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Can you feel their pain? Examining the relationship between the mental simulation of visceral states and the willingness to donate to a charitable organization

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Table of Contents

List of figures

List of tables

Abstract

People's behavior is heavily influenced by the visceral state they are experiencing. Previous research has found that mental simulation can act as substitute for real experiences. This study combines these two concepts and examines the relationship between the mental simulation of visceral states within a charitable giving scenario. In two studies, we have evaluated whether mentally simulating two states — hunger and cold — will affect participants' willingness to donate to the charity that seeks to help those suffering from a condition caused by that state. After engaging in the mental simulation exercise, participants of Study 1, were given the opportunity to evaluate and allocate a donation to four real charitable organizations. In Study 2, participants were presented with four hypothetical charities and they were also informed that they could keep the hypothetical funds they chose not to donate. Results from our studies yielded evidence that suggests the mental simulation condition, the vividness of their immersion, and the current bodily states of participants all have varying degrees of influence on donation decision-making behavior.

Introduction

When we are hungry, we will look for something to eat to fulfil this need. When we are cold, we will seek shelter or put on some warm clothing. When we see someone else who is suffering from hunger or cold, we will offer them food or cover them with a blanket — or will we? Could witnessing someone else with the shivers make you seek out a blanket to cover your own newfound chills? Or will the sight of a hunger-stricken individual make you aware of your own lunchtime cravings, motivating you to buy yourself a cheeseburger rather than helping to nourish that person in need?

While most people can empathize with someone else's physical hardships and literally "feel their pain" on a visceral level, it is unclear how this will influence their subsequent behavior. How do people's empathic and visceral responses affect their willingness to perform altruistically or give a donation? In the field of marketing and communications, researchers have been unable to determine precisely how charitable organization's marketing or promotional campaigns will influence a person who is experiencing a particular visceral state.

The research study outlined in this report will attempt to examine and quantify the relationship between visceral states and the willingness to donate. By doing so, we will determine whether feeling someone else's pain will provoke people to become empathetic benefactors or empirically justifiable self-interested beings.

Research Questions

People can mentally experience the feelings of a visceral state that differs from their current physical condition. This leads to a more accurate projection for how the simulated state would affect their behavior and preferences if they were actually experiencing it. By actively imagining, visualizing, and reproducing a given bodily state, people are more likely to understand the wants and needs of others, as well as their future selves (Steinmetz, J., Tausen, B. M., & Risen, J. L., 2017).

Previous research has established that current preferences and behavior are influenced by a simulated visceral state (Steinmetz et al., 2017). We are interested

in whether the mental simulation of being hungry or being cold can manipulate a person's future preferences. We will examine whether a person is able to project the hungry or cold visceral state onto others who would be physically experiencing that condition. The degree to which that person can "feel their pain" will be evaluated within a charitable giving scenario. Accordingly, the research questions we will examine are as follows:

(1.1) How does the mental simulation of a visceral state influence a person's willingness to donate?

(1.2) Does a parallel simulated state lead to a higher or lower willingness to donate? (Does the assimilation effect hold true?)

(2) How is this relationship moderated by a person's ability to accurately perceive his or her current bodily state? (PBC & BAQ scores)

(3) How is this relationship moderated by a person's measured current bodily state(s)?

For the purposes of this study and its analyses, willingness to donate will be measured via two dependent variables: donation choice and donation amount.

As mentioned in the introduction, the effect of having participants mentally simulate visceral states, specifically hunger and cold, has not yet been analyzed within a charitable giving context. Implications from our study will be relevant for charities and non-profit organizations, the planning of marketing messages, as well as a broader context for how mental simulation can be used to influence behavior. The findings of this study will also contribute to the literature in the field of sensory marketing. By better understanding the relationship between a consumer's physical state and his or her decision-making processes, we will better predict where, when, and *how* a desired marketing effort should —or should not — be communicated.

In the following sections, we will examine the existing literature on this topic, establish the theoretical framework, present our resulting hypotheses, and describe the proposed methodology for our experiment.

Literature Review

Empathy

Research establishes several definitions of empathy. For the purposes of this research, empathy will be defined as an affective response to another person, which sometimes involves sharing that person's emotional state (Jackson, P. L., Meltzoff, A. N., & Decety, J. 2005). Empathy plays a role in people's prosocial behavior, or any action performed by a person to relieve another person's need or to improve their welfare (Decety, J., Bartal, I. B. A., Uzefovsky, F., & Knafo-Noam, A., 2016). Empathic or prosocial behaviors may include helping, consolidating, or sharing with another person. Altruism is also closely linked to empathy. Altruism refers to prosocial behavior when the helper's motivation is distinguished by perspective taking and empathy (Bierhoff, H. W., 2005., p. 9). Whether altruism exists due to the prospect of benefitting ourselves or a genuine concern for the welfare of another has been a topic of both philosophical debate and empirical research. As Batson, C. D. (2014) states our motivation is often derived from the goal of benefiting someone else, although advocates of altruism admit that much of human behavior and action is egoistic (p. 2).

Empathy and the role it plays in prosocial behavior has been researched extensively. Batson (1998) demonstrated that empathy does increase prosocial behavior, and Basil, D. Z., Ridgway, N. M., & Basil, M. D. (2008) found that empathy will lead to an increase in guilt and a reduction in maladaptive responses, which further increases the intent to donate. Lewin (1951), as cited in Bierhoff, H. W(2005), assumed that prosocial behavior as a motivated behavior is a function of the person and the situation. Furthermore, gender differences in prosocial behavior are found by girls being more empathic than boys (Zahn-Waxler, Robinson & Emde, 1992b. As cited in Bierhoff, H. W., 2005). Later studies have used the Interpersonal Reactivity Index (Davis, 1994. As cited in Bierhoff, H. W., 2005. p.26) and confirmed higher empathic concern in women than men (Davis & Franzoi, 1991; Erlanger, 1998. As Cited in; Bierhoff, H. W., 2005).

Verhaert, G. A., & Van den Poel, D. (2011) examined donation behavior in a true, real world environment via direct email. They found evidence that empathic

concern positively affects the donation decision. Interestingly, they also found that donors with high empathic concern are more likely to donate to several different charities, but often allocate a relatively smaller donation to each one (Verhaert, G. A., & Van den Poel, D., 2011). On the other hand, donors with high empathic concern might wish to give higher donation amounts, but are reluctant to donate due to information they receive about a charity's poor state of funding. One way of getting people to produce most good with their resources (i.e donate higher amounts to the "right" charity) is by encouraging charities to update their benefit-to-cost-ratio (i.e the ratio of benefit to beneficiaries over cost to a donor) for each financial contribution (Baron, J., & Szymanska, E.,2011). This could be helpful to enable donors to select and provide their aid to the most efficient charity at the time they give their donation.

Furthermore, there is no clear formula to evaluate an expected donation amount or accurately determine how helpful human beings will be. Rather, the answer depends on the vulnerability of the potential helper (Miligram,1970 as cited in: Bierhoff, H. W., 2005) and the perceived cost of helping. Overall, Bierhoff, H. W. (2005) reports that a high vulnerability and high perceived cost usually reduces the willingness to help (p.17). Latanè & Nida (1981) found what they deemed as social inhibition of helping in emergency situations. Two of the factors contributing to social inhibition of helping are social influence and diffusion of responsibility. Social influence and the presence of others nearby can inhibit helping if people see the inaction of others and perceive the situation as less critical (p. 309). Diffusion of responsibility occurs when a person knows other people are present and available to respond (i.e provide assistance), which then allows him or her to shift the responsibility of helping over to the others. Taking this same concept and applying it to a broader donation context, a prospective donor might feel less responsible to donate to a charity that receives financial support from a wide variety of sources. The Red Cross, Doctors Without Borders, and the World Wildlife Fund receive large amounts of financial support from private, corporate or federal donors. This can make a prospective donor feel less responsible to make a small donation that will have a relatively small perceived positive impact. On the other hand, this prospective donor might feel more obligated to donate to a specific person in immediate need, such as a family

posting on Facebook asking for financial help to provide their sick child with medical assistance.

Overall, encountering a person in need will induce a wide range of emotions and behavioral responses ranging from distress or unaccountability to compassion or a burning desire to help (Goubert, L., Craig, K. D., Vervoort, T., Morley, S., Sullivan, M. J. L., de CAC, W. & Crombez, G., 2005). An understanding of empathy is necessary to understand the effects of witnessing or considering others who are in pain. Empathy may be automatic and implicit, or explicit and dependent on the effortful use of cognitive processes. Perhaps most interestingly for the present research, empathy can even be interpreted as a sense of knowing the experience of another person (Goubert et.al., 2005., p.287).

Visceral States

Visceral states can be defined as attention-consuming bodily experiences, such as hunger and cold (Steinmetz et al., 2017; Risen & Critcher, 2011; Loewenstein, 1996). It is widely upheld and empirically understood that a person's decisions and actions are largely influenced by his or her visceral state. When a person experiences a visceral state, he or she focuses primarily on the goals associated with their current state and downplay the importance of other goals. For instance, people will exhibit more unhealthy eating habits while hungry relative to being satiated (Read & van Leeuwen, 1998; Nisbett & Kanouse, 1969). Other mental states, such as sexual arousal, have also been shown to influence judgment and decision making (Ariely & Loewenstein, 2006). Risen, J. L., & Critcher, C. R. (2011) found that visceral states can influence beliefs through visceral fit. While experiencing one visceral state, people will judge future states of the world to be more likely, if those states fit with the experienced visceral state. The authors conceptualized this result with finding fit between (1) the experience of heat and the belief in global warming, (2) the experience of thirst and the belief in imminent drought and (3) the experience of hunger and the belief in impending famine.

Nevertheless, people have the tendency to underestimate the influence of visceral factors if they are not actually experiencing the visceral state. This leads to the

resulting hot-to-cold and cold-to-hot empathy gaps between people (Ariely & Loewenstein, 2006; Loewenstein, G., Prelec, D., & Shatto, C., 1998). Cold-to-hot empathy gaps occur when a person in a "cold" and non-aroused state recalls or predicts his or her behavior in a "hot" state of arousal (i.e hungry and cold). Hot-to-cold empathy gaps occur when people in "hot" and aroused state underestimate the influence of that visceral state on attitudes, preferences and behaviors (Loewenstein, G., Prelec, D., & Shatto, C.,1998).

Empathy Gaps

Experiencing one visceral state does not help to overcome the empathy gap for other visceral states (Steinmetz et al., 2017; Nordgren, McDonnell, & Loewenstein, 2011). Steinmetz et al. (2017) confirmed that people rely on mental simulation the same way they rely on the actual experience of visceral states when inferring their current preferences. Simulation has been shown to only affect current preferences, not general preferences such as basic psychosocial needs (Van Haitsma, K., Abbott, K. M., Heid, A. R., Carpenter, B., Curyto, K., Kleban, M., & Spector, A., 2014).

When incorporating empathy as a result of mental simulation, the mental simulation might enable people to anticipate others' preferences and needs to a greater extent. Inter-individual differences may influence when and to what extent people spontaneously generate mental simulation. People can more easily generate the simulation if a visceral state is familiar (Steinmetz et al., 2017). They also perceive states they have experienced as more likely to happen again (Bandura, 1997; Heckhausen, 1991, as cited in Kappes, H. B., & Morewedge, C. K. (2016)). Accordingly, if the participants of this study have never experienced the feelings of hunger or cold, the results of this study would be more difficult to generalize.

As these empathy gaps demonstrate, those in a cold state will fail to empathize with the feeling of someone in a hot state feels because they are not experiencing the parallel visceral state. Since people in a hot state are said to respond to stimuli in "the heat of the moment" (Ariely & Loewenstein, 2006; Loewenstein, G.,

Prelec, D., & Shatto, C.,1998). This study will be to determine whether simulating a hot visceral state will influence people to behave altruistically.

Overall, we expect the stimulation of the relevant visceral state to reduce empathy gaps between the subject and prospective charity recipient. We predict this effect will be stronger and more prominent when a donor's simulated visceral state matches the recipient's physical state of suffering that the charity seeks to relieve. As a result, we have formulated the following hypothesis:

> *H1: Participants mentally simulated to experience a visceral state will have a higher willingness to donate to a charity whose recipients are currently experiencing that state.*

This study will use the feelings of cold and hunger as the hot visceral state during the mental simulation experiment.

The Feelings of Cold and Hunger

Williams and Bargh (2008) further confirmed that experiences of physical coldness would increase feelings of interpersonal coldness. They found that coldness affects an individual's impression of and behavior towards others. Research has shown that cold environments do have an effect on physiology and behavior. Evidence has shown how an experience with a cold or warm object had an influence on people's judgement and prosocial behavior (Williams and Bargh, 2008). Interestingly, empirical research state that physical coldness leads to decreased trust behavior, compared to warmth (Kang, Y., Williams, L. E., Clark, M. S., Gray, J. R., & Bargh, J. A.,2010). Herman (1993) found that appetite is more likely to be suppressed in a hot environment compared to a cold environment, all else equal (p.190). Furthermore, animal research has found significant empirical evidence that cold can induce hunger, since cold environments demand a higher caloric intake (Zhang & Wang, 2006; Zhao, 2011). Within the context of this study, the measurable relationship between cold and hunger will need to be analyzed and evaluated.

Regarding the feeling of hunger, hunger refers to a objective deprivation state. It is a true need that can produce a perceived desire in the form of an appetite. Hunger can be described as stomach hunger pains, emptiness, a focus on eating and loss of energy. Fullness, on the contrary, is associated with feelings of general satisfaction, contentment, energy, focus, and a lack of the desire to eat (Murray, M., & Vickers, Z., 2009). Furthermore, Read, D., & Van Leeuwen, B. (1998) found that a person's current state of appetite has a significant effect on choices that apply to the future (p.189). These visceral states have a great effect on our desires and behavior, making them highly relevant when considering a person's past and future actions. Therefore, cold and hunger will serve as suitable "hot" states for the purpose of this research.

Mental Simulation as a Viable Substitute for Physical Experience

Mental simulation is defined as the cognitive construction of hypothetical scenarios, usually in the form of stories or narratives (Escalas, J. E., 2004). It can make events seem real, and hence, be used as an empirically viable and important substitute for actual experience. Research from cognitive-behavior therapy accentuates the importance of mental simulation generating links to behavioral action. In research consolidated by Taylor et al. (1998) test participants were asked to imagine hypothetical events and rate the likelihood of that those events would occur. They found that participants are more likely to believe an event will occur following mental simulation compared to other cognitive activities that focused on that same event.

The habituating and satiating effects of mental simulation are further evidence that mental simulation can act as a substitute for an experience. Habituation and satiation have mostly been demonstrated in cases where people or animals are exposed to a stimulus repeatedly, which decreases how much they want and enjoy the stimulus. Morewedge, Huh, & Vosgerau (2010) found that the mere mental simulation of an experience can lead people to exhibit habituation or satiation to a stimulus they imagine consuming. Research participants who first imagined eating 30 M&M's and then ate as many M&M's as they would like from a bowl ate fewer M&M's from that bowl than participants in another condition who first imagined eating three M&M's or no M&M's (Morewedge et.al, 2010). Imagined

consumption only reduced participants subsequent actual consumption when they simulated the experience of eating the food. This experiment demonstrates the importance of ensuring a mental simulation exercise is close to or identical to the actual experience of interest.

Steinmetz et al. (2017) found that actively stimulating hunger or feeling cold can make people more interested in eating or activities that make them feel warmer, respectively. While mental simulation can act as substitute for experience, Kappes & Morewedge (2016) found that the substitution effect is likely to be strong initially, but will dissolve without reactivation. As they demonstrated, a short mental simulation exercise is sufficient to affect behavior and preferences. Thus, a mental simulation exercise does not have to last a significant period of time, but it must be explicit to create the highest likelihood of influencing a behavioral change or decision (Steinmetz et al., 2017).

Mental Simulation in Marketing and Donation Scenarios

Mental simulation has been broadly researched in branding and consumption scenarios. Simulations can be used by a seller to increase the motivation and production of the simulated behavior in a prospective buyer (Kappes & Morewedge, 2016). Escalas (2004) found that ad-encouraged mental simulation has a positive effect on advertisement attitudes and brand evaluation. Mental simulation is highly relevant for marketers, since advertisements and promotional materials seek to influence behavior via verbal or visual imagery. In this regard, marketing campaigns can be directly or indirectly defined as simulation exercises. Consider a person who encounters an advertisement for a beach getaway while standing at a bus stop in the middle of a snowy winter. This person is visually stimulated by the advertisement to forget the freezing surroundings and imagine him or herself on the beach, relaxing in the warm sun. Hence, the advertising company has induced mental simulation via a visual cue to influence and elicit a specific behavior (e.g. purchasing a vacation to the beach destination to escape the cold environment).

In a donation context, research has found that certain types of mental simulation exercises (e.g. Imagining the act of donating to a charitable organization and the

allocation of a specific amount of money to that organization) can increase the willingness to actually donate (Stathi & Crisp, 2008; Turner, Crisp, & Lambert, 2007. As cited in: Kappes, H. B., & Morewedge, C. K. (2016). However, until now, research has not examined how mental simulation may be used to influence the willingness to donate as it relates to the real or imagined visceral state of the recipient and donor.

Mental Simulation on Emotional and Physiological Responses

Imagining being in a scenario often evokes an emotional response. Using mental simulation to manipulate positive and/or negative emotional effects is one of the most effective ways to manipulate affective states (Taylor, S., Pham,L., Rivkin, I. & Armor, D. 1998). One important component of this application is the mental simulation process required to reach the simulated goal or outcome. Taylor et al. (1998) found that donation behavior could be changed by mentally simulating the process of physically giving funds from the donor to the recipient in need. Attitudes also work in conjunction with emotions to motivate human behavior. Ajzen (1991) found that attitudes, which are based on beliefs about outcomes, can change when a person is simulated to imagine a particular outcome. Since mental simulation may be used to alter people's beliefs, it follows that their current or pre-existing attitudes are similarly modifiable.

Additionally, Barraza et. al, (2015) demonstrated that sympathetic and parasympathetic systems may predict attention and empathic concern. When exposed to a stimuli, the physiological responses of these bodily systems predicted stimulus-related behavior. The behavior also showed that these results held true when controlling for personality traits. Therefore, people exposed to the same stimuli are likely to exploit the same behavior and level of empathic concern. This study will build upon this finding and evaluate whether people simulated to feel hungry or cold will have a similar response and altruistic behavior to these stimuli.

A person's behavioral response is also affected by how they currently feel and their internal bodily states. According to Janig (2003), the brain asserts control over the body via neural (autonomic) and hormonal (neuroendocrine) systems as

they transmit information about internal bodily states back to the brain. Therefore, bodily states should be considered an important predictor and influencer of behavior. However, the accuracy of a person's self-reported bodily states depends on the degree to which they are in-tune with their body's feelings and functions. In our study, we measured self-reported attentiveness to body processes using the Bodily Awareness and Consciousness Questionnaire (BAQ) and the Private Body Consciousness (PBC) scale.

Measuring Self-Reported Bodily States

We use the Bodily Awareness and Consciousness Questionnaire (BAQ) and the Private Body Consciousness (PBC) scale to measure the ability of a person to be aware of his or her own bodily state. The BAQ measures the self-reported attentiveness to normal non-emotive body processes using an 18-item scale. In particular, the BAQ captures sensitivity to body cycles and rhythms, the ability to discover small changes in normal bodily functions, and the ability to predict bodily reactions (Researchgate, 2018). The PBC scale, on the other hand uses a 5-item scale to measure how well a person is aware of of their internal body sensations and changes in their bodily states (Researchgate, 2018).

As Steinmetz et al. (2017) found, "people's self-reported feelings [partially] mediate the effects of simulation on preferences and behavior, [but] did not consistently find a mediating effect of feelings on preferences and behavior" (p. 8). They determined that, "simulation affects current feelings," but does not necessarily exist as a mediating variable between mental simulation and preferences and behavior (p. 9). Bearing this in mind, we predicted that participants' degree of bodily-awareness (BAQ and/or PBC scores), as well as their self-reported current bodily states would act a moderators in our conceptual model (see Figure 1, below). We expect these variables to influence the strength of the relationship between the mental simulation and willingness to donate, but not to be fully sufficient in explaining the relationship between these two variables.

Based on the theoretical and practical implications of our literature review, we formulated our second and third hypotheses as follows:

H2a) Participants simulated to feel cold or hungry will donate a higher amount to a coat drive or food drive charity, respectively if they have high degrees of bodily awareness and consciousness (BAQ and/or PBC scores)

H2b) Participants simulated to feel cold or hungry will choose to donate to a coat drive or food drive charity, respectively if they have high degrees of bodily awareness and consciousness (higher BAQ and/or PBC scores)

We hypothesize that people who can better understand what it feels like when they are hungry or cold are more likely to feel empathetic towards someone who is suffering from that state.

H3a): Participants who report being more hungry or more cold relative to other participants will donate a higher amount to a food drive or a coat drive charity, respectively.

H3b): Participants who report being more hungry or more cold relative to other participants will chose to donate to a food drive or a coat drive charity, respectively.

This hypothesis is largely based on the empirical evidence that demonstrates how simulating a state that is relevant for the recipient will increase the degree of perceived similarity, and the likelihood of a positive empathic response.

Assimilative Effect

The assimilation effect occurs when mental simulation effects reflect the effects of the actual experience (Steinmetz et al., 2017). We expect to find evidence of the assimilative effect. We predict subjects in the *Cold or Hungry* simulation condition will feel colder or more hungry, resulting in a higher willingness to donate to help those experiencing that similar state (e.g., donating to a coat drive or food drive charity, respectively).

When testing for the assimilative effect, it is important to determine if the simulation caused participants to feel a measurable increase in their level of cold or hunger. In addition to the assimilative effect, Steinmetz et al. (2017) also discussed the contrast effect.

Contrast Effect

As Steinmetz et al. (2017) indicated, a question that might arise is why we mostly find assimilative effects as a result of mental simulation and not contrast effects. The contrast effect occurs when people simulating warmth notice a contrast to their current experience and feel colder. In the context of our research, a contrast effect would need to be tested by simulating warmth and testing whether or not participants donate to a coat drive charity. In the case of a food drive charity, a contrast effect would be tested by simulating the experience of being full. For the purposes of this research paper, we will only be testing the assimilation effect within our experiment design. Since we sought to replicate the study and procedures of Steinmetz et al. (2017) within a charitable giving context, we limited our experiment design to only test for the assimilation effect, with the hungry and cold simulations aligning with the food drive and coat drive charities, respectively. Investigating the contrast effect within both a preference and charitable giving context provides an opportunity for future research. In the current experimental design, this may include a hot and overeating simulation exercise with charities seeking to help those facing heat stroke and obesity, respectively.

Treating Empathic Ability as Constant

While we acknowledge including empathy within the model, as shown in Figure 1, is a more accurate portrayal of a real-world donation scenario, we have chosen to hold empathic ability constant across participants. Ein-Gar, D., & Levontin, L. (2013) demonstrated that empathy mediates willingness to donate to a single victim, but not to a charitable organization. The purpose of this study is to isolate the aforementioned relationship between mental simulation and the willingness to donate to a charitable organization relevant to that person's current and perceived bodily states. Further research may be completed to fully understand how a person's empathic ability relates to mental simulation in a charitable giving

context, by isolating the emotional component of a donation scenario, relating to a visceral state.
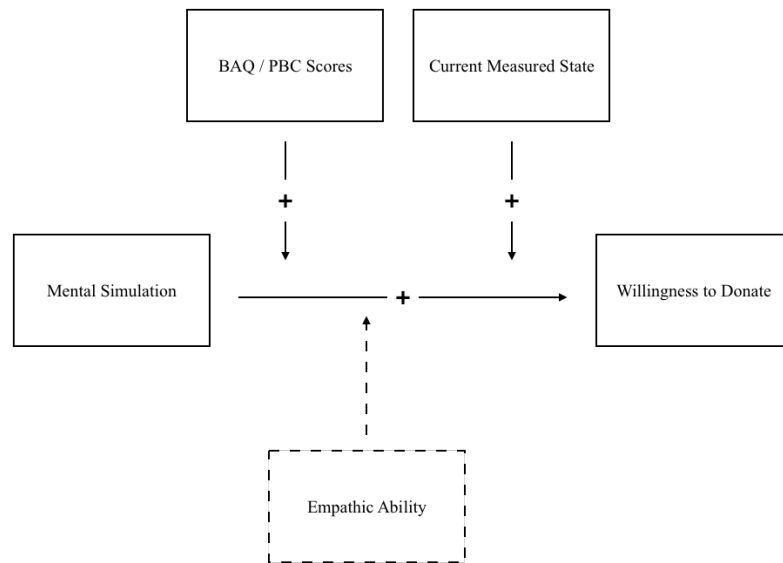
Figure 1: Conceptual Model

Real World Factors

Another important factor within a real-world donation scenario is the degree of similarity between a donor and recipient. Researchers have examined various theoretical interactions between visceral states and social judgement (O'Brien & Ellsworth, 2012; Van Boven & Loewenstein, 2003; Van Boven, Loewenstein, & Dunning, 2003). There is empirical evidence that suggests people have a low capacity to empathize with those who they perceive as being different or those who hold different ideological or social viewpoints, and a consequent low desire to behave altruistically (O'Brien & Ellsworth, 2012). However, dissimilar people do not have to be distant. Mok, D., & Wellman, B. (2007) found that for people who are neither in a romantic relationship nor related are also less sensitive to distance. Ein-Gar, D., & Levontin, L. (2013) showed that people had higher willingness to donate to a charity organisation when they perceived it as temporally or socially distant. This research paper will include both well-known charities and fictive, unknown charities. The fictive charities will further increase the perceived level of distance between the participants and the charity organisations, potentially resulting in higher willingness to donate for these charities. Nevertheless, Ein-Gar, D., & Levontin, L. (2013) also acknowledged that the willingness to donate to a specific person (not charity) was higher when the donors perceived the person in need as temporally or socially close.

We acknowledge social judgments and the perceived degree of similarity between a prospective recipient and donor are likely to be key factors within a real-world donation scenario. However, for the purposes of this research and in an effort to isolate the influence of visceral states in a donation context, we will neither manipulate nor measure these variables. On the other hand, we have sought to minimize any level of perceived dissimilarity between study participants and the donation recipient groups by limiting our recruitment to participants currently residing in the United States and by selecting charities that only operate nationally.

In the following section, we will describe the procedures and empirical methods of the two studies that were used to test our hypotheses.

Overview of Experiments

The studies conducted in this research sought to mentally simulate the visceral states of feeling hungry or cold to determine their hypothesized role as drivers of a person's willingness to donate within a charitable giving scenario. In two separate studies, we tested all aforementioned hypotheses via the simulation of two visceral states: cold and hunger. The design of these studies were derived from Steinmetz et al. (2017), specifically their mental simulation procedures. The implementation of this mental simulation task, the BAQ and PBC questionnaires, and questions about participants current bodily states were identical for both studies.

Study 1 was conducted in a controlled lab-setting at the University of Michigan in Ann Arbour. This study used the names and descriptions of four real charities for the charitable giving scenario. These charities were: Feeding America, One Warm Coat, First Book, and the National Association of Free and Charitable Clinics. Feeding America and One Warm Coat were the charities of hypothesized preference for the hungry and cold conditions, respectively.

The participants of Study 2 were recruited using Amazon Mechanical Turk (MTurk) and were rewarded with a reasonable financial compensation. We sought

to remove sources of potential bias from our first study with two key changes to the design. Firstly, the names of the four real charities used in Study 1 were replaced with four fictitious charities: Food For All (Feeding America), One Warm Coat (Warmer Together), First Book (Smart Start), and The People's Clinic (National Association of Free and Charitable Clinics). The descriptions of each charity remained unchanged.

Secondly, during the four donation allocation exercises, participants were clearly informed that they would be able to keep any of the hypothetical $100 they chose not to donate. By including this specification, it increased the realistic nature of this experimental donation scenario, thereby helping to strengthen the reliability of the study results.

In our subsequent analysis, we discern whether our manipulation was successful and whether this mental simulation exercise contributed to an increased empathic response of the participant, thereby leading to a higher willingness to donate.

Study 1

In this experiment, we replicate the majority of the methods and procedures of Steinmetz et al. (2017), particularly the methods the authors used in Study 2 of their research. The questions used in the study design included prosocial behavior scales, five point semantic differential scales and seven-point likert scales. For more information, the surveys for Study 1 and Study 2 can be found in their entirety in the Appendix.

Before participants of each condition engaged in the simulation exercise, they were asked different questions using the PBC and BAQ-scales. As stated previously, this allowed us to measure the extent to which each participant was attentive to his or her bodily processes and the ability to imagine bodily feelings.

Next, subjects engaged in the cold or hungry mental simulation exercise. Participants were asked to think about what it feels like to be hungry or cold for 60 seconds and to give a detailed written description of their thoughts and

imagined feelings. After the exercise, participants were asked to rate the vividness with which they participated in the simulation task.

Participants were then given a hypothetical $100 to allocate to each of four pre-selected charities: Feeding America (a charity that helps those facing hunger), One Warm Coat (a charity that helps those facing cold), First Book and the National Association of Free and Charitable Clinics. Feeding America and One Warm Coat reflected the simulated visceral states in order to test H1 and to see if experiencing i.e being cold would increase the willingness to donate to One Warm Coat.

Participants and Design

We recruited 202 participants (69 male, 59 female) for 2 (simulation task: cold, hunger) * 4 (charity type: Feeding America, One Warm Coat, First Book and National Association of Free and Charitable Clinics) mixed design, where simulation is a between-participants variable, charity is a within-participant variable, and donation allocation and charity choice serve as dependent variables.

For the purposes of our analysis, we established two forms of donation allocation: donation choice and donation amount. Donation choice was determined by asking participants, "If you could donate to just one of these charities, which one would you pick?" thereby providing an absolute choice of a preferred charity among the four that were presented. Donation amount is a concrete dollar allocation that was determined by asking participants to donate a number of funds between $0 and $100 to each charity.

Simulation and Procedure

Participants were asked to imagine being cold or hungry for 60 seconds. In order to simulate these visceral states, participants read the following instructions:

> *For the next 60 seconds, please imagine that you are very cold (hungry).*
> *Please think about what it would be like to feel very cold (hungry) in as*
> *much detail as possible. Think about what your experience would be like:*
> *What would you be thinking about? How would your body feel? How*

> *would you act? Please try to give us a detailed description of your*
> *thoughts and feelings. (as written and used by Steinmetz et al., 2017)*

Next, participants were required to record their thoughts and feelings for a minimum of 60 seconds. After this period, participants could either continue writing or proceed to the next phase. Participants were also asked to rate the vividness of their imagination.

In the second part of the study, participants were asked to complete a set of survey items. A donation allocation question. Participants were given a hypothetical $100 to allocate to each of the four charities (Feeding America, One Warm Coat , First Book or the National Association of Free and Charitable Clinics). Participants received a new $100 in each of the four questions. These four questions allowed us to measure willingness to donate as a monetary amount. After these allocation tasks, participants were also asked to choose which of the four charities they would donate to, if they could only choose one. As stated previously, this question served as a means of measuring absolute donation preference. As we will present in our subsequent analyses, these two willingness to donate measures were used in our statistical models and tests when evaluating our hypotheses.

To reduce the probability of respondents detecting the focal variable (mental simulation and willingness to donate), other questions not central to the study were included. After the willingness to donate questions, participants were asked to report to what degree they currently feel cold or warm, hungry or satiated, tired or energized, thirsty or quenched, and how long ago they had last eaten. The survey concluded with questions about participants' age, gender, comments, and what they believed might be the study purpose.

Preliminary Analysis and Data Cleaning

A series of quality checks were executed to remove any damaging and bias-inducing responses from these data. All respondents with missing values for any answer were removed. We also removed respondents who guessed the purpose of the study and those who we deemed as being non-responsive. Specifically, we evaluated each participant's free response answer describing their thoughts and

feelings during the simulation exercise in detail.. In addition, we calculated a minimum acceptable response time to remove participants whose study completion times were equal to or less than the calculated minimum threshold of 205 seconds or 3.41 minutes. This minimum completion time was calculated by finding the mean response time (296.77 seconds) and subtracting the standard deviation (60.49). As a result of executing these quality checks, 74 participants were removed from the analysis, leaving a total of 128 survey responses suitable for further analysis.

Different types of response errors might occur when participants respond to surveys. Research has established that the order of the survey questions may bias results, but there are different findings in terms of the overall direction and magnitude of these effects. Some studies support the primary effect, where participants are biased to answer the first option they see (McFarland, 1981). Other researchers have found support for the recency effect, where respondents answer the last option available. Furthermore, studies have also found no order effects overall (Krosnick, 1999). In an effort to control for the possible order effects error, all conditions were randomly assigned to the participants (McFarland, 1981).

Results

Manipulation Checks

Prior to conducting our in-depth analysis, we performed manipulation checks to determine whether or to what degree the cold and hunger simulations affected participants.

Based on the mean values of our measured variables, we do not find evidence that our hungry and cold manipulation affected the relevant perceived bodily states of participants. On the contrary, those in the hungry condition reported a lower level of hunger ($M = 4.44, SD = 2.19$) and a higher level of coldness ($M = 5.37$, $SD = 1.27$) on average, while the converse was found for the hunger and coldness levels of those in the cold condition ($M = 5.08, SD = 2.28; M = 5.18, SD = 1.32$, respectively). Interestingly, the hungry condition participants reported a higher

average time since they had last eaten (*M = 4.27, SD = 4.36*) compared to those in the cold condition (*M = 3.62, SD = 4.11*). The table of means can be found in in Table 1, below.

Table of Means

		Cold		Hungry		BAQ_score		PBC_score		Last_eaten		Vivid	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Condition	Cold	5.18	1.32	5.08	2.28	4.38	0.86	3.76	0.70	5.80	1.70	3.64	4.11
	Hungry	5.37	1.27	4.44	2.19	4.51	0.86	3.80	0.66	6.16	1.79	4.27	4.36

Table 1: Measured Variable Means and Standard Deviations by Condition

We also performed a univariate regression analysis of condition on each of our measured variables (*cold, hungry, BAQ_score, PBC_score, vivid, last_eaten*) to determine whether there was a statistically significant effect of our manipulation. The differences between treatment conditions was not statistically significant for self-reported cold, $F(1, 126) = .647$, $p = .423$; self-reported hunger, $F(1, 126) = 2.640$, $p = .107$; BAQ scores, $F(1, 123.947) = .681$, $p = .411$; BAQ scores, Welch's $F(1, 126) = .681$, $p = .411$; PBC scores, $F(1, 126) = .110$, $p = .740$, vividness, $F(1, 126) = 1.366$, $p = .245$; and the time since participants had last eaten, $F(1, 126) = .714$, $p = .400$.

Condition and Donation Amount and Choice (H1)

Firstly, we conducted a general test for whether condition had an impact on donation amount between charities. As can be seen in Table 2, the highest mean donation amount was allocated to Feeding America for both the hungry (*M = 56.50, SD = 31.88*) and cold (*M = 53.42, SD = 35.87*) condition participants. Those in the hungry condition donated the next highest average amount to One Warm Coat (*M = 52.90, SD = 31.68*), while those in the cold condition donated the next highest amount to the National Association of Free and Charitable Clinics, on average (*M = 47.05, SD = 34.14*). First Book received the lowest average donation allocation between both hungry (*M = 47.10, SD = 31.33*) and cold participants (*M = 45.30, SD = 35.67*).

Table of Means

		Donation_fa		Donation_owc		Donation_fb		Donation_nafcc	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Condition	cold	53.42	35.87	46.38	34.98	45.30	35.67	47.05	34.14
	hungry	56.50	31.88	52.90	31.68	47.10	31.33	50.15	33.44

Table 2: Mean Donation Amounts and Standard Deviations by Condition

We also analyzed the donation choice frequencies between conditions. As can be seen in Table 3, Feeding America was the clear preference for both hungry ($N = 38, 55.9\%$) and cold participants ($N = 34, 56.7\%$). Next, donation preferences for those in the hungry condition decreased from the National Association of Free and Charitable Clinics ($N = 14, 20.6\%$), to First Book ($N = 10, 14.7\%$), and One Warm Coat ($N = 6, 8.8\%$), in that order. For those in the cold condition, First Book ($N = 10, 16.7\%$) was the second most selected charity and One Warm Coat ($N = 8, 13.3\%$) and the National Association of Free and Charitable Clinics ($N = 8, 13.3\%$) were tied for the least chosen charity.

Donation Choice Frequencies and Percentages

		Donation_ffa		Donation_owc		Donation_fb		Donation_nafcc	
		Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %
Condition	Cold	34	56.67%	8	13.33%	10	16.67%	8	13.33%
	Hungry	38	55.88%	6	8.82%	10	14.71%	14	20.59%

Table 3: Donation Choice Frequencies and Percentages by Simulation Condition

A one-way ANOVA was conducted to determine if donation amount to each charity was different between the two condition groups: hungry ($n = 68$) and cold ($n = 60$). There were no outliers as assessed by boxplot, but we found that the data was not normally distributed at each time point as assessed Shapiro-Wilk test ($p < .001$) for all donation amounts. However, since the levels of within-subject factors are similarly skewed, we chose to carry on with our analysis despite this violation.

The average donation amount increased for all charities if the participant was in the hungry condition relative to the cold condition. For the hungry condition, the average donation amount increased from: First Book ($M = 45.30, SD = 35.67$), One Warm Coat ($M = 46.38, SD = 34.98$), the National Association of Free and Charitable Clinics ($M = 47.05, SD = 34.14$), and Feeding America ($M = 53.42, SD = 35.87$), in that order. For the cold condition, the average donation amount increased from: First Book ($M = 47.10, SD = 31.33$), One Warm Coat ($M = 52.90, SD = 31.68$), the National Association of Free and Charitable Clinics ($M = 50.15, SD = 33.44$), and Feeding America ($M = 56.5, SD = 31.88$), in that order.
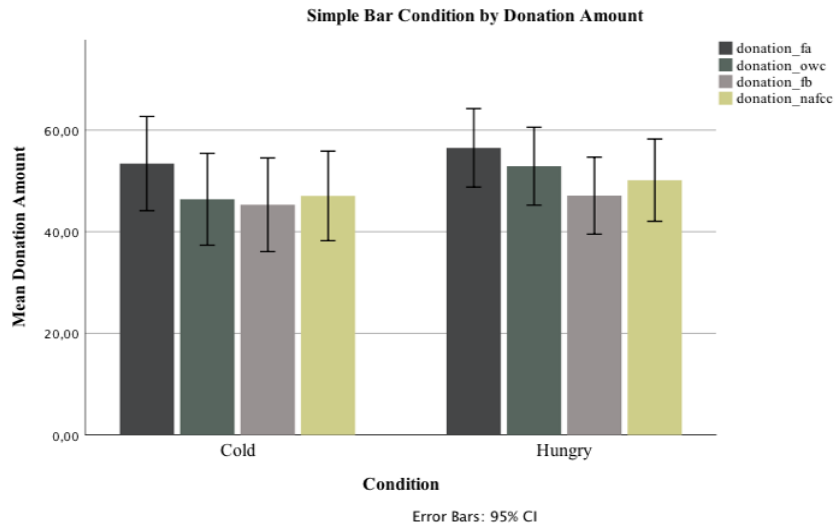
Figure 2: Mean Donation Amount for Each Charity by Simulation Condition

There was homogeneity of variances, as assessed by Levene's test of homogeneity of variance, for Feeding America ($p = .155$), One Warm Coat ($p = .610$), and the National Association of Free and Charitable Clinics ($p = .916$). The assumption of homogeneity of variances was violated for First Book ($p = .038$). The differences between the conditions were not statistically significant for Feeding America, *F(1, 126) =.265, p = .608*, One Warm Coat, *F(1, 126) = 1.222, p = .271*, First Book, *F(1, 126) =.093, p = .761*, and the National Association of Free and Charitable Clinics, *F(1, 126) =.268, p = .605*.

Bodily Awareness and Consciousness and Donation Amount (H2a)

We used the median split method to separate BAQ score (*Mdn = 4.39*) and PBC score (*Mdn = 3.80*) into low and high values. Firstly, we examined the difference in donation amounts between these low and high levels of bodily awareness and consciousness and condition. These results are shown in Table 4, below.

				Donation_fa		Donation_owc	
				Mean	Standard Deviation	Mean	Standard Deviation
Condition	Cold	BAQ_1_h	Low BAQ	48.42	34.85	40.12	33.80
			High BAQ	59.52	36.80	54.04	35.48
		PBC_1_h	Low PBC	44.45	33.39	38.64	31.74
			High PBC	64.37	36.34	55.85	36.97
	Hungry	BAQ_1_h	Low BAQ	56.06	30.76	57.53	30.54
			High BAQ	56.94	33.42	48.26	32.57
		PBC_1_h	Low PBC	52.05	32.03	45.63	31.06
			High PBC	62.13	31.32	62.10	30.52

Table 4: Mean Donation Amounts by Simulation Condition

and Median Split BAQ and PBC Scores

For participants in the cold condition, we found that those with low PBC and BAQ scores donate relatively lower amounts to Feeding America and One Warm Coat compared to those with high PBC and BAQ scores. For those in the hungry condition, we found mixed results; participants with lower PBC scores donate relatively lower amounts to Feeding America and One Warm Coat compared to those with high PBC scores. However, for hungry condition participants with low BAQ scores, we find they donated a slightly smaller amount to Feeding America and a higher amount to One Warm Coat relative to those with high BAQ scores.

In order to determine whether these differences in donation amount were statistically significant, we performed an ANOVA of condition and bodily awareness and consciousness on donation amount for Feeding America and One Warm Coat. In order to complete this test, we constructed a new variable to control for the interaction between condition and BAQ and PBC scores. This interaction variable was included as a covariate in our model, along with the original PBC and BAQ score variables. The donation amounts for Feeding America and One Warm Coat, as well as the effects of BAQ and PBC scores were examined in separate tests:

> ***Test 1:*** *DV: Donation Amount for Feeding America;*
> *IV: BAQ_score, Condition*BAQ_score, Condition*
>
> ***Test 2:*** *DV: Donation Amount for Feeding America;*
> *IV: PBC_score, Condition*PBC_score, Condition*
>
> ***Test 3:*** *DV: Donation Amount for One Warm Coat;*
> *IV: BAQ_score, Condition*BAQ_score, Condition*
>
> ***Test 4:*** *DV: Donation Amount for One Warm Coat;*
> *IV: PBC_score, Condition*PBC_score, Condition*

Tests 1, 2, and 3 revealed no statistically significant difference between the means of the treatment groups. For Test 4, we found a statistically significant result for PBC scores and the donation amount for One Warm Coat, $F(1, 124) = 4.846$, $p = .030$, partial $\eta^2 = .038$. However, the difference between the mean donation amounts between condition groups was not statistically significant, $F(1, 124) =$

.545, p = .462, partial $\eta2$ = .004 nor was the difference between groups for the interaction of condition and PBC scores $F(1, 124)$ = .881, p = .350, partial $\eta2$ = .007. Results can be found in Table 5, below.

Tests of Between-Subjects Effects

Dependent Variable: Donation_owc

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7355.859ᵃ	3	2451.953	2.279	0.083	0.052
Intercept	831.340	1	831.340	0.773	0.381	0.006
PBC_score	5214.240	1	5214.240	4.846	0.030	0.038
Condition_PBC	948.350	1	948.350	0.881	0.350	0.007
Condition	586.262	1	586.262	0.545	0.462	0.004
Error	133425.016	124	1076.008			
Total	458784.000	128				
Corrected Total	140780.875	127				

a. R Squared = .052 (Adjusted R Squared = .029)

Table 5: Test of Between-Subject Effects; DV: Donation Amount for One Warm Coat; IV: PBC_score, Condition*PBC_score, Condition

Bodily Awareness and Consciousness and Donation Choice (H2b)

A multinomial logistic regression was performed to ascertain the effects of the treatment and bodily awareness and consciousness, as assessed by the BAQ and PBC scores, on the likelihood that participants will donate to a coat drive or food drive charity. In order to include bodily awareness and consciousness as factors within our regression model, we used the median split method to separate BAQ score (*Mdn= 4.39*) and PBC score (*Mdn = 3.80*) into low and high values.

The regression model was statistically significant, $\chi2(9)$ = 16.917, p < .050. The model explained only 13.7% (Nagelkerke R^2) of the variance in donation choice and correctly classified 56.3% of cases. We also found that one of the predictor variables was significant: low PBC scores for First Book. Those with a low PBC score had 2.346 times higher odds to choose to donate to First Book, as shown in Table 6.

donation_choice[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Feeding America	Intercept	1.799	0.539	11.149	1	0.001			
	[Condition=Cold]	-0.468	0.506	0.855	1	0.355	0.626	0.232	1.689
	[Condition=Hungry]	0[b]			0				
	[PBC_l_h=Low]	0.105	0.505	0.043	1	0.835	1.111	0.412	2.991
	[PBC_l_h=High]	0[b]			0				
	[BAQ_l_h=Low]	-0.708	0.517	1.880	1	0.170	0.493	0.179	1.356
	[BAQ_l_h=High]	0[b]			0				
One Warm Coat	Intercept	0.289	0.692	0.174	1	0.677			
	[Condition=Cold]	-0.865	0.702	1.521	1	0.218	0.421	0.106	1.665
	[Condition=Hungry]	0[b]			0				
	[PBC_l_h=Low]	0.148	0.716	0.043	1	0.836	1.160	0.285	4.718
	[PBC_l_h=High]	0[b]			0				
	[BAQ_l_h=Low]	-0.623	0.725	0.739	1	0.390	0.536	0.130	2.219
	[BAQ_l_h=High]	0[b]			0				
First Book	Intercept	-1.065	0.914	1.356	1	0.244			
	[Condition=Cold]	-0.620	0.657	0.891	1	0.345	0.538	0.148	1.949
	[Condition=Hungry]	0[b]			0				
	[PBC_l_h=Low]	2.346	0.882	7.077	1	0.008	10.445	1.854	58.829
	[PBC_l_h=High]	0[b]			0				
	[BAQ_l_h=Low]	-0.647	0.682	0.899	1	0.343	0.524	0.138	1.994
	[BAQ_l_h=High]	0[b]			0				

a. The reference category is: National Association of Free and Charitable Clinics.

b. This parameter is set to zero because it is redundant.

Table 6: Parameter Estimates; DV: Donation Choice; IV: Condition, Median Split PBC Score, Median Split BAQ score

Self-Reported Cold and Hunger and Donation Amount (H3a)

A linear regression was run to understand the effect of self-reported levels of cold and hunger on donation amount for Feeding America and One Warm Coat. The prediction equation was:

$$Y_i = \beta_0 + \beta_1 \, cold + \beta_2 \, hungry + \beta_3 \, donate\_fa +$$
$$\beta_4 \, donate\_owc + \beta_5 \, donate\_fb + \beta_6 \, donate\_nafcc + \varepsilon$$

where Y_1 = donation amount for Feeding America, and Y_2 = donation amount for One Warm Coat.

We chose to include the donation amount for the other charities in our regression model because we found that participants' donation amount decisions for one charity were highly correlated with their other donation allocation decisions. Furthermore, we found that including these variables in our model resulted in a significantly higher R^2. Our included variables predicted the donation amount to Feeding America, $F(5,122) = 63.391 \ p < .001$, accounting for 72.2 % of the variation in donation amount with adjusted $R^2 = 71.1\%$, a large size effect according to Cohen (1988). The coefficients for cold and hungry were not statistically significant, which implied that the slope coefficients is not different

from zero, and there is no linear relation between the independent and dependent variables.

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	19.598	7.552		2.595	0.011
Donation_owc	0.389	0.087	0.385	4.462	0.000
Donation_fb	0.066	0.080	0.066	0.833	0.406
Donation_nafcc	0.459	0.084	0.458	5.460	0.000
Cold	-1.879	1.290	-0.072	-1.456	0.148
Hungry	0.117	0.744	0.008	0.157	0.876

a. Dependent Variable: donation_fa

Table 7: Coefficients; DV: Donation Amount for Feeding America; IV: Donation Amounts for OWC, FB, NAFCC, Self-reported Cold, and Self-reported Hungry

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-5.943	7.443		-0.798	0.426
Donation_fa	0.360	0.081	0.365	4.462	0.000
Donation_fb	0.293	0.072	0.293	4.062	0.000
Donation_nafcc	0.266	0.087	0.269	3.065	0.003
Cold	2.606	1.229	0.101	2.120	0.036
Hungry	-0.912	0.711	-0.061	-1.283	0.202

a. Dependent Variable: donation_owc

Table 8: Coefficients; DV: Donation Amount for Feeding America; IV: Donation Amounts for FA, FB, NAFCC, Self-reported Cold, and Self-reported Hungry

Our included variables predicted the donation amount to One Warm Coat, $F(5, 122) = 68.159$ $p < .001$, accounting for 73.6% of the variation in donation amount with adjusted $R^2 = 72.6\%$, a large size effect according to Cohen (1988). Participants who were one degree more cold leads to a \$2.61 higher donation to One Warm Coat ($p = .036$). The coefficients for hungry was not statistically significant, which implied that the slope coefficient is not different from zero, and there is no linear relation between the independent and dependent variables.

Self-Reported Cold and Hunger and Donation Choice (H3b)

A binary logistic regression was performed to ascertain the effects of self-reported cold and hunger on the likelihood that participants chose to donate to Feeding

America and One Warm Coat. In order to perform this type of statistical analysis, we constructed a dummy variable for Feeding America and One Warm Coat, which take the value 1 if a participant chose to donate to this charity and 0 otherwise. These variables were *donate_fa* and *donate_owc*, which correspond to a donation choice of Feeding America and One Warm Coat, respectively. As was the case in our regression analysis of H3a, the donation allocation amounts for all charities was included in this regression to increase the overall explanatory value of our model.

The logistic regression model for Feeding America produced three studentized residual with a value of 2.651, -2.500, and -4.250 standard deviations, which were kept in the analysis. The regression model was not statistically significant, $\chi 2(8) = 7.590$, $p < .474$. The model explained 31.0% (Nagelkerke R^2) of the variance in donation choice and correctly classified 73.4% of cases. Of the six predictor variables, two were statistically significant: the donation amounts for Feeding America and First Book.

In the logistic regression model for One Warm Coat there were six studentized residual with a value of 2.712, 3.228, 3.345, 3.443, 4.147 and 4.876 standard deviations, which were kept in the analysis. This model was not statistically significant, $\chi 2(8) = 6.556$, $p < .585$. The model explained 37.9% (Nagelkerke R^2) of the variance in donation choice and correctly classified 92.2% of cases. Of the six predictor variables two were statistically significant: the donation amounts for Feeding America and One Warm Coat.

Discussion

The purpose of Study 1 was to expand upon the mental simulation procedures and findings of Steinmetz et al. (2017) within a charitable giving context to empirically examine all hypotheses: H1, H2a, H2b, H3a, and H3b.

Our manipulation checks suggested our mental simulation exercise had no statistically significant effect on participants' self-reported current bodily feelings of cold or hunger. While there were minor differences in our measured variables

between participants in each treatment, we could not conclude that the manipulation exercise was the main source of these differences.

We found varying degrees of support for and against our hypotheses. When testing H1, we found that participants in both conditions donated the most to Feeding America. However, since the differences in the donation amounts between conditions were not significant, we could not conclude with statistical certainty that those simulating the feelings of cold or hungry had a higher willingness to donate to the coat or food drive charity, respectively.

For H2a, we found that participants with lower or higher BAQ and PBC scores exhibited different donation allocation preferences for the charities of interest. In all cases, except for the donation allocation for those in the hungry condition, we found that the average donation amount increased for those with higher BAQ and PBC scores. An ANOVA revealed that there was a statistically significant difference between PBC scores of those in the cold condition and the donation amount for One Warm Coat. This provided evidence that the PBC scores for participants in the cold condition did have a statistically significant influence over their donation amount decisions to this charity. Although the partial eta squared revealed that this effect size was small, the result provided support in favor of our hypothesis

Further analysis did not reveal any statistically significant evidence that the differences in participants' bodily awareness and consciousness levels between conditions influenced their donation amount decisions. We also did not find any statistical evidence in strong support of H2b. Therefore, we cannot conclude that the hungry or cold simulation condition affected participants' overall preference to donate to a food or coat drive charity, respectively, based on their PBC or BAQ scores.

Our regression analysis testing H3a produced a statistically significant coefficient for self-reported levels of cold on the donation amount for One Warm Coat. This provided some evidence in favor of the assimilation effect, as defined by Steinmetz et al. (2017). Our binary logistic regression models testing H3b

produced no significant statistical evidence in support of our hypothesis. However, both of these tests provided support for a statistical relationship between one donation allocation decision and the other donation amount decisions in this experiment. For instance, we found that participants' donation allocation decisions for Feeding America, First Book, and the National Association of Free and Charitable Clinics had a statistically significant influence on the donation amount for One Warm Coat. Although this result may be intuitive, since we can expect a person exercises the same overall donation allocation tendencies, all else constant (i.e. Controlling for the effects of brand-related charity evaluation, current visceral state, empathic ability, etc.), it emphasizes the importance of controlling for these variables in empirical models.

As mentioned previously, there are two key sources of bias that we believe affected our results and provided a lack of evidence in support of our hypotheses: The use of real charity names and the lack of an explanation informing participants that they could keep any unallocated donation funds. These sources of potential bias were corrected for in the design and implementation of Study 2, which will be presented below.

Study 2

Participants and Design

In Study 2, we recruited 581 participants (277 male, 222 female) using MTurk for a for 2 (simulation task: cold, hunger) * 4 (charity type: Food For All, Warmer Together, Smart Start, The People's Clinic) mixed design, where simulation is a between-participants variable, charity is a within-participant variable, and donation allocation and charity choice serve as dependent variables. By using MTurk, the study participants covered a larger range of demographic diversity, which provided a higher external validity of the study. Participants were also randomly assigned to all conditions to avoid response errors and to control for the possible order effects error (McFarland, 1981).

Simulation and Procedure

We duplicated all procedures and methods from Study 1, aside from the two key exceptions specified previously: (1) the names of the four real charities used in

Study 1 were replaced with four fictitious charities (Food For All, One Warm Coat, First Book, and The People's Clinic) and (2) participants were clearly informed that they could keep any hypothetical funds they chose not to donate. With these two adjustments, Study 2 was designed to remove potential sources of bias while also increasing the external validity and real-world reliability of our analyses.

Preliminary Analysis

Upon implementing the same quality checks and data cleaning methods used in Study 1, 191 respondents were removed from our data and left 394 respondents (221 male, 173 female) for further analysis.

The minimum response time was also measured for Study 2. We replicated the procedure of Study 1, by finding the mean number of seconds used to complete the study ($M = 394.86$), subtracted the standard deviation ($SD = 204.41$). All participants who used equal to or less than 190.44 seconds (3.17 minutes) were removed.

Results

Manipulation Checks

As was the case with Study 1, we performed manipulation checks to determine whether and to what degree the cold and hunger simulations affected participants before conducting our in-depth analysis.

Between the two conditions, we find little to no difference with the mean values for *vividness*, *last_eaten, cold*, *hungry*, *BAQ_score*, and *PBC_score*. These means can be found in Table 9, below.

Table of Means

		Cold		Hungry		BAQ_score		PBC_score		Last_eaten		Vivid	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Condition	Cold	4.78	1.34	4.37	2.11	4.60	0.93	3.88	0.68	4.35	4.17	7.44	1.37
	Hungry	4.63	1.43	4.42	2.23	4.57	0.97	3.77	0.76	3.87	3.62	7.37	1.48

Table 9: Descriptive Means by Condition

Notably, participants in the hungry condition ate about 28 minutes (0.48 hours) more recently compared to those in the cold condition, on average. While this

suggests participants in the cold condition may have been marginally more hungry than those in the hungry condition, this is only a minor difference difference and is exogenous to the mental simulation exercise.

We ran a univariate regression analysis of the simulation condition on each of our measured variables (*vivid, hungry, cold, BAQ_score, PBC_score*) to determine the true effect of our manipulation. The differences between treatment conditions was not statistically significant for self-reported cold, $F(1, 392) = 1.076$, $p = .300$; self-reported hunger, $F(1, 392) = 0.052$, $p = .820$; BAQ scores, $F(1, 392) = .156$, $p = .639$; PBC scores, $F(1, 392) = 2.104$, $p = .148$, vividness, $F(1, 392) = .233$, $p = .367$; and the time since participants had last eaten, $F(1, 392) = 1.496$, $p = .222$.

Condition and Donation Amount and Choice (H1)

A general test revealed that participants in the hungry condition allocated average donation amounts to Food For All ($M = 36.64$, $SD = 32.55$), The People's Clinic ($M = 30.91$, $SD = 31.22$), Warmer Together ($M = 29.29$, $SD = 29.03$), and Smart Start ($M = 27.03$, $SD = 27.59$), in that order. Those in the cold condition allocated an average donation to Food For All ($M = 34.80$, $SD = 32.64$), The People's Clinic ($M = 29.98$, $SD = 30.37$), Warmer Together ($M = 29.32$, $SD = 30.96$), and Smart Start ($M = 27.10$, $SD = 30.52$), in that order. These results can be found in Table 10.

Table of Means

		Donation_ffa		Donation_wt		Donation_ss		Donation_tpc	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Condition	Cold	34.80	32.64	29.32	30.96	27.10	30.52	28.98	30.37
	Hungry	36.64	32.55	29.29	29.04	27.03	27.59	30.91	31.22

Table 10: Mean Donation Amounts and Standard Deviations by Simulation Condition

The donation choice frequencies between conditions, shown in Table 11, revealed that Food For All was the charity of preference for participants in both the hungry ($N = 113$, 53.6%) and cold conditions ($N = 88$, 48.1%). The People's Clinic was the next most chosen charity among the hungry ($N = 48$, 22.7%) and cold conditions ($N = 34$, 18.6%). Warmer Together was the third most selected charity among those in the hungry condition ($N = 27$, 12.8%), while Smart Start was the third most frequent choice for those in the cold condition ($N = 31$, 16.9%). Smart

Start was the least selected charity for the hungry condition ($N = 34$, 10.9%) and Warmer Together was the least selected for the cold condition ($N = 30$, 16.4%).

Donation Choice Frequencies and Percentages

		Donation_ffa		Donation_wt		Donation_ss		Donation_tpc	
		Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %
Condition	Cold	88	48.09%	30	16.39%	31	16.94%	34	18.58%
	Hungry	113	53.55%	27	12.80%	23	10.90%	48	22.75%

Table 11: Donation Choice Frequencies and Percentages by Simulation Condition

A one-way ANOVA was conducted to determine if donation amount to each charity was different between the two condition groups: hungry ($n = 211$) and cold ($n = 183$). There were no outliers as assessed by boxplot, but we found that the data was not normally distributed at each time point as assessed Shapiro-Wilk test ($p < .001$) for all donation amounts. However, since the levels of within-subject factors were similarly skewed, we chose to carry on with our analysis despite this violation.
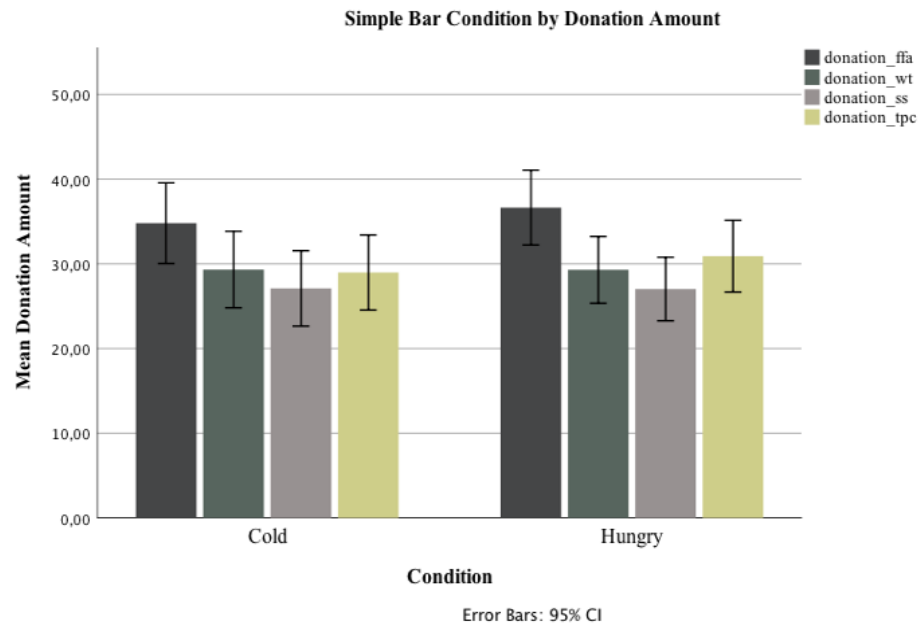

Figure 3: Mean Donation Amount for Each Charity by Simulation Condition

The average donation amount increased for all charities if the participant was in the hungry condition relative to the cold condition. There was homogeneity of variances, as assessed by Levene's test of homogeneity of variance, for Food For All ($p = .869$), Warmer Together ($p = .360$), Smart Start ($p = .199$), and The People's Clinic ($p = .367$). The differences between the conditions was not statistically significant for Food For All, $F(1, 392) = .313$, $p = .567$, One Warm

39

Coat, $F(1, 392) = .000$, $p = .992$, Smart Start, $F(1, 392) = .001$, $p = .979$, and The People's Clinic, $F(1, 392) = .383$, $p = .536$. These results can be found in Table 12.

Table of Means

		Donation_ffa		Donation_wt		Donation_ss		Donation_tpc	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Condition	Cold	34.80	32.64	29.32	30.96	27.10	30.52	28.98	30.37
	Hungry	36.64	32.55	29.29	29.04	27.03	27.59	30.91	31.22

Table 12: Mean Donation Amounts and Standard Deviations by Condition

Bodily Awareness and Consciousness and Donation Amount (H2a)

Similar to our analysis in Study 1, we used the median split method to separate BAQ score ($Mdn = 4.67$) and PBC score ($Mdn = 4.00$) into low and high values. Firstly, we examined the difference in donation amounts between these low and high levels of bodily awareness and consciousness and condition. These results are shown in Table 13, below.

				Donation_fa		Donation_owc	
				Mean	Standard Deviation	Mean	Standard Deviation
Condition	Cold	BAQ_l_h	Low BAQ	35.01	33.77	30.75	31.81
			High BAQ	34.43	30.76	26.72	29.43
		PBC_l_h	Low PBC	36.10	34.23	30.89	32.56
			High PBC	33.34	30.89	27.56	29.14
	Hungry	BAQ_l_h	Low BAQ	36.10	32.67	28.99	29.64
			High BAQ	37.62	32.53	29.84	28.13
		PBC_l_h	Low PBC	33.03	30.96	27.27	27.70
			High PBC	40.58	33.92	31.50	30.42

Table 13: Mean Donation Amounts by Condition and Median Split BAQ and PBC Scores

For participants in the cold condition, we found that those with low PBC and BAQ scores donated relatively lower amounts to Food For All and Warmer Together compared to those with high PBC and BAQ scores. For those in the hungry condition, we found a converse effect; participants with high PBC and BAQ scores donated relatively higher amounts to Food For All and Warmer Together compared to those with low PBC and BAQ scores.

To test whether these differences were statistically significant, we constructed a new variable to control for the interaction between condition and BAQ and PBC scores. This interaction variable was included as a covariate in our ANOVA, along with the original PBC and BAQ score variables. The donation amounts for

Food For All and Warmer Together, as well as the effects of PBC and BAQ
scores were examined in separate tests:

Test 1: *DV: Donation Amount for Food For All;*
IV: BAQ_score, Condition*BAQ_score, Condition

Test 2: *DV: Donation Amount for Food For All;*
IV: PBC_score, Condition*PBC_score, Condition

Test 3: *DV: Donation Amount for Warmer Together;*
IV: BAQ_score, Condition*BAQ_score, Condition

Test 4: *DV: Donation Amount for Warmer Together;*
IV: PBC_score, Condition*PBC_score, Condition

Tests 1, 2, 3 and 4 revealed no statistically significant differences between the
means of the treatment groups based on the included independent variables.

Bodily Awareness and Consciousness and Donation Choice (H2b)

As was the case in Study 1, a multinomial logistic regression was performed to
test this hypothesis. Once again, the median split method was used to separate
BAQ score ($Mdn = 4.67$) and PBC score ($Mdn = 4.00$) into low and high values.
The dependent variable in this model was donation choice and the independent
variables were: Condition, median split PBC score, and median split BAQ score.

Parameter Estimates

donation_choice[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
Food For All	Intercept	0.909	0.257	12.483	1	0.000			
	[Condition=Cold]	0.098	0.267	0.135	1	0.713	1.103	0.654	1.860
	[Condition=Hungry]	0[b]			0				
	[PBC_l_h=Low]	0.371	0.296	1.574	1	0.210	1.449	0.812	2.587
	[PBC_l_h=High]	0[b]			0				
	[BAQ_l_h=Low]	-0.534	0.289	3.414	1	0.065	0.586	0.333	1.033
	[BAQ_l_h=High]	0[b]			0				
Warmer Together	Intercept	-0.512	0.347	2.175	1	0.140			
	[Condition=Cold]	0.453	0.349	1.692	1	0.193	1.574	0.795	3.116
	[Condition=Hungry]	0[b]			0				
	[PBC_l_h=Low]	0.405	0.390	1.083	1	0.298	1.500	0.699	3.218
	[PBC_l_h=High]	0[b]			0				
	[BAQ_l_h=Low]	-0.603	0.377	2.556	1	0.110	0.547	0.261	1.146
	[BAQ_l_h=High]	0[b]			0				
Smart Start	Intercept	-0.932	0.376	6.142	1	0.013			
	[Condition=Cold]	0.644	0.355	3.283	1	0.070	1.903	0.949	3.818
	[Condition=Hungry]	0[b]			0				
	[PBC_l_h=Low]	0.211	0.398	0.281	1	0.596	1.235	0.566	2.696
	[PBC_l_h=High]	0[b]			0				
	[BAQ_l_h=Low]	0.101	0.391	0.067	1	0.796	1.106	0.514	2.381
	[BAQ_l_h=High]	0[b]			0				

a. The reference category is: The People's Clinic.

b. This parameter is set to zero because it is redundant.

Table 14: Parameter Estimates; DV: Donation Choice; IV: Condition, Median Split PBC Score, Median Split BAQ Score

The regression model was not statistically significant, $\chi2(9) = 11.994$, $p < .214$. The model explained only 3.3% (Nagelkerke R^2) of the variance in donation choice and correctly classified 51.0% of cases. Additionally, none of the predictor variables were significant. This suggests that bodily awareness and consciousness measured by PBC and BAQ scores, may not be used to predict the likelihood that participants donated to the coat or food drive charity in either condition.

Self-Reported Cold and Hunger and Donation Amount (H3a)

A linear regression was run to understand the effect of self-reported levels of cold and hunger on donation amount for Food For All and Warmer Together. The prediction equation was:

$$Y_i = \beta_0 + \beta_1 \, cold + \beta_2 \, hungry + \beta_3 \, donate\_ffa+$$
$$\beta_4 \, donate\_wt + \beta_5 \, donate\_ss + \beta_6 \, donate\_tpc + \varepsilon$$

where Y_1 = donation amount for Food For All and Y_2 = donation amount for Warmer Together.

Our included variables predicted the donation amount to Food For All, $F(5, 388)$ = 341.497 $p < .001$, accounting for 81.5% of the variation in donation amount with adjusted R^2 = 81.2%, a large size effect according to Cohen (1988). Participants who were one degree more cold leads to a \$0.147 higher donation to Food For All. Participants who were one degree more hungry leads to a \$0.062 higher donation to Food For All.

Coefficients^a

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	4.381	2.992		1.464	0.144
Cold	0.147	0.516	0.006	0.284	0.776
Hungry	0.062	0.328	0.004	0.189	0.851
Donation_wt	0.369	0.047	0.339	7.791	0.000
Donation_ss	0.193	0.044	0.172	4.399	0.000
Donation_tpc	0.480	0.042	0.454	11.307	0.000

a. Dependent Variable: Donation_ffa

Table 15: Coefficients; DV: Donation Amount for Food For All; IV: Self-reported Cold, Self-reported Hungry, and Donation Amounts for WT, SS, TPC

Our included variables predicted the donation amount to Warmer Together, $F(5, 388) = 341.497$, $p < .001$, accounting for 78.2% of the variation in donation amount with adjusted $R^2 = 81.2\%$, a large size effect. Participants who were one degree more cold leads to a \$0.002 lower donation to Warmer Together. Participants who were one degree more hungry leads to a \$0.147 lower donation to Warmer Together.

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.322	2.989		0.442	0.659
Cold	-0.005	0.514	0.000	-0.010	0.992
Hungry	-0.147	0.327	-0.011	-0.448	0.654
Donation_ffa	0.367	0.047	0.399	7.791	0.000
Donation_ss	0.318	0.042	0.307	7.588	0.000
Donation_tpc	0.231	0.047	0.238	4.884	0.000

a. Dependent Variable: Donation_wt

Table 16: Variables in the Equation; DV: Donation Amount for Warmer together; IV: Self-reported Cold, Self-reported Hungry, and Donation Amounts for FFA, SS, TPC

Self-Reported Cold and Hunger and Donation Choice (H3b)

Once again, a binary logistic regression was performed to test H3b in this study. We constructed two new dummy variables, which take the value 1 if a participant chose to donate to Food For All or Warmer Together, and 0 otherwise. These variables were *donate_ffa* and *donate_wt*, which correspond to a donation choice of Food For All and Warmer Together, respectively. We found four studentized residual with a value of -3.233, -2.871, -2.504 and 3.257 standard deviations, which were kept in the analysis.

The logistic regression model for Food For All was statistically significant, $\chi2(8) = 15.995$, $p < .042$. The model explained 18.8% (Nagelkerke R^2) of the variance in donation choice and correctly classified 67.0% of cases. Of the six predictor variables four were statistically significant: the donation amounts for Food For All, Warmer Together, Smart Start, and The People's Clinic.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Cold	-0.093	0.081	1.315	1	0.252	0.911
Hungry	-0.095	0.051	3.416	1	0.065	0.910
Donation_ffa	0.065	0.011	37.510	1	0.000	1.067
Donation_wt	-0.018	0.008	4.309	1	0.038	0.983
Donation_ss	-0.027	0.008	12.025	1	0.001	0.973
Donation_tpc	-0.024	0.009	7.355	1	0.007	0.977
Constant	0.575	0.464	1.541	1	0.214	1.778

a. Variable(s) entered on step 1: cold, hungry, donation_ffa, donation_wt, donation_ss, donation_tpc.

Table 17: Variables in the Equation; DV: Donation Choice of Food For All; IV: Self-reported Cold, Self-reported Hungry, and Donation Amounts for OWC, FB, NAFCC

The logistic regression model for Warmer Together was not statistically significant, $\chi2(8) = 3.337$, $p < .911$. The model explained 26.1% (Nagelkerke R^2) of the variance in donation choice and correctly classified 85.5% of cases. The model found ten studentized residual with a value of 2.531, 2.749, 2.839, 3.168, 3.233, 3.490, 4.029, 4.065, 5.720 and 6.834 standard deviations, which were kept in the analysis. Of the six predictor variables four were statistically significant: hunger, and the donation amounts for Food For All, Warmer Together, and Smart Start. Participants who were one degree more hungry had 1.195 times higher odds to donate to Warmer Together. All results can be found in Table 18.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Cold	0.143	0.114	1.556	1	0.212	1.153
Hungry	0.178	0.075	5.585	1	0.018	1.195
Donation_ffa	-0.062	0.016	14.225	1	0.000	0.940
Donation_wt	0.098	0.017	33.750	1	0.000	1.103
Donation_ss	-0.040	0.012	10.574	1	0.001	0.961
Donation_tpc	-0.014	0.014	1.000	1	0.317	0.987
Constant	-3.055	0.691	19.520	1	0.000	0.047

a. Variable(s) entered on step 1: cold, hungry, donation_ffa, donation_wt, donation_ss, donation_tpc.

Table 18: Variables in the Equation; DV: Donation Choice of Warmer Together; IV: Self-reported Cold, Self-reported Hungry, and Donation Amounts for OWC, FB, NAFCC

Discussion

The alterations made to the design of Study 2 influenced participants' responses in several noteworthy ways. Firstly, the average donation amounts allocated to each charity decreased overall. These results implied participants were more self-interested and preferred to reserve a higher proportion of their donation budgets for themselves. Furthermore, since participants were explicitly given instruction

that they would keep any funds they chose not to donate, their evaluation more closely resembled a real-world donation decision. Any donation above $0 was more likely to have been a thoughtful choice. It also implied that participants' pre-existing relationships with or their knowledge of the real charities used in Study 1 influenced their donation allocation decisions. Overall, these identifiable differences have provided evidence that brand evaluation and the opportunity to withhold donations are factors that should be measured or controlled for during empirical research about charitable giving.

As was the case in Study 1, the food drive charity received the highest average donation amount and was the charity of choice for Study 2 participants in both the hungry and cold conditions. This result suggests that in general, people exhibit an overall preference for food drive charities. It is possible that because most people have felt the pain of being hungry to some degree, hunger alleviation is regarded as a very important and donation-worthy cause; regardless of any external and internal factors that may seek to influence their decisions. However, we cannot conclude with statistical certainty that this phenomena is true based on these data.

The statistical analyses used to evaluate all hypotheses revealed varying degrees of difference and similarity to the results of Study 1. Like Study 1, Study 2 does not provide conclusive statistical evidence that the mental simulation exercise influenced participants' willingness to donate or their self-reported current bodily states. However, compared to the mixed results of Study 1, Study 2 found more consistent evidence regarding the interaction between the simulation and bodily awareness. Specifically, we found that a participant in the cold condition with a relatively higher level of personal body consciousness and body awareness (BAQ and PBC scores) had a higher likelihood of donating a lower amount to the food drive and coat drive charities. Given that former research has found the feeling of coldness increases interpersonal coldness and decreases trust behavior (Williams and Bargh, 2008), this result provides some support that those with high levels of bodily awareness may have been more affected by the cold simulation. As a result, they chose to donate less to Food For All and Warmer Together, on average. Conversely, participants simulating hunger gave a higher average donation to Food For All and Warmer Together if their BAQ and PBC scores

were above the median value. This provides evidence in favor of the assimilation effect and suggests that those who were more aware of the feeling of hunger were more willing to donate, in general. Nonetheless, we cannot make these conclusions with absolute empirical certainty based on the results of our analyses.

In Study 2, we also found significant results that support research relating the feeling of cold to the feeling of hunger. We found statistically significant evidence that if a participant's self-reported level of coldness increased by one degree, his or her donation to Food For All would increase by a small amount. Additionally, we found confirmatory evidence of H3a, supporting the assimilation effect. Our regression model predicted that if a participant was one degree more hungry, he or she would donate a marginally higher amount to Food For All. Interestingly, our results revealed statistically significant evidence in favor of the contrast effect. We found that participants who were one degree more cold would be more likely to donate a marginally lower amount to Warmer Together, on average.

After finding equally mixed results both for and against our hypotheses, we chose to expand our research and conduct an additional analysis using the Study 2 data with two empirical goals. First, we sought to further evaluate the effectiveness of the mental simulation exercise. We chose to conduct a test for whether and to what extent the vividness with which participants engaged in the simulation had an impact on their subsequent behavior and decision-making. Second, we chose to supplement our main analyses and uncover further evidence about participants' overall donation preference. This was completed using a binary logistic regression that included all measured variables of interest as independent variables: condition, self-reported levels of cold, hunger, tiredness, thirst, BAQ scores, PBC scores and vividness, as well as the donation amount variables for all charities. To perform these this regression analysis, we used the dummy variables that were constructed for H3b, *donate_ffa* and *donate_wt*, which take the value of 1 if a participant selected Food For All or Warmer Together, respectively, and 0 otherwise. These additional tests were only completed for Study 2 because, as discussed previously, the lack of bias and external validity appeared to have been stronger than that of Study 1.

Additional Analysis

Results & Discussions

The Effect of Vividness

A multinomial logistic regression was performed to ascertain the effects of condition on the likelihood for a particular donation choice, with self-reported vividness as a covariate within our model. The regression model was statistically significant, $\chi2(6) = 18.366$, $p < .005$. The Likelihood Ratio Tests revealed that vividness was statistically significant ($p = .004$). Condition, on the other hand, was not statistically significant ($p = .176$). Overall, this result shows it is more likely that you chose to donate to either Food For All or Warmer Together if your imagination was more vivid in the simulation exercise. These results can be found in Table 19.

Parameter Estimates

Donation_choice[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
Food For All	Intercept	-0.484	0.669	0.523	1	0.469			
	Vivid	0.184	0.090	4.220	1	0.040	1.202	1.008	1.433
	[Condition=Cold]	0.080	0.267	0.089	1	0.766	1.083	0.642	1.827
	[Condition=Hungry]	0[b]			0				
Warmer Together	Intercept	-3.587	1.079	11.053	1	0.001			
	Vivid	0.402	0.138	8.524	1	0.004	1.495	1.141	1.958
	[Condition=Cold]	0.430	0.351	1.497	1	0.221	1.537	0.772	3.060
	[Condition=Hungry]	0[b]			0				
Smart Start	Intercept	-0.524	0.831	0.398	1	0.528			
	Vivid	-0.030	0.113	0.071	1	0.790	0.970	0.778	1.211
	[Condition=Cold]	0.647	0.355	3.316	1	0.069	1.910	0.952	3.831
	[Condition=Hungry]	0[b]			0				

a. The reference category is: The People's Clinic.

b. This parameter is set to zero because it is redundant.

Table 19: Parameter Estimates, DV: Donation Choice, IV: Vivid, Condition

These results suggest, that if a participant engaged in a more vivid hungry or cold mental simulation, this was more likely to have impacted their decision to donate to Food For All or Warmer Together, respectively. This provides some evidence that the mental simulation of a visceral state that is similar to a charity's purpose, will increase the likelihood of a donation to that charity. We cannot, however, determine whether this is the consequence of priming or a higher degree of empathic concern.

Donation Choice for Food For All

A binary logistic regression was performed to ascertain the effects of test condition, participants' self-reported levels of cold and hunger, BAQ scores, PBC scores, and vividness on the likelihood that participants chose to donate to Feeding America. In order to perform this type of statistical analysis, we utilized the dummy variable for a donation choice to Food For All (*donate_ffa*), which had been used to test H3b in Study 2. Again, the donation allocation amounts for all charities was included in this regression to increase the overall explanatory value of our model.

The logistic regression model for Food For All produced three studentized residual with a value of -3.154, -2.781 and 3.199 standard deviations, which were kept in the analysis. The regression model was statistically significant, $\chi^2(12) = 64.940$, $p < .001$. The model explained 20.3% (Nagelkerke R^2) of the variance in donation choice and correctly classified 66.2% of cases. Of the 12 predictor variables, four were statistically significant: hunger and the donation amounts for Food For All, Smart Start and The People's clinic. The results can be seen in Table 20 below.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Donation_ffa	0.064	0.011	35.601	1	0.000	1.066
Donation_wt	-0.017	0.009	3.734	1	0.053	0.984
Donation_ss	-0.028	0.008	11.977	1	0.001	0.972
Donation_tpc	-0.023	0.009	6.821	1	0.009	0.977
Condition	0.142	0.221	0.417	1	0.519	1.153
Cold	-0.085	0.082	1.074	1	0.300	0.919
Hungry	-0.114	0.057	4.045	1	0.044	0.892
Tired	-0.039	0.060	0.421	1	0.516	0.962
Thirsty	0.084	0.063	1.769	1	0.183	1.088
BAQ_score	0.218	0.146	2.230	1	0.135	1.243
PBC_score	-0.162	0.188	0.745	1	0.388	0.851
Vivid	0.028	0.082	0.112	1	0.738	1.028
Constant	-0.233	0.965	0.058	1	0.809	0.792

a. Variable(s) entered on step 1: donation_ffa, donation_wt, donation_ss, donation_tpc, condition, cold, hungry, tired, thirsty, BAQ_score, PBC_score, vivid.

Table 20: Variables in the Equation; DV: Donation Choice of Food For All; IV: Donation Amounts for FFA, WT, SS, TPC, Condition, Self-reported Cold, Hungry, Tired, Thirsty, BAQ Score, PBC Score, Vivid

The negative and significant relationship between *hungry* (*B = -0.114, SE =0.057*) indicates that if a participant was one degree more full — or less hungry — the odds that he or she donated to Food For All increased by 11.4. This result provides evidence of the contrast effect; that a person is more likely to donate to a hunger-alleviating charity if he or she is more full, so long as all other factors are

held constant. The majority of the donation amount coefficients were also significant at the 95% error level, which is unsurprising since the donation amounts are highly related determinants of the respondent's charity choice.

Donation Choice for Warmer Together

Once again, a binary logistic regression was performed to ascertain the effects of the aforementioned variables on the likelihood that participants chose to donate to Warmer Together. We utilized the dummy variable for a donation choice to Warmer Together (*donate_wt*). Again, the donation allocation amounts for all charities was included in this regression to increase the overall explanatory value of our model.

The logistic regression model for Warmer Together produced 16 studentized residuals, which were kept in the analysis. The regression model was statistically significant, $\chi^2(12) = 73.654$, $p < .001$. The model explained 30.3% (Nagelkerke R^2) of the variance in donation choice and correctly classified 85.3% of cases. Of the 12 predictor variables, five were statistically significant: hunger, vividness and the donation amounts for Food For All, Warmer Together and Smart Start. The results can be seen in Table 21 below.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Donation_ffa	-0.063	0.017	14.382	1	0.000	0.939
Donation_wt	0.098	0.017	32.491	1	0.000	1.103
Donation_ss	-0.039	0.013	9.482	1	0.002	0.962
Donation_tpc	-0.013	0.014	0.812	1	0.367	0.987
Condition	-0.205	0.330	0.385	1	0.535	0.815
Cold	0.147	0.123	1.440	1	0.230	1.159
Hungry	0.251	0.087	8.265	1	0.004	1.285
Tired	-0.048	0.086	0.308	1	0.579	0.953
Thirsty	-0.130	0.091	2.047	1	0.152	0.878
BAQ_score	0.093	0.220	0.180	1	0.672	1.098
PBC_score	-0.216	0.290	0.555	1	0.456	0.806
Vivid	0.290	0.136	4.558	1	0.033	1.336
Constant	-4.297	1.455	8.723	1	0.003	0.014

a. Variable(s) entered on step 1: donation_ffa, donation_wt, donation_ss, donation_tpc, condition, cold, hungry, tired, thirsty, BAQ_score, PBC_score, vivid.

Table 21: Variables in the Equation; DV: Donation Choice of Warmer Together; IV: Donation Amounts for FFA, WT, SS, TPC, Condition, Self-reported Cold, Hungry, Tired, Thirsty, BAQ Score, PBC Score, Vivid

The positive and significant relationship between *hungry* ($B = .251$, $SE = .087$) indicates that if a participant was one degree more hungry — or less full — the odds that he or she donated to Warmer Together increased by 25.1. This provides evidence that feeling hungry is closely related to the feeling of being cold, as has

been found in animal research (Zhang & Wang, 2006; Zhao, 2011). Resulting from the underlying connection between the feeling of hunger and the feeling of cold, this may have contributed to lower the empathy gap between the *hungry* condition participants and those seeking relief from feeling cold; resulting in an absolute donation choice of the hypothetical cold drive charity.

The positive and significant relationship with vividness ($B = .290$, $SE = .136$) indicates that for every one degree that a participant more vividly participated in the simulation exercise, it increased the odds that he or she donated to Warmer Together increased by 29. This result supplements the findings above and provides additional support for the importance of vividness within mental simulation exercises.

General Discussion

In the current research, we have sought to uncover empirical evidence about the relationship of the mental simulation of visceral states in a charitable giving scenario. We have conducted two studies to evaluate whether mentally simulating two states — hunger and cold — will affect participants' willingness to donate to the charity that seeks to support those suffering from a condition caused by the relevant state. We find evidence that suggests the mental simulation condition, the vividness of their immersion, and the current bodily states of participants all have varying degrees of influence on donation decision-making behavior.

Overall Findings

We find some evidence that the condition to which a participant was assigned influenced his or her desired donation allocation to a given charity. In Study 1 and Study 2, we found that the food drive charities, Feeding America and Food For All, are the charities receiving the highest donation amounts regardless of condition. In Study 1, we found an average donation allocation pattern that differed between conditions. In Study 2, participants in both conditions exhibited the same pattern of average donation amount. We could not, however, find any further statistically significant evidence to confirm whether or to what degree this difference in donation amount was caused by the manipulation conditions.

Notably, the average donation amounts were higher in Study 1 than Study 2. This is most likely due to the important changes in study design. Since participants received a clearer explanation that they would keep any hypothetical funds they chose not to donate, this likely contributed to a higher perceived cost of donating and reduced the overall willingness to donate. In addition, by presenting participants in Study 1 with real-life charities, their willingness to donate and donation allocation preferences was likely biased by a pre-existing relationship with or evaluation of the given charities. The hypothetical charity names used in Study 2 controlled for this source of bias.

The clear preference for the food drive charities in both studies indicates that people have a higher willingness to donate to hunger-alleviating charities, in general. There are several possible explanations for this result. One possible explanation stems from the research of Bandura (1997) and Heckhausen (1991), as cited in Kappes, H. B., & Morewedge, C. K. (2016). As discussed previously in the literature review, everyone has felt or experienced hunger to some extent and as a result, they are more easily able to empathize with the challenges, difficulties, and general discontentment of this state. This may create a higher willingness to donate or a lower threshold for an empathic response in food drive donors, which may have occurred for the participants in this research. Additionally, hunger may be recognized as a more widespread issue that faces a larger number of people relative to extreme cold. Since most people have not experienced what it feels like to suffer from extreme cold, this limits the degree to which they can empathize with those suffering from that state. Further research should be conducted to either confirm or deny this proposed logical explanation.

Steinmetz et al. (2017) found significant evidence that their mental simulation technique could be used to elicit a change in preferences in a subject. The results we gathered in this study using the same simulation procedure indicated that the mental simulation exercise had no statistically significant effect on the measured bodily feelings of participants in the hungry and cold conditions. Although mental simulation exercises may affect preferences, they do not necessarily create a measurable or perceivable difference in a subject's current bodily states. That said, we expect that a research study using different mental simulation exercises,

techniques, and/or duration of the simulation would elicit a relatively different effects on participants. This would also imply such a study would receive different statistical results.

Our additional analysis revealed that the vividness with which a participant engaged in the mental simulation exercise had a significant impact on their donation preferences for Food For All and Warmer Together. This result supports the findings of Steinmetz et al. (2017). If a subject more vividly immersed him or herself in the experiences and feelings associated with a hungry or cold visceral state, he or she was more likely to choose to donate to the charity relevant for that state. This result is valuable and insightful for marketing managers and researchers, as will be discussed in more detail in the following sections.

We did not find evidence that the ability of participants to accurately perceive their bodily states, as measured by their BAQ and PBC scores, had an impact on their donation decisions. The results for Study 1 and Study 2 provide mixed evidence lower or higher levels of PBC and BAQ scores influenced the willingness to donate in different ways. Although we can make no general conclusions that are empirically justifiable, these studies did show that the simulation exercise influenced donation amount decisions depending on a participant's level of bodily awareness and consciousness.

Our studies found some evidence that the current bodily state of a prospective donor would influence his or her willingness to donate. Although our data showed varying — and sometimes conflicting — results, this research does provide general evidence that the current bodily states of a person do affect his or her willingness to donate. Notably, both Study 1 and Study 2 find support for the assimilation effect for the feeling of hungry and cold, while Study 2 also found evidence for the contrast effect for the feeling of cold.

The results of our additional analysis revealed that the degree to which a participant was measurably more or less hungry had a significant impact on the likelihood of donating to Warmer Together or Food For All, respectively. This provides evidence that contradicts H2 and instead, suggests that when a

participant was less hungry, or more full, he or she was more likely to donate to the hunger-alleviating charity. Furthermore, this finding supports the research conducted by Herman (1993), which suggests the feeling of hunger is related to the feeling of being cold.

Theoretical Implications

This study has provided evidence for the effectiveness of mental simulation in the context of a charitable giving scenario. Similar to Steinmetz et al. (2017), this research finds evidence that mental simulation can be used to effect current preferences. Since current preferences are typically the result of current experiences, the vividness with which a subject participates in a mental simulation exercise is an important decision-making criteria. Furthermore, as Steinmetz et al. (2017) suggested, our results provide evidence that engaging in a mental simulation increases the likelihood that a subject will be able to bridge an empathy gap and choose to empathize with others preferences and needs. The vividness of the mental simulation is an important prerequisite for reducing this empathy gap.

Based on participants' donation choices and allocations we found some evidence in support of the assimilation effect, as defined by Steinmetz et al. (2017). The food drive charity was both the charity of preference and received the highest average donation amount for those in the hungry condition. While the coat drive charity received a slightly higher average donation amount for those in the cold condition compared to the hungry condition, the food drive was the overall prefered charity. Interestingly, the results of this study have also found evidence of a contrast effect. Participants who were more full, or less hungry, were more likely to choose to donate to Food For All. While this result was not related to the mental simulation exercise, it does suggest contrast effects may be found within a donation-decision context.

On the other hand, this research indicates the mental simulation of a visceral state will not always induce the physical feelings of that state in the subject. Although various research has claimed that mental simulation can serve as a valuable substitute for a real-world experience, our results suggest different simulation techniques and the vividness with which a subject participates in the simulation

are important determinants of its effectiveness. Therefore, researchers using mental simulation should thoroughly investigate and evaluate which simulation technique is most suitable for the goals and desired outcomes of their research. Pertaining to the design of research experiments, the differences between the results of Study 1 and Study 2 exemplify the importance of controlling for bias, brand evaluation, and pre-existing brand relationships, as well as considering the degree of similarity between the study design and a real world experience.

Additionally, Barraza et. al, (2015) found that neurological responses may predict empathic concern. This research builds upon this finding; we have provided evidence that suggests a person's altruistic preferences are, to some degree, based on that person's current physical condition. Namely, we found that the degree to which a person was cold or hungry affected their likelihood of donating to a particular charity.

Managerial Implications

The results of our study provide several key insights for managers and marketers. Particularly for those responsible for the marketing and communications activities at charitable organizations, reducing the empathy gap between a prospective donor and the recipient is a critical goal. Marketers frequently employ mental simulation techniques to decrease empathy gaps, convey a particular message, or influence a desired behavior. As we have discussed and demonstrated, they must be aware of whether or not the intended audience will engage vividly with the marketing medium. Depending on the context, a viewer may or may not be able to consume a particular method of communication with a high degree of vividness. Therefore, marketers should consider methods that will increase the likelihood that their intended audience will engage vividly with the marketing method. The viewer's sensory experiences and physical environment can be used as both a cue and a tool to accomplish this goal. For instance, an advertisement that prompts simulation would be more appropriate in an environment where the intended viewer would be relaxed and attentive (e.g. in a cinema) as opposed to where he or she would be rushed and un-engaged (e.g. in a busy metro station).

Overall, our discussions and analyses should serve as a reminder that the sensory aspects of the intended viewer is an important component of marketing activities. The context in which a brand is evaluated or a communications element is consumed will impact the intended viewer's perception of the message, as well as the likelihood that their behavior will be motivated in the intended way. In particular, the physical location of an advertisement should be a topic for consideration. As the results of our additional analysis suggest, an advertisement for a coat drive charity would be most effective if it were placed at the entrance of a cafeteria where hungry people will see it as they pass by. On the other hand, an advertisement for a food drive charity should be placed by the exit to this cafeteria for the now-satiated viewers to see.

Limitations and Future Research

In the subsequent sections, the limitations of our research will be presented, followed by our suggestions for future research based on this study.

Limitations

Regarding the design and implementation of the study, Study 2 was conducted by distributing an online survey, which means we were unable to control for potential disturbing factors in the participants' environment. Hence, we cannot exclude the potential of a non-laboratory setting that acted as a confounding factor. Furthermore, regarding the current bodily state scale questions, additional scales and measurement techniques could have been used. A more thorough measure of participants' current bodily states would also allow for a more accurate and robust final analysis.

In both studies several participants indicated that they did not have the financial capability to donate in real life. Since these participants would not choose to donate in real life, they chose a donation amount of $0 for all charities in our experiment. Although, this makes the research more realistic, it also biases the donation results downwards. Notably, however, removing these participants from our analysis did not produce any statistically significant differences in the aforementioned results.

People exhibit varying degrees of trust and confidence in charitable organizations. This may also limit the willingness to donate and minimize the perceived degree of closeness to those a charity seeks to offer aid. Furthermore, people with high moral identity and high empathic concern exhibit a lower willingness to donate to charity recipients who have a high perceived responsibility for their condition (i.e when the recipients are responsible for their state of need), but they have a higher willingness to donate to recipients with low perceived responsibility for their condition (Lee, S., Winterich, K. P., & Ross Jr, W. T., 2014). Participants in this study may have varying degrees of willingness to donate depending on whether they think recipients of each of the four charities may be held accountable for their state of need, leading to potentially biased test results.

Turning to the analytical techniques and methods used in this study, we acknowledge there may be limitations to the strength and confirmatory nature of our conclusions. Despite the successful theoretical and mathematical manipulation of our data, particularly our use of a dummy variable for overall donation choice, limits the degree to which we can extrapolate any overarching conclusions to our hypotheses. Regardless, our additional analysis has undoubtedly provided evidence that further research and additional study designs are necessary if we are to fully comprehend the underlying links between mental simulation, visceral states, empathy gaps, and the willingness to donate. In addition, we utilized the median split method to evaluate H2 and test for interaction effects between participants' BAQ and PBC scores and our test conditions. We acknowledge that there are limitations and restrictions to this method, namely the loss of statistical power, which makes it more difficult to determine the real underlying effects of the analysis (Aiken, L. S., West, S. G., & Reno, R. R.,1991, p. 168).

Furthermore, several tests revealed outliers within our data, all of which we chose to include in the final analyses. Upon inspection, we found that these outliers most often resulted from a high or maximum donation allocation amount to each charity (i.e. Choosing a donation amount of $100 for all four charities). We also noticed that these respondents engaged in the simulation exercise with a relatively high degree of vividness. While we acknowledge including these outliers in our analyses may present a source of bias, we believe it was relevant to include these

participants' results in our data. It is not unrealistic that these respondents are financially able and have a relatively high willingness to donate to charitable organizations. Furthermore, we re-performed all analyses after filtering out the relevant outliers and found that the overall significance of the results was not affected.

Future Research

This study may serve as a basis for designing and implementing increasingly effective and empirically compelling experiments. Regarding mental simulation experiments, Zapille et al (2016) noted that a simulation exercise can be more effective in shifting attitudes when implemented over an extended period of time (i.e. 4-5 weeks). The study outlined in this paper could give more conclusive empirical results if we applied the mental simulation over a longer time-frame. As our additional analysis showed, increasing or measuring the vividness with which participants engage in a mental simulation exercise is also an important factor that future researchers should consider.

Additionally, rather than simply simulating a visceral state, having a subject feel the physical sensations or pains of the state (e.g. placed in a cold environment or requesting that participants fast for at least 12 hours prior to the experiment) could be a more effective experimental technique. Future research can also be designed to create a more immersive, realistic, and genuine simulation experience by utilizing a virtual reality environment. A group of experts can model a scenario where avatars (virtual charity recipients) are in need, and other avatars (virtual charity organisation workers) help them. Furthermore, if participants were to receive a more detailed explanation or first-hand look into how a charity operates, how it provides aid, and those whom it helps to relieve from a state of suffering, it could make the experiment a more compelling and engaging experience for the participants.

There are additional test conditions and studies that could be conducted to supplement the literature on this topic. Future research could look further into the simulation of the experience of donating, rather than simulating a visceral state. For example, participants could be given the opportunity to physically place a

chosen monetary donation in a donation box at the end of the experiment. This would more accurately simulate the experience of charitable giving within a context that subjects would likely encounter in a real-world setting (e.g. street side Salvation Army donation boxes). Additional research would need to be conducted before finalizing this study design in order to validate its empirical relevance.

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Appendix

Appendix 1: Survey for Study 1

Dear Participant,

In this study, you will be asked to complete a series of questions and tasks. The study will take approximately 7 minutes to complete.

We thank you in advance for your honest and thoughtful responses. There are no right or wrong answers; we just want your honest opinions.

The first part of this study contributes to a research project on personality.

In this project, we try to understand the extent to which people differ in their ability to "listen" to their own body and to imagine bodily feelings.

PBC_scale

First, we are interested in how sensitive you are to different kinds of bodily feelings. How much do you agree with the following statements about yourself:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I am sensitive to internal bodily tensions. (1)	○	○	○	○	○
I know immediately when my mouth or throat gets dry. (2)	○	○	○	○	○
I can often feel my heart beating. (3)	○	○	○	○	○
I am quick to sense the hunger contractions of my stomach. (4)	○	○	○	○	○
I'm very aware of changes in my body temperature. (5)	○	○	○	○	○

BAQ_scale

Listed below are a number of statements regarding your sensitivity to normal body processes. To what extent does each statement describe you?

	Not at all true about me 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Very true about me 7 (7)
I notice differences in the way my body reacts to various foods. (1)	○	○	○	○	○	○	○
I always know when I've exerted myself to the point where I'll be sore the next day. (2)	○	○	○	○	○	○	○
I am always aware of changes in my energy level when I eat certain foods. (3)	○	○	○	○	○	○	○
I know in advance when I'm getting the flu. (4)	○	○	○	○	○	○	○
I know I'm running a fever without taking my temperature. (5)	○	○	○	○	○	○	○
I can distinguish between tiredness because of hunger and tiredness because of lack of sleep. (6)	○	○	○	○	○	○	○
I can accurately predict what time of day lack of sleep will catch up with me. (7)	○	○	○	○	○	○	○

I am aware of a cycle in my activity level throughout the day. (8)	○	○	○	○	○	○	○
I don't notice seasonal rhythms and cycles in the way my body functions. (9)	○	○	○	○	○	○	○
As soon as I wake up in the morning, I know how much energy I'll have during the day. (10)	○	○	○	○	○	○	○
I can tell when I go to bed how well I will sleep that night (11)	○	○	○	○	○	○	○
I notice distinct body reactions when I am fatigued. (12)	○	○	○	○	○	○	○
I notice specific body responses to changes in the weather. (13)	○	○	○	○	○	○	○
I can predict how much sleep I will need at night in order to wake up refreshed. (14)	○	○	○	○	○	○	○
When my exercise habits change, I can predict very accurately how that will affect my energy level. (15)	○	○	○	○	○	○	○

There seems to be a best time for me to go to sleep at night. (16)	○	○	○	○	○	○	○
I notice specific bodily reactions to being overhungry. (17)	○	○	○	○	○	○	○
I can always tell when I bump myself whether or not it will become a bruise. (18)	○	○	○	○	○	○	○

Next, we are now going to ask you to <u>imagine</u> being in a specific bodily state.

For the next 60 seconds, please imagine that you are very COLD.

Imagine what it would be like to feel very cold in as much detail as possible. What would you be thinking about? How would your body feel? How would you act? Please try to give us a detailed description of your thoughts and feelings.

_____

_____

_____

_____

_____

For the next 60 seconds, please imagine that you are very HUNGRY.

Imagine what it would be like to feel very hungry in as much detail as possible. What would you be thinking about? How would your body feel? How would you act? Please try to give us a detailed description of your thoughts and feelings.

_____

_____

_____

_____

_____

- -

How vivid was your imagination in the preceding question?

◯ Not vivid at all 1

◯ 2

◯ 3

◯ 4

◯ 5

◯ 6

◯ 7

◯ 8

◯ Very vivid 9

This concludes the first part of the study. Thanks for your contribution!

In the second part, we are interested in your evaluation of different charitable organizations. To this end, we will show you several charities (one by one).

For each charity, assume you have $100 at your disposal. Your task is to decide how much you would donate to that particular charity. Assume you have a new $100 at your disposal for each donation decision.

<u>One Warm Coat</u>

One Warm Coat is a national non-profit organization that works to provide a free, warm coat to any person in need. Coats are distributed in the communities where they were collected, to children and adults in need,

without charge, discrimination or obligation. Since One Warm Coat's inception in 1992, we have worked with our volunteers to host more than 27,000 coat drives and have given away more than 5 million coats.

Suppose you have $100 at your disposal. How much of that would you donate to this charity?

	0 10 20 30 40 50 60 70 80 90 100
Donate $ ()	
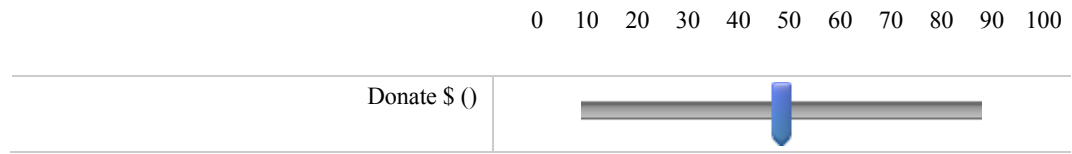
First Book

First Book provides access to new books for children in need. To date, First Book has distributed more than 85 million books and educational resources to programs and schools serving children from low-income families throughout the United States and Canada. First Book is transforming the lives of children in need and elevating the quality of education by making new, high-quality books available on an ongoing basis.

Suppose you have $100 at your disposal. How much of that would you donate to this charity?

	0 10 20 30 40 50 60 70 80 90 100
Donate $ ()	
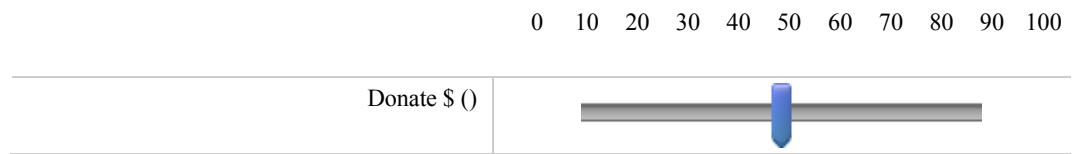
National Association of Free and Charitable Clinics

The mission of the National Association of Free and Charitable Clinics is to ensure that the medically underserved have access to affordable quality health care. However, it is our larger vision of being a national voice promoting quality health care for all that motivates donors, volunteers, and communities around the country to join our cause, as we work together to build a healthy America, one patient at a time. Within our Association, we value volunteerism, generosity, collaboration and human dignity.

Suppose you have $100 at your disposal. How much of that would you donate to this charity?

	0 10 20 30 40 50 60 70 80 90 100
Donate $ ()	
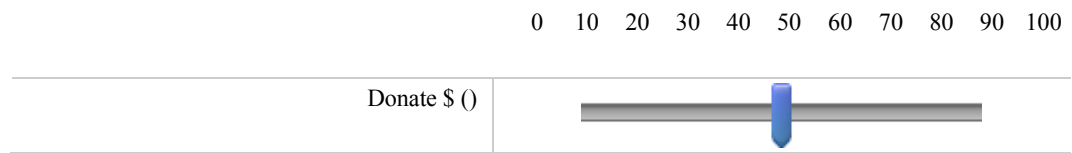
Feeding America

41 million people face hunger in the U.S. today — including nearly 13 million children and more than five million seniors. Hunger knows no boundaries — it touches every community in the U.S., including your own. The Feeding America network is the nation's largest domestic hunger-relief organization, working to connect people with food and end hunger. Donors, staff, and volunteers all play an important role in our efforts to end hunger in the United States.

Suppose you have $100 at your disposal. How much of that would you donate to this charity?

	0 10 20 30 40 50 60 70 80 90 100
Donate $ ()	▬▬▬▬▬▬▮▬▬▬▬▬▬

If you could donate to just one of these charities, which one would you pick?

○ Feeding America

○ One Warm Coat

○ First Book

○ National Association of Free and Charitable Clinics

In your opinion, what was the purpose of this study?

_____

_____

_____

_____

_____

Please choose the responses that describe best how you feel right now.

	1	2	3	4	5	6	7	8	9	
Tired	C	C	C	C	C	C	C	C	○	Energized
Thirsty	C	C	C	C	C	C	C	C	○	Quenched
Hungry	C	C	C	C	C	C	C	C	○	Full
Cold	C	C	C	C	C	C	C	C	○	Hot

How old are you?

_____

- -

What is your gender?

   ○ Male

   ○ Female

   ○ Intersex

- -

How many hours has it been since you last ate (a meal or snack)?

_____

Do you have any comments or suggestions regarding this survey?

   ○ Yes (please, write in the box): _____

   ○ No

Appendix 2: Survey for Study 2

Dear Participant,

In this study, you will be asked to complete a series of questions and tasks. The approximate duration is 7 minutes.

We thank you in advance for your honest and thoughtful responses. There are no right or wrong answers; we just want your honest opinions.
By clicking the button below, you acknowledge that your participation is voluntary and that you are at least 18 years old.

Thank you very much for your time!

○ Yes, I would like to participate in this study

The first part of this study contributes to a research project on personality.
In this project, we try to understand the extent to which people differ in their ability to "listen" to their own body and to imagine bodily feelings.

PBC_scale

First, we are interested in how sensitive you are to different kinds of bodily feelings. How much do you agree with the following statements about yourself:

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I am sensitive to internal bodily tensions. (1)	○	○	○	○	○
I know immediately when my mouth or throat gets dry. (2)	○	○	○	○	○
I can often feel my heart beating. (3)	○	○	○	○	○
I am quick to sense the hunger contractions of my stomach. (4)	○	○	○	○	○
I'm very aware of changes in my body temperature. (5)	○	○	○	○	○

BAQ_scale

Listed below are a number of statements regarding your sensitivity to normal body processes. To what extent does each statement describe you?

	Not at all true about me 1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	Very true about me 7 (7)
I notice differences in the way my body reacts to various foods. (1)	○	○	○	○	○	○	○
I always know when I've exerted myself to the point where I'll be sore the next day. (2)	○	○	○	○	○	○	○
I am always aware of changes in my energy level when I eat certain foods. (3)	○	○	○	○	○	○	○
I know in advance when I'm getting the flu. (4)	○	○	○	○	○	○	○
I know I'm running a fever without taking my temperature. (5)	○	○	○	○	○	○	○
I can distinguish between tiredness because of hunger and tiredness because of lack of sleep. (6)	○	○	○	○	○	○	○
I can accurately predict what time of day lack of sleep will catch up with me. (7)	○	○	○	○	○	○	○

I am aware of a cycle in my activity level throughout the day. (8)	○	○	○	○	○	○	○
I don't notice seasonal rhythms and cycles in the way my body functions. (9)	○	○	○	○	○	○	○
As soon as I wake up in the morning, I know how much energy I'll have during the day. (10)	○	○	○	○	○	○	○
I can tell when I go to bed how well I will sleep that night (11)	○	○	○	○	○	○	○
I notice distinct body reactions when I am fatigued. (12)	○	○	○	○	○	○	○
I notice specific body responses to changes in the weather. (13)	○	○	○	○	○	○	○
I can predict how much sleep I will need at night in order to wake up refreshed. (14)	○	○	○	○	○	○	○
When my exercise habits change, I can predict very accurately how that will affect my energy level. (15)	○	○	○	○	○	○	○

There seems to be a best time for me to go to sleep at night. (16)	○	○	○	○	○	○	○
I notice specific bodily reactions to being overhungry. (17)	○	○	○	○	○	○	○
I can always tell when I bump myself whether or not it will become a bruise. (18)	○	○	○	○	○	○	○

Next, we are now going to ask you to <u>imagine</u> being in a specific bodily state

If Condition = cold

For the next 60 seconds, please imagine that you are very COLD.

Imagine what it would be like to feel very cold in as much detail as possible. What would you be thinking about? How would your body feel? How would you act? Please try to give us a detailed description of your thoughts and feelings.

_____

_____

_____

_____

_____

If Condition = hungry

For the next 60 seconds, please imagine that you are very HUNGRY.

Imagine what it would be like to feel very hungry in as much detail as possible. What would you be thinking about? How would your body feel? How would you act? Please try to give us a detailed description of your thoughts and feelings.

_____

_____

_____

_____

How vivid was your imagination in the preceding question?

⚪ Not vivid at all 1

⚪ 2

⚪ 3

⚪ 4

⚪ 5

⚪ 6

⚪ 7

⚪ 8

⚪ Very vivid 9

This concludes the first part of the study. Thanks for your contribution!

In the second part, we are interested in your evaluation of different charitable organizations. To this end, we will show you several charities (one by one).

For each charity, assume you have $100 at your disposal. Your task is to decide how much of the $100 allowance you would donate to that particular charity – if at all – and how much you would like to keep for yourself. Please try to decide as you would in real life using your own, real money.

Important: Assume you have a new $100 at your disposal for each decision.

The People's Clinic

The mission of The People's Clinic is to ensure that the medically underserved have access to affordable quality health care. However, it is our larger vision of being a national voice promoting quality health care for all that motivates donors, volunteers, and communities around the country to join our cause, as we work together to build a healthy America, one patient at a time. We value volunteerism, generosity, collaboration and human dignity.

Suppose you have $100 at your disposal. How much of that would you donate to this charity?

Please note, you will keep any money that you do not choose to donate.

	0 10 20 30 40 50 60 70 80 90 100
Donate $ ()	

Food For All

41 million people face hunger in the U.S. today — including nearly 13 million children and more than five million seniors. Hunger knows no boundaries — it touches every community in the U.S., including your own. Food For All network is a large domestic hunger-relief organization, working to connect people with food and end hunger. Donors, staff, and volunteers all play an important role in our efforts to end hunger in the United States.

Suppose you have $100 at your disposal. How much of that would you donate to this charity?

Please note, you will keep any money that you do not choose to donate.

	0 10 20 30 40 50 60 70 80 90 100
Donate $ ()	

Smart Start

Smart Start provides access to new books for children in need. To date, Smart Start has distributed more than 85 million books and educational resources to programs and schools serving children from low-income families throughout the United States and Canada. Smart Start is transforming the lives of children in need and elevating the quality of education by making new, high-quality books available on an ongoing basis.

Suppose you have $100 at your disposal. How much of that would you donate to this charity?

Please note, you will keep any money that you do not choose to donate.

	0 10 20 30 40 50 60 70 80 90 100
Donate $ ()	

Warmer Together

Warmer Together is a national non-profit organization that works to provide a free, warm coat to any person in need. Coats are distributed in the communities where they were collected, to children and adults in need, without charge, discrimination or obligation. Since Warmer Together's inception in 1992, we have worked with our volunteers to host more than 27,000 coat drives and have given away more than 5 million coats.

Suppose you have $100 at your disposal. How much of that would you donate to this charity?

Please note, you will keep any money that you do not choose to donate.

<div align="right">0   10   20   30   40   50   60   70   80   90   100</div>

Donate $ ()	

If you could donate to just one of these charities, which one would you pick?

○ Food For All (1)

○ Warmer Together (2)

○ Smart Start (3)

○ The People's Clinic (4)

In your opinion, what was the purpose of this study?

_____

_____

_____

Please choose the responses that describe best how you feel right now.

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	6 (6)	7 (7)	8 (8)	9 (9)	
Tired	○	○	○	○	○	○	○	○	○	Energized
Thirsty	○	○	○	○	○	○	○	○	○	Quenched
Hungry	○	○	○	○	○	○	○	○	○	Full
Cold	○	○	○	○	○	○	○	○	○	Hot

How old are you?

_____

What is your gender?

◯ Male (1)

◯ Female (2)

◯ Intersex (3)

- -

How many hours has it been since you last ate (a meal or snack)?

_____

Do you have any comments or suggestions regarding this survey?

◯ Yes (please, write in the box): (1) _____

◯ No (3)