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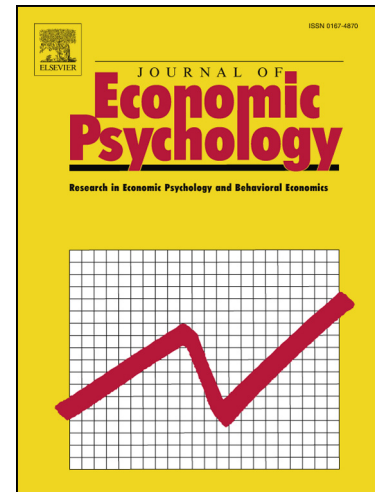
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The Effects of Extreme Rituals on Moral Behavior: the performers-observers gap hypothesis

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Abstract

Religious rituals are found all over the world. Some cultures engage in extreme religious rituals in which individuals take on forms of bodily harm to demonstrate their devotion. Such rituals entail excessive costs in terms of physical pain and effort, but the equivalent societal benefits remain unclear. The field experiment reported here examined the interplay between extreme rituals and moral behavior. Using a die-roll task to measure honest behavior, we tested whether engaging or observing *others* engaging in extreme ritual activities affects subsequent moral behavior. Strikingly, the results showed that extreme rituals promote moral behavior among ritual observers, but not among ritual performers. The discussion centres on the moral effects of rituals within the broader social context in which they occur. Extreme religious rituals appear to have a moral cleansing effect on the numerous individuals observing the rituals, which may imply that these rituals evolved to advance and maintain moral societies.

Keywords:

moral behavior, cleansing, licensing, self-sacrifice, extreme rituals

1. Introduction

Religions can be seen as some of the largest human organizations, in that they connect and structure groups of people and resources on a global scale (Weber, 2002; Smith, 2008; Tracey, 2012). Within religious communities moral norms are often transmitted to followers through rituals (Turner, 1967; Boyer, 2008). While some rituals are personal, such as individual prayer, religious ceremonies are often communal. In such social gatherings the believers are exposed to rituals that provide specific ways of organizing actions (Lienard & Boyer, 2006). Such religious rituals may prompt individuals to behave in accordance with the ethical code and moral standards dictated by their religious community.

In some cultures, certain religious rituals involve extreme forms of bodily harm such as fire-walking, body piercing, starvation, or other types of self-mutilating behavior. While few perform such rituals, many observe them. From a standard economics perspective, such ceremonies pose intriguing questions: are the costs of engaging in these rituals, whether extreme or not, outweighed by the potential benefits the ritual provides? Are the benefits from engaging in a ritual restricted to those performing it, or perhaps extend to those observing them? The current work seeks to address these questions.

2. Extreme rituals and moral behavior

To study the impact of high-ordeal rituals on moral behavior, we conducted a quasi-experimental study in Congomah, a rural village of 2000 people located in Mauritius, a small island in the western Indian Ocean. The study took place during the Hindu festival of Thaipusam. One tradition associated with the festival is the Kavadi ritual, which is held once a year, in which performers pierce their bodies, sometimes with multiple needles and skewers, carry heavy bamboo structures, and walk on swords for over four hours (Figure 1). The Kavadi, which is considered a purification ritual (Ward, 1984), involves men and

women, young and old who engage in the ritual while observed by spectators from the local community.



Figure 1. Thaipusam Kavadi. On the left, the priest and a devotee engage in the ritual by inserting multiple body piercings. On the right, devotees observe the ritual.

High-ordeal rituals have been suggested to play a role in social cohesion (Durkheim, 1995; Sosis & Alcorta, 2003; Sosis & Ruffle, 2003) and may enforce prosocial behaviors (Rappaport, 1979; Norenzayan & Shariff, 2008; McKay et al., 2013; Whitehouse & Lanman, 2014) such as generosity that was previously reported in the specific context of the Kavadi ritual (Xygalatas et al., 2013). A study showed that enduring pain and effort for a good cause increases generosity towards that cause, a phenomenon dubbed the “martyrdom effect” (Olivola & Shafir, 2013). Human sacrifice rituals, an extreme form of high-ordeal rituals, have been associated with justifications of authority and social class systems (Watts et al.,

2016). By holding rituals that unite the community and show devotion (Watson-Jones & Legare, 2016), group members may feel more compelled to adhere to various moral norms.

Seen in this light, pain may serve as moral social ‘glue’ (Bastian et al., 2014).

But how exactly do high-ordeal rituals reinforce moral behavior? One assumption is that rituals only boost societal level morality of those who actively perform the rituals. This suggests that morality can be buttressed by having multiple individuals actually perform these acts during the ritual, which is not easy to achieve. Alternatively, rituals may encourage morality at the societal level by boosting the morality of those observing the rituals, which corresponds to a much larger group. If the acts of the few encourage societal level morality of the many, rituals of this type should be widespread. Initial evidence on pro-social behavior (i.e. generosity) indeed suggests that rituals may not only affect their actual performers physiologically and behaviorally, but also those who observe it (Xygalatas et al., 2013; Konvalinka et al., 2011).

Research in behavioral ethics has proposed several theoretical constructs associating rituals and morality. The licensing hypothesis suggests that engaging in, as well as observing, rituals may authorize people to act *less* morally. This is because during the ritual people earn moral credentials (by engaging or observing the ritual), which in turn liberates them from their moral shackles and allows them to act immorally without experiencing the negative emotions associated with such behavior (Ayal & Gino, 2011; Merritt et al., 2010; Merritt et al., 2012).

By contrast, the cleansing hypothesis suggests that engaging in, as well as observing, rituals may prompt people to act *more* morally. This is because the ritual serves as a moral reminder that makes moral concepts more salient (Ayal et al., 2015; Cialdini et al., 1973; Gino et al., 2011; Ariely, 2012; Shu et al., 2012; Shariff & Norenzayan, 2007). By extension, the activation of moral concepts may enable both those engaging in the ritual and those

observing them to achieve moral purification through exposure to the ritual (Shariff & Norenzayan, 2007).

A third possibility is that licensing and cleansing pertain differently to performers and observers of high-ordeal rituals. A laboratory study by Mazar and Zhong (2010) suggested that these two different effects could coexist in the same setting. In their study, people were more likely to cheat and steal after an explicit moral act such as purchasing green products than after purchasing conventional products. By contrast, non-explicit moral acts such as mere exposure to green products, made people act more altruistically compared to those exposed to conventional products.

Based on this theoretical rationale, our performers-observers gap hypothesis predicts that the behavior of people who explicitly engage in the activity (the ritual performers) may be consistent with the licensing hypothesis; namely they will cheat more after the ritual.

However, those who were merely exposed to the activity (ritual observers) may still need to pay their bill (van Bunderen & Bastian, 2014). Their subsequent behavior should thus be best accounted for by the cleansing hypothesis and they will cheat less after the ritual.

From an evolutionary point of view, if the licensing hypothesis is correct, it would suggest that high-ordeal rituals may have evolved and been maintained because they provide a justification for engagement in unethical behavior. In contrast, if either the cleansing or the performers-observers gap hypotheses apply to high-ordeal rituals, they may help explain why societies encourage such painful rituals and support their continuation, since rituals may be preserved because they boost moral behavior among the many observing the rituals.

Below we describe a study that examined how the Kavadi ritual in Mauritius shapes the moral behavior of observers and performers. We focused on one proxy for moral behavior – honesty. Honesty is considered a fundamental aspect of moral behavior and has been investigated in both experimental (Ariely, 2012; Shalvi et al., 2015) and field settings (for a

review see Pierce & Balasubramanian, 2015). In the task used here, participants could be honest or lie to boost their own profit. Participants were guaranteed complete privacy during the task, which meant that detecting lies on the individual level was impossible. This was the key to our design, since we were interested in how high-ordeal rituals affect people's intrinsic moral behavior independently of external considerations such as maintaining a moral appearance or fear of punishment (Purzycki et al., 2016, Norenzayan & Shariff, 2008). To assess the robustness of the effects, we varied the person who would benefit from the participant's potential lies. The recipient was defined as the person performing the task (Gneezy, 2005; Fischbacher & Heusi, 2013; Mazar et al., 2008; Coricelli et al., 2010), a friend of this person, or a stranger (Gino et al., 2013; Weisel & Shalvi, 2015; Shalvi & De Dreu, 2014). This made it possible to assess whether exposure to a high-ordeal ritual affects all types of (dis)honest behavior, or is restricted to selected settings.

3. Materials and Methods

(a) Participants

A total of 85 people were recruited –either before or after the ritual– by local assistants to participate in the experiment. Thirty performed the high-ordeal ritual (age 28.0, $SD=11.6$, 13 females), thirty observed it (age 37.0, $SD=14.4$, 15 females), and twenty-five students from the University of Mauritius comprised the control group (age 21.4, $SD=1.5$, 15 females). The research design was a double-blind 3 (Group: Ritual performers vs. Ritual observers vs. Control) X 3 (Benefit: lie to benefit Self vs. Friend vs. Unknown other) X 2 (Time: before vs. after the ritual) X 3 (blocks) with the first as between- and all other as within-subjects factors. It is important to note that observers typically had prior experience with performing the Kavadi (no mainstream explanation for individual participation was given and in this case all participants except one observer had previously taken part in the ritual). Since our study was done in the field, we had no control over the duration of the ritual or the selection of the

participants. Thus, we did not have a specific stop rule for sample size, and we did not carry out statistical analyses while collecting the data. The sample size was determined on the basis of the restrictions of the field and drew on research that has implemented similar methods (Xygalatas et al., 2013). The sample size of the control group (N=25 students from University of Mauritius) was determined in advance to approximately match the sample size of the ritual conditions.

(b) Procedure

To assess moral behavior we conducted a die-roll task to measure honesty in the outcome reports (Fischbacher & Föllmi-Heusi, 2013; Shalvi et al., 2011, 2014). Participants privately rolled a six-sided die nine times and reported the outcome of each roll. We chose to roll the die 9 times and not more, since participants would be worn out after the ritual. The payoff for each roll was ten times the reported outcome of the die in Mauritian rupees (e.g., for outcome 1 the participant earned 10 MUR ~ 30 US cents). Since the participants were the only witnesses to the outcome of their die rolls, they could cheat and inflate the stated outcome to increase payment. The nine die rolls consisted of three rolls for three different target recipients (randomized and counterbalanced): (i) 3 times for Self – the reported outcome benefited the participant, (ii) 3 times for a Friend – the reported outcome benefited the participant's best friend, whose name was provided by the participant at the beginning of the study, and (iii) 3 times for a Stranger – the reported outcome benefited an unknown inhabitant of the island. The task was completed twice, before and after the ritual.

Based on previous research showing that there is an effect of time of day on unethical behavior (Kouchaki & Smith, 2013) we made sure to run the study at the same time each day. All participants gave their written consent prior to inclusion in the study. To complete the task, participants (ritual performers and observers) entered a room near the temple. The room was separate from the temple and free of any religious reminders or imagery. As a control

group, we sampled university students who matched the other two groups culturally and geographically. This control group served as a benchmark to indicate typical trends when completing the task twice at a time interval. The time interval was identical to the interval used in the other conditions. The control group trials were conducted in a university room on campus, with a similar setup. In total, the experiment lasted four days.

To clarify the task and assure the participants of full confidentiality, before engaging in the die rolling task, the experimenter handed the participant a six-sided die together with a box with a hole on the top, so that the participant could roll the die inside it and see the result without it being seen by others. Participants were encouraged to roll the die several times before the experiment started, to verify that the die was legitimate. Instructions for the experiment, trials, and the questionnaire were delivered on iPads. The instructions stated that the participant should roll the die, report the result, and fill out a questionnaire. The self-reported number that the participant noted would determine the payoff on each trial. The payoff would equal 10, 20, 30, 40, 50, or 60 Mauritian rupees, depending on the reported die roll outcome. The minimum amount participants were able to earn was a significant sum by Mauritian standards. The instructions also stated explicitly that neither the experimenter nor anybody else would or could control the numbers observed. The instructions were first read aloud by the experimenter and then the experimenter explained them. After assuring task comprehension, participants engaged in the die rolling task.

After the die-roll task, participants filled in a short questionnaire assessing socio-demographic characteristics and questions regarding religiosity (e.g., “How much do you believe in God(s) or any supernatural power?”), pain (e.g., “How painful was the ritual?”), and ritual participation frequency (“How many times have you participated in the Thaipusam?”). All instructions were presented in the local Creole language. The experiment took about 12 minutes per participant.

4. Results

Since participants' die rolls were truly private, we could only assess dishonesty on the group level by comparing the group-level payoff between conditions as well as to the baseline (i.e., the mean across trials = 3.5). For each participant, we averaged the three rolls aimed at benefitting the self into a 'benefit to self' index. We similarly averaged the three rolls aimed at benefitting a friend into a 'benefit to friend' index. Finally, we averaged the three rolls aimed at benefitting an unknown other into a 'benefit to other' index. Table 1 summarizes the average values for each participant group, condition and time.

Variable name	Ritual performers	Ritual observers	Controls
Benefit to self			
Pre-ritual	3.86 (0.99)	3.86 (1.05)	3.75 (0.94)
Post-ritual	4.36 (1.05)	3.48 (0.97)	4.09 (1.07)
Benefit to friend			
Pre-ritual	3.57 (1.32)	3.52 (0.90)	3.52 (0.91)
Post-ritual	3.76 (1.00)	3.99 (1.12)	3.67 (0.88)
Benefit to other			
Pre-ritual	3.50 (1.01)	3.36 (0.91)	3.99 (0.89)
Post-ritual	3.56 (1.04)	3.70 (0.98)	3.49 (0.97)

Table 1. Summary of means and standard deviations (in parentheses) of each variable by group, condition, and time (pre and post ritual).

A repeated measures ANOVA with 3 (Group: Ritual performers vs. Ritual observers vs. Control) X 3 (Benefit to: Self vs. Friend vs. Other) X 2 (Time: before vs. after the ritual) with

the first as between- and all other as within-subjects factors revealed a main effect of Target, $F(2,164) = 4.90, p = .009, \eta^2 = .056$. Not surprisingly, post-hoc contrasts revealed that participants reported higher numbers to boost their own rather than a friend's ($M_{\text{self}} = 3.90$ vs. $M_{\text{friend}} = 3.67, p = .025$), or an unknown other's outcomes ($M_{\text{self}} = 3.90$ vs. $M_{\text{other}} = 3.60, p = .003$). The differences between dice-rolls for a friend and for an unknown other were not significantly different ($p = .486$). No other effects were significant, except the key three-way interaction between Group x Benefit x Time, $F(4,164) = 2.59, p = .039, \eta^2 = .059$. Table 2 summarizes the repeated measures ANOVA model.

Effect	<i>F</i>	<i>DF</i>	<i>p</i>	η^2
Group	0.50	2	.606	.012
Error (Group)		82		
Benefit to..	4.90	2	.009	.056
Benefit to... x Group	2.02	4	.093	.047
Error (Benefit to...)		164		
Time	2.26	1	.137	.027
Time x Group	0.66	2	.518	.016
Error (Time)		82		
Benefit to... x Time	0.92	2	.400	.011
Group x Benefit to... x Time	2.56	4	.039	.059
Error (Benefit to... x Time)		164		

Table 2. Repeated measures ANOVA of dice throws by group, condition, and time (pre and post ritual).

To better understand the interaction, we analyzed the Group x Time interaction within each of the Benefit settings. A repeated measures ANOVA with Time and Group predicting the reported outcome aimed at benefiting the friend or the unknown other revealed no significant effects (p 's > .093). In contrast, a repeated measures ANOVA with Time and Group predicting the reported outcome aimed at benefiting the self revealed a significant interaction between Time x Group, $F(2,82) = 3.52, p = .034, \eta^2_p = .079$.

To investigate this interaction effect on self-benefits, post-hoc contrasts revealed that the reported trends before and after the ritual were different among observers as compared to both the performers and control participants, who in turn did not differ from one another. Specifically, the performers showed a significant increase in their reported outcome (*from* $M_{\text{before}} = 3.85$ to $M_{\text{after}} = 4.35, t(29) = -2.15, p = .040$). The control participants also increased their reported outcome, but this trend was not significant ($M_{\text{before}} = 3.75$ to $M_{\text{after}} = 4.09$ after, $t(24) = -1.36, p = .188$). However, an opposite trend was found among observers who decreased their reported outcome although not significantly (*from* $M = 3.85$ before to $M = 3.47$ after $t(29) = 1.38, p = .178$).

Finally, further regression analyses revealed that the reported effects were not due to effects of age, level of pain or religiosity. To test whether the main effect could be explained by group differences in participants' age, reported religiosity, reported experience with ritual participation and perceived pain during the ritual (reported after the ritual), we specified a multiple regression model using these four variables as predictors and the difference scores (post-ritual minus pre-ritual) of the die rolls for each participant (for the self) as a dependent variable. However, none of these predictors yielded a significant effect for the difference scores (all p 's > .299).

5. Discussion

How have high-ordeal rituals, such as piercing oneself or walking on fire, survived for millennia? These age-old ceremonies cause pain to performers, and are not easy to observe either. One possibility is the benefits to the societies that have preserved them. The field experiment we conducted in Mauritius sheds light on the nature of this benefit. Previous research on the Kavadi ritual (Xygalatas et al., 2013) showed that in-group charity (a more explicit behavior) increased for both performers and observers, and that the latter displayed even higher levels of generosity than the performers themselves. Using a more indirect measure of moral behavior where the actual behavior could be masked by the participants' overt statements, we found an increase in moral (honest) behavior among ritual observers but not among ritual performers. This may imply that for this ritual at least, there is an overall communal moral gain from individuals' pain and sacrifice.

The pattern observed among performers (and control participants) suggests that they lied to a relatively minor extent before the rituals and modestly increased their cheating after it. This is consistent with findings observed in Western cultures which show that people lie to the extent that they can still maintain their moral image as honest individuals, even when lying (Shalvi et al., 2011; Gino & Ariely, 2012; Welsh et al., 2015; Barkan, Ayal & Ariely, 2015). In contrast, the results here revealed that high-ordeal ritual observers reported lower die roll outcomes *after* as compared to *before* the ritual, and thus collected a lower payoff after observing the ritual compared to those performing the ritual. These results lend partial credence to our performers-observers gap hypothesis that observing such rituals works as a moral reminder (Ayal et al., 2015; Mazar et al., 2008) and leads people to believe that they may need to pay their bill (van Bunderen & Bastian, 2014). Thus, observers chose to cleanse themselves by acting more morally whereas performers and control participants showed the opposite trend. Importantly, the fact that after the ritual the behavior of the control participants was more similar to the performers weakened the licensing hypothesis and

suggests that actually performing the ritual and experiencing the pain did not have a significant additive value in gaining moral credit that licenses cheating behavior. Therefore, the overall pattern of results may hint that cleansing among observers is the main driver of the performer-observer gap, but further research is needed to validate this claim.

Neither ritual participation nor exposure affected people's likelihood of lying to boost others' profits, whether a friend or a stranger. There is growing literature suggesting that people are willing to lie to benefit others (Wiltermuth, 2011; Lewis et al., 2012; Gino et al., 2013). This particular high-ordeal ritual, however, may make people focus on their own rather than others' benefit. Note, nevertheless, that in our design we intentionally varied the target benefitting from the lies to be either the self or another person. This prevented the participants from collecting large collective earnings by lying. These results thus fail to corroborate the finding in Purzycki and colleagues (2016), who reported that belief in moralistic gods is associated with greater in-group (co-religion) generosity. However, the type of design employed in each study was different. Whereas we focused on whether there was an effect of a high-ordeal ritual, their study investigated whether the specific type of god endorsed by a group had an influence on behavior. Nevertheless, since outcome alignment is known to boost corrupt collaboration (Weisel & Shalvi, 2015), future research should explore the moralizing effect of (high-ordeal) rituals on settings in which there is a moral clash between being honest and cooperating with one's peers. Finally, and given the constraints of a field study, our sample size was relatively low. This should motivate a replication of the study either in similar settings or under controlled laboratory conditions, to strengthen external validity.

6. Conclusion

Religious rituals are found around the world. A select few enact them, and numerous observers watch them. There have been many attempts to determine the societal benefits of

maintaining religious rituals. In a recent study, Watts and colleagues (2016) explored the darker sides of human sacrifice as regards the stabilization of social stratification and argued that religious human sacrifices, apparently high-ordeal rituals where pain (and death) is inflicted upon others, are linked to the evolution of modern complex societies. Extreme rituals that require individuals to inflict self-pain pose a specific (and rather different) challenge. How can societies encourage their members to cause pain to themselves? The results here reveal one potential explanation, with a brighter perspective. One advantage of holding such ritual ceremonies is the increase in moral behavior among the many who observe the rituals, potentially due to activation of a moral code that stresses the need to explicitly cleanse themselves after observing a peer inflict self-pain. If this finding can be generalized, it may have important implications for the ways in which we interpret the effects of high-ordeal rituals on behavior and understand the importance of physiological pain and self-sacrificing in religion.

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Highlights

- Extreme rituals promote morality among ritual observers, but not among performers
- Cleansing effects of the extreme ritual may be the driver of honesty for observers
- Extreme rituals may make people focus on their own rather than others' benefit
- Self-sacrifice and pain of few people may increase the moral behavior of many