

# Applying self-determination theory to the blood donation context: The blood donor competence, autonomy, and relatedness enhancement (Blood Donor CARE) trial

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## ARTICLE INFO

### Article history:

Received 15 August 2016

Received in revised form 29 November 2016

Accepted 3 December 2016

Available online 12 December 2016

### Keywords:

Clinical trial

Blood donation

Internal motivational

## ABSTRACT

The Blood Donor Competency, Autonomy, and Relatedness Enhancement (Blood Donor CARE) project was designed as a practical application of self-determination theory to encourage retention of first-time donors. Self-determination theory proposes that people are more likely to persist with behaviors that are internally-motivated, and that externally-motivated behavior can evolve and become internalized given the appropriate socio-environmental conditions. According to self-determination theory, motivation to engage in blood donation may become increasingly self-determined if the behavior satisfies fundamental human needs for competence (a sense of self-efficacy to achieve specific goals), autonomy (a sense of volitional control over one's behavior), and relatedness (a sense of connection to a larger group). The primary aim of this randomized controlled trial is to examine the effect of competence, autonomy, and/or relatedness interventions on donor retention. Using a full factorial design, first-time donors will be assigned to a control condition or one of seven intervention conditions. Donation competence, autonomy, and relatedness, along with additional constructs associated with return donation, will be assessed before and after the intervention using online surveys, and donation attempts will be tracked for one-year using blood center donor databases. We hypothesize that, compared to the control condition, the interventions will increase the likelihood of a subsequent donation attempt. We will also examine intervention-specific increases in competence, autonomy, and relatedness as potential mediators of enhanced donor retention. By promoting first-time donor competence, autonomy, and relatedness our goal is to enhance internal motivation for giving and in so doing increase the likelihood of future donation.

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## 1. Introduction

In the US, nearly one-third of all whole blood donations are provided by first-time donors [1]. Whereas there is good evidence that new donors internalize the role and expectations of being a blood donor as they gain donation experience [2–6], many new donors never provide a second donation [7–9] and one study showed that only 2% of first-time donors under the age of 20 become committed donors [8]. Because of this retention challenge, the US blood supply is highly reliant on continual recruitment of first-time donors. With this in mind, the Blood Donor Competency, Autonomy, and Relatedness Enhancement (Blood Donor CARE) project was designed as a practical application of self-determination theory (SDT) in an effort to encourage retention of first-time donors.

Much research regarding donation behavior has focused on the theory of planned behavior (TPB) [10,11] and its major constructs of *attitude* (a basic evaluative judgment), *subjective norm* (perception of social pressure), and *perceived behavioral control* (a combination of self-efficacy and controllability). However, whereas the TPB has been consistently shown to predict blood donation intention and behavior (e.g., [12–24]), the model does not account for all of the variance in donation intention and there remains a notable intention-behavior gap (i.e., intention is not the sole predictor of donation behavior). These findings highlight the need to expand our consideration to other potential factors that may affect people's motivations and behaviors regarding blood donation. While the TPB focuses on situational-level intentions, SDT offers an alternative conceptualization centered on contextual-level motivations [25–27].

SDT proposes that people are more likely to persist with behaviors that are internally-motivated as opposed to externally-motivated [28]. Indeed, studies in a variety of health contexts have demonstrated that individuals with greater internal motivation exhibit better medication

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adherence [29,30], glucose control [31,32], healthy eating and physical activity [33], and commitment to addictions treatment [33–35]. Similar findings have also been reported in the blood donation context, where measures of the extent to which a donor identity has been internalized are positively related to both donation intention and behavior [2–6, 12–14]. Importantly, according to SDT, motivation to engage in a behavior can evolve from an extrinsic focus and become self-motivated and integrated as a personal value given the appropriate socio-environmental conditions. Specifically, as shown in Fig. 1, SDT posits that motivation may become increasingly internalized and self-determined as a function of the satisfaction of fundamental human needs for *competence* (a sense of self-efficacy or perceived ability to achieve specific goals), *autonomy* (a sense of volitional control over one's behavior) and *relatedness* (a basic sense of connection or need to belong to a larger group) [28].

Over the past few years, we have developed interventions designed to address these fundamental human needs among blood donors. For instance, we have demonstrated that self-efficacy or feelings of competence as a blood donor is enhanced through exposure to coping materials that address common donor fears and concerns [17,36–39]. We have also demonstrated that a brief telephone interview based on motivational interviewing principles, which encourages donors to reflect on their unique motivations for giving, has a positive effect on internal motivation [40] and subsequent donation behavior [41]. And most recently, we developed a social media intervention designed to increase perceptions of belonging or feelings of connectedness among donors [42]. Thus, we have interventions to promote each of the basic human needs that, according to SDT, should foster greater internal motivation to donate blood. The Blood Donor CARE project is a multi-component, randomized controlled trial that uses a full factorial design to test the impact of these interventions when delivered in isolation and in combination.

Importantly, this trial also offers an opportunity to test a recent model of motivation that proposes an integration of SDT and the TPB. This integrative model is based on the premise that the processes proposed by SDT and the TPB regarding motivated behavior are complementary. Specifically, motivational autonomy is seen as a key contextual-level factor that influences the proximal, situational-level variables of attitude, subjective norm, and perceived behavioral control. While this integrated model has received empirical support in a wide variety of health-related contexts [25,43–46], to date it has not been tested with respect to blood donation behavior.

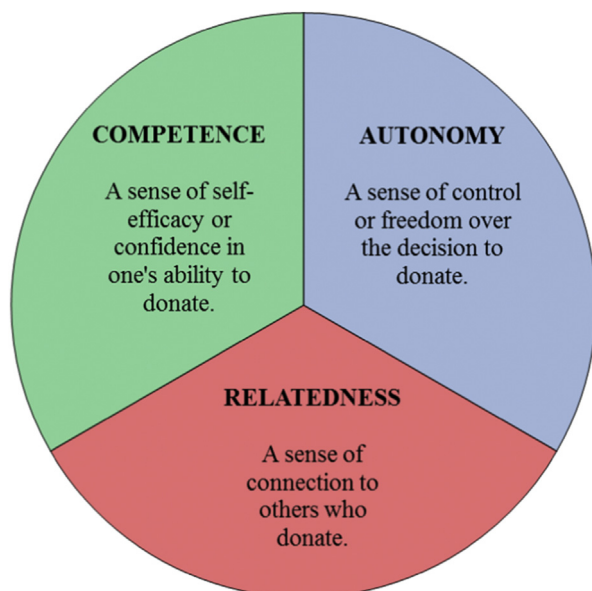


Fig. 1. Contributors to the development of internal motivation for blood donation.

## 2. Design and methods

Using a full factorial design, 16–24 year-old first-time donors with the New York Blood Center will be randomly assigned to a control condition or one of seven intervention conditions designed to enhance one or more fundamental human needs (i.e., competence, autonomy, relatedness). A total of 2240 participants will complete baseline survey measures approximately 1–2 weeks after their donation, engage in their assigned intervention(s), and then repeat the surveys approximately 6 weeks after the baseline. In addition to survey measures, donation attempts will be tracked for 1 year using blood center records.

### 2.1. Hypotheses

The primary aim of this study is to examine the effect of the intervention conditions on donation attempts in the one-year follow-up period (i.e., donor retention). We hypothesize that, compared to controls, the intervention conditions will increase the likelihood of a donation attempt in the next year. Our secondary aim is to examine intervention-specific increases in competence, autonomy, and relatedness as potential mediators of enhanced donor retention. We hypothesize that 1) participants will exhibit intervention-specific increases in competence, autonomy, and relatedness as compared to all other conditions that do not receive the corresponding intervention, and that 2) post-intervention competence, autonomy, and relatedness will be positively related to likelihood of a donation attempt in the next year. Finally, an exploratory aim will examine an integrative model of motivation that views motivational autonomy as a mediating influence on the more proximal, situational-level determinants of behavior described by the theory of planned behavior [15,16,47]. That is, we will examine whether any observed intervention effects on attitude, subjective norm, perceived behavioral control, and donation intention are mediated by changes in motivational autonomy.

### 2.2. Study design

This multi-site study is being conducted by Ohio University (Athens, OH, USA) and New York Blood Center (New York, NY, USA). Study candidates include whole blood donors who have recently completed their first New York Blood Center donation and who remain eligible to give again in the future. As shown in Fig. 2, interested donors provide informed consent and then complete a baseline assessment using REDCap [48], which is a secure online survey and database management application.

Within a few days of completing the baseline survey, participants are randomly assigned using the REDCap randomization procedure into one of eight groups: 1) Treatment-as-Usual control, 2) Competence, 3) Autonomy, 4) Relatedness, 5) Competence + Autonomy, 6) Competence + Relatedness, 7) Autonomy + Relatedness, or 8) Competence + Autonomy + Relatedness. Participants in the control group receive an email indicating that they will be contacted again to complete a second survey in approximately 6–7 weeks. Participants in the intervention groups receive an email invitation to complete their assigned intervention. For those assigned to complete more than one intervention, each intervention is administered in a set order (Competence, Autonomy, and then Relatedness) and email invitations for each new assigned intervention are sent within a few days of completing the prior assignment. The study protocol was approved by the Institutional Review Boards of Ohio University (14-X-256) and New York Blood Center (818209-6), and is registered with [ClinicalTrials.gov](https://www.clinicaltrials.gov) (NCT02717338).

### 2.3. Participant recruitment, screening, and randomization

Each week, a randomly-selected subset of all NYBC donors from the previous week who meet inclusion criteria receives an email invitation to participate in the study. Initial eligibility is determined on the basis of

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