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Understanding Motivations to Participate in an Observational Research Study: Why do Patients Enroll?

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Abstract

By understanding common motivations for participating in observational research studies, clinicians may better understand the perceived benefits of research participation from their clients' perspective. We enrolled 164 cardiac patients in a study about the effects of gratitude and optimism. Two weeks post-enrollment, participants completed a four-item questionnaire regarding motivations for study enrollment. Altruistic motivation ranked highest, while intellectual, health-related, and financial motivations rated lower. Four subgroups of participants emerged, each with distinct characteristics and different priorities for participating. These findings may help front-line clinicians to understand which motivations for participation apply to their clients who enroll in non-treatment-based research projects.

Keywords

Research participation; motivation; recruitment; cardiac; observational

Introduction

Across different healthcare settings, it is common for patients to have the opportunity to participate in clinical research projects. Understanding why patients may choose to participate in research is important for several reasons. From the perspective of researchers, knowledge about factors that increase patients' motivation to participate may help study

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teams to recruit the broadest and most representative group of patients. This is an important goal, given that having a widely representative study sample will allow the research findings to apply to the greatest number of patients (Hulley, Cummings, Browner, Grady, & Newman, 2001; Motulsky, 2010). From a clinician's perspective, knowing common, specific motivations for research participation—and how these motivations might differ depending on a client's circumstances—can help clinicians to best understand the perspectives of their clients about being involved in a research study and what tangible or emotional benefits they hope to get out of participation.

Currently, there are several gaps in understanding why people may participate in research in healthcare settings. First, almost all prior studies of participation have examined studies involving treatments (Chang, Hendricks, Slawsky, & Locastro, 2004; Cheung et al., 2008; Gammelgaard, Mortensen, & Rossel, 2004; Groeneveld, Proper, van der Beek, Hildebrandt, & van Mechelen, 2009; Henzlova, Blackburn, Bradley, & Rogers, 1994; Irewall et al., 2014; Lakerveld et al., 2008; Mattson, Curb, & McArdle, 1985; Toft et al., 2007), while few studies have explored motivations to participate in prospective observational studies (Daniels et al., 2006; Mein et al., 2012; Patterson, Duhig, Connell, & Scott, 2014; Vecchi Brumatti et al., 2013), in which subjects gain no direct benefit. Since observational studies help to describe the natural course of a medical condition or other phenomenon, they often inform next-step treatment studies. Therefore, recruiting a truly representative sample in such studies is very important, given that a treatment study should be designed for the broadest and most “real-world” sample of patients possible. Likewise, though there have been numerous descriptive studies of participation, quantitative studies have been rare (Burgess et al., 2009; Mattson et al., 1985). Additionally, prior research on this topic has only involved a small subsample of the total study cohort and assessed reasons for participating only after the study was over (Baker, Lavender, & Tincello, 2005; Cheung et al., 2008; Dixon-Woods & Tarrant, 2009; Featherstone & Donovan, 2002; Kass, Maman, & Atkinson, 2005; Liaschenko & Underwood, 2001), which may assess less accurately why enrollees initially decided to participate. Finally, there has been minimal study of the motivations of individuals with heart disease to participate in research. Given that heart disease affects over 15 million Americans (Mozaffarian et al., 2015) and is the primary cause of death in the world (WHO, 2014), having studies that represent the full spectrum of patients with heart disease is important.

Accordingly, during a prospective observational study on health outcomes after an acute coronary syndrome (ACS; defined as myocardial infarction [MI] or unstable angina [UA]—a heart attack or related condition), we systematically surveyed participants to investigate their motivations for participation. Our specific goals were: (1) to identify and compare participants' motivations for participation and (2) to identify associations between sociodemographic, medical, and psychological characteristics and reasons for enrolling in this study. Using this data, we aimed to identify different subgroups based on their reasons for participating to help researchers and clinicians understand the perspective of clients in healthcare settings who enroll in observational studies in which they will receive no direct health benefits.

Methods

Study overview

This is an analysis of a prospective observational study examining psychological predictors (e.g., gratitude) of health indicators (physical activity, biomarkers, and rehospitalizations) over a 6 month period following an ACS (clinicaltrials.gov identifier NCT01709669). The main methods and results of the study have been described elsewhere (J. C. Huffman et al., 2015; J.C. Huffman et al., 2015). In the main study, participants were enrolled in the hospital and completed in-person study visits 2 weeks and 6 months later. For the present analysis of participant factors that contributed to enrollment in the study, participants completed a four-item questionnaire regarding their motivation for participation at the first study visit (2 weeks). Institutional Review Board approval for the overall protocol, including these four questions, was obtained prior to commencement of any study procedures.

Participants

Potentially eligible adult patients were hospitalized on one of three cardiac units at an urban academic medical center, with a primary admission diagnosis of ACS, defined using established criteria (Fox et al., 2006). Patients were excluded if they had: (1) 'periprocedural' ACS (an ACS occurring in the setting of another medical procedure); (2) a medical condition that did not allow participation in physical activity, altered levels of biological factors measured in the blood as part of the primary study (e.g., inflammatory conditions or end-stage renal disease), or was likely to lead to death within 6 months; or (3) an inability to complete self-report evaluations due to cognitive, sensory, or language barriers. Participants were enrolled between September 2012 and January 2014 (with follow-up until June 2014). Participants received \$40 at completion of the 2-week visit, and \$60 after completion of the 6-month visit.

Study Design/Data Collection

Baseline characteristics—Baseline sociodemographic characteristics (age, gender, race, marital status, living alone), medical characteristics (Charlson comorbidity index for overall medical burden (Charlson, Pompei, Ales, & MacKenzie, 1987)), admission diagnosis (MI or UA), and total number of cardiac risk factors (diabetes mellitus, hypertension, hyperlipidemia, smoking, and prior ACS) were obtained by participant self-report at enrollment and supplemented by post-discharge medical record review.

Self-reported health status—As part of the main study protocol, validated, standardized self-report measures were used to examine participants' physical and psychological states at 2 weeks. Dispositional gratitude (a general disposition to appreciate and be thankful for people, events, and experiences in one's life) was measured using the Gratitude Questionnaire-6 (GQ-6) (McCullough, Emmons, & Tsang, 2002), along with a four-item modification to assess state gratitude (more current/recent feelings of gratitude since the time of the cardiac event). We measured optimism using the Life Orientation Test-Revised (LOT-R) optimism and pessimism components (Carver, Scheier, & Segerstrom, 2010), spirituality using the Daily Spiritual Experience Scale (DSES) (Underwood & Teresi, 2002), and stress using the Perceived Stress Scale-10 (PSS-10) (Cohen, Kamarck, & Mermelstein,

1983). The Patient Health Questionnaire-9 (PHQ-9) was used as a measure of depression, and the Hospital Anxiety and Depression Scale anxiety subscale (HADS-A) served as a measure of participants' anxiety (Bjelland, Dahl, Haug, & Neckelmann, 2002). Items from the MOS Specific Adherence Scale (MOS-SAS) were used to measure baseline adherence to medical behaviors (DiMatteo, Hays, & Sherbourne, 1992). Mental and physical health-related quality of life were assessed with the MOS Short Form-12 (SF-12) (Burdine, Felix, Abel, Wiltraut, & Musselman, 2000). A scale adapted from the Women and Ischemia Syndrome Evaluation (WISE) study was used to measure cardiac symptoms (Merz et al., 1999), and the Duke Activity Symptom Index (DASI) was utilized to assess function (Hlatky et al., 1989).

Participation motivation—To investigate enrolled subjects' motivations to participate in this study, a four-item questionnaire was administered during the 2-week follow-up visit. This questionnaire presented statements regarding the extent to which an individual's motivation to participate was intellectual, altruistic, health-focused, or financial in nature (see Table 2). Participants rated their agreement with each statement as a reason that they had decided to enroll in the study while hospitalized, on a Likert scale ranging from 1 (*Strongly Disagree*) to 10 (*Strongly Agree*). There was a fifth open-ended question that provided space for participants to write in and rate any reason for participating that was not covered by the presented items. The items were derived from elements of the study recruitment script presented by study staff to potential participants; these elements had been chosen based on motivations identified in prior research of study participation (Ellis, 2000; Fry & Dwyer, 2001; Gammelgaard et al., 2004) along with the study team's extensive clinical and research experience with similar cardiac populations.

Data analysis

The major aims of this study were (1) to identify which motivation(s) participants identified with most strongly and (2) to determine the associations between individual characteristics and specific motivations for participating. To accomplish the first aim, we used descriptive statistics to examine the absolute and relative priorities of the four motivations for participation that were presented during recruitment. Specifically, we first calculated the mean item scores for each question to determine the absolute extent to which a particular motivation was linked to participation. Next, we calculated a "relevance score" for each item by subtracting the item score from the mean of the remaining three items (e.g., the relevance score for Q1 = $Q1 - [(Q2+Q3+Q4)/3]$). A positive relevance score indicates that a participant affiliated more strongly than average with that motivation. A negative relevance score indicates that a participant affiliated more strongly with the other motivations than with the targeted motivation. We chose to create this relevance score because participants may have different "anchor points" for their ratings that may not represent true differences in motivation (e.g., participant A may rate all reasons as 6/10, and participant B may rate all reasons as 10/10, but this may not represent that participant B felt more strongly about motivations than participant A), making the use of absolute mean scores potentially problematic.

To examine the associations between the relevance score for each item and a variety of participant characteristics (including sociodemographic/medical characteristics and self-reported outcome measures), univariate analyses were completed using Pearson's correlation for continuous independent variables (e.g., age) and independent samples t tests for categorical independent variables (e.g., gender). Multivariate analyses were not performed due to high collinearity among many of the measures (Mason & Perreault Jr, 1991), to avoid overfitting (Babyak, 2004), and because of the exploratory nature of this study. All comparisons were 2-tailed. Given that, for each patient characteristic, four comparisons (correlating with all four items), were completed, using the conservative Bonferroni correction (Curtin & Schulz, 1998), we considered p values less than $0.05/4 = 0.0125$ as significant, though we also highlight all p values < 0.05 given the exploratory nature of this analysis. All statistical analyses were completed using Stata software, version 11.2 (StataCorp; College Station, TX).

Results

Patient Characteristics

Three hundred ninety-four patients were approached for participation, of whom 182 (46%) declined. Of the 212 who enrolled, 164 (77%) completed the 2-week baseline assessment visit that was required for full study participation. The 164 participants (Table 1) had a mean age of 61.5 years (standard deviation [SD] 10.5). Of these, 137 (84%) were men and 137 (84%) were White. Cardiac diagnoses were nearly evenly split between MI ($n=88$; 54%) and UA ($n=76$; 46%).

Question #1: Intellectual Motivation

Table 2 lists patient factors associated with each participation question/domain. Across the full sample ($N=164$), the mean item score on Question #1 was 7.8/10 (SD 2.3) and the median was 8. The mean of the relevance variable was 1.74 (SD 2.4), indicating that participants affiliated more strongly than average with this motivation. There was a negative (marginal) correlation with the cardiac symptom severity scale ($r=-0.18$; $p=0.02$), indicating those participants with less symptom burden endorsed this item more strongly.

Question #2: Altruistic Motivation

The mean item score was 9.0/10 (SD 1.7) and the median was 10. The mean of the relevance variable was 3.5 (SD 2.3), suggesting that this item was endorsed more strongly than the others. Significant associations with this item included links with state gratitude ($r=0.19$; $p=0.01$), the LOT-R pessimism component ($r=-0.19$; $p=0.01$), and the DSES ($r=0.2$; $p=0.009$), indicating that participants with greater current gratitude, less pessimism, and greater spirituality were more likely to endorse an altruistic motivation compared to other participants.

There were additional associations with marital status (2.87 [unmarried] vs. 3.81 [married]; $t=-2.4$; $p=0.02$), GQ-6 ($r=0.18$; $p=0.02$), the PSS-10 ($r=-0.18$; $p=0.02$), the Charlson comorbidity index ($r=-0.18$; $p=0.02$), and cardiac risk factors ($r=-0.18$; $p=0.02$); however, these associations were non-significant after correction for multiple comparisons.

Question #3: Health-Related Motivation

When considering health-related motivations, the mean item score was 6.7/10 (SD 3.3), and the median was 8. The mean of the relevance variable was 0.3 (SD 3.1). This suggests that this motivational domain was rated similarly to the mean of other three domains, though there was substantial variability across participants. Unmarried participants rated this item significantly higher than married participants (1.78 [unmarried] vs. -0.29; $t=4.17$; $p<0.001$) as did those living alone (1.62 [living alone] vs. -0.02; $t=-2.91$; $p=0.004$). Lower levels of spirituality ($r=-0.21$; $p=0.007$) and a greater medical comorbidity score ($r=0.21$; $p=0.006$) were also significantly associated with greater health-related motivation relative to the other questions.

Additional (non-significant) associations included higher relative motivations associated with female gender (1.47 [women] vs. 0.14; $t=2.04$; $p=0.04$), depression ($r=0.16$; $p=0.04$), perceived stress ($r=0.18$; $p=0.02$), as well as lower physical quality of life ($r=-0.17$; $p=0.03$).

Question #4: Financial Motivation

The mean item score was 2.2 (SD 2.1) and the median was 1. The mean of the relevance variable was -5.6 (SD 2.7), suggesting that participants rated the other items higher as reasons for participation. There was a significant negative correlation with state gratitude ($r=-0.24$; $p=0.002$), such that those with low current gratitude were likely to rate this item higher. There were no other significant associations.

“Other” Motivations

In response to an open-ended question at the end of the questionnaire, some respondents (54/164) offered additional reasons they participated in the study, in addition to ranking the four presented motivations. The most frequent responses included feelings of gratitude toward the care team and hospital and a desire to “give back” (as expressed as feelings toward the care team and hospital and a desire to “give back”) ($n=16$). Several indicated that liking the researcher or clinicians on the team provided motivation ($n=12$). A smaller number cited an interest in learning from the study ($n=5$) or felt that participating was the “right thing to do” ($n=3$).

Discussion

To our knowledge, this is the first study to examine the motivations of participants with heart disease to take part in a prospective observational study. Our data support the conclusion that study participants have diverse reasons to participate in research (Fry & Dwyer, 2001; Mattson et al., 1985). This investigation further describes the relationship between specific motivations and participant characteristics, to better identify subgroups of patients who may have very different reasons for participating in research depending on their situation and characteristics. With this insight, clinicians will be better equipped to understand the decisions that their clients make regarding research participation.

Overall, in order, the altruistic, intellectual, and health-related motivations were rated most strongly by our cohort as indicated by their positive relevance scores and their relatively high

mean scores across the population; financial motivation was rated much lower as a main motivating factor. This finding is similar to other studies that have found altruistic motivations as strong drivers to participate in research (Burgess et al., 2009; Willis, Robinson, Wood-Baker, Turner, & Walters, 2011), and is consistent with a recent review of studies of motivation to participate in emergency department research noting that financial incentives were cited as important far less frequently (Limkakeng et al., 2014).

Our study goes further, however, by examining participant-level characteristics correlated with motivation. The characteristics that were correlated with a stronger response to each item appeared to outline distinct sample subgroups. Taken together, our data indicate that several subgroups existed within our total cohort, each of which expressed different priorities regarding participation; these subgroups might respond to different incentives or explanations when deciding whether to participate in research. Those who were more likely to respond that they participated for an intellectual reason had a lower physical comorbidity index score. These results may signal a healthier subgroup able to elect to participate not because they *need* to, but because they are *interested*. From the perspective of a researcher, a failure to illustrate what is generally interesting or novel about a study, perhaps because study team members feel that these details might not be relevant to participants, may mean that patients in this subgroup may not be effectively recruited and therefore their experiences and input may be missed. Clinically, understanding that healthier clients may participate in research out of intellectual interest in the study can help a clinician to better understand how participation fits in with that person's other activities, perspectives, and life goals.

Participants with greater current gratitude, less pessimism, and greater spirituality had greater relative ratings of altruism as a motivating factor, and this subset also was more likely to be married and have somewhat lower stress and fewer medical conditions. These results indicate an emotionally healthier subgroup that is more interested in helping others. Members of this group may have a greater disposition toward an altruistic motivation in general given that they are more optimistic, grateful, and spiritual. In addition, these responders had lower medical morbidity and may have been more able to consider helping others because they were less occupied with their own health problems. To ensure recruitment of this subgroup, recruitment materials and approaches can emphasize the future benefits of the study to others. Altruism has been noted to rank highly in other studies of participation in older participants (Warburton & Dyer, 2004), so the high scores for this motivation may in part reflect the age of our cohort (mean age 62).

Participants in the health-related motivation subgroup had higher medical comorbidity, were unmarried and lived alone, and reported less spirituality. There were also suggestions that such patients had greater depression and perceived stress, lower health related quality of life, and were more likely to be female. These correlations outline a subgroup that is more isolated, less well, and may feel comforted by the possibility of increased contact with medical providers if such monitoring or contact is part of study procedures. Emphasizing the benefits of additional contact and symptom monitoring—when accurate—could lead to greater recruitment of more symptomatic populations, thus ensuring applicability of results to sicker patients—an important goal for any clinical research study. These patients often get left behind in research studies despite the fact they represent a population who may benefit

most from new methods of assessment or treatment. From a clinical standpoint, it can be very useful to consider whether a medically sicker client has enrolled in a project in part because of a sense that their condition needs additional monitoring or they have numerous, perhaps unexpressed, physical health concerns. In these cases, it is important for the client to understand clearly whether their hope for increased medical attention will in fact be met in the study as some studies have a placebo arm which may not provide an expected medical benefit.

Regarding financial motivation, only 15 participants (9%) responded above a 5/10 on this item, with most participants clustered at very low ratings. Participants who rated financial gain relatively higher than others tended to have lower current gratitude. While this finding is consistent with the general trend in the literature, the lack of representation in this subgroup may indicate that our study population was less financially needy than others (e.g., compared to groups examined in other studies of research participation motivation (Nappo, Iafrate, & Sanchez, 2013)), or this study may simply have not offered a great enough financial incentive. It is also possible that participants may not be as readily willing to endorse financial compensation as a motivator for fear of appearing selfish. As pointed out in prior qualitative studies of participation, financial motivations are often downplayed or presented at the end of a list of other reasons, perhaps in order to be more socially acceptable (Fry & Dwyer, 2001; Wasan, Taubenberger, & Robinson, 2009). Further work is required to clarify the role of compensation in research participation.

The low ranking of the financial motivation, the higher ranking of more altruistic (or less selfish) motives, and the emphasis in the open-ended responses on “giving back” and admiration for researchers points to social desirability as a significant force in shaping responses in this population. As has been noted in the literature (Sjostrom & Holst, 2002), these responses are more likely to be viewed positively by clinical researchers. For this reason, respondents may be more likely to give such responses (and conversely, may be less likely to describe “less desirable” motives) The fact that social desirability appears to shape the responses we gathered may be a particular characteristic of our population or may indicate a meta-motivation that drives participation in research in general.

A further lens that could be applied to this data is the well-supported Health-Belief Model (HBM), which suggests that perceived benefits of action, the potential perils of inaction, and self-efficacy drive participation in health-promoting behavior in the presence of a stimulus to action (Becker, 1974). In our case, such a stimulus would have been the ACS and associated hospitalization. In a prior HBM-based study in a cardiac population, patient sociodemographics influenced health maintenance behavior, (Horwood, Williams, & Mandic, 2015), just as our study found that sociodemographics (among other factors) differed across distinct subgroups of participants who took action for different reasons. Using a model like HBM to understand health-related motivations could help researchers understand their population and fine-tune their recruitment approach. Further, a deeper comprehension of these HBM principles might also guide clinical treatment through targeted and research-validated methods for boosting treatment compliance.

Identification of these four subgroups may be useful for researchers and clinicians alike as they encompass a broad range of individual experiences and conditions. Importantly, however, motivation to participate can be study-specific, and the findings regarding motivational factors for this study may differ from reasons to participate in other studies. Motivations to participate in an intervention trial, in which specific treatments are offered, are likely quite different from reasons to participate in an observational study.

The present study had several limitations. First, we focused specifically on a limited number of motivational domains that our experience and literature review suggested may be most important. In doing so, we did not systematically address additional relevant factors seen in prior research, such as perceived trustworthiness of their doctor, institution, or the recruiter, or the influence of family (Dixon-Woods & Tarrant, 2009; Ellis, 2000; Kass et al., 2005; Limkakeng et al., 2014; Lowton, 2005; Mills et al., 2003). Our list of motives was also limited in theoretical scope, and did not include potential reasons, such as beliefs about the efficacy of medical science, that are well-grounded in theories such as the theory of reasoned action and the theory of planned behavior (Ajzen, 1991; Hackman & Knowlden, 2014).

Second, because the participation motivation questionnaire was given at the 2-week visit and not at enrollment, it did not assess motivation precisely at the time of enrollment, therefore introducing potential recall bias. Third, our study examined only the motives of those who agreed to participate, and did not address motivations not to participate in research among eligible decliners, an important and related topic (Eborall, Stewart, Cunningham-Burley, Price, & Fowkes, 2011; Groeneveld et al., 2009; Irewall et al., 2014). That 46% of those approached chose not to participate (and almost one-quarter of enrolled participants dropped out prior to the 2-week assessment) underscores this limitation in understanding the motivations not to participate. Finally, our findings were likely influenced by the nature of our study; as one example, the focus in our study on positive psychological constructs (e.g., gratitude) may have drawn a cohort of participants who valued altruism more strongly than other populations of cardiac patients.

In conclusion, we found that participants in an observational study had characteristics that correlated with specific motivations to participate. There is still much to be learned about reasons for research participation, and how best to utilize this information with persons eligible for biomedical research studies. Additional studies utilizing both qualitative and quantitative measures, in a wide range of studies, will be highly valuable.

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Table 1**Patient Characteristics**

Sociodemographic and Medical Characteristics* (N=164)	
Age (Mean, SD)	61.5 (10.5)
White	137 (83.5)
Male	137 (83.5)
Marital Status	113 (68.9)
Living Alone	38 (23.2)
Myocardial Infarction	88 (53.7)
Unstable Angina	76 (46.3)
Cardiac Risk Factors (Mean out of 5, SD)	2.2 (1.2)
Charlson score age adjusted	3.3 (1.6)
Self-Report Measures (Mean, SD)	
Gratitude Questionnaire-6 (<i>range: 6–42</i>)	36.5 (5.8)
State Gratitude (<i>range: 4–48</i>)	24.6 (3.8)
Medical Outcome Study Specific Adherence Scale (<i>range: 4–24</i>)	16.9 (3.1)
Life Orientation Test Revised-Optimism Subscale (<i>range: 3–15</i>)	9.0 (2.9)
Life Orientation Test Revised-Pessimism Subscale (<i>range: 3–15</i>)	8.7 (3.3)
Life Orientation Test Revised (<i>range: 0–24</i>)	17.7 (5.6)
Short Form-12 Mental Component Scale (<i>range: 0–100</i>)	50.8 (9.2)
Short Form-12 Physical Component Scale (<i>range: 0–100</i>)	40.8 (10.4)
Women's Ischemia Syndrome Evaluation (<i>range: 0–30</i>)	4.1 (3.9)
Duke Activity Status Index (<i>range: 0–58.2</i>)	38.7 (15.8)
Patient Health Questionnaire-9 (<i>range: 0–27</i>)	4.4 (4.5)
Hospital Anxiety and Depression Score-Anxiety Subscale (<i>range: 0–21</i>)	4.43 (4)
Daily Spiritual Experience Scale (<i>range: 4–24</i>)	14.2 (5.3)
Perceived Stress Scale-10 (<i>range: 0–40</i>)	12.8 (7.3)

* N (%), otherwise specified

Cardiac Risk Factors=DM, HTN, HLD, Smoking CAD History; GQ-6=Gratitude Questionnaire-Six Item Form;

MOS-SAS=Medical Outcomes Study Specific Adherence Scale; LOT-R=Life Orientation Test-Revised; SF-12 PCS= Medical Outcomes Study Short Form-12 Physical Component Scale; SF-12 MCS= Medical Outcomes Study Short Form-12 Mental Component Scale; WISE = Women's Ischemia Syndrome Evaluation; DASI=Duke Activity Status Index; PHQ-9=Patient Health Questionnaire-9; HADS=Hospital Anxiety and Depression Scale—Anxiety Subscale; DSES = daily spiritual experience scale; PSS-10=perceived stress scale-10

Table 2

Motivations to Participate and Associated Subgroup Characteristics

	Mean Score	Mean Relevance Score*	Characteristics (p<0.05)
Intellectual Motivation: <i>I signed up because it is an interesting study and research question.</i>	7.8	1.74	<ul style="list-style-type: none"> • Fewer cardiac symptoms
Altruistic Motivation: <i>I signed up because this study might be able to help future patients in my situation.</i>	9	3.52	<ul style="list-style-type: none"> • More state gratitude*** • Less pessimistic*** • More spiritual*** • Married • Less medical comorbidities • Less cardiac risk factors • More grateful • Less stressed
Health Motivation: <i>I signed up because it would be helpful to have additional monitoring of my heart symptoms at the follow-up visits.</i>	6.7	0.35	<ul style="list-style-type: none"> • Not married*** • Living alone*** • More medical comorbidities*** • Less spiritual*** • Female • Less physical quality of life • More depressed • More stressed
Financial Motivation: <i>I signed up because of the compensation (money) for participation.</i>	2.2	-5.64	<ul style="list-style-type: none"> • Less state gratitude***

* e.g., the relevance score for Q1 = $Q1 - [(Q2+Q3+Q4)/3]$

*** p-value < 0.012