WHAT'S IN A RITUAL? EXAMINING THE IMPACT OF RITUAL FEATURES AND FRAMING ON PERCEPTIONS OF EFFICACY

by

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"No one who achieves success does so without acknowledging the help of others. The wise and confident acknowledge this help with gratitude." – Alfred North Whitehead

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ABSTRACT

Rituals, or a sequence of required goal-demoted actions conducted to produce a desired outcome (e.g., Kapitány & Nielsen, 2016; Legare & Souza, 2012), are common human behaviors that have been present throughout human history and across many cultures (Mort & Slone, 2006; Rossano, 2009). Given their ubiquity across cultures, researchers have also wondered if there are common features of rituals and whether these features are tied to perceptions of their efficacy in bringing about particular outcomes. Certain features of rituals—such as a specified number of steps and repetition of procedures—may be linked to higher levels of perceived efficacy (Legare & Souza, 2012). The goal of the current study was to replicate and extend these findings to examine whether (1) including a nonreligious object and (2) framing the rituals as coming from a cultural context unknown to participants (far) or a cultural context familiar to participants (near), affects the perceived efficacy of rituals. Although previous research has treated the use of objects in rituals as a default (Kapitány & Nielsen, 2015; 2016; 2019; Barrett & Lawson, 2001), there is no research regarding how the inclusion of a nonreligious object in a ritual affects its perceived efficacy. I predicted that the use of nonreligious object in a ritual would increase perceptions of ritual efficacy in solving familiar day-to-day problems, given that the presence of objects seems to be a pervasive feature of rituals. We were also interested in the framing of rituals since the degree to which a ritual seems to come from a familiar versus unfamiliar context may change the degree of skepticism that participants feel when evaluating whether it will work to solve

different problems. I predicted that when rituals were framed as coming a cultural context unknown to participants, there would be an increase in evaluations ritual efficacy since participants may be less skeptical. In a between-subjects design, participants (N = 350) were asked to evaluate how effective a series of rituals were in solving different problems (e.g., sleeplessness, a fight with a friend). The rituals either included a nonreligious object or no objects, and were framed as coming from the U.S. (near) or as from Brazil (far). Results indicated no main effect of ritual feature ($F(1, 341) = 1.05$, $p = .306$), however independent samples *t*-test results indicated significant differences between rituals with ($M = 3.13$; $SD = 1.85$) and without ($M = 3.71$; $SD = 2.07$) a non-religious object ($t(349) = 2.78$, $p < .01$. There was no main effect of ritual framing ($F(1, 341) = 0.18$, $p = .672$), and no interaction effect between ritual feature and framing ($F(1, 341) = 0.21$, $p = .651$). In contrast with my predictions, my findings indicate that the presence of non-religious objects does impact judgements of ritual efficacy (however, in the opposite direction than what was predicted), but framing does not impact judgments of the efficacy of rituals. I discuss the implications of these findings for the pervasiveness of different features of rituals.

In a second study, I examine the Theory of Ritual Competence which explains humans use their intuitions to make judgements about a ritual's efficacy based on the appeal to a superhuman entity. Two previous studies, Barrett and Lawson (2001) and Sørensen et al. (2006), supports the theory of ritual competence, however, the rituals used in each were primarily novel, non-familiar rituals. In essence, the rituals themselves

could have been seen as too abstract. Moreover, the terminology used in these studies (e.g., explicitly labeling an agent or object as "special"; Barrett & Lawson, 2001) does not reflect how we often learn about rituals. The theory of ritual competence should not be limited to unfamiliar rituals or those in which elements are explicitly labeled as "special", humans should be able to reason in the way about familiar rituals as well. I presented participants (N = 161; based sample size on power analysis) with six familiar rituals, three that are religious and three that are not religious, each ritual will have three different versions of a prototype ritual which differ on the inclusion of a special agent and a special object. Participants rated how effective they thought each ritual is at obtaining the desired outcome stated in the ritual. I hypothesized two possibilities of ritual efficacy relating to the theory of ritual competence. Either participants would judge the presence of a special agent or object would only matter when these elements are held within the context of a religious ritual, or there would be no impact of religiosity, ritual efficacy evaluations will be similar for both religious and non-religious rituals based on the inclusion of a special agent and/or object. Results indicated no main effect of religiosity. In reference to ritual features, participants valued two special features over one special feature (either the agent or the object), and one special feature over rituals with no special features. There was a marginally significant difference between religious rituals with a special object and non-religious rituals with a special object. I discuss the implications of these findings on the theory of ritual competence, followed by an overall discussion about how rituals features impact the perceived success of rituals and the future directions for

follow-up studies.

I. INTRODUCTION

How many times in your life have you sung 'Happy Birthday' to someone before they blew out the candles on their cake? Have you ever thrown rice into the air at a wedding? Do you like to wear a pair of lucky socks when your favorite team has a big game?

The behaviors listed above are all considered rituals. Rituals are a sequence of essential goal-demoted actions conducted to produce a desired outcome (Kapitány & Nielsen, 2017; 2019; Legare & Souza, 2012). They are ubiquitous human behaviors that are common throughout human history and across many cultures (Bell, 2009; Mort & Slone, 2006; Rossano, 2009). Ritualistic actions may have evolved to ease feelings of anxiety and are arguably present in multiple species (Boyer & Liénard, 2006). Rituals have been developed to serve multiple purposes including cleansing one's environment, protecting one from danger, or increasing one's luck (Boyer & Liénard, 2006; Lawson, 2012; Kapitány & Nielsen, 2017). They are also used to create bonding experiences among in-group members and to provide a tool for individuals to signal to other group members that they share the same values (Watson-Jones & Legare, 2016).

Although rituals are a common human behavior (Kapitány & Nielsen, 2017), there are many questions left to be answered: Do rituals from different cultures share common features? Have these common features developed because they help humans to deal with the cognitive challenge of evaluating the efficacy of ritual actions that are often not physical-causally connected to desired outcomes (Legare & Souza, 2012; Sax & Weinhold, 2010)? Do these ritual features help us make better sense of the non-obvious connections between ritual actions and their desired outcomes?

In this thesis, I conducted replications and extensions of previous work in two studies to examine features of rituals that could cause them to be perceived as more or less effective. Specifically, in Study 1, I conducted a registered replication to examine the role of different components of rituals (*ritual features*), including a component that has not been previously examined, on perceptions of these rituals' efficacy in bringing about desired outcomes. I also extended previous research by examining whether presenting a ritual as an artifact from a different culture (*framing*) impacts perceptions of its efficacy. In Study 2, I conducted a conceptual replication of previous research that supports the theory of ritual competence. In this study, I used ecologically-valid rituals to examine how the involvement of a superhuman agent impacts perceptions of ritual efficacy.

Below I first discuss research examining common features of rituals, before turning to an explanation of how particular features are tied to perceptions of rituals' efficacy. I then present how I replicated and extended the finding of this pervious research by examining an additional feature of rituals (the presence or absence of objects) and the impact of framing in Study 1. After this, I present research supporting the theory of ritual competence and how this theory has been supported and extended by previous studies.

II. STUDY 1. EXAMINING THE IMPACT OF RITUAL FEATURES AND FRAMING ON PERCEPTIONS OF EFFICACY

Ritual Features

Although the contents of rituals are often culturally- and contextually-specific, there are some common characteristics and general features of rituals that researchers have identified. In particular, Boyer and Liénard (2006) propose that all rituals have five general features in common: compulsion, rigidity, goal-demotion, internal repetition and redundancy, and limited range of themes. These features are based on a synthesis of literatures from anthropology, psychology, and ethology. *Compulsion* refers to the idea that rituals are mandated in some way—either to relieve anxiety, or, in the case of cultural rituals (e.g., rituals shared by a group of people), to meet a particular social expectation. Rituals are also characterized by their *rigidity* in that actors must adhere to a script or conduct specified actions, in the correct order, in the same manner as past performances. Rituals are also *goal-demoted* in that they are a "performance divorced from observable goals", meaning that rituals are a pattern of behaviors that may not have clear explanations as to why the specified actions need to be performed to achieve the desired goal (Boyer & Liénard, 2006, p. 4). Rituals also feature *internal repetition* either through the inclusion of repetitive actions or redundant exclamations. The final feature of rituals is that they have a *limited range of themes*, meaning the purpose of rituals and when to conduct them is restricted to specific occurrences (e.g., to purify people, objects, or land; Boyer & Liénard, 2006). These five features are the defining components of rituals, but are there particular features or elements that can be incorporated into rituals that may make them seem more or less effective?

Although rituals are common and widely used in many cultures around the world, they also pose what has been referred to as a "cognitive paradox". Specifically, rituals are widely used to create change, but remain causally opaque (Legare & Souza, 2012). Causal opacity refers to the lack of an apparent causal connection between the ritualistic actions and the ritual's intended outcome, potentially a consequence of goal-demotion (Boyer & Liénard, 2006). For example, ritualistic handwashing may feature required steps, such as washing the right hand before the left hand or using a particular container for water. A prescribed hand order and container are not actually causally connected to the goal of ensuring that hands become clean. Thus, if it is difficult to link specific components of rituals to the outcomes they are intended to create, are particular components perceived to make a ritual more or less effective? Legare and Souza (2012) examined this by asking what kinds of information influence perceptions of the efficacy of rituals at bringing about desired goals.

In particular, Legare and Souza (2012) drew inspiration from Brazilian *simpatias* to explore links between particular ritual features and rituals' perceived efficacy in a series of four studies. In Brazil, simpatias are culturally-endorsed common ritualistic behaviors that are used to solve everyday problems. Thus, examining features of rituals in Brazil allowed researchers to examine perceptions of different rituals' efficacy in an ecologically-valid way, without the need to explain the ritual system to participants. To do this, Legare and Souza designed a set of experimental rituals modeled after preexisting Brazilian simpatias. They created two versions of each ritual to capture more effective and less effective versions of nine features they predicted that people may use to judge the efficacy of the rituals. These nine features were developed by examining the content

of 50 preexisting *simpatias* that were selected from a wide variety of available sources (i.e., books and popular websites) and from using qualitative data from cultural communities. The nine features Legare and Souza explored were: specificity of time (more effective – specified time vs. less effective – unspecified time), specificity of place (more effective – specified place vs. less effective – unspecified place), specificity of material (more effective – specified material vs. less effective – unspecified material), repetition of procedures (more effective – repetition vs. less effective – no repetition), number of procedural steps (more effective – more steps vs. less effective – fewer steps), number of items used (more effective – more items vs. less effective – fewer items), edibility (more effective – edible items included vs. less effective – not included), digestibility (more effective – edible items ingested vs. less effective – not ingested), and use of a religious icon (more effective – present vs. less effective – not present; Legare & Souza, 2012).

In their first study, Legare and Souza wanted to assess the ecological validity of the experimental rituals they had developed. Each experimental ritual was presented along with a list of problems preexisting simpatias could fix (e.g., sadness, bronchitis, toothache). They asked Brazilian participants to choose from the list of problems they thought the ritual would be most effective to treat, but also gave them the choice to indicate that the ritual was not effective at treating any of the presented problems. If no patterns emerged in which the simpatias were systematically paired with one particular problem, then they could be certain that the experimental simpatias were ecologically valid. Legare and Souza (2012) did not want the simpatias to be associated with specific problems, so that participants would not have preconceived notions about their efficacy.

They found that their experimental rituals were representative of real simpatias but that they were not associated with particular problems and that some participants indicated they had used several similar simpatias in the past.

After the experimental rituals were validated, Legare and Souza examined which of the nine ritual features they had identified influenced perceptions of how effective a ritual was at bringing about its intended outcome. They asked participants to rate one experimental ritual from each feature category on how effective they thought the ritual would be at solving a specific problem. Participants evaluated either all the versions predicted to be more effective or all the versions predicted to be less effective. They found that the experimental rituals that had a specified time, a greater number of repetition of procedures, and a greater number of steps were found to be more effective than those versions which did not provide such specifications. Thus, there were certain features of rituals that impacted their perceived efficacy.

In their third study, Legare and Souza wanted to systematically examine the extent to which the features they found to be more effective from their second study could be replicated with a set of individuals that professed to regularly use simpatias. They limited their participants to only those they labeled as "believers", because participants who did not use simpatias gave lower efficacy ratings than those who did. In this study, they also included the feature of the presence of a religious icon. By including this feature, Legare and Souza were able to examine the effects of matching the religious icon feature with the "believer" participants, and the addition allowed them to match problems commonly associated with real simpatias. Again, participants each rated a set of experimental rituals, this time three rituals per feature. Legare and Souza used a between-

subjects design so that participants only rated rituals that included the more effective version of each feature or the less effective version. They found that the results of Study 3 replicated the results of Study 2. Experimental rituals that included the features of repetition, more steps, and specified a time were rated as significantly more effective than those that did not. They also found that experimental rituals that included a religious icon had higher efficacy ratings than simpatias that did not include a religious icon.

In their fourth study, Legare and Souza conducted the same experiment in a different cultural context to examine the generalizability of their findings. They asked 68 U.S. undergraduate students at a large state university in Texas to rate the 12 experimental rituals used in Study 3 to examine the impact of repetition, number of steps, specificity of time, and presence of a religious icon on ratings of the rituals' efficacy. The results of this study indicated that rituals featuring repetition, more steps, and a religious icon were all found to be more effective. I intend to replicate this study with a new sample of U.S. undergraduate students from a university in Texas. One limitation of the original study is that, in light of recent movements in psychology regarding the importance of replication and designing studies to have high levels of statistical power (Brandt et al., 2014), the initial study was underpowered (see the participants section). My goal is to examine the extent to which these particular ritual features are perceived to be more effective by a demographically-similar, but appropriate-sized, sample.

Replication and Extension

In my thesis, I worked to replicate Legare and Souza's (2012) Study 4 by examining college students' evaluations of the same experimental rituals. I also extended this work by examining a new feature—the inclusion of a non-religious object—and

assessed the effect of ritual framing on perceptions of efficacy. Below, I present my rationale for extending the previous research in each of these directions.

Role of objects in rituals

Objects are often central elements of rituals, though when exploring perceptions of the outcomes and efficacy of rituals, the inclusion of objects is taken for granted. Objects that are acted upon in a ritualistic manner are not there arbitrarily (Kapitány & Nielsen, 2019). Moreover, past research suggests that describing an object as being special affects the efficacy ratings of the rituals (Kapitány & Nielsen, 2015; 2017; Barrett & Lawson, 2001). In addition, rituals may be used to change the nature of objects themselves. For example, Kapitány and Nielsen (2017; 2019) have found that rituals can change the perception of ordinary objects into extraordinary objects.

To examine the role of rituals in changing perceptions of objects, Kapitány and Nielsen (2017) explored the dissociation between a ritual's causal opacity (i.e., lack of causal connection between actions and their goal) and its goal-demotion (i.e., opacity regarding the reasons the ritualistic actions are being produced). They asked participants to watch a series of videos in which an actor performed different actions on a glass containing a liquid. Each video was accompanied with a statement detailing the intentions of the actor (i.e., performing a blessing, a curse, or no description of the intention) and contained actions which were either ritualistic (causally opaque) or ordinary actions (causally transparent). When the participants viewed the causally opaque videos, they were more than twice as likely to report the object (the glass) as being special. When the video contained the accompanied description of the actor's intentions to perform a curse, the participants were less likely to see the object as desirable.

Kapitány and Nielsen concluded that causal opacity informs us of an object's status (either special or not special) and that goal information and opacity information contributes to attitudes towards objects (avoidance or desire). This study suggests objects can be made more or less special within the context of particular ritual structures, but it is taken for granted that objects are involved in rituals.

To our knowledge, no studies to date have examined the role of an object's presence on perceptions of a ritual's potential for success. There has been work examining the impact of the presence or absence of what was termed a "special" object. Barrett and Lawson (2001) presented participants with a prototype ritual, containing ritual features of an agent, an object, and an action, followed by different variations of the ritual. Some of these variations did not have the "special" label before the object. When compared with ratings of rituals that contained a "special" object, rituals with ordinary objects were rated as significantly less effective. Thus, this research supported the idea that special objects are important contributors to perceptions of ritual success. Again, however, this study did not assess the impact of the presence or absence of objects in rituals.

Does the inclusion or absence of an object as a central feature of a ritual change perceptions of its efficacy? I expected that rituals that include a non-religious object would be perceived as more effective than rituals that do not contain objects. Legare and Souza (2012) found that rituals that contained the presence of a religious icon had increased efficacy ratings compared to the rituals that did not contain the presence of a religious icon and I predicted that these findings will extend to of the presence of a non-religious object.

Ritual framing

In the presentation of their method, Legare and Souza (2012) did not specify how they framed the rituals to their participants in their fourth study. It is possible that if the rituals were presented as from a different culture, this may have impacted the way U.S. participants (who were unfamiliar with simpatias) approached their evaluations. I examined the effects of framing a ritual as from the participant's own culture versus a different culture on perceptions of efficacy, motivated by past research examining Construal Level Theory.

According to Construal Level Theory, people's thoughts and behaviors are influenced by psychological distance--or the degree of their involvement or separation from people, time and events (Liberman & Trope, 2014; Trope, Liberman, & Wakslak, 2007). Trope and Liberman discuss that people use higher levels of construal, or mental representations or interpretations of the surrounding world, as the psychological distance between items increases (Trope & Liberman, 2010; Liberman & Trope, 2014). The use of higher levels of construal results in thinking more abstractly and creating greater representations of an object relative to one's goal. An example Trope and Liberman (2010) discuss is the representation of a cell phone: a higher level construal makes the cell phone represent a way to communicate, whereas a lower level construal of a cell phone may be an individual's particular phone. When we use higher level representations, certain details or features are omitted from our representations (e.g., the size of a cell phone) and instead features that convey the utility of the object are emphasized. Opposite to this, lower level representations focus on specific details of an object (e.g., the weight and color of the cell phone).

Different levels of construal allow us to transcend our mental representations and perceive objects or people through psychological distance. Psychological distance impacts our perceptions of when something happens, where it happens, who it occurs to, and whether it does occur (Trope & Liberman, 2010). Psychological distance encompasses spatial distance, temporal distance, social distance, and hypotheticality. Trope and Liberman argue if you change the distance of one of these aspects, you will also change it in the others because they are automatically associated. Thus, if we consider something to be "closer", such as in time or in space, we tend to think of it using a less abstract, lower-level construct representation. If we consider something to be "far away", we use a higher-level construct representation (Trope & Liberman, 2010).

Rim, Uleman, and Trope (2009) examined to what extent abstract details can be inferred during information processing about other people and how temporal or spatial distances affect this thinking. They found when they presented an individual as coming from somewhere spatially far, participants examined them in a higher-level way and inferred more abstract traits than if the individual was presented as coming from somewhere spatially near. Similarly, Henderson, Wakslak, Fujita, and Rohrbach (2011) and Jia, Hirt, and Karpen, (2009) argue that when there is at a greater spatial distance and higher-level constructs, people have the tendency to make predictions that are more creative and perform better at problem solving tasks.

If psychological distance can impact our construal of people, what about ritualistic actions? Kapitány and Nielsen (2015) explored a similar question when examining how contextualized and decontextualized rituals impact perceptions of objects. In this study Kapitány and Nielsen examined the role of causal opacity and goal demotion

on perceptions of objects, as in their 2017 study described above, and they also examined the role of ritual context or framing. Some of the ritual videos were paired with a description that stated the actions featured in the video were seen in established rituals around the world and gave the name of the ritual and where it originated (e.g., Kava Ceremony from the Pacific Island Fiji). All of the rituals selected were believed to be from different social groups than the participants. Kapitány and Nielsen (2019) found that when the causally opaque actions were framed as coming from a preexisting ritual there were increased judgements of object specialness (i.e., participants used higher-level construals) compared to causally-opaque actions that were not contextualized. Notably, in a later study that did not include contextualization of ritual actions, the ritual actions did not result in different evaluations of objects compared to non-ritual control actions. These studies indicate that when ritual actions were framed as coming from a particular cultural context, participants view the ritual as being effective and which suggests that the object involved was special. If the actions were not given context, then the actions are not viewed as effective and the object is not evaluated as special.

The findings summarized above lead to an open question of: were participants judging the actions as if they were from their own culture, even if they were presented without context?. If so, then it is possible that the actions were evaluated from a psychologically-close perspective, leading to a more skeptical assessment. In contrast, the studies' findings suggest that giving participants the view that the rituals came from a different culture resulted in them evaluating it from a psychologically distant perspective and, thus, being more willing to be open in their assessment about the efficacy of the actions at changing the nature of the object.

Based on the construal level theory, rituals framed as coming from a distant culture (e.g., Brazil) causes us to use more abstract thinking. Legare and Souza (2012) highlighted that the U.S. participants were more skeptical when evaluating the simpatias than Brazilians were. What we do not know, however, is whether the rituals were framed as originating in the U.S. (psychologically close) or in Brazil (psychologically far). It is possible that, like the participants without context in Kapitány's and Nielsen's studies, the U.S. participants were more skeptical because the rituals were perceived as psychologically close and, therefore, evaluated their efficacy using more concrete reasoning. It is possible that participants will evaluate rituals of a different culture as being more efficacious than those within their own culture because they are able to think about the rituals more abstractly.

Summary of hypotheses for Study 1

In this study, I examined the effects of framing the ritual as coming from a cultural context familiar to participants (near condition) compared to framing the ritual as coming from a cultural context unfamiliar to participants (far condition), thus allowing for a 2 (more effective vs. less effective) x 2 (near vs. far) between subjects mixed design. I predicted that:

1. As this is a replication of Legare and Souza (2012), I expected to find similar effects related to the efficacy of ritual features as they found in their Study 4 with U.S. participants. Specifically, rituals that specify time, have increased repetition of procedures, increased number of steps, and have the presence of a religious icon will be evaluated as being more effective.

2. Rituals that feature non-religious objects would have higher efficacy ratings than rituals that do not feature objects.
3. Rituals framed as coming from a cultural context different from that of the participants (i.e. *far)* would have higher efficacy ratings than those rituals which are framed as coming from the participants' own cultural context (i.e., *near*).

III. METHOD

Participants

A total of 61 participants completed the study (n = 283 females; n = 67 males). My goal was to provide a demographic match for the participants in Legare and Souza (2012) who also used undergraduate students from a psychology participant pool at a large university in Texas. Therefore, participants were recruited through the Texas State University Psychology Department participant pool. The students received course credit for their participation per department policy. As mentioned in the introduction, I intended to use a sample size that would result in a high level of statistical power. The intended sample size, N = 352, was determined by a power analysis for a 2x2 ANOVA on the largest effect from Legare & Souza (2012; d = 0.31, a small-medium effect size). The results of the power analysis (α = .05, and β = .80) indicated I needed a minimum sample of N = 351 to detect a main effect of ritual feature (more or less effective) or a main effect of framing. My target sample size was N = 352 to allow for an even number of participants for each of the four groups (high efficacy/near, low efficacy/near, high efficacy/far, low efficacy/far). The difference between my intended sample size and my obtained sample size was due to discrepancies between sign-ups on the institutional survey site and survey completion, resulting in the over-addition of study sign-up spots to reach my intended sample size. Due to unforeseen circumstances related to the COVID-19 pandemic, data collected was shifted from an in-person setting (an exact replication of Legare and Souza, 2012) to online data collection. As such, 68 participants completed the study in-person and 293 participants completed the study online, with this difference

controlled for in Study 1 analyses.

Design

The primary objective of this study was to determine how different kinds of information (ritual features and ritual framing) influence the perceived efficacy of rituals. I used a 2x2 between-subjects design to assess the impact of ritual feature (high efficacy versions versus low efficacy versions) and ritual framing (near versus far) on evaluations of ritual efficacy. Participants read descriptions of rituals based on Brazilian simpatias that have been validated in previous studies in the United States and in Brazil (Legare & Souza, 2012; 2014). I tested the impact of five different ritual features believed to impact evaluations of a ritual's efficacy, including specificity of time, repetition of procedures, number of steps, religious icon, and presence of non-religious object.

Procedures

Participants were randomly assigned to a ritual feature condition and ritual framing condition, resulting in four experimental groups: high efficacy/near, low efficacy/near, high efficacy/far, low efficacy/far. At the beginning of the study, participants read descriptions of the origins of the rituals to implement the framing manipulation. In the *far* condition, participants read, "You will be reading a series of descriptions of *simpatias* or rituals used by Brazilians to solve different problems". In the *near* condition, participants read, "You will be reading a series of descriptions of rituals used by Americans to solve different problems". After being presented with the framing, participants were told "After reading each, you will be asked to indicate: On a scale from 1 to 10, 1 being INEFFECTIVE and 10 being EFFECTIVE, how effective do you think this ritual is for treating this specific problem". Participants were then asked to evaluate

the efficacy of 15 different rituals presented one at a time in a random order. Each ritual was paired with a problem (e.g., friends fighting, better sleep, or depression) and included one of the five ritual features being tested. For a full list of the rituals included, see Appendix A. Participants evaluated three unique rituals from each of the five ritual categories (specificity of time, repetition of procedures, number of steps, religious icon, and presence of non-religious object). Participants only evaluated one type of ritual feature, so they either evaluated only the high efficacy versions of the rituals or the low efficacy versions.

Measures

The dependent variable of interest was perceived efficacy. Efficacy is the perceived ability of the ritual to produce a desired outcome (e.g., solve a problem such as lack of love). To measure efficacy, each ritual was paired with a problem and participants were asked to rate how effective they think the ritual was in helping to solve the problem on a scale of 1 (ineffective) to 10 (effective). Participants received an average efficacy score for ritual category (e.g., specificity of time, repetition of procedures, number of steps, presence of religious icon, presence of non-religious object) in addition to an overall average efficacy score. The ritual category score was the average of the participant's three ratings for rituals in that category. The overall average efficacy score was the average of the participant's fifteen ratings collapsed across ritual feature category.

IV. RESULTS

Examining the impact of ritual features and framing on overall efficacy

A factorial ANOVA was performed to assess the effects of ritual features (high efficacy versus low efficacy) and ritual framing (near versus far) and their interaction, controlling for modality of data collection (in-person versus online), on participants' overall efficacy ratings. All effects were not statistically significant. This analysis indicated that there was not a significant main effect of ritual feature, $F(1, 341) = 1.05$, $p = .306$, and that there was not a significant main effect of framing, $F(1, 341) = 0.18$, $p = .672$, on total average efficacy ratings. The interaction of ritual feature and ritual framing was also not significant, $F(1, 341) = 0.21$, $p = .651$. There was also not a significant main effect of data collection modality, $F(1, 341) = 1.67$, $p = .197$. As depicted in Figure 1, participants' evaluations of more effective and less effective versions of the rituals did not significantly differ. Participants' evaluations of overall ritual efficacy were also not impacted by receiving a near versus far framing.

Examining the impact of ritual feature by category

To compare the mean efficacy ratings by ritual feature (high versus low) for each category (specificity of time, repetition of procedures, number of steps, religious icon, and presence of non-religious object), I ran five independent samples *t*-tests. For these analyses, I collapsed across ritual framing (near versus far) and modality of data collection since these were not significant in the previous analysis. In these analyses, the outcome was the mean efficacy score for each category. The means and standard deviations for efficacy scores by category and feature and the results of each *t*-test are presented in Table 1.

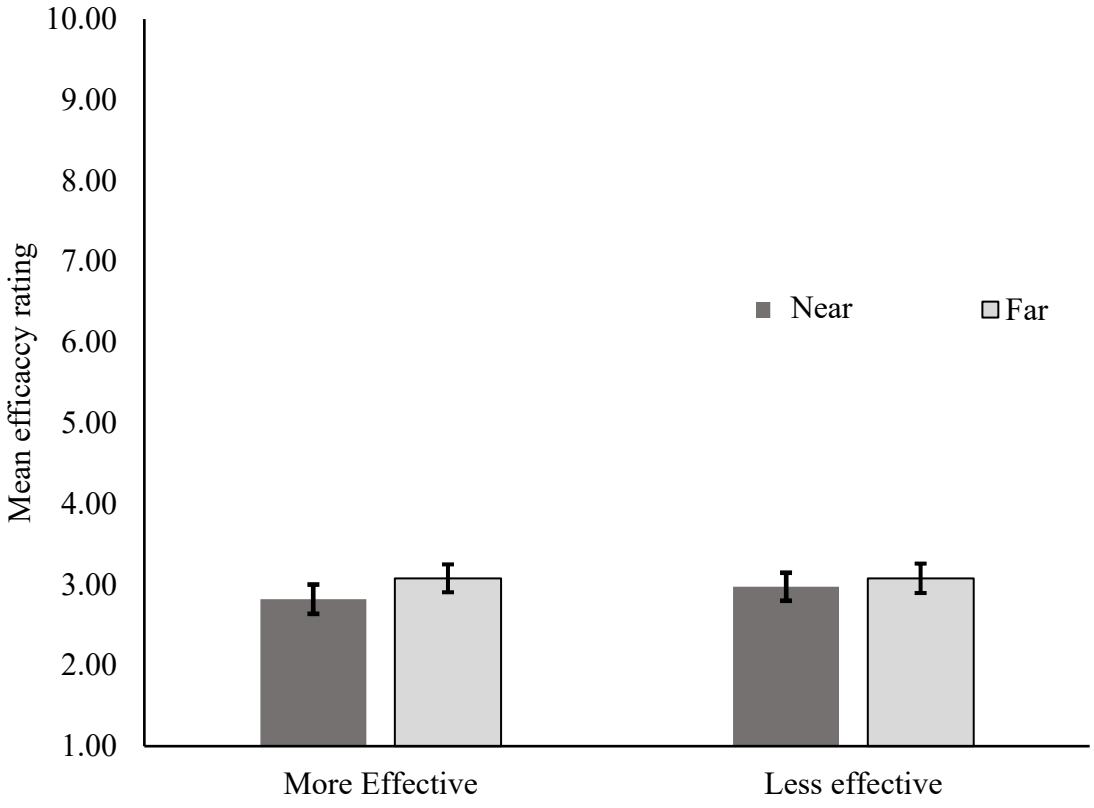

Figure 1. Total mean efficacy ratings of ritual effectiveness based on near versus far framing. Error bars represent 1 Standard Error of the Mean.

The results of the independent samples *t*-tests indicated that there was not a significant difference in ritual efficacy ratings between the two features for the specificity of time, repetition of procedures, number of steps, or inclusion of a religious icon categories. There was a significant impact of feature on ritual efficacy ratings in the presence of a non-religious object category, such that rituals without an object (less effective) had a higher average efficacy rating ($M = 3.71$, $SD = 2.07$) than rituals with an object (more effective; $M = 3.13$, $SD = 1.85$). This finding is the opposite of what was predicted.

Table 1.

Means and standard deviations by ritual category and feature and Independent samples t-tests.

	M(SD)		Independent samples *t*-test		
	More effective	Less effective	*t*-test statistic	*p*	*D*
Specificity of time	3.24(1.95)	3.27(1.96)	*t*(350) = 0.16	.871	0.015
Repetition of procedures	2.81(1.86)	3.00(1.90)	*t*(349) = 0.96	.339	0.101
Number of steps	2.51(1.78)	2.78(1.88)	*t*(349) = 1.35	.179	0.147
Religious icon	2.67(1.90)	2.54(1.75)	*t*(347) = -0.69	.491	0.071
Presence of non-religious object	3.13(1.85)	3.71(2.07)	*t*(349) = 2.78	.006**	0.295

** $p < .01$

V. DISCUSSION

In this study, I conducted a replication and extension of Legare and Souza (2012) to examine the impact of ritual features and ritual framing on American college students' perceived efficacy of unfamiliar rituals. Consistent with the previous findings of Legare and Souza (2012), I expected to find that participants in the high efficacy condition would rate the rituals as more effective than those in the low efficacy condition. Specifically, I expected that rituals containing a specified time, more steps, more complexity, or the presence of religious icon would be viewed as more effective than rituals with an unspecified time, fewer steps, less complexity, or no religious icon present, respectively. In addition, I extended this work by adding a fifth ritual category—the presence of non-religious objects—and expected that rituals containing a non-religious object would have higher efficacy ratings than rituals that did not contain a non-religious object. I also extended the original study by examining the impact of ritual framing and anticipated finding increased efficacy ratings for rituals framed as *far* (i.e., from another culture) than the rituals framed as *near* (i.e., from the participant's culture).

Overall, I did not replicate the results of Legare and Souza (2012). In contrast to their findings, I did not find a significant difference in efficacy ratings between the high efficacy and low efficacy versions of the categories they assessed. This is notable considering that the rituals presented to the participants were identical (with the exception of some grammatical edits) to those used in Legare and Souza (2012). One consistent finding between this study and Legare and Souza (2012), was the overall low levels of

efficacy assigned to the rituals by U.S. college students.[1] One change that I did make that could have impacted the results of the study is changing the efficacy scale to fit a more intuitive way of thinking. Legare and Souza used a scale of 1 = "more effective" and 10 = "less effective". In this study, I reversed these anchors, instead using 1 = "less effective" and 10 = "more effective" to reflect a more intuitive rating system (e.g., more = more effective). Future studies could examine the effect of scale type by presenting two sets of participants with the same rituals, but manipulating which scale is used (e.g., the Legare and Souza (2012) scale vs. the present study's scale). Given that my sample was appropriately-powered, however, I am not concerned that this is a Type II error (e.g., not detecting a significant result when there is one), as an effect of the size reported by Legare and Souza (2012) would have likely been detected with this sample.

Although I did not replicate the findings of the Legare and Souza (2012)'s study, I was able to extend their findings through the addition of the presence of a non-religious object category. I found that participants were rating rituals that contained a non-religious object to be significantly different than rituals that did not contain a non-religious object, though in the opposite direction of what was predicted. In the present study, rituals that did not contain a non-religious object showed higher efficacy ratings than those that did. I predicted that the presence of an object might make rituals seem more effective because it allows people to create a connection between the ritual and the outcome (i.e., the object has been granted special power by a superhuman entity so that it will bring about a

[1] For the U.S. college students in Legare & Souza (2012), mean efficacy ratings for the more effective versions of rituals ranged from 7.29 to 8.07 and mean efficacy ratings for the less effective versions ranged from 7.59 to 8.92. The rating scale ranged from 1 (most effective) to 10 (least effective).

desired outcome). It is possible that objects could be seen as arbitrary to a ritual's overall success, and people put a greater importance on the agent enacting the ritual rather than the objects within the rituals. Past work, however, has not directly assessed the role of the presence or absence of a non-religious object, but rather whether objects labeled as "special" were judged as more important to a ritual's success than an ordinary object (Barret & Lawson, 2001). Future research should explore the connections between having an object with implied specialness and its presence or absence from the ritual, on perceptions of the ritual's efficacy.

In addition to examining an additional ritual feature category, I also extended Legare and Souza (2012) by examining whether framing rituals as either coming from a cultural context familiar to participants (near) or a cultural context unfamiliar to participants (far) impacted perceptions of ritual efficacy. Drawing from Construal Level Theory, or the proposal that people's thoughts and behaviors are influenced by their involvement or separation from people, time, and events (Liberman & Trope, 2014; Trope, Liberman, & Wakslak, 2007), I predicted that ritual framed as *far* would be perceived as more effective due to their proposed physical separation from participants (framed as coming from Brazil, *simpatias*). I found that framing did not significantly impact participants' efficacy ratings, suggesting that participants did not view the rituals framed as coming from an unfamiliar culture in more abstract mental representations. These findings are inconsistent with previous literature examining the effects of imagined spatial distance from a culture or person (Jia, Hirt, & Karpen, 2009; Kapitány & Nielsen, 2019; Rim, Uleman, & Trope, 2009). Rim, Uleman, and Trope (2009) found that people use higher levels of construal when individuals are presented as coming from a distant

land as opposed to coming from somewhere spatially near. Moreover, when there is a larger proposed spatial distance, people also have the tendency to become more creative and become better at solving problems (Jia, Hirt, & Karpen, 2009). Its possible participants' were overall very skeptical of the rituals due to their overall unfamiliarity, and judged the ritual's effectiveness regardless of their framing (near, far).

Overall, participants' skepticism toward the efficacy of the rituals highlights one of the limitations of this study. The rituals used in the present study are based off of *simpatias*, which are commonly used in Brazil, but not in the U.S. (Legare & Souza, 2012). In the U.S., in most communities, there is not a similar cultural practice of prescribed non-religious rituals to resolve typical life challenges. As such, there are really no equivalent U.S. rituals similar to *simpatias*. In regard to religious contexts within the U.S., there are certainly rituals present - such as receiving communion in Catholicism. However, future research should explore whether a religious context is necessary for U.S. participants to display more variability in their evaluations of rituals. This leads to the question of whether the rituals need to be religious (i.e., appeal to a supernatural entity) to be considered effective in the first place?

Barrett and Lawson (2001) suggest that in order for individuals who are not familiar with rituals to be view them as effective, the rituals must include an appeal to superhuman agency. Involving a superhuman agent violates natural intuitive causal explanation, and thus allows the non-natural result of a ritual seems more plausible. Researchers found having an appropriate (superhuman) agent present in a ritual matters more than the actual actions being performed. These findings show the inclusion of an agent will best predict ritual success, but what would happen to the perceived efficacy of

ritual when another person is described (either as a superhuman entity or as a normal, non-special individual) as participating in the ritual? Would the perceived success of a ritual change? In study 2 of my thesis, I explored these research questions through a conceptual replication of Barrett and Lawson (2001), and a similar study, Sørensen et al. (2006), using ecologically-valid religious and non-religious rituals.

VI. STUDY 2. EXAMINING THE THEORY OF RITUAL COMPETENCE USING ECOLOGICALLY-VALID RITUALS

Theory of Ritual Competence

Previous research has proposed that other features of rituals, beyond those explored by Legare and Souza (2012), are linked to their perceptions of efficacy. In particular, Lawson and McCauley (1990) proposed the theory of ritual competence to explain how humans may evaluate ritual efficacy. This theory states that even individuals who are unfamiliar with specific religious or ritual systems will still have intuitions about rituals' efficacy that centers on the inclusion of or appeal to a superhuman entity. These naïve individuals are able to reason about how effective a ritual is at generating a desired outcome by first identifying how the ritual appeals to a superhuman entity for intervention and then by examining whether the ritual is performed by an individual (e.g., agent) or includes the presence of an object that has been granted special power by that superhuman entity. Thus, this theory presents the possibility that even if the link between the ritual and the desired outcome is beyond natural causal explanations, people will reason that these non-natural outcomes occurred because the ritual invoked the involvement of a superhuman entity. Critically, this superhuman entity may need to be engaged through the presence of a special agent who performs the ritual or the use of a special object in the ritual.

To examine potential empirical support for the theory of ritual competence, Barrett and Lawson (2001) asked participants to evaluate a series of novel rituals that differed in the extent to which they included an agent or object that might engage or invoke a superhuman entity. In particular they were interested in whether marking

particular features of a ritual as being granted particular powers by superhuman entities, or "special", impacted perceptions of its efficacy. Barrett and Lawson defined special as someone or something given special properties authorized by the gods. They predicted that including appeals to the superhuman entity, as indicated by a "special" marker (i.e., explicitly labeling a person or object as special, as in a special person or special dust), would result in those rituals being rated as more effective than matched rituals that did not include the "special" marker. Barrett and Lawson proposed that without this appeal, the ritual would only be considered a series of simple common behaviors that could not bring about the desired outcome. They also predicted that people would judge the agent completing the ritual as being more important than the actions being performed. Thus, a special agent performing a ritual with ordinary objects should still be viewed as being more effective at bringing about the desired outcome than an ordinary agent performing the ritual with special objects. Barrett and Lawson's predictions were supported by their results. They found that versions of rituals that contained two special features were rated significantly more effective than all other versions. The rituals that contained either a special agent or special object did not significantly differ from each other, but were rated as significantly more effective than rituals that did not have any special features. Thus, labeling the agent in a ritual or the object used in a ritual as "special" is more important for perceptions of ritual efficacy than the exact identity of the agent or object involved in ratings of ritual efficacy (Barrett & Lawson, 2001). These findings supported the theory of ritual competence. Even though participants were evaluating unfamiliar rituals, they used the special markers to guide their decisions.

Sørensen, Liénard, and Feeny (2006) extended this work to examine if using familiar labels for "specialness" instead of the word special (i.e., special person became a shaman) would result in differential evaluations of rituals' efficacy. Thus, they used the same procedures as Barrett and Lawson, but removed the "special" marker and replaced it with labels implying specialness. Sørensen et al. predicted the same outcomes as Barrett and Lawson (2001), but they also hypothesized that when a ritual is framed as serving a social or instrumental goal, people's judgements of ritual efficacy will be differentially centered on the special agent versus the special object (respectively). Sørensen et al. found that participants judged the contents and features of rituals (specifically the ritual's agent) significantly more important to the rituals' overall efficacy. Their findings also indicated that agent changes and instrument changes significantly impacted the perceived efficacy of a ritual. In cases of instrument changes, participants saw agent and instrument changes more important when paired together, however, rituals with agent changes were more significant to the ritual's efficacy. These results indicate that agent changes were key in influencing perceptions of ritual efficacy further supported the predictions presented by Lawson and McCauley's (1990) theory of ritual competency.

Conceptual Replication and Extension

Although the data from both Barrett and Lawson (2001) and Sørensen et al. (2006) supports the theory of ritual competence, the rituals used in each were primarily novel, non-familiar rituals. In essence, the rituals themselves could have been seen as too abstract. For example, in Sørensen et al. (2006), participants were asked to evaluate rituals from an unfamiliar culture (e.g., "the Uu'lofa). Moreover, the terminology used in

these studies (e.g., explicitly labeling an agent or object as “special”; Barrett & Lawson, 2001) does not reflect how we often learn about rituals. The theory of ritual competence should not be limited to unfamiliar rituals or those in which elements are explicitly labeled as “special”, humans should be able to reason in the way about familiar rituals as well. Could the theory of ritual competence be empirically examined in an ecologically-valid manner drawing from real world rituals? In addition, is the impact of special agents and special objects exclusive to religious rituals with explicit connections to superhuman entities (i.e., a priest’s and holy water’s connection to God during a baptism), or does they also extend to rituals that do not rely on specific superhuman entities? The theory of ritual competency also needs to be examined in the context of non-religious rituals in which there is no explicit connection to superhuman entities (e.g., an officiant and handfasting cloth in the context of a secular wedding).

In Study 2 of my thesis, I conducted a conceptual replication to address both of these gaps in the literature. Participants were asked to judge ritual efficacy in the same manner and method as Barrett and Lawson (2001) and Sørensen et al. (2006). Participants judged different versions of a prototype ritual that vary in the presence of special object and special agent. The prototype rituals draw from real-world rituals and feature familiar religious and non-religious agents and objects. By doing so, I was able to examine the predictions posed by the theory of ritual competence with ecologically valid religious and non-religious rituals.

Summary of hypotheses Study 2

In this study, I am interested in replicating the effects found in both Barrett and Lawson (2001) and Sørensen et al. (2006), but with ecologically-valid rituals, and expanding the work to consider non-religious rituals. I predict two potential outcomes:

1. An interaction between religiosity and agent/object change, such that the presence of a special agent or object will only matter when these elements are performed within the context of religious rituals.
2. No impact of religiosity, but an impact of agent/object change. In other words, participants will make similar evaluations about ritual efficacy based on the inclusion of a special agent and/or object for both religious and non-religious rituals.

VII. METHOD

Participants

A total of 161 participants completed the study (n = 139 females; n = 22 males). These participants were a subset of Study 1 participants and completed this study after evaluating the rituals presented in Study 1. A power analysis was performed to determine an appropriate sample size based on a small-medium effect size using Cohen's (1988) criteria (f = 0.17) with α = 0.05 and β = 0.80. The projected sample size was based on examining a within-group comparison between the different change types (e.g., four different outcome measures) using a repeated-measures ANOVA with a weak to moderate correlation among measures (r = 0.20) and non-sphericity correlation = 1 was N = 77, which I rounded to N = 80. Because I also examined the impact of religion (i.e., whether the ritual is religious or not), a larger proposed sample size of N = 160 was determined to be more adequate for the two main objectives of this study. Participants were recruited through the Texas State University Psychology Department participant pool. The students received course credit for their participation per department policy.

Design

Study 2 consists of a within-subjects examination similar to the designs of Barrett and Lawson (2001) and Sorensen et al. (2006). In contrast with previous studies' use of unfamiliar, novel rituals, I used ecologically-valid religious and non-religious rituals (e.g., baptisms and handfasting at a wedding, respectively). Participants were presented with a series of ritual sets that contain a prototype ritual and its outcome, and then they were asked to evaluate the efficacy of the variations of the prototype in achieving the desired outcome. All participants saw four versions of each of the six religious/non-

religious rituals, resulting in 24 total rituals rated on their perceived efficacy to achieve a particular outcome.

Procedure

Drawing from the format used by both Barrett and Lawson (2001) and Sørensen et al. (2006), participants were presented with prototype rituals, which will be presented as the normative way to perform the ritual of interest to bring about a specified outcome. Participants were then asked to evaluate how effective the variations of the prototype ritual containing different components would be at achieving the desired outcome. Ritual sets were presented in a random order.

Measures

To extend previous research in an ecologically-valid way, I used rituals inspired by real-world behaviors. Three of the rituals are religious and originate in the Catholic, Jewish, and Shinto faiths. Each of the religious rituals appeals to a superhuman entity and are all performed by a faith leader. The three secular rituals are rituals that do not directly appeal to a specified superhuman entity and are not performed by a faith leader. Each ritual contains two target features: (1) an agent acting out the behavior and (2) an object utilized in the ritual. As presented in Appendix B, versions of the prototype will contain an agent change (an instantiation of special status has been dropped) and object change, or both an agent and an object change.

Each participant's outcome scores were calculated separately for their responses to the religious and secular rituals. Within the religious and secular ritual overall categories, participants have four scores that calculated based on their average efficacy response for each of the following categories:

1. Prototype score – Evaluations of the prototype rituals
2. Agent change score - Evaluations of the rituals without the special agent
3. Object change score - Evaluations of the rituals without the special object
4. Agent and object change score – Evaluations of the rituals with neither the special agent nor the special object

The lowest possible average score a ritual could receive is 1, indicating that participants judged the ritual as being less effective at bring out the desired outcome listed in the ritual. The highest possible average score possible is 5, indicating that participant judged the ritual as being more/very effective at bring out the desired outcome.

VIII. RESULTS

Impact of religiosity and change type on evaluations of efficacy

I examined the impact of religiosity and change type on participants' evaluations of ritual efficacy. For the analyses presented below, I used multilevel models to examine the impact of religiosity (religious, non-religious) and change type (agent change, object change, both change)—both fixed effects—and their interactions on the ratings of ritual efficacy with a random effect of participant to account for non-independence of observations. Change type was dummy coded so that I could compare each change type to each other to examine the impact on efficacy ratings. Two models were run: The first model compared each change type (agent change, object change, both change) to the prototype ritual and the second model compared each change type (prototype, object change, both change) to the agent change. The full results of each of these analyses are reported in Table 2.

Both models indicated that there was not a significant main effect of religiosity. The results of both models indicated that there was a main effect of change type: Model 1 indicates two special features were evaluated as more effective than one special feature, and one special feature (either special agent or object) was evaluated as more effective than no special objects (both change). Model 2 also indicates that two special features were evaluated as more effective than one special feature (either special agent or object; however, there was no difference between agent and object change), and one special feature was evaluated as more effective than no special objects. Moreover, in both models there was a marginally significant interaction between religiosity and change type. Post hoc analyses using a paired-samples *t*-test were used to examine religious

object change to the non-religious object change rituals. This analysis indicated that people view religious objects as more special and their removal as more detrimental to the ritual's success (M = 2.47, SE = .08) than non-religious objects (M = 2.73, SE = .08); $t(159) = -4.25$, $p < .001$, $d = 0.270$.

Table 2.

Results of multilevel models examining the impact of religiosity and change type on evaluations of ritual efficacy.

Model	Effect	F	p
1	Religiosity	$F(1,1274) = 2.38$	.123
	Change type (vs. prototype)		
	Agent change	$F(1,1274) = 198.74$	$< .001^{***}$
	Object change	$F(1,1274) = 161.03$	$< .001^{***}$
	Both change	$F(1,1274) = 315.30$	$< .001^{***}$
	Agent change * religiosity	$F(1,1274) = 0.000$	.995
	Object change * religiosity	$F(1,1274) = 3.61$	.058^
	Both change * religiosity	$F(1,1274) = 0.154$	.695
2	Religiosity	$F(1,1274) = 2.35$	.125
	Change type (vs. agent change)		
	Prototype	$F(1,1274) = 198.74$	$< .001^{***}$
	Object change	$F(1,1274) = 2.00$	.157
	Both change	$F(1,1274) = 13.17$	$< .001^{***}$
	Prototype * religiosity	$F(1,1274) = 0.00$	.995
	Object change * religiosity	$F(1,1274) = 3.57$	.059^
	Both change * religiosity	$F(1,1274) = 0.148$	.701

$^{\wedge} p < .10$, $^{**} p < .01$, $^{***} p < .001$

IX. DISCUSSION

The goal of this study was to apply the Theory of Ritual Competence to ecologically-valid religious and non-religious rituals. I anticipated two possible outcomes: (1) an interaction? between religiosity and change type suggesting that special features would only matter within the context of a religious ritual) or (2) participants would make similar judgements on the rituals' success based on if they included special features--agent and/or object—independent of religiosity. This second hypothesis was supported. My results indicated that the Theory of Ritual Competence can be applied to non-religious rituals as the ratings between religious and non-religious rituals did not significantly differ. Participants did judge ritual change types (prototype, agent/object change, both change) to be significantly different. Consistent with Barrett and Lawson (2001), and Sørensen et al. (2006), rituals containing two special features (agent and object) were rated significantly more effective than rituals with only one special feature (agent or object) and no special features, and rituals with one special feature were rated more effective at bringing out a particular outcome than rituals with no special feature. Moreover, agent and object change rituals did not significantly differ between each other, which aligns with the findings of Barrett and Lawson (2001) but not Sørensen et al. (2006). These findings do support the Theory of Ritual Competence as participants were judging the changes to be significantly different from each other. My results also show that both Barrett and Lawson's (2001), and Sørensen et al.'s (2006) results can be replicated with real-world rituals, and that the theory of ritual competence is not limited to only religious rituals.

When considered within the context of objects in rituals (like in Study 1), the marginal interaction between object change and religiosity presents the question of whether religious objects and non-religious objects are viewed differently. Future studies could explore whether religious and non-religious objects in rituals are viewed as having different effects on ritual efficacy when changed or removed. For example, is it possible that the religious object is viewed as having an appeal to a superhuman entity (e.g., holy water) whereas the non-religious object does not (e.g., tap water; Appendix B, Ritual 6)?

Some possible limitations to this study could be the way the rituals were contextualized for the participants. Participants were asked to rate how likely the rituals would be at bringing out a particular outcome with only one sentence worth of background information. I did not ask participants to explain their thought process as to why they think the ritual either did or did not work. Participants' explanations could have told me why they thought some versions of the rituals would be effective, and not others. Additionally, could the amount of background information impact the way participants judged the rituals? To further expand these findings, I am interested in the impact of longer prompts explaining the rituals (including information about the purpose of the ritual and more information about the agent and object present. I also plan to ask participants to explain their thought processes behind their evaluations. This future work will provide more insight into why the Theory of Ritual Competence holds for rituals without an explicit appeal to a superhuman entity (e.g., a birthday wish) versus religious rituals (e.g., a baptism).

X. GENERAL DISCUSSION

The main purpose for both of these studies was to examine how humans reason about how rituals work, even when the ritual actions are not physically-causally connected to the desired outcome. I conducted two registered replications to extend findings relating to ritual features that caused them to be perceived as more or less effective.

In Study 1, I conducted a replication of Legare and Souza (2012) to examine how U.S. college students judge rituals that contain different components (e.g., (1) specificity of time, (2) repetition of procedures, (3) number of steps, (4) presence of a religious icon) believed to be more effective than others and also explored an additional component (non-religious objects) that was not previously examined. I also examined the role of framing the rituals as having different cultural origins (near vs. far). Ultimately, I did not replicate the main findings of Legare and Souza (2012), nor did I find an impact of ritual framing. Contrary to my predictions, I did find that the rituals that included a non-religious object were judged as significantly less effective than rituals without a non-religious object.

In my second study, I examined whether the Theory of Ritual Competence, previously empirically examined by Barrett and Lawson (2001) and Sorensen et al. (2006), could be applied to ecologically-valid religious rituals, in addition to non-religious rituals that do not obviously appeal to a superhuman entity. My findings did support previous literature that people do view the inclusion of at least one special ritual feature (either agent or object) as beneficial to the ritual's success, however this is independent of whether the ritual is religious or non-religious ritual. Therefore, I was also

able to determine that the Theory of Ritual Competence may not be limited to only religious rituals.

Considering the findings from both of these studies, there is still some exploration needed as to the impact of how a ritual is framed and what other features can be included for a ritual to be perceived as successful at bringing out a particular outcome. Based on the findings from this thesis, rituals that contain features such as an agent or an object that have appeared to have been given special properties by a supernatural power may be linked to higher levels of efficacy (Study 2) rather than rituals without this context (Study 1). Future work is also needed to further examine how contextual information connects to the inclusion of agents and objects linked to superhuman entities.

In conclusion, this thesis examined how humans determine whether or not rituals are effective in two studies. My findings suggest that if a ritual includes an agent or object that is viewed as "special" in some way, this that effects its perceived efficacy. However, the findings of Study 1 suggest that U.S. college students are skeptical of rituals' efficacy without context.

APPENDIX SECTION

Appendix A

Specificity of time

	Less	More
1 (Quit Drinking)	Take out the water from a coconut and give it to the person to drink **on any day that you choose**. After that, ask the person to spit in the hole made in the coconut. Following that, light a brand-new white candle and drop the wax around the hole until the hole is sealed. Take the coconut to a faraway beach or river.	**On the first day of the last quarter phase of the moon**, take out the water from a coconut and give it to the person to drink. After that, ask the person to spit in the hole made in the coconut. Following that, light a brand-new white candle and drop the wax around the hole until the hole is sealed. Take the coconut to a faraway beach or river.
2 (Depression)	**On any day of the month**, throw a piece of the person's clothes into a streaming river unbeknownst to the person. As the river flows away, the problem goes away.	**On the last day of the month**, throw a piece of the person's clothes into a streaming river unbeknownst to the person. As the river flows away, the problem goes away.
3 (Quit Smoking)	**On a day of your choosing**, buy seven red apples. Before eating anything, peel the apple, eat it and save the peel. Right before going to bed, make a tea with the peel.	**On the first day of the month**, buy seven red apples. Before eating anything, peel the apple, eat it and save the peel. Right before going to bed, make a tea with the peel.

Repetition of procedures

	Less	More
1 (Sadness)	In a metal container, put the leaves of a white rose. After that, set fire to the leaves. Get the remaining ash from the leaves and put it in a small plastic bag. Take the small plastic bag and leave it at a crossroad. **Do the procedure one time.**	In a metal container, put the leaves of a white rose. After that, set fire to the leaves. Get the remaining ash from the leaves and put it in a small plastic bag. Take the small plastic bag and leave it at a crossroad. **Repeat the procedure for 7 days in a row.**

2 (Lack of friends)	Wear a white t-shirt for **an entire day**. After that, wash the t-shirt using salted water. Put the t-shirt to dry in the shade. After it has dried, fold the t-shirt and take it to a church.	Wear a white t-shirt for **five days in a row**. After that, wash the t-shirt using salted water. Put the t-shirt to dry in the shade. After it has dried, fold the t-shirt and take it to a church
3 (Lack of love)	Light a candle on a saucer and pray Our Father. After the candle finishes burning, get the saucer, wrap it in a white paper and bury it in a garden with lots of flowers. **Do this one time.** While burying the saucer, pray Hail Mary once.	Light a candle on a saucer and pray Our Father. After the candle finishes burning, get the saucer, wrap it in a white paper and bury it in a garden with lots of flowers. **Repeat this six times.** While burying the saucer, pray Hail Mary.

Number of steps

	Less	**More**
1 (Athletic performance)	Make a small bag with white cloth. Put three sage leaves inside it. Right after putting the leaves inside the white bag, close the small white bag. After closing the bag, put the small white bag with the sage leaves inside a drawer where you keep your personal belongings.	Cut a piece of white cloth and make a small bag with it. Put three sage leaves inside it. **Pray Hail Mary once and close the small bag. Then, rub the bag on your forehead, and then rub it on your neck.** Put it inside a drawer where you keep your personal belongings.
2 (Lack of luck)	Get an orange that grows on a tree, squeeze the orange juice out and following that, bury its flesh. Drink the remaining juice from the orange three times a day (in the morning, then in the afternoon and again in the evening).	Get an orange, peel it, squeeze its juice and bury its flesh. **Place the peel on top of the dirt. Pour some juice on the peel and some in the dirt.** Drink the remaining juice three times a day (morning, afternoon and evening).
3 (Infidelity)	Go to a streaming river that has water flowing through it and throw a white handkerchief in this streaming river. Then say: "This handkerchief should take away the cheating". Collect some of the water from this river that has running water that you threw the handkerchief in and take some home.	Go to a streaming river, **get down on your knees by the river bank, say the name of your partner** and throw a white handkerchief in the river. Then say: "This handkerchief should take away the cheating". Collect some of the water from this river, **drink some of it,** and take some home.

Religious icon

	Less	More
1 (Evil eye)	Put basil leaves inside a container with honey. Mix it well. After mixing it, spread some of it in your hands and place the rest of it, with a lid, **in a cupboard in the kitchen.**	Put two basil leaves inside a container with honey. Mix it well. After mixing it, spread some of it in your hands and place the rest of it, with a lid, **under an image of *Virgin Mary.***
2 (Lack of money)	Put 4 olives inside a bottle of wine, and leave them there for 15 days. After this period, put a cup of the wine **in a flowered garden** and leave it there for 10 days.	Put 4 olives inside a bottle of wine, and leave them there for 15 days. After this period, put a cup of the wine **next to a picture of *Saint Expeditus*** and leave it there for 10 days.
3 (Lack of employment)	Boil a cup of water with a few pieces of an apple. When it starts boiling, take the apple out and wait for the water to cool down. Drink a little bit of the water and put the **rest in a crossroad**.	Boil a cup of water with a few pieces of an apple. When it starts boiling, take the apple out and wait for the water to cool down. Drink a little bit of the water and put the rest **under a picture of *Saint Hedwig***.

Presence of (non-religious) object

	Less	More
1 (Friends fighting)	Open your hands with your palms facing up and hold them at chest height. Move your hands toward each other. When the sides of your hands touch, bring your hands together like you are crumpling a piece of paper into a ball.	Open your hands with your palms facing up, hold them at chest height, and **place a strip of fabric over top of them**. Move your hands toward each other. When the sides of your hands touch, **remove the fabric** and crumple it into a ball.
2 (Better sleep)	Stand with your feet shoulder width apart. Stretch your arms above your head with palms facing forward and pinch your left thumb and pointer finger together. Move your arms apart and down toward your sides. Release your thumb and pointer finger.	Stand with your feet shoulder width apart. Stretch your arms above your head with palms facing forward and pinch **a feather** between your left thumb and pointer finger. Move your arms apart and down to your sides. Release **the feather** and let it fall to the floor.

3 (Luck on exams)	Place your hands palm down on the table. Lift your hands and place them back down on the table. Turn your hands over so that your palms are facing up. Lift your hands again and place them back down on the table.	Place **two stones** in front of you on the table. Lift **the stones** and place them back down on the table. Turn **the stones** over so that the other side is facing up. Lift **the stones** again and place them back down on the table.

Appendix B

Sample items for Study 2. Special agent and object are bolded. Non-special agent and object are underlined.

Non-religious rituals

Ritual 1. Birthday: *Participants were asked "How likely is it that each of the following acts will result in a person's wish coming true?"*

Prototype	A **person celebrating their birthday** blows out a candle on a **birthday cake** to make a wish come true.
Agent change	A <u>person attending a birthday party</u> blows out a candle on a **birthday cake** to make a wish come true.
Object change	A **person celebrating their birthday** blows out a candle on a <u>table</u> to make a wish come true.
Agent and object change	A <u>person attending a birthday party</u> blows out a candle on a <u>table</u> to make a wish come true.

Ritual 2. Football game: *Participants were asked "How likely is it that each of the following acts will result in a team winning a game?"*

Prototype	A **football player** touches a statue of his **team's mascot** to bring his team luck.
Agent change	A <u>football fan</u> touches a statue of his **team's mascot** to bring his team luck.
Object change	A **football player** touches a <u>football</u> to bring his team luck.
Agent and object change	A <u>football fan</u> touches a <u>football</u> to bring his team luck.

Ritual 3. Handfasting ceremony: *Participants were asked "How likely is it that each of the following acts will result in a couple being married?"*

Prototype	A **judge** wraps a **ceremonial cloth** around a couple's hands to marry them.
Agent change	A <u>friend</u> wraps a **ceremonial cloth** around a couple's hands to marry them.
Object change	A **judge** wraps a <u>scarf</u> around a couple's hands to marry them.
Agent and object change	A <u>friend</u> wraps a <u>scarf</u> around a couple's hands to marry them.

Religious Rituals

Ritual 4. Shinto construction ceremony: *Participants were asked "How likely is it that each of the following acts will result in bringing safety to a construction site?"*

Prototype	A **priest** waves a **wooden mallet** over the ground to bring safety to a construction site.
Agent change	A <u>construction worker</u> waves a **wooden mallet** over the ground to

	bring safety to a construction site.
Object change	A **priest** waves a <u>hammer</u> over the ground to bring safety to a construction site.
Agent and object change	A <u>construction worker</u> waves a <u>hammer</u> over the group to bring safety to a construction site.

Ritual 5. Jewish New Year ceremony: *Participants were asked "How likely is it that each of the following acts will result in a congregation's sins being forgiven?"*

Prototype	A **rabbi** blows a **shofar** to forgive the congregation's sins.
Agent change	A <u>member of the synagogue</u> blows a **shofar** to forgive the congregation's sins.
Object change	A **rabbi** blows a <u>trumpet</u> to forgive the congregation's sins.
Agent and object change	A <u>member of the synagogue</u> blows a <u>trumpet</u> to forgive the congregation's sins

Ritual 6. Christian Baptism ceremony: *Participants will be asked "How likely is it that each of the following acts will result in a baby being baptized?"*

Prototype	A **pastor** pours **holy water** over the head of a baby to baptize them.
Agent change	A <u>parent</u> pours **holy water** over the head of a baby to baptize them.
Object change	A **pastor** pours <u>tap water</u> over the head of a baby to baptize them.
Agent and object change	A <u>parent</u> pours <u>tap water</u> over the head of a baby to baptize them.

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