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PRAYER OBJECTS PROVIDE THE EXPERIENCE OF BELONGING

A Thesis

Presented to

The Faculty of the Department

of Psychology

University of Houston

In Partial Fulfillment

Of the Requirements for the Degree of

Master of Arts

By

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ABSTRACT

Existing literature on *social surrogacy* demonstrates that reminders of others with whom people have secure relationships can provide the experience of belonging. Additionally, it has been shown that God can be seen as an alternate attachment figure who can fulfill social needs for connection. Accordingly, this study hypothesizes that objects that remind people of their relationship with God (i.e., prayer objects) can fulfill connection needs and buffer against belongingness threats. Two hypotheses examined whether (1) belongingness threats can increase the desire to use a prayer object, and (2) using a prayer object alleviates the negative feelings caused by a rejection experience. The final sample consisted of 252 UH undergraduate students. Unexpectedly, participants spent more time describing a prayer object than a grocery object independent of belongingness threat. Consistent with the second hypothesis, thinking about a prayer object (but not a grocery object) buffered against the typical negative outcomes of a rejection experience. Explanations for the unexpected results regarding the first hypothesis, limitations of the current study, and future directions are discussed.

Keywords: belongingness needs, relationship with God, rejection, social surrogacy, reminders of others, prayer objects

TABLE OF CONTENTS

CONTENTS	PAGE
Prayer Objects Provide the Experience of Belonging.....	1
Need to belong	2
Relationship with God and belongingness needs.....	3
Reminders of others satisfy connection needs	3
Prayer objects as reminder of God.....	4
Overview and Hypotheses	6
Method	7
Participants and Design.....	7
Procedure	8
Dependent Measures	9
Results.....	11
Preliminary Analyses	11
Primary Analyses	12
Discussion	14
Limitations	16
Conclusions and Future Directions.....	16
Tables	18
Figures.....	20
Appendices.....	23
References	34

Prayer Objects Provide the Experience of Belonging

What do people usually do when they experience rejection by a close friend or exclusion from their community? What do they do when they feel their intimate relationship is under threat? A simple strategy in these situations is to develop interpersonal connections with others and invest in existing relationships. But how can people satisfy their belongingness needs in the absence of social connection? Existing literature on *social surrogacy* (i.e., the use of fictional and nonhuman entities to fulfill social connection) demonstrates possible ways that people can meet their connection needs and protect themselves against relationship threats, especially in the absence of satisfying relational bonds. For example, consuming comfort food reminds people of their previous relationships and, for securely attached people, reduces the effects of belongingness threats (Troisi & Gabriel, 2011). Similarly, threats to belongingness needs increase the desire for favorite television shows and engaging with those favorite television shows buffers against rejection-related feelings (Derrick, Gabriel, & Hugenberg, 2009). Although there is a growing body of research examining the use of social surrogates to restore connection, the influence of social surrogates specific to religion have not been a focus. Is there a specific type of social surrogate that can alleviate feelings of loneliness in religious people?

Objects that take on some God qualia may protect against relationship threats and reduce feelings of loneliness by reminding religious people of their connection to God. God can be seen as an attachment figure: people with secure attachment demonstrate increases in proximity-seeking to God following activation of their attachment system (Birgegard & Granqvist, 2004), and having a secure attachment to God predicts lower levels of loneliness (Kirkpatrick & Shaver, 1992). In addition, there is evidence that prayer objects can embody the presence of God in the minds of practitioners (Valenti, Gabriel, & Blanton, 2016). Given that reminders of others with

whom people have secure relationships can fulfill connection needs (Troisi & Gabriel, 2011; Niemyjska, 2015), prayer objects, which can serve as reminders of people's relationship with God (Valenti, Gabriel, & Blanton, 2016) may yield similar effects. The proposed study tested whether belongingness threats can increase the desire to use a prayer object and whether using a prayer object alleviates the negative feelings caused by a rejection experience.

Need to belong

The need to belong is a fundamental need and a powerful human motivation (Maslow, 1970; Baumeister and Leary, 1995). In Maslow's theory of motivation, the need to love and belong constitutes one of the foremost human needs, following only physical and safety needs (Maslow, 1970). Other motivation and need theorists also refer to relatedness and connection needs as one of the fundamental human needs (e.g., Murray, 1938; Alderfer, 1969; Deci & Ryan, 2000; 2002). Indeed, the need for relatedness constitutes one of the significant elements of the deep organization of human psyche (Deci & Ryan, 2000), such that frustration of relatedness needs is associated with impoverished functioning and greater ill-being (Deci & Ryan, 2017).

Failing to fulfill connection needs can result in negative psychological and physical outcomes (e.g., Leary et al., 2003; Williams, 2007). For instance, lack of social connection can lead to decreased feelings of self-worth (Leary, 1999), the emergence of anxiety, depressive symptoms, and greater risk of suicidality (Rothberg & Jones, 1987; Baumeister & Tice, 1990; Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006), and physical health problems (Eisenberger, Lieberman, & Williams, 2003; Adam, Hawkley, Kudielka, & Cacioppo, 2006; Hawkley, Masi, Berry, & Cacioppo, 2006). People resist the dissolution of existing bonds and try to maintain meaningful, strong, and stable interpersonal relationships (Baumeister & Leary, 1995; Baumeister, Brewer, Tice, & Twenge 2007; Lacoursiere, 1980). Investing in satisfying

relational bonds can buffer against the deficits to both mental and physical well-being engendered by unfulfilled belongingness needs.

However, maintaining interpersonal relationships with other humans is not the only possible way to fulfill connection needs. People try to compensate for their lack of social connection by preserving human-like connection with nonhuman targets, such as nonhuman gadgets and animals, as well as religious agents (Epley, Akalis, Waytz, & Cacioppo, 2008). Both chronic and momentary feelings of loneliness lead people to increase their belief in commonly anthropomorphized religious figures (e.g., God), such that increased belief in God can satisfy connection needs (Epley et al., 2008). In addition to close friends and significant others, God can provide a valuable resource of connection and support for religious people.

Relationship with God and belongingness needs

Developing a relationship with God can address social connection needs and buffer against loneliness and exclusion. Ostracism and rejection both threaten the fundamental need of belongingness and generate sadness and anger (Williams, 2007). People apply different strategies to cope with these negative feelings. Turning to religion might be an effective way to alleviate negative feelings of isolation and loneliness (Aydin, Fischer, Frey, 2010). God can be seen as an alternate attachment figure who can alleviate exclusion and fulfill social needs for connection (Kirkpatrick, 1992, 1998). In a survey study, religious beliefs, especially belief in a relationship with God, predicts lower levels of loneliness for women, independent of other available social support resources (Kirkpatrick, Shillito, & Kellas, 1999). Indeed, there is strong evidence that belongingness needs play a significant role in motivating the belief in God (Allport, 1950; Fromm, 1956; Kirkpatrick, 1998; Gebauer & Maio, 2012).

Reminders of others satisfy connection needs

Relationships with close others can satisfy connection needs, but people can satisfy their belongingness needs through the development of symbolic connections with social surrogates as well (Derrick, Gabriel, & Hugenberg, 2009; Troisi, & Gabriel, 2011; Gabriel & Young, 2011). There are various types of social surrogates that can provide symbolic social bonds. One type of social surrogate is the reminder of others—a tangible symbol that reminds people of their previous relationships (Gabriel, Valenti, & Young, 2016). A photograph of one's romantic partner (Niemyjsk, 2015) and comfort foods (Troisi & Gabriel, 2011; Troisi et al., 2015) can both function in this way. They can remind people of their relationships by generating a sense of affective, emotional, and cognitive association with close others. For instance, Troisi and Gabriel (2011) have demonstrated that comfort food can remind people of their existing relationships. Those who have already had positive experiences in their relationships are able to consume comfort food to alleviate their loneliness and buffer against belongingness threats (Troisi & Gabriel, 2011; Troisi et al., 2015). Hence, objects that work as reminders of others and yield emotional associations with people's relationships can provide symbolic connection.

Existing literature on reminders of others as a type of social surrogate has focused mostly on tangible objects that remind people of their interpersonal interactions with other humans. However, past research has found that a relationship with God can satisfy connection needs and buffer against loneliness (Kirkpatrick, 1992, 1998). Therefore, reminders of God (e.g., prayer objects) should similarly satisfy connection needs.

Prayer objects as reminder of God

The great expansion of using prayer objects across different times and places suggest that these objects can improve spirituality and play a significant role in creating and maintaining a connection with God. In an experimental study, Valenti, Gabriel, and Blanton (2016) have

demonstrated that prayer objects can take on the properties of God in the minds of religious people through the principle of psychological “contagion,” and hence, symbolize the presence of God for practitioners (Valenti et al., 2016).

The concept of contagion was first introduced by Edward Tylor (1871, 1974) and then elaborated by Mauss (1902, 1972) and Frazer (1890, 1959) in the field of anthropology to account for magical beliefs in traditional societies and cultures. According to the theory of contagion, objects maintain their connection to each other forever, if they have once been in contact in the past. Frazer argues that those things which have past contact continue to act on each other later (Frazer, 1959, p. 35). In other words, an endless transfer of effects occurs between two things, once they are in physical contact. This concept has been extended to the psychological literature to account for continued psychological links between entities after initial physical contact.

Psychology researchers have utilized the concept of contagion to explain how psychological properties attached to objects shape people’s beliefs toward them. For instance, people are not interested in wearing clothes that have already been used by a non-favored person; rather, they place high value on clothes used by loved ones (Rozin et al., 1986). In the same vein, people place high value on objects that have been previously owned by celebrities (Newman, Diesendruck, & Bloom, 2011). In other studies, Rozin and his colleagues (1986, 1987) have explained the cognitive and moral bases of the feeling of disgust based on the principle of contagion. They argue that people feel disgust toward and reject foods which are in contact with offensive targets (e.g., insects) because people believe that some enduring properties transfer between objects through physical contact (Rozin et al., 1986; Rozin & Fallon, 1987). These

studies provide support for the theory of contagion and demonstrate that an object can yield influential psychological characteristics transferred to it by other tangible objects.

The theory of contagion can also be used to account for psychological characteristics attached to prayer objects. A principal function of prayer includes feeling closer to God (Kumari & Pirta, 2009; Krause, 2009a). There is evidence that prayer is an important tool for achieving interpersonal closeness to God (Granqvist & Kirkpatrick, 2008). Therefore, as people perceive the presence of God and feel interpersonally close to God while praying, the objects that are used during praying (i.e., prayer objects) should represent the attendance of God. In other words, based on contagion theory, a sense of the presence of God should transfer to prayer objects. In this regard, Valenti et al. (2016) have demonstrated that prayer objects can act as reminder of God for religious practitioners. Hence, if prayer objects remind religious people of a close other (i.e., God), they may perform as other social surrogates (e.g., comfort foods) in providing the experience of belonging.

Overview and Hypotheses

The efficacy of prayer objects in alleviating loneliness and fulfilling connection needs has not been considered. People develop relationships with friends, family members, and romantic partners to satisfy their connection needs, and existing literature on social surrogacy shows that reminders of close others (e.g., comfort foods, Facebook posts, pictures, and letters) can supply the experience of belonging. In addition, God can be seen as an attachment figure. Accordingly, I proposed that tangible objects which serve as a reminder of God (i.e., prayer objects) may produce similar effects to other social surrogates in fulfilling connection needs.

For the present study, I proposed two hypotheses. First, I hypothesized that belongingness threats increase the desire for use of prayer objects. To test this hypothesis, I

examined how threatening belongingness may increase the desire to write (and hence think) about a prayer object. Second, I hypothesized that prayer objects buffer against relationship threats. To test this hypothesis, I examined how writing (and thinking) about a prayer object can alleviate the potential pain (i.e., rejection-related feelings) elicited by a threat to belonging needs.

Method

Participants and Design

I recruited undergraduate students at the University of Houston (UH) to participate in exchange for research credit in a psychology class. This experiment employed a 2 (Reliving Essay: Fight vs. Grocery Store) X 2 (Social Surrogacy Essay: Prayer Object vs. Grocery Object) between-subject design. Previous research in this area using 2 X 2 analyses of covariance obtained effect sizes of approximately $d=0.40$ ($f=0.20$) for the interaction effect (e.g., Derrick et al., 2009; Derrick, 2013). I used this information to calculate the required sample size, using G*Power 3.1.9.2 software (<http://www.gpower.hhu.de>). With power = 0.80, alpha = 0.05, effect size (f) = 0.20, number of groups = 4, and numerator $df = 1$, the critical F ratio would equal 3.88 for a total sample size of 199. Therefore, I planned to recruit at least 50 participants into each of four conditions in this study, for a total sample size of at least 200.

Five-hundred and five participants from the UH campus initially completed the study. Data from 236 participants were unusable due to technical problems in Qualtrics¹, leaving a sample of 269 participants with intact data. An additional 17 participants were dropped because they were 3 SD above the mean for time to complete the study ($n = 7$), 3 SD above the mean for time to complete the prayer object/grocery item essay ($n = 7$), and because they failed to follow

¹ This study was programmed to record both the content of participants' essays and the length of time participants spent writing them. However, this information was not recorded for the first 236 participants due to a technical problem occurred in Qualtrics.

procedures ($n = 3$), leaving a final sample of 252 participants. The sample was 17.46% ($n = 44$) male, 80.95% ($n = 204$) female, 1.19% ($n = 3$) other, and .40% ($n = 1$) missing. The sample was 44.84% ($n = 113$) Hispanic, Latinx, or Spanish origin, 25.40% ($n = 64$) Asian, 12.70% ($n = 32$) White, 10.71% ($n = 27$) Black or African American, 3.17% ($n = 8$) Middle Eastern or North African, 0.79% ($n = 2$) American Indian or Alaska Native, 1.98% ($n = 5$), mixed race/ethnicity, and .40% ($n = 1$) missing. The sample was 78.57% ($n = 198$) Christian, 13.10% ($n = 33$) Muslim, 7.94% ($n = 20$) other religions, and .40% ($n = 1$) missing.

Procedure

The experiment was completed online. Recruitment materials posted on SONA (UH's research management system) indicated that participants must be over 18 years of age and must believe in God in order to sign up for the study. After signing up for the study in SONA, participants were directed to Qualtrics, where they could provide their consent to participate in the study by clicking on the "agree" button at the end of the consent form. Participants completed two check questions at the beginning of the study that asked about their age and their belief in God. Those who indicated that they were not over 18 years old or did not believe in God were directed to the end of the survey without receiving any research credit.

Participants were randomly assigned to condition. First, participants completed the belongingness needs manipulation. In the fight (experimental) reliving essay condition, participants were asked to write about a fight they had with a close other. This task was successfully implemented in previous research to threaten belongingness needs (e.g., Derrick, Gabriel, & Hugenberg, 2009; Troisi & Gabriel, 2011; Troisi et al., 2015). Participants in the grocery store (control) reliving essay condition were asked to write about a recent trip to the

grocery store. All participants had 3 min to write their reliving (fight vs. grocery store) essay. Instructions for the reliving essays can be seen in Appendix A.

Next, participants completed the social surrogacy manipulation. Participants in the prayer object (experimental) condition were asked to name one object they associated with their relationship with God or use for prayer and write about a time in which they used that prayer object. They were asked to describe that prayer object and their experience of using it in as much detail as possible. In the grocery object (control) condition, participants were asked to name one item they frequently purchased at the grocery store and describe that item and its importance in as much detail as possible. Participants were not limited in the length of time they could spend writing the social surrogacy essay (see Derrick, 2013). Instructions for the social surrogacy essays can be seen in Appendix B.

After completing the essays, participants completed a set of questions targeting rejection-related feelings. Specifically, participants were asked to complete measures of state self-esteem, mood, and feelings of rejection. At the end, participants completed a set of demographic questions, a procedure check, and a suspicion check.

Dependent Measures

Social surrogacy engagement. The amount of time participants spent writing the social surrogacy essay (measured via computer) served as a measure of desire to engage in social surrogacy (the primary dependent measure for the first hypothesis).

State self-esteem. Changes in state self-esteem were assessed using the 20-item state self-esteem scale (Heatherton & Polivy, 1991). This measure of state self-esteem was successfully used in previous research on rejection (Leary et al., 1998, Derrick et al., 2009). Responses to each of 20 self-relevant statements (e.g., “I feel confident about my abilities”; “I feel frustrated

or rattled about my performance”, reverse coded) were made on a 7-point scale (1 = not at all, 7 = extremely). The answers to these 20 items were averaged to create each participant’s total score for state self-esteem ($\alpha = .91$). Higher scores indicated higher state self-esteem ($M = 4.49$, $SD = 1.04$). The state self-esteem questions can be seen in Appendix C.

Mood. Participants completed the 20-item Positive and Negative Affect Schedule (PANAS: Watson, Clark, & Tellegen, 1988). Participants indicated the degree to which they felt each of 20 emotions (e.g., interested, distressed, excited) on a 1 (not at all) to 7 (extremely) scale. Positive mood items were reverse coded and were averaged with negative mood items to create each participant’s total score for negative mood ($\alpha = .82$, $M = 3.56$, $SD = .93$)². The PANAS can be seen in Appendix D.

Feelings of rejection. An adaptation of the revised UCLA loneliness scale (ULS-8) created by Hays and DiMatteo (1987) was used in this study to measure feelings of loneliness. Reliability, validity, and homogeneity of this short-form measure of loneliness were supported in previous research (Hays & DiMatteo, 1987; Wu & Yao, 2008; Yildiz & Duy, 2014). Participants indicated their agreement with each of eight rejection-related statements (e.g., “There is no one I can turn to”) on a 1 (not at all true) to 7 (extremely true) scale. The question wording was changed to reflect state feelings of rejection (e.g., “Right now, there is no one I can turn to”). Higher scores indicated increased feelings of rejection ($\alpha = .81$, $M = 2.82$, $SD = 1.11$). The ULS-8 can be seen in Appendix E.

Religiosity. The 14-item religiosity scale (Gorsuch & McPherson, 1989) was used in this study to control for participants’ religious orientations. Eight items measured intrinsic religious

² The two-way Reliving Essay X Social Surrogacy Essay interactions were not significant when a positive mood subscale and a negative mood subscale were considered separately.

orientations (e.g., “I have often had a strong sense of God’s presence”), three items measured socially extrinsic religious orientations (e.g., “I go to church mainly because I enjoy seeing people I know there”), and three items measured personally extrinsic religious orientations (e.g., “Prayer is for peace and happiness”). Participants indicated their agreement with each of these 14 items on a 1 (strongly disagree) to 7 (strongly agree) scale. The question wording of the three items measuring socially extrinsic religious orientations was changed to reflect general socially extrinsic orientations relevant to all religions (e.g., “I go to religious services mainly because I enjoy seeing people I know there”). Higher scores indicated greater religiosity ($\alpha = .81$, $M = 4.43$, $SD = .91$). The religiosity scale questions can be seen in Appendix F.

Demographics. Participants reported their gender, race/ethnicity, and religion. Questions for demographics can be seen in Appendix G.

Procedure check. Four questions asked participants about their essay tasks. The four procedure check questions can be seen in Appendix H.

Suspicion check. At the end of the survey, two questions asked participants to describe the purpose of the study. The two suspicion check questions can be seen in Appendix I.

Results

Preliminary Analyses

Descriptive statistics and bivariate correlations can be found in Table 1. The kurtosis of the residuals for the dependent variables were all above 0.3, and the results of Shapiro-Wilk tests failed to reach significance for all dependent variables, indicating violations of normality assumptions. Additionally, Brown-Forsyth tests identified severe violation of homoscedasticity for the time participants spent writing their social surrogacy essays. Therefore, I applied a log

transformation to all dependent variables to address the violations of normality and homoscedasticity.

Primary Analyses

Social surrogacy engagement. Did aroused belongingness needs elicit an increase in the amount of time participants spent elaborating on (and hence, thinking about) prayer objects? To test this possibility, I ran a 2 (Reliving Essay: Fight vs. Grocery Store) X 2 (Social Surrogacy Essay: Prayer Object vs. Grocery Object) between-subjects ANCOVA examining the time participants spent writing the social surrogacy essay, controlling for religiosity. On average, participants spent 168.91 seconds on the prayer object essay ($M = 168.91$, $SD = 143.06$), and 101.44 seconds on the grocery item essay ($M = 101.44$, $SD = 68.93$). Results for the ANCOVA are presented in columns 2 and 3 of Table 2. The predicted two-way Reliving Essay X Social Surrogacy Essay interaction was not significant, so I examined the main effects of condition. The main effect of Reliving Essay was not significant, but the main effect of Social Surrogacy Essay was significant. Participants thought about prayer objects for longer than grocery items, independent of the manipulation of belongingness needs.

State self-esteem. Did the typical drop in state self-esteem that people experience after a relationship threat disappear when participants wrote about prayer objects? To test this hypothesis, I submitted participants' scores on state self-esteem to a 2 (Reliving Essay: Fight vs. Grocery Store) X 2 (Social Surrogacy Essay: Prayer Object vs. Grocery Object) between-subjects ANCOVA, controlling for religiosity. Results for the ANCOVA are presented in columns 4 and 5 of Table 2. The two-way Reliving Essay X Social Surrogacy Essay interaction was significant. This interaction is depicted in Figure 1. Participants who wrote about a grocery item had lower state self-esteem after reliving a fight than after writing about a trip to the grocery

store, $t(252) = -2.70, p = .007, d = -0.34$, demonstrating that the manipulation of relationship threat was successful. However, this difference was no longer significant (and showed a marginally significant reversal) among participants who wrote about a prayer object, $t(252) = 1.72, p = .087, d = 0.22$, demonstrating the protective effect of prayer objects against belongingness threats. After reliving a grocery trip, those who wrote about a prayer object experienced lower levels of state self-esteem than those who wrote about a grocery object, $t(252) = -3.22, p = .001, d = -0.40$. After reliving a fight, this difference was not significant, $t(252) = 1.18, p = .239, d = 0.15$.

Negative Mood. Did the increase in negative mood that people experienced after a relationship threat disappear when participants wrote (and hence, thought) about prayer objects? To test this hypothesis, I submitted participants' scores on negative mood to a 2 (Reliving Essay: Fight vs. Grocery Store) X 2 (Social Surrogacy Essay: Prayer Object vs. Grocery Object) between-subjects ANCOVA, controlling for religiosity. Results for the ANCOVA are presented in columns 6 and 7 of Table 2. The two-way Reliving Essay X Social Surrogacy Essay interaction was significant. This interaction is depicted in Figure 2. Participants who wrote about a grocery item had higher levels of negative mood after reliving a fight than after writing about a trip to the grocery store, $t(252) = 2.70, p = .007, d = 0.34$, demonstrating that the manipulation of relationship threat was successful. However, this difference was no longer significant (and showed a non-significant trend toward reversal) among participants who wrote about a prayer object, $t(252) = -1.63, p = .104, d = -0.20$, demonstrating the protective effect of prayer objects against belongingness threats. After reliving a trip to the grocery store, those who wrote about a prayer object experienced higher levels of negative mood than those who wrote about a grocery

object, $t(252) = 2.99, p = .003, d = 0.38$. After reliving a fight, this difference was not significant, $t(252) = -1.33, p = .184, d = -0.17$.

Feelings of rejection. Did writing (and hence, thinking) about prayer objects buffer against the feelings of rejection people experienced after a relationship threat? To test this hypothesis, I submitted participants' scores on feelings of rejection to a 2 (Reliving Essay: Fight vs. Grocery Store) X 2 (Social Surrogacy Essay: Prayer Object vs. Grocery Object) between-subjects ANCOVA, controlling for religiosity. Results for the ANCOVA are presented in columns 8 and 9 of table 2. The two-way Reliving Essay X Social Surrogacy Essay interaction was significant. This interaction is depicted in Figure 3. Participants who wrote about a grocery item had higher feelings of rejection after reliving a fight than after writing about a trip to the grocery store, $t(252) = 2.78, p = .006, d = 0.35$, demonstrating that the manipulation of relationship threat was successful. However, this difference was no longer significant (and showed a non-significant reversal) among participants who wrote about a prayer object, $t(252) = -0.34, p = .734, d = -0.04$, demonstrating the protective effect of prayer objects against belongingness threats. After reliving a trip to the grocery store, those who wrote about a prayer object experienced greater feelings of rejection than those who wrote about a grocery object, $t(252) = 3.24, p = .001, d = 0.41$. After reliving a fight, this difference was not significant, $t(252) = .15, p = .881, d = 0.02$.

Discussion

The purpose of this study was to assess whether prayer objects can supply connection needs and buffer against belongingness threats. Accordingly, I proposed two hypotheses. The first hypothesis was that threatening belongingness would increase the desire to write (and hence think) about a prayer object. The main effect of social surrogacy condition demonstrated that

people preferred to think about a prayer object more than a grocery item, independent of the rejection manipulation. That participants spent more time on prayer object essays than grocery object essays in both experimental and control conditions can be attributed to the higher attractiveness of prayer objects compared to grocery objects.

The second hypothesis of this study predicted that using a prayer object would alleviate rejection-related feelings elicited by a threat to belonging needs. Accordingly, I examined whether writing and thinking about a prayer object would buffer against drops in state self-esteem and mood and against increased feelings of rejection as a consequence of belongingness threats. The findings demonstrated that the manipulation of relationship threat was successful, as participants who wrote about a grocery item had higher feelings of rejection, higher negative mood, and lower state self-esteem after reliving a fight than after writing about a grocery trip. In line with the Social Surrogacy Hypothesis, these associations disappeared, and sometimes reversed, among participants who wrote about a prayer object, supporting the protective ability of prayer objects³. These findings supported the strength of prayer objects to improve the experience of belongingness and to buffer the negative effects of a rejection experience.

This study extends previous research examining the effects of social surrogates, especially reminders of others, in supporting connection needs. Not only can reminders of close others (e.g., comfort foods, photographs of a romantic partner) provide the experience of belonging (Troisi & Gabriel, 2011; Niemyjska, 2015), but also reminders of God (i.e., prayer objects) can yield similar effects. Accordingly, examining the effects of reminders of other

³ When time spent writing the social surrogacy essays was included as a covariate, the two-way Reliving Essay X Social Surrogacy Essay interactions remained at the same levels of significance.

religious figures with whom people develop a secure relationship (e.g., Jesus) on belongingness needs and feelings of rejection may add to the literature of social surrogacy.

Limitations

The main limitation of the current study involved a technical problem in Qualtrics. Although the study was programmed to record both the content of participants' essays and the length of time participants spent writing them, this information was not recorded for the first 236 participants. Therefore, the records of these participants were dropped from the analyses. These technical problems occurred across conditions, and therefore, selective attrition cannot account for the results of the current study.

Another limitation of this study was that participants' usage of prayer objects in daily life was not controlled for. While the strength of religiosity was controlled for in the current study, it might be the case that participants' daily usage of prayer objects influenced the protective effects of prayer objects against belongingness threats. It might be possible that the longer time participants spent writing about a prayer object than a grocery object was due to the high usage rate of prayer objects in daily life by participants.

In addition, the use of a prayer object by a participant in the current study was measured through writing and thinking about that object. Some readers may believe that this is a limitation, given that actually handling a prayer object may better bring to mind the use of that prayer object than just thinking and writing about it. However, it can be argued that this manipulation would be expected to be weaker than a manipulation involving real prayer objects, and thus, the experiment provided a conservative test of the protective effects of prayer objects. Therefore, we do not believe that this is truly a limitation of the design.

Conclusions and Future Directions

Although the study results did not clearly support the hypothesis that participants would seek prayer objects after experiencing rejection, the results supported the hypothesis that prayer objects can provide the experience of belonging through alleviating rejection-related feelings. However, the results of the current study cannot speak to the potential long-term effects. In order to have a more comprehensive understanding of the efficacy of prayer objects in supporting connection needs, a longitudinal analysis is suggested. A longitudinal study of the association of prayer objects and connection needs can better elucidate the long-term protective effects of prayer objects against relationship threats in a natural setting. In addition, since this study examined the efficacy of prayer objects, as one type of social surrogate, in supporting connection needs, it is suggested that the social aspects of prayer objects be taken into account. Whether the prayer object participants use is a personal object or an object used in social religious services may alter the strength of that prayer object in supporting connection needs.

Table 1. Descriptive Statistics and Correlations Among Study Variables.

	1	2	3	4
1. Feelings of rejection	-			
2. Negative mood	0.5333***	-		
3. State self-esteem	-0.6406***	-0.6675***	-	
4. Religiosity	-0.1842**	-0.2960***	0.2933***	-
Mean	2.82	3.56	4.49	4.43
<i>SD</i>	1.11	.93	1.04	.91
<i>Skewness</i>	.68	-.31	-.10	-.32
<i>Kurtosis</i>	3.18	2.89	2.96	3.07

⁺ p < .10, * p < .05, ** p < .01, *** p < .001.

Table 2. Results of ANCOVA analyses predicting the time spent on social surrogacy essays, state self-esteem, negative mood, and feelings of rejection by condition

Independent Variable	Time Spent on Social Surrogacy Essays		State Self-Esteem		Negative Moods		Feelings of Rejection	
	<i>F</i>	η_p^2	<i>F</i>	η_p^2	<i>F</i>	η_p^2	<i>F</i>	η_p^2
Religiosity	0.16	.000	27.30***	.099	26.06***	.095	8.06**	.031
Reliving Essay	1.34	.005	0.49	.002	0.57	.002	2.97 ⁺	.012
Social Surrogacy Essay	19.03***	.071	2.16	.009	1.43	.006	5.84*	.023
Reliving Essay X Social Surrogacy Essay	1.68	.007	9.78**	.038	9.40**	.037	4.87*	.019

Note. "Degrees of freedom = (1, 247) for each test."

⁺ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

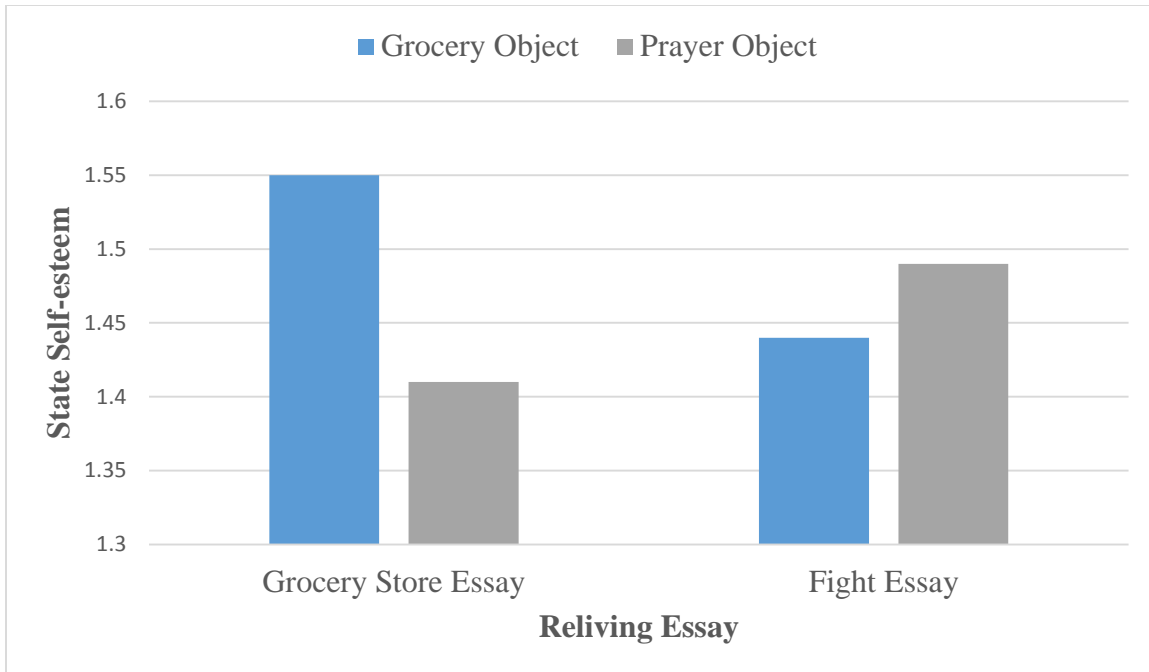


Figure 1. State self-esteem as a function of belongingness threat and social surrogacy.

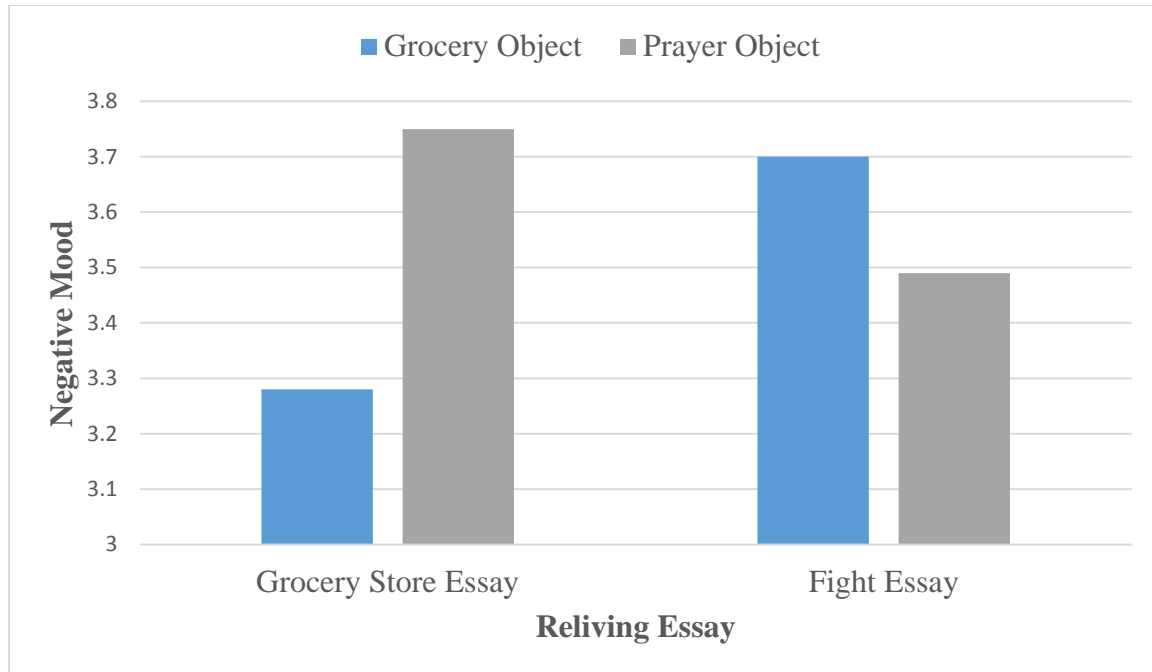


Figure 2. Negative mood as a function of belongingness threat and social surrogacy.

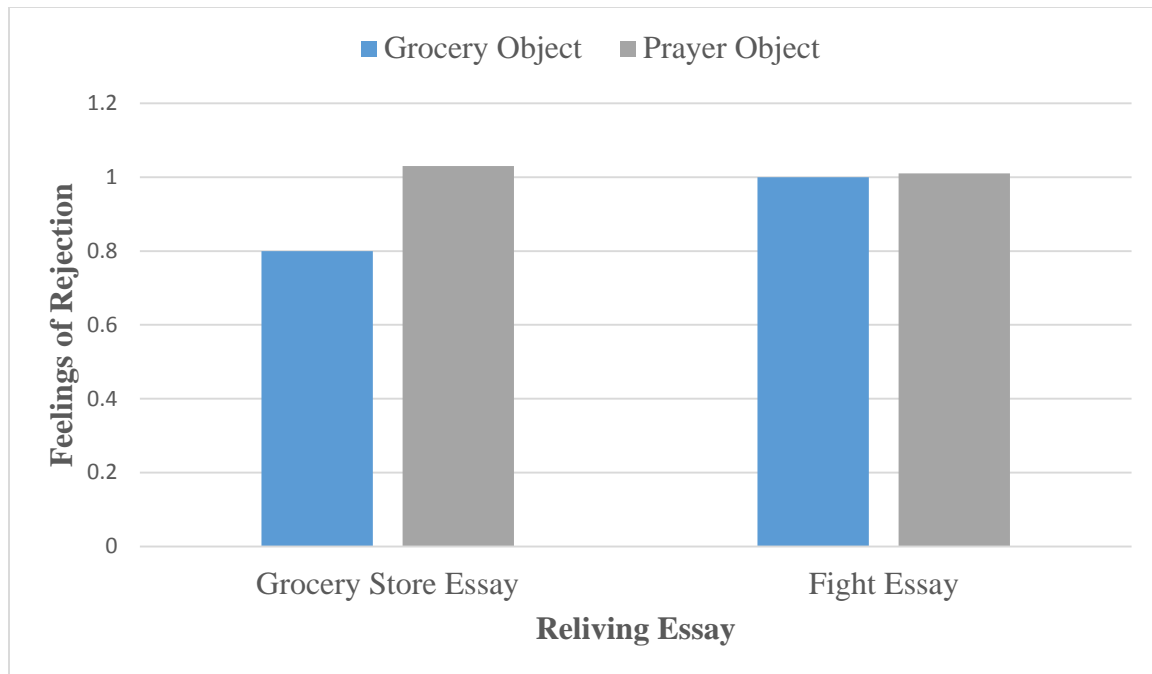


Figure 3. Feelings of rejection as a function of belongingness threat and social surrogacy.

Appendix A: Relieving Essays

Fight reliving essay:

INSTRUCTIONS: For this next task, please write about a fight you had with a close other. In your response, please describe the reasons and the characteristics of that fight in as much detail as possible. You will be given 3 minutes to complete this task; be sure to write for the entire time! The screen will be automatically removed after the time has elapsed - so keep writing until you are prompted to stop.

Grocery store essay:

INSTRUCTIONS: For this next task, please write about a recent trip to the grocery store. In your response, please describe what you did in your recent trip to the grocery store in as much detail as possible. You will be given 3 minutes to complete this task; be sure to write for the entire time! The screen will be automatically removed after the time has elapsed - so keep writing until you are prompted to stop.

Appendix B: Social Surrogacy Essays

Prayer object essay:

INSTRUCTIONS: Please name one object you associate with your relationship with God or use for prayer. _____

For this next task, please write about the characteristics of <insert that object>, how much it is important to you, and why? In your response, please describe this prayer object and its importance to you in as much detail as possible. You can advance the screen after you finish writing.

Grocery item essay:

INSTRUCTIONS: Please name one item you frequently purchase at the grocery store.

For this next task, please write about the characteristics of <insert that item>, how much it is important to you, and why? In your response, please describe this item and its importance to you in as much detail as possible. You can advance the screen after you finish writing.

Appendix C: Heatherton & Polivy, 1991**(State Self-Esteem)**

This is a questionnaire designed to measure what you are thinking at this moment. There is, of course, no right answer for any statement. The best answer is what you feel is true of yourself at this moment. Be sure to answer all of the items, even if you are not certain of the best answer.

Again, answer these questions as they are true for you RIGHT NOW.

1	2	3	4	5	6	7
Not at all	Slightly	Somewhat	Neutral	Moderately	Very	Extremely

1. I feel confident about my abilities.
2. I am worried about whether I am regarded as a success or failure.
3. I feel satisfied with the way my body looks right now.
4. I feel frustrated or rattled about my performance.
5. I feel that I am having trouble understanding things that I read.
6. I feel that others respect and admire me.
7. I am dissatisfied with my weight.
8. I feel self-conscious.
9. I feel as smart as others.
10. I feel displeased with myself.
11. I feel good about myself.
12. I am pleased with my appearance right now.
13. I am worried about what other people think of me.
14. I feel confident that I understand things. Performance.

- 15. I feel inferior to others at this moment.
- 16. I feel unattractive.
- 17. I feel concerned about the impression I am making.
- 18. I feel that I have less scholastic ability right now than others.
- 19. I feel like I'm not doing well.
- 20. I am worried about looking foolish

Appendix D: PANAS

The following measure consists of a number of words that describe different feelings and emotions. Please read each item and rate the extent to which you feel this way right now (that is, at the present moment). Use the following scale to record your answers.

1	2	3	4	5	6	7
Not at all				Extremely		
interested	_____			irritable	_____	
distressed	_____			alert	_____	
excited	_____			ashamed	_____	
upset	_____			inspired	_____	
strong	_____			nervous	_____	
guilty	_____			determined	_____	
scared	_____			attentive	_____	
hostile	_____			jittery	_____	
enthusiastic	_____			active	_____	
proud	_____			afraid	_____	

Appendix E: Hays & DiMatteo, 1987**The revised UCLA loneliness scale (ULS-8)**

For each of the following statements, please indicate how true the statement is of your feelings
RIGHT NOW. Please indicate how you feel using the following scale.

1	2	3	4	5	6	7
Not at all true	Slightly true	Somewhat true	Neutral	Moderately true	Very true	Extremely true

1. Right now I lack companionship.
2. Right now there is no one I can turn to.
3. At the moment I am an outgoing person.
4. I feel left out right now.
5. I feel isolated from others right now.
6. At this moment I can find companionship when I want it.
7. At this moment I am unhappy being so withdrawn.
8. Right now people are around me but not with me.

Appendix F: Gorsuch & McPherson, 1989**(Religiosity Scale)**

Please indicate how much you agree with each of these statements using the following scale.

1	2	3	4	5	6	7
Strongly disagree			Neither agree nor disagree			Strongly agree

1. I enjoy reading about my religion
2. I go to religious services because it helps me to make friends
3. It doesn't much matter what I believe so long as I am good
4. It is important to me to spend time in private thought and prayer
5. I have often had a strong sense of God's presence
6. I pray mainly to gain relief and protection
7. I try hard to live all my life according to my religious beliefs
8. What religion offers me most is comfort in times of trouble and sorrow
9. Prayer is for peace and happiness
10. Although I am religious, I don't let it affect my daily life
11. I go to religious services mostly to spend time with my friends
12. My whole approach to life is based on my religion
13. I go to religious services mainly because I enjoy seeing people I know there
14. Although I believe in my religion, many other things are important in my life

Appendix G: Demographics

Please answer the following questions about yourself.

1. What is your gender?

Male

Female

Other

2. What is your age? _____

3. What is your race/ethnicity?

_____ American Indian or Alaska Native (e.g., Navajo Nation, Blackfeet Tribe, Mayan, Aztec, Native Village of Barrow Inupiat Traditional Government, Nome Eskimo Community, etc.)

Please specify: _____

_____ Asian (e.g., Chinese, Filipino, Indian, Vietnamese, Korean, Japanese, etc.)

Please specify: _____

_____ Black or African American (e.g., African American, Jamaican, Haitian, Nigerian, Ethiopian, Somali, etc.)

Please specify: _____

_____ Hispanic, Latinx, or Spanish origin (e.g., Salvadoran, Dominican, Colombian, Guatemalan, Spaniard, Ecuadorian, etc.)

Please specify: _____

_____ Middle Eastern or North African (e.g., Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian, etc.)

Please specify: _____

_____ Native Hawaiian or Other Pacific Islander (e.g., Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, etc.)

Please specify: _____

_____ White (e.g., German, Irish, English, Italian, Polish, French, etc.)

Please specify: _____

_____ Other

Please specify: _____

4. What is your religion?

Christianity, please specify denomination: _____

Judaism

Islam

Other _____

5. How often do you pray?

Several times a day

Once a day

More than once a week
Once a week
A few times a month
Once a month or less
Never

6. How often do you attend religious services?

Several times a day
Once a day
More than once a week
Once a week
A few times a month
Once a month or less
Never

7. How important is religion to you?

Not at all important
Low importance
Slightly important
Neutral
Moderately important
Very important
Extremely important

Appendix H: Procedure Checks

Please answer the following questions:

1. What did you write about in your first essay? (Please describe in one to two sentences)

2. What did you write about in your second essay? (Please describe in one to two sentences)

<next screen>

3. In my first essay, I wrote about

1. A fight I had with a close other
2. A recent trip to the grocery store
3. Other, Please specify: _____

In my second essay, I wrote about...

1. A prayer object
2. A grocery item
3. Other, Please specify: _____

Appendix I: Suspicion Checks

Please answer the following questions:

1. What do you think was the purpose of this study? (Please describe in one to two sentences)

2. Was there anything suspicious about this study? (Please describe in one to two sentences)

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