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Future orientation and health quality of life in primary care: vitality as a mediator

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Abstract

Purpose Temporal perspective, including views about future goals, may influence motivational processes related to health. An adaptive sense of future orientation is linked to better health, but little research has examined potential underlying factors, such as vitality.

Method In a sample of 101 primary care patients, we examined whether belief in the changeability of the future was related to mental and physical energization and, in turn, to health-related quality of life. Participants were working, uninsured primary care patients, who completed self-report measures of future orientation, vitality, and health-related quality of life.

Results Mediation models, covarying age, sex, and race/ethnicity indicated that vitality significantly mediated the association between future orientation and the outcomes of general health, mental health, social functioning, bodily pain, and role limitations due to emotional and physical

reasons. Vitality exerted an indirect-only effect on the relation between future orientation and physical functioning.

Conclusions Our findings suggest that adaptive beliefs about the future may promote, or allow access to, physical and mental energy and, in turn, may result in better mental and physical health functioning. Individual-level and public health interventions designed to promote future orientation and vitality may beneficially influence quality of life and well-being.

Keywords Future orientation · Vitality · Health quality of life · Primary care

Introduction

Increased attention is being given to patient-centered outcomes, such as subjective health-related quality of life (HRQL), as a way to assess health. For instance, for the first time, the Department of Health and Human Services (DHHS) Healthy People Initiative (2020) placed a special emphasis on understanding and improving HRQL [4]. Historically, HRQL has been defined negatively and in narrow, physical terms; however, a more modern perspective includes consideration of optimal functioning and well-being [25, 30].

Conceptualized as a multidimensional concept, HRQL involves physical, mental and social functioning, and well-being [10, 15]. Functional components include estimates of how much one's physical and emotional health impair ability to perform basic care routines, vocational requirements, and social activities. The well-being component of HRQL reflects an individuals' subjective assessment of their mood, level of energy, and severity of pain [26].

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HRQL is influenced strongly by cognitive, emotional, and behavioral factors. One such factor, future orientation, is conceptualized as a person's expectations about and actions related to the changeability of their future for the better (e.g., one will feel better in the future, one will be able to engage in useful plans in the future, one will be able to reach desired goals in the future) [11]. Not surprisingly, future orientation is related to better mental and physical health in clinical and community samples [5, 12].

Similarly, vitality, which is operationalized as a positive energy state and the subjective experience of feeling alive, is beneficially associated with health functioning [20, 23]. Considered a robust contributor to eudaimonic well-being, which differs from hedonic well-being in its emphasis on meaning and enhanced functioning, vitality is related to beneficial immune and anti-viral responses and better self-reported quality of life [8, 21, 28], perhaps via the mental energization and behavioral activation that occur as a result of vitality. Levels of subjective vitality, however, may be dependent on psychological factors, such as future orientation [20]. From a theoretical perspective, goal-oriented behaviors focus on resolution of past, present, or future stressors in the service of attaining a targeted outcome [22]; thus, having an adaptive view of the changeability of the future may facilitate these processes. Perhaps, with a greater self-belief about ability to alter one's future beneficially, also comes greater access to the energization of vitality, higher levels of energization and, as well, better ability to successfully implement the energization inherent in vitality. From a clinical perspective, future orientation and vitality may be a critical linkage to be emphasized and bolstered in the quest for individual-level and public health approaches to improving quality of life; no published data has previously assessed this premise.

In a sample of working, uninsured primary care patients, we examined vitality as a potential mediator of the association between future orientation and an array of quality of life indicators including: social functioning, physical functioning, bodily pain, mental health, general health, and role limitations due to physical and emotional problems. We hypothesized that greater levels of future orientation would be associated with more vitality and better HRQL and that vitality would be related to better HRQL. We also hypothesized that the association between future orientation and HRQL would be mediated by vitality, such that greater future orientation would be related to more vitality and, in turn, better HRQL.

Method

Participants

Our sample ($n = 101$) in this Institutional Review Board-approved study was recruited from a rural primary care

clinic serving working, uninsured patients, and were primarily female ($n = 71$; 71 %), white ($n = 94$; 93 %), and had a mean age of 42.18 ($SD = 12.83$; range 18–64 years old). Seventy-five percent ($n = 75$) of our sample reported earning <\$20,000 USD annually, and only 25 % ($n = 25$) had obtained a college degree. Participants completed an informed consent process and self-report surveys; upon completion, participants received \$15.00 compensation.

Measures

The Future Orientation Scale [7, 11], a 6-item measure, was utilized to assess the ability of participants to consider a possible future and includes items focused on the changeability of the future, attainment of goals, and improvement of emotional functioning; for example, "No matter how badly I feel, I know it will not last." Respondents are asked to indicate "how important each reason is to you for dealing with stressors" using a 6-point Likert-type scale, ranging from 1 (extremely unimportant) to 5 (extremely important); higher scores indicate a stronger sense of adaptive future orientation. Strong psychometric support exists for the scale in clinical and medical samples [3, 12]. In the present sample, Cronbach's alpha = .87.

Vitality, which is conceptualized as the physical and psychological sensation of feeling energetic and alive, was assessed using the subjective vitality scale (SVS) [20], which is a 6-item scale that is rated on a 7-point Likert scale from 1 (not at all true) to 7 (very true), with higher scores indicating greater vitality. Respondents are asked to describe themselves generally with regard to vitality; for instance, "I feel alive and vital" and "I nearly always feel alert and awake." The SVS has excellent psychometric properties in adult and primary care samples [19, 20]. In the current study, Cronbach's alpha was .93.

We measured multidimensional HRQL with the Short Form 36 Health Survey (SF-36v2) [29, 31], which assesses physical and social functioning, role limitations due to physical and emotional problems, bodily pain, vitality, mental health, and general health, via self-report. Each subscale has a different number of items, ranging from 2 to 10, and most are scored on a 5-point Likert scale. We utilized the transformed, norm-based scoring system for analyses. The vitality subscale was not used as an outcome, given its role as a mediator assessed by the SVS; as well, the two scales were convergent ($r = .79$, $p < .001$), providing some psychometric support. The reliability and validity of the SF-36v2 are well established in medical samples [18]; in the current sample, internal consistency was adequate, ranging from .83 to .95.

Statistical analyses

Bivariate correlations were used to assess the independence of, and association between, predictor variables; no relationship reached accepted cutoffs for multicollinearity ($p > .70$) [24]. Mediation analyses, consistent with Hayes [7], were conducted, covarying age, sex, and race/ethnicity. Using the PROCESS macro in SPSS 20, with 5,000 bootstrapped samples, allows for analysis of indirect effects without requiring direct effects and use of non-normally distributed data. The PROCESS model utilizes a path analysis framework to estimate OLS regression coefficients for all model pathways (i.e., a, b, c, c') and covariates and provides bias-corrected confidence intervals. Mediation analyses can produce several effects: A total effect (c) refers to the relationship between IV and DV without controlling for mediating variables (MV); a direct effect (c') refers to the relationship between IV and DV after controlling for MVs; a total indirect effect (ab) refers to the role of all MVs in the relationship between IV and DV; a specific indirect effect (a^1b^1 and/ or a^2b^2) refers to the role of a particular MV in the relationship between IV and DV. Mediation analyses can produce five different results: total effect; direct effect; indirect-only effect, whereby ab is significant, but c and c' are not significant; partial mediation, whereby there is a decrease from c to c' and c' remains significant; and full mediation, whereby there is a decrease from c to c' and c' falls out of significance [17]. Given that we conducted numerous analyses, there is greater risk of a type I error; thus, we utilized Hommel's method to adjust p values post hoc across all models, as well as within each subscale model, with no loss of significance [1].

Results

At the bivariate level, future orientation was significantly, positively associated with vitality ($r = .52$, $p < .01$) and with all subscales of HRQL (p 's $<.001-.02$), except physical functioning. Vitality was positively related to all subscales of HRQL (p 's $<.001-.01$). Finally, all subscales of the SF-36v2 were positively associated (p 's $<.001-.002$) (See Table 1).

At the multivariate level, in mediation analyses, vitality fully mediated the association between future orientation and the following HRQL subscales, as the 95 % confidence intervals did not cross zero and p values dropped out of significance: social functioning (PE = 1.83; 95 % CI .64–3.45), role limitations due to physical (PE = 2.42; 95 % CI 1.20–4.08) and emotional problems (PE = 3.82; 95 % CI 1.95–5.92), bodily pain (PE = 2.95; 95 % CI

1.74–4.61), mental health (PE = 4.76; 95 % CI 2.98–6.78), and general health (PE = 3.39; 95 % CI 2.01–5.20). Vitality exerted an indirect-only effect on the association between future orientation and physical functioning (See Table 2).

Discussion

In support of our hypotheses, we found that future orientation and vitality are beneficially related to one another and to HRQL in our sample of primary care patients. Further, the effects of future orientation on physical and psychosocial functioning appear to be explained, in part, by sense of vitality, also supporting our hypotheses. Future orientation was not associated with physical functioning at the bivariate level and, at the multivariate level, there was an indirect-only effect for vitality as a mediator of the future orientation–physical function linkage.

In general, our findings suggest that the ability to envision future selves and goals, specifically the changeability of the future, may promote or allow access to a store of mental and physical energization that, in turn, is linked to a wide array of perceived adaptive health outcomes. From a theoretical perspective, our findings support the idea that cognitive–emotional characteristics contribute to goal-directed behaviors [6]; in this case, the motivational process is related to perceptions of better psychological functioning, better ability to engage in daily roles and routines, less pain, and better overall health functioning.

It is interesting that the pattern of findings for physical functioning was different from other aspects of HRQL; specifically, future orientation was not related to physical functioning at the bivariate level and only indirectly via vitality in mediation analyses. It is important to consider that, despite its beneficial association with many markers of good health, simply having a positive belief about the future is not a panacea and may be insufficient to exert a positive effect in the context of illness or functional impairment [14]. What may be more essential is the extent to which beliefs about a changeable future become translational, and are applied toward a manifestation of goal-oriented volition and activation that result in adaptive health behaviors and functioning [12, 13]. Of note, we did find that future orientation was related to overall general health, which is considered a good marker of objective physical illness and functioning and that vitality mediated this association. In future research and interventions, it is important to distinguish between physical symptoms and perceived health. Although physical symptoms may truly be difficult to manage or perhaps intractable, patients may not perceive their overall sense of health or quality of life as only a result of illness or impairment; instead,

Table 1 Bivariate correlations of study variables

	Future orientation	Vitality	Physical functioning	Social functioning	Role limitation: physical	Role limitation: emotional	Bodily pain	Mental health	General health
Future orientation	–	.52**	.09	.37**	.28**	.24*	.26**	.43**	.27**
Vitality	.52**	–	.26*	.52**	.44**	.53**	.51**	.74**	.59**
Physical functioning	.09	.26**	–	.51**	.79**	.44**	.67**	.30**	.54**
Social functioning	.37**	.52**	.51**	–	.66**	.78**	.56**	.69**	.43**
Role limitation: physical	.28**	.44**	.79**	.66**	–	.65**	.69**	.46**	.66**
Role limitation: emotional	.24**	.53**	.44**	.78**	.65**	–	.49**	.70**	.48**
Bodily pain	.26**	.51**	.67**	.56**	.69**	.49**	–	.46**	.60**
Mental health	.43**	.74**	.30**	.69**	.46**	.70**	.46**	–	.50**
General health	.27**	.59**	.54**	.43**	.66**	.48**	.60**	.50**	–

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

individuals may consider other factors such as social support and activities, ability to cope, religiosity and spirituality, and mood [2, 16].

Our findings provide insight into a critical linkage between future-oriented cognitive–emotional processing and self-reported health functioning and offer several points of intervention for promoting adaptive health in primary care settings. Therapeutic strategies focused on promotion of future orientation, or which promote vitality directly, may result in better interpersonal, intrapersonal, and physical health. Interventions based on a Motivational Interviewing or Cognitive–Behavioral Therapy framework, which perhaps encourage identification of future possible selves and feasible, meaningful goals, could be delivered by a behavioral health consultant or other trained clinical staff, or may be self-guided via homework assignments or online activities [27]. Similarly, vitality might be encouraged behaviorally via behavior activation, such as exercise, and through promotion of health regimens such as healthy eating. Psychosocially, vitality might be promoted via training in mindfulness and by encouraging satisfaction of basic psychological needs including promotion of autonomy, bolstering sense of self-efficacy (e.g., competence), and improving dysfunctional interpersonal relationships (e.g., relatedness) [20].

Our study had numerous strengths, including use of an uninsured primary care sample, and our novel findings may have clinical and theoretical implications; however, outcomes must be considered in the context of minor limitations. Our medical sample was largely comprised of white females, who were also working and uninsured, and reported lower levels of education and income. Despite being vulnerable and underserved,

conclusions derived from our sample may not be representative or generalizable to other community samples. We used cross-sectional data, which precludes examining causality, and bidirectionality is a risk; individuals with better health-related quality of life are likely to have a stronger belief that the future is changeable and may also have more vitality. Although these models could be tested in future studies, the models in the current study are based on well-established theory and findings indicating that cognitive–emotional forces, such as future orientation, affect motivational and behavioral processes (i.e., vitality); we have extended past work to mechanistically identify both antecedents and consequences of vitality, in a patient sample. Yet, our study should be replicated prospectively and longitudinally, in diverse clinical and community samples, to confirm our hypotheses.

In closing, we found that future orientation was related to vitality and, in turn, to better health-related quality of life in a sample of low-income, uninsured primary care patients. A belief in the changeability of the future may promote or allow access to mental and physical energy and consequent improvements in mental, physical, and social well-being. Rigorous prospective research is needed to determine causal relations between these variables; however, our findings represent a first step toward understanding the linkages between temporal perspective, motivational processes, and quality of life. Importantly, future orientation and vitality are both considered malleable and can be promoted therapeutically via individual-level and public health approaches, to improve quality of life in primary care and other medical patients.

Table 2 Mediation coefficients for study outcome variables

	Physical functioning	General health	Bodily pain	Mental health	Social functioning	Role limits: emotional	Role limits: physical
Future orientation to vitality (a)	.84***	.84***	.84***	.84***	.84***	.84***	.84***
Vitality to HRQL (b)	2.17†	4.02***	3.50***	5.64***	3.69***	4.53***	2.87***
Future orientation to HRQL (c)	1.49	3.10*	3.26*	5.83***	4.80***	3.21*	3.67*
Future orientation to HRQL accounting for vitality (c')	-.33	-.29	.31	1.07	1.68	-.60	1.24
Total indirect effect: point estimate (95 % CI)	1.83 (.64–3.45)	3.39 (2.01–5.20)	2.95 (1.74–4.61)	4.76 (2.98–6.78)	3.12 (1.65–4.91)	3.82 (1.95–5.92)	2.42 (1.20–4.08)
Model R ²	.21**	.38***	.33***	.61***	.35***	.33***	.34***

a, b, c, and c' represent unstandardized regression coefficients: a = direct effect of future orientation on vitality; b = direct effect of vitality on health-related quality of life (HRQL) outcomes (SF-36v2 subscales); c = total effect (overall effect of future orientation on HRQL, without accounting for vitality); c' = direct effect (overall effect of future orientation on HRQL when accounting for vitality [ab]); ab = total indirect effect (future orientation affects HRQL subscales through vitality); CI = bias corrected and accelerated 95 % confidence interval with 5,000 bootstrap samples

p values adjusted using Hommel's method; p = .05†; p < .05*; p < .01**; p < .001***

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