The effects of optimism and gratitude on adherence, functioning and mental health following an acute coronary syndrome ☆

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ABSTRACT

Objective: This study examined the effects of optimism and gratitude on self-reported health behavior adherence, physical functioning and emotional well-being after an acute coronary syndrome (ACS).

Methods: Among 156 patients, we examined associations between optimism and gratitude measured 2 weeks post-ACS and 6-month outcomes: adherence to medical recommendations, mental and physical health-related quality of life (HRQoL), physical functioning, depressive symptoms and anxiety. Multivariable linear regression models were used, controlling for increasing levels of adjustment.

Results: Optimism [β=.11, standard error (S.E.)=.05, P=.038] and gratitude (β=.10, S.E.=.05, P=.027) at 2 weeks were associated with subsequent self-reported adherence to medical recommendations (diet, exercise, medication adherence, stress reduction) at 6 months in fully adjusted models. Two-week optimism and gratitude were associated with improvements in mental HRQoL (optimism: β=.44, S.E.=.13, P=.001; gratitude: β=.33, S.E.=.12, P=.005) and reductions in symptoms of depression (optimism: β=−.11, S.E.=.05, P=.039; gratitude: β=−.10, S.E.=.05, P=.028) and anxiety (optimism: β=−.15, S.E.=.05, P=.004; gratitude: β=−.10, S.E.=.05, P=.034) at 6 months.

Conclusion: Optimism and gratitude at 2 weeks post-ACS were associated with higher self-reported adherence and improved emotional well-being 6 months later, independent of negative emotional states. Optimism and gratitude may help recovery from an ACS. Interventions promoting these positive constructs could help improve adherence and well-being.

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1. Introduction

Over one million Americans suffer from an acute coronary syndrome (ACS: myocardial infarction or unstable angina) each year [1–5], and rates of rehospitalization and death in the following year are high [6]. Psychological well-being may improve cardiac-related outcomes, independent of cardiac risk factors and negative emotional states [7]. Optimism, defined as positive expectations about the future [8], is a relatively well-studied positive psychological construct. For example, optimism has been independently associated with improved functioning and superior cardiac health [9]. While optimism has been studied in depth in the cardiac and health behavior literature, less is known about other positive constructs. We therefore chose to explore another common positive psychological construct, gratitude. Gratitude is defined as noticing and appreciating the positive [10]. Gratitude is commonly

experienced following an ACS [11] and may also have effects on health outcomes, but it has been less well studied in this context [10]. Gratitude can be a powerful positive feeling following a life-threatening event. There are indications that gratitude and gratitude interventions may improve well-being and some physical markers of cardiac health [12–14]. The present study seeks to explore whether these two positive emotions, optimism and gratitude, have similar effects on a variety of cardiac outcomes.

Several pathways have been hypothesized for the beneficial effects of positive psychological constructs on cardiac health. First, positive constructs may affect cardiovascular physiology. Negative psychological syndromes (e.g., depression) are associated with abnormal levels of inflammatory cytokines and related biomarkers that have been linked to adverse cardiac outcomes [15,16]. Positive psychological constructs have been linked to improvements in cardiac biomarkers, though the findings have been mixed [17–19]. Optimism and other positive constructs have also been more consistently associated with greater adherence to health behaviors, including healthy diet, physical activity and smoking cessation [7]. Greater levels of baseline psychological well-being may also protect from subsequent development of

depression and anxiety [20], which may be important given the connections of these syndromes with adverse cardiovascular events following an ACS [21].

Though there is a substantial body of literature on the relationships between optimism and heart disease [7], there are less data available on gratitude in this context, despite its potential utility in understanding cardiac health. There is evidence to suggest that gratitude can influence a variety of cardiac-related outcomes, potentially mediated through emotions and behaviors such as sleep, self-efficacy, and mood. A conceptual model outlines these hypothesized relationships (Fig. 1).

No prior studies had simultaneously examined the prospective effects of multiple positive psychological constructs on a broad range of psychological, functional and adherence-based outcomes after an ACS. Accordingly, we examined associations between optimism and gratitude, measured 2 weeks post-ACS, and self-reported adherence to health behaviors, physical functioning, health-related quality of life (HRQoL) and psychiatric outcomes (depression/anxiety) 6 months later. We hypothesized that both positive psychological constructs would be prospectively associated with these outcomes, independent of baseline levels of these outcome measures and multiple relevant covariates.

2. Methods

2.1. Study design and sample

The parent study (the Gratitude Research in Acute Coronary Events [GRACE] study) was a prospective observational study of the impact of gratitude and optimism on health-related outcomes among patients admitted for an ACS between September 2012 and January 2014 to one of three cardiac units at an urban academic medical center. Approval from our healthcare system's institutional review board was obtained prior to commencement of study procedures, and all participants underwent full written informed consent. Full study methods have been described elsewhere [22]. In a previous analysis from this trial, optimism (but not gratitude) measured 2 weeks post-ACS was associated with increased physical activity measured by accelerometer and reduced cardiac readmissions 6 months post-ACS [18]. The previous analysis did not examine the effects of optimism and gratitude on a broad range of self-reported clinical outcomes, which is the focus of the current analysis.

2.1.1. Measures

Baseline self-report measures were completed 2 weeks after hospital discharge. Follow-up measures were collected 6 months thereafter.

2.1.1.1. Positive psychological constructs.
Optimism was measured using the well-validated six-item Life Orientation Test–Revised (LOT-R) [23]. Gratitude was measured using the validated six-item Gratitude Questionnaire-6 (GQ-6) [10].

2.1.1.2. Adherence.
Four items from the Medical Outcomes Study Specific Adherence Scale (MOS SAS) [24] were used to measure self-reported frequency of adherence to diet, physical activity, stress reduction and medication over the past 2 weeks. The items were asked with the stem: "How often have you done each of the following in the past two weeks? 1) Cut down on stress in your life, 2) Exercised regularly, 3) Followed a low-fat, low-salt, or diabetic diet, 4) Took prescribed medication." For each item, ratings were made on a 1–6 Likert/qualitative scale ranging from 1 (none of the time) to 6 (all of the time). This scale has been used to examine adherence in prior studies of cardiac patients [25].

2.1.1.3. Medical and functional status.
The 12-item well-validated Medical Outcomes Study Short Form-12 (SF-12) [26] was used to measure mental (mental component score [MCS]) and physical (physical component score [PCS]) components of HRQoL. The Duke Activity Symptom Index (DASI) [27] was used to measure health-related limitations and physical function with 12 yes/no items. These scales have been used to assess these constructs in prior studies of patients with cardiac illness [28].

2.1.1.4. Depressive symptoms and anxiety.
We assessed depressive symptoms with the well-validated Patient Health Questionnaire-9 (PHQ-9) [29]. The PHQ-9 inquires about the frequency of the nine symptoms of major depression in the prior 2 weeks and has good sensitivity and specificity [30]. Anxiety was measured via the seven-item Hospital Anxiety and Depression Scale anxiety subscale (HADS-A) [31]. The HADS-A is designed for use with medically ill patients. It has few somatic symptom items and has been used in studies of patients with heart disease [32].
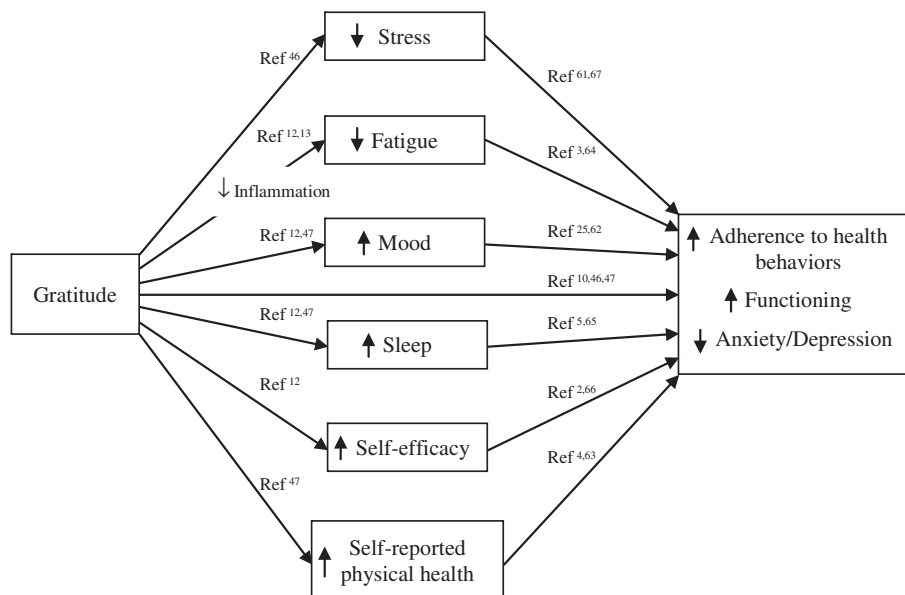

Fig. 1. Conceptual model of the relationships between gratitude and the outcomes used in this study.