extraversion, and conscientiousness over similar intervals (Atienza et al., 2004; Costa & McCrae, 1994; Scheier & Carver, 1985; Scheier et al., 1994). One potential explanation is that dispositional optimism is less genetically based than many other personality traits (Plomin et al., 1992) and by process of elimination must therefore be more influenced by the environment and especially, as suggested here and elsewhere, by the accumulation of available resources, both social and status, in that environment (Atienza et al., 2004; c.f., Neyer & Asendorpf, 2001). Another possibility is that the generally young age of the sample combined with the transition out of law school contributed to more personality change than is typical at later ages and stages of life (Costa & McCrae, 1994). Further follow-ups with this sample will illuminate whether dispositional optimism is less malleable in middle adulthood, whether role transitions (with the changes in resources that they imply) offer a period of opportunity for personality change (Caspi & Roberts, 1999; Helson & Stewart, 1994), or both.

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Figure 1. Dispositional optimism at baseline and 10 years later

Note: LOT = Life Orientation Test (baseline); LOT10 = Life Orientation Test (10-year follow-up)

Table 1

Means and Correlations of Study Variables

	Mean (SD)	1	2	3	4	5	6	7	8	9	10	11	12
<i>1994</i>													
1. LOT	3.6 (0.6)	-											
2. Social support number	4.1 (2.4)	.16	-										
3. Social support satisfaction	4.7 (1.0)	.41*		-									
4. GSI	0.5 (0.3)	-.51*	.12	-.38*	-								
5. Log days symptoms	0.8 (1.1)	-.21	-.13	-.32*	.30*	-							
<i>2005</i>													
6. LOT	3.8 (0.6)	.35*	-.08	.06	-.04	-.02	-						
7. Social support number	4.1 (2.1)	.01	.43*	.36*	.08	-.22	.08	-					
8. Social support satisfaction	4.9 (0.9)	.05	.19	.32*	-.06	.04	.22	.22	-				
9. Social network size	21.1 (10.1)	-.17	.19	-.09	.12	.03	.29*	.32*	.09	-			
10. Number of supervisees	2.1 (2.3)	.02	-.18	.00	.03	-.02	.27*	-.10	-.16	.25	-		
11. Annual income (\$1000)	137 (95.6)	.28*	-.03	.04	-.23	-.25	.26*	.07	-.10	.04	.28*	-	
12. GSI	0.5 (0.3)	-.19	.04	-.25*	.34*	.25*	-.31*	-.06	-.17	-.10	.19	.05	-
13. Log days symptoms	0.7 (1.1)	-.22	-.27*	-.22	.09	.29*	-.48*	-.29*	-.27*	-.26*	-.21	-.15	.26*

Note: Test-retest correlations are italicized. Correlations with number of supervisees and annual income partial number of hours worked. $N = 61$ except for correlations with number of supervisees ($N = 54$) and annual income ($N = 58$) due to missing data.

Table 2

Dispositional optimism at baseline as a predictor of resource growth at 10-year follow-up

Outcome	β	t	partial r^2
<i>Status resources</i>			
Annual income	.21	2.14*	.078
Number of supervisees	.02	−0.15	.000
<i>Social resources</i>			
Network size	−.20	−1.57	.041
Number of supportive others	−.06	−0.50	.004
Satisfaction with support	−.10	−0.70	.008

*
 $p < .05$

Table 3

Resources at 10-year follow-up as predictors of changes in dispositional optimism

Predictor	β	t	partial r^2
<i>Status resources</i>			
Annual income	.00	0.00	.000
Number of supervisees	.26	2.07*	.078
<i>Social resources</i>			
Network size	.36	3.09*	.141
Number of supportive others	.07	0.58	.006
Satisfaction with support	.20	1.65†	.046
Network size after control for previous supportive number	.41	3.53*	.180
Number of supervisees after control for network size	.25	2.13*	.083
Network size after control for number of supervisees	.34	2.82*	.138

* $p < .05$

† $p < .10$

Table 4

Optimism and resources as predictors of change in psychological symptoms

Predictor	Concurrent predictor [‡]			Change in predictor		
	β	<i>t</i>	partial r^2	β	<i>t</i>	partial r^2
<i>Dispositional optimism</i>						
Baseline	-.02	-0.16	.000			
10-year follow-up	-.30	-2.54*	.100	-.34	-2.66*	.111
<i>Status resources</i>						
Annual income	.19	1.53	.041			
Number of supervisees	.19	1.51	.043			
<i>Social resources</i>						
Network size	-.14	-1.13	.022	-.14	-1.14	.022
Number of supportive others	-.09	-0.72	.009	-.11	-0.81	.012
Satisfaction with support	-.15	-1.25	.027	-.13	-0.96	.028

*
 $p < .05$ [‡]Except baseline optimism, which was a prospective predictor.

Table 5

Optimism and resources as predictors of change in chronic health symptoms

Predictor	Concurrent predictor [‡]			Change in predictor		
	β	<i>t</i>	partial r^2	β	<i>t</i>	partial r^2
<i>Dispositional optimism</i>						
Baseline	-.23	-1.74 [†]	.049			
10-year follow-up	-.49	-4.22*	.234	-.34	-2.66*	.197
<i>Status resources</i>						
Annual income	-.01	-0.10	.000			
Number of supervisees	-.21	-1.53	.044			
<i>Social resources</i>						
Network size	-.28	-2.16*	.075	-.23	-1.82 [†]	.055
Number of supportive others	-.29	-2.28*	.083	-.22	-1.56	.042
Satisfaction with support	-.27	-2.13*	.074	-.22	-1.67 [†]	.055
Network size after control for change in optimism	-.18	-1.42	.035			

* $p < .05$

[†] $p < .10$

[‡] Except baseline optimism, which was a prospective predictor.