

# The Role of Cultural Narratives in Moral Decision Making

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## Abstract

Cultural narratives such as those mentioned in religious texts and folk stories are instrumental in teaching core cultural moral values. In this paper, we investigate the role of cultural narratives in understanding novel moral situations. We examine whether the processes by which core cultural narratives are applied in people's lives follow the principles of analogical retrieval and mapping. In particular, we examine how analogical accessibility influences the use of canonical moral narratives. We also show how access to different moral stories results in differences in moral preference across cultures. We report on the results of two experiments performed among Iranian and American participants. Our results indicate that analogical accessibility to cultural narratives that are similar in structure to a given dilemma is the differentiating factor in our participants' responses across the different variants and between the two cultural groups.

## Introduction

Judgment and decision making researchers have highlighted a number of ways in which culture may influence decision making. Probably the most well-known results are the findings on cultural differences in judgments of risk. Hsee and Weber (e.g. 1999) have found that participants from collectivist cultures, such as East Asian cultures, are more risk-seeking because they have a larger social cushion to fall back on in case of loss. Weber and Hsee (1998) argue that a variety of cultural products such as proverbs could influence people's decision making.

One type of cultural product that may underlie culturally specific moral values is core cultural narratives. Certain elements of moral reasoning can be best learned and transferred in narratives as they are not common situations encountered in daily life. Great cultural narratives, such as those contained in most religious texts or in folk stories, can deeply imprint our long term memory, whether or not we ever encounter these situations in real life. It is not implausible to think that those values seep into our beings and affect our reasoning.

Prasad (2007) conducted ethnographic research in Sringeri in Southern India looking at how oral narratives shape moral identities. She argues that the way in which cultural narratives about morality are interpreted and reinterpreted at every telling are instrumental in the complex nature of moral reasoning.

In this work we investigate whether cultural narratives guide people's moral decision making. That is, whether moral reasoning is influenced by analogies with the core narratives. If so, then moral reasoning should manifest the keynote phenomena that characterize analogical processing. We focus on whether analogical accessibility influences the use of canonical moral narratives and shapes our understanding of novel moral situations. Additionally, we examine how access to different moral narratives can result in differences in moral preference among cultures.

We begin by summarizing relevant results on the relationship between analogy and decision making. Next, we discuss the role similarity in long-term memory retrieval. Then we explain our hypotheses and describe our experiments. We close with implications and future work.

## Analogy and Decision Making

The link between analogy and decision-making has been explored from various perspectives, including consumer behavior (Gregan-Paxton, 1998), political reasoning (May, 1973) and legal decision-making (Holyoak and Simon, 1999). Goldstein and Weber (1995) argue that the process of decision making is a constructive process in which the decision maker relies extensively on his/her background knowledge and previous experiences. Medin et al. (1995) demonstrate that similarity processing and decision making share important commonalities which suggest common mental processes for the two tasks. When making a choice, the decision maker recognizes the current situation as analogous to some previous experience and draws inferences from his/her previous choices (Markman and Medin 2002). The next section summarizes the relevant findings regarding similarity and retrieval.

## Similarity, Retrieval and Alignment

In our studies we varied the kind of similarity between the target given to the participants and the core cultural story (which is never presented). The first question is how similarity between the target story and the core story will influence reminding of the core story. In general, surface similarity is the best predictor for whether a current target story will retrieve a given base story from LTM; and structural similarity is the best predictor for inference (Forbus et al., 1994; Gentner et al., 1993; Holyoak & Koh, 1987). However, structural similarity can also influence retrieval for experts in a domain (Novick, 1988), and also for novices who have previously compared the base story to another analogous story (Gick & Holyoak, 1983; Gentner et al., 2003). (Of course, these phenomena may be related.) Thus the question for retrieval is (a) whether Iranians will show reminders to the core cultural story; and, if so, (b) whether their reminding will be influenced by surface similarity, structural similarity, or both.

The second set of questions and predictions concern inference. Assuming that the core narrative is accessed, in order to draw inferences, it must first be aligned with the target story (Clement & Gentner, 1991; Gentner, 1983). The correspondences created by this alignment are used to import knowledge from the base representation into the target. Thus, if analogy is operative, then Iranians should make more inferences from the core narrative for targets that are structurally alignable with the core narrative.

## Experiments

We suggest that some important elements of moral reasoning are learned and retained in cultural narratives, and that these cultural narratives play a role in understanding novel moral situations. Further, we suggest that the processes by which these narratives are applied in people's lives follow the principles of analogical retrieval and mapping. That is, we argue that by using analogy we apply a *moral theme*, a certain relational structure from one domain (that of the cultural narrative) to a novel, but structurally similar domain. In sum, our chief prediction is that, for Iranians, moral reasoning should abide by the key constraints of analogical processing: that is, structural similarity to the core narratives should guide inference. Of course, we predict no such pattern for Americans, because the stories are designed to match core Iranian narratives. With respect to retrieval, the question is whether Iranians will show the typical pattern (that is, surface similarity as the main predictor of retrieval), or whether they will show the pattern characteristic of experts (of structural similarity also as a strong predictor of retrieval). A key feature of these studies is that the base domain (the cultural narrative) is never presented to participants. We are predicting that such narratives are sufficiently entrenched in the minds of members of the culture that no presentation is necessary.

We focus our studies on the notion of sacrifice. The idea of sacrifice is embedded in narratives of many cultures, with great saliency in some cultures—in particular, the Iranian culture that concerns us here. As Prasad (2007) notes, such narratives can have great power in a culture.

In order to compile a list of salient stories for a given culture, we performed an Internet based pilot study using 199 Iranian subjects. Among other questions, subjects were asked to list the top 10 cultural and religious moral stories they could think of. Based on subjects' answers, we compiled a list containing the most referred to non-religious and non-political narratives. Next, for each of these narratives, we came up with four different variants: surface changes relative to the base scenario; structural changes; both surface and structural changes; and changes that affect the core cultural values (sacred values) that underlie the narrative. Our prediction was that for people who hold these values sacred, alteration of these values in a story should decrease structural similarity.

Our hypotheses are that for Iranians, (1) changing the surface structure of the scenarios should still allow inference from the original cultural stories, while changing the deep structure should block the inference; (2) the rate of retrieval of cultural narratives should vary based upon the degree of surface and structural similarity with the new scenario; (3) Americans, who lack these cultural narratives, should show no difference between these variations.

## Experiment 1

To test these questions, we created story variants for the following cultural narrative, prominent in Iranian culture:

### Base Story:

Pourya Vali was the most famous wrestler of his time. The morning before wrestling with a young athlete from another province, he goes to a mosque and sees the mother of the young athlete praying and saying "God, my son is going to wrestle with Pourya Vali. Please watch over him and help him win the match so he can use the prize money to buy a house". Pourya Vali thinks to himself that the young wrestler needs the money more than he does, and also winning the match will break the heart of the old mother. He has two choices, he can either win the match and keep his status as the best wrestler in the world or he could lose the match and make the old mother happy. Even though he was known not to ever lose a match, he loses that one on purpose.

### Surface change ( $\Delta SF$ ):

Ali is the greatest ping pong player of his city. The morning before a match with a young athlete from another city, he goes for a walk outside the stadium and sees the mother of the young athlete praying and saying "God, my son is going to play a match with Ali the famous ping pong player. Please watch over him and help him win the match so he can use the prize money to get married". Ali has two choices, he can either win the match and keep his status as the best ping pong player or he could lose the match and make the old mother happy.

### Structure change ( $\Delta ST$ ):

Ali was the most famous wrestler of his city. The morning before wrestling with a young athlete from another province, he goes to a mosque and sees the mother of the young athlete praying and saying "God, my son is going to wrestle with Ali. Please watch over him and help him win the match so he can use the prize to buy me new expensive clothes". Ali has two choices, he can either win the match and keep his status as the best wrestler in the world or he could lose the match and make the old mother happy.

#### Surface + Structure change ( $\Delta$ SS):

Ali is the greatest ping pong player of his city. The morning before a match with a young athlete from another city, he goes for a walk outside the stadium and sees the mother of the young athlete praying and saying "God, my son is going to play a match with Ali the famous ping pong player. Please watch over him and help him win the match so he can use the prize money use the prize to buy me new expensive clothes". Ali has two choices, he can either win the match and keep his status as the best ping pong player or he could lose the match and make the old mother happy.

#### Sacred Value Change ( $\Delta$ SV):

Ali was going to wrestle against the most famous wrestler of his city. The morning before the match, he goes to a mosque and sees the mother of the famous athlete praying and saying "God, my son is going to wrestle with young Ali. Please watch over him and help him win the match so he can keep his status as the best wrestler in the world". Ali has two choices, he can either win the match and beat the best wrestler in the world or he could lose the match and make the old mother happy.

After reading one of these dilemmas, the subjects were asked the following questions:

1. What should Ali do?
  - a. Win the match
  - b. Lose the match and make the old woman happy
2. What narrative does this scenario remind you of?
3. If it reminds you of any narratives, please list the similarities between the two.
4. Please list the differences between the two.

Choice 'a' in question 1 corresponds to the utilitarian choice, that is the choice that brings the highest overall utility to the agent. Choice 'b' represents the choice involving sacrifice, where the agent disregards his own immediate utility for the better of others. The control group received English translations of the above scenarios with the changes in the names, sports and the locations such that they would be more familiar to American audiences (e.g., Andrew instead of Ali, tennis instead of wrestling, etc.).

#### Method

364 subjects in Iran between the ages of 17 to 41 (mean = 18.67, Female/Male: 191/173), completed our questionnaire. These subjects were either students at University of Tehran or enrolled in the college preparation course (4<sup>th</sup> year of high school). The control group was 48 Northwestern

undergraduates (mean age = 18.91; Fe-male/Male: 28/20). Each participant received one target variant (randomized across subjects). For the Iranian subjects, the answer to the second question was coded as a recall only when they recalled the cultural narrative. However, for the control group a recall was coded when they indicated any story retrieved from LTM (including children's stories, movie plots, etc.). The answers to questions 3 and 4 were coded using the following scheme: if subjects reported attribute similarities/differences to/from the base, these were coded as surface similarities/differences, whereas functional/relational similarities/differences were reported as structural similarities/differences. Translations were done by independent translators.

#### Results

The proportion of sacrificial choices (choice b) to the total number of selected choices for each variant is reported in Table 1. As predicted, Iranians who received the  $\Delta$ SF target were highly likely to make the sacrifice inference. Those receiving  $\Delta$ SS were also highly likely to make this inference. There was a significant difference between the following variants:  $\Delta$ SF and  $\Delta$ ST ( $\chi^2 = 6.5291$ ,  $df = 1$ ,  $p < 0.01$ ),  $\Delta$ SF and  $\Delta$ SV ( $\chi^2 = 4.3829$ ,  $df = 1$ ,  $p < 0.05$ ),  $\Delta$ ST and  $\Delta$ SS ( $\chi^2 = 5.8091$ ,  $df = 1$ ,  $p < 0.05$ ) and  $\Delta$ SS and  $\Delta$ SV ( $\chi^2 = 3.7877$ ,  $df = 1$ ,  $p < 0.05$ ). For the control group, there were no significant differences among the variants<sup>1</sup>.

Among the Iranian subjects who chose the sacrificial choice, a significantly larger number reported structural similarities to the cultural narrative ( $N = 66$ ) than reported surface similarities ( $N = 32$ ) ( $\chi^2 = 17.2997$ ,  $df = 1$ ,  $p < 0.001$ ). Among those who chose the utilitarian choice, the reverse held: a significantly larger number reported structural differences ( $N = 20$ ) rather than surface differences ( $N = 2$ ) ( $\chi^2 = 18.6941$ ,  $df = 1$ ,  $p < 0.001$ ). Note that even those Iranians who chose the utilitarian option still mostly made reference to the cultural narrative.

The results for retrieval (question 2), as expected, show dependence on both surface and structural similarity. Iranians who received the  $\Delta$ SS variant showed significantly lower retrieval of the cultural narrative (51%) than did those who received the  $\Delta$ SF situation (66%) ( $\chi^2 = 3.6497$ ,  $df = 1$ ,  $p = 0.05$ ). Moreover, those in the  $\Delta$ SS condition reported a larger number of alternate stories (31%) than did those in the  $\Delta$ SF condition (12%) ( $\chi^2 = 4.5158$ ,  $df = 1$ ,  $p < 0.05$ ).

Among the Iranians who were reminded of the core story, a significantly larger number of subjects chose the sacrificial choice (choice b) (76%) than chose the utilitarian choice (20%) ( $\chi^2 = 157.533$ ,  $df = 1$ ,  $p < 0.001$ ).

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<sup>1</sup> A power test revealed that even had there been the same number of subjects in the American group as in the Iranian group, the probability that all of the above differences would hold among the Americans would have been very low (less than 2.5% for the first experiment and less than 10% for the second experiment).

Logistic regression revealed a significant difference in the trend of answers to these variants between the Iranian subjects and the control group ( $z = -3.87, p \ll 0.001$ ).<sup>2</sup>

Table 1: Proportions of sacrificial choices to total number of selected choices for Experiment 1

	$\Delta SF$	$\Delta ST$	$\Delta SS$	$\Delta SV$
Iranian Group	0.83	0.65	0.82	0.68
Control Group	0.07	0.00	0.00	0.00

## Discussion

As predicted, Iranians were highly likely to draw the inference suggested by their core narrative, especially when they could align the structure of the target with that of the core narrative. Also as predicted, Americans (who lack this core narrative) showed no such pattern; there were no differences among the variants. We speculate that Americans may have shown a different cultural value, that of observing the rules of the game. That is, they more or less might have treated these rules as sacred values and as they were inclined not to violate their principles regardless of the consequences. Future research will investigate this possible difference in core values.

Interestingly enough, among the Iranians, when both surface and structure were modified ( $\Delta SS$ ), retrieval of the core story was significantly reduced as compared to the  $\Delta SF$  variant. In fact, many Iranians were reminded of other stories that have surface and structural resemblance to the  $\Delta SS$  variant (chiefly a moral story about another wrestler and a moral story about a running match). These reminders may have contributed to the many sacrificial answers for the  $\Delta SS$  variant as these stories also laud the value of sacrifice.

The clear difference between  $\Delta SF$  and  $\Delta ST$  variants among Iranian participants indicates a strong preference for inference from the core story in the  $\Delta SF$  variant over the  $\Delta ST$  variant. This follows the general hypothesis that structural similarity is the most important feature for inference. Moreover, as indicated above, a significantly larger number of the Iranian subjects reported structural differences, as opposed to surface differences, from the base story when they chose the utilitarian choice (when the inference was blocked from the base to the target). Importantly, even those Iranians who chose the utilitarian option still mostly did so by reference to the cultural narrative; they simply considered that the structural differences were sufficiently serious as to block the analogous inference.

There was no significant difference between  $\Delta ST$  and  $\Delta SV$ , indicating that a change in sacred values, in this case swapping the roles of the actors, had effects similar to a

change in structure. In the Vali story, a person in power, helping someone in need by sacrificing his status is considered the moral message of the story.

In conclusion, the results of the first experiment highlights how analogical accessibility to a base moral theme affected participants' decision making when faced with moral dilemmas. The trend of sacrificial decision making among the Iranian subjects depended on whether the probe could be structurally aligned to the base moral narrative or not. However, due to the fact that the control group did not have access to the base, structural differences between the variants did not affect their decision making. In the second experiment, we examine the effects of a more recent cultural story on people's decision making.

## Experiment 2

In the second experiment we used a story about the Iran and Iraq war.

### Base story:

During the Iran and Iraq war, Hossein, a young boy who has sneaked into the army, is confronted with a convoy of tanks that if not stopped will destroy a part of the city that the boy is fighting at. Hossein can either try to run to his commander on time, inform him about the situation and save his own life or he can stop a tank by sacrificing his own life. Hossein, therefore, took a grenade from a nearby body, pulled the pin out, and jumped underneath the Iraqi tank, killing himself and disabling the tank. This stopped the Iraqi tank division's advance and saved many people's lives.

### $\Delta SF$ :

During the Bosnian and Serbian war, a young boy sneaks in to the army. One day during the war, he is confronted with a convoy of enemy buses carrying soldiers and weapons. If these buses are not stopped, they will help the enemy destroy part of the city that the boy is fighting at. He can either try to run to his commander on time, inform him about the situation and save his own life or he can stop a bus by running underneath it and activating a mine which otherwise would not work.

### $\Delta ST$ :

During a war, a young boy who has sneaked into the army, is confronted with a tank that if not stopped will destroy a part of the city that the boy is fighting at. He can either try to run to his commander on time and inform him about the attack which would cause the commander to issue a strike from other units against the tanks or he can stop a tank by running underneath it and activating a mine which otherwise would not work.

### $\Delta SS$ :

During the Bosnia and Serbian war, a young boy sneaks in to the army. One day during the war, he is confronted with a convoy of enemy buses carrying soldiers and weapons. If this bus is not stopped, it will help the enemy destroy part of the city that the boy is fighting at. He can either run to his commander on time, inform him about the situation which would cause the commander to issue a strike from other units against the convoy of buses or he can stop a bus by running underneath it and activating a mine which otherwise would not work.

<sup>2</sup> An ANOVA power test suggests that the difference would stay significant if there were an equal number of subjects in both groups.

### ΔSV:

During the Bosnian and Serbian war, a young Serbian boy sneaks in to the army. One day during the war, he is confronted with a convoy of Bosnian buses carrying soldiers and weapons. If these buses are not stopped, they will help the Bosnians destroy part of the city that the boy is fighting at. He can either try to run to his commander on time, inform him about the situation and save his own life or he can stop a bus by running underneath it and activating a mine which otherwise would not work.

After reading one of these dilemmas, the subjects were asked similar questions to those asked in experiment one, with only the first question being different:

1. What should the young boy do?
  - a. Run away
  - b. Sacrifice his own life

The control group received exact translations of the above variants.

### Method

The participants and procedure were as in Study 1.

### Results

The proportion of sacrificial choices to the total number of selected choices for each variant is reported in table 2. As in Study 1, Iranians who received the ΔSF variant were highly likely to choose the sacrificial option. For the Iranian group there was a significant difference between the following variants: ΔSF and ΔST ( $\chi^2 = 4.2817$ ,  $df = 1$ ,  $p < 0.05$ ), ΔSF and ΔSV variants ( $\chi^2 = 5.6432$ ,  $df = 1$ ,  $p < 0.01$ ) and ΔSS and ΔSV ( $\chi^2 = 4.0652$ ,  $df = 1$ ,  $p < 0.05$ ). For the control group, there were no significant differences between the different variants<sup>1</sup>.

As in Study 1, among the Iranians who chose the sacrificial option, a significantly larger number reported structural similarities to the base ( $N = 47$ ) rather than surface similarities ( $N = 19$ ) ( $\chi^2 = 17.5544$ ,  $df = 1$ ,  $p < 0.001$ ). Furthermore, among participants who chose the utilitarian option, a significantly larger number reported structural ( $N = 66$ ), rather than surface ( $N = 10$ ), differences from the base ( $\chi^2 = 57.8086$ ,  $df = 1$ ,  $p < 0.001$ ). As expected, given that Americans did not know the base story, none of these differences were observed in this group.

As in the first experiment, Iranians who received the ΔSS variant, showed a significantly lower (79%) amount of recall than those who received the ΔSF variant (93%) ( $\chi^2 = 4.6738$ ,  $df = 1$ ,  $p < 0.05$ ).

Among Iranians, a significantly larger number of subjects who were reminded of a story chose the sacrificial options (92%), compared to the utilitarian option (83%) ( $\chi^2 = 4.6609$ ,  $df = 1$ ,  $p < 0.05$ ).

Comparing the trend of the choices across different variants using logistic regression revealed a significant difference between the two cultures ( $z = -2.045$ ,  $p < 0.05$ )<sup>2</sup>.

Table 2: Proportions of sacrificial choices to total number of selected choices for Experiment 2

	ΔSF	ΔST	ΔSS	ΔSV
Iranian Group	0.50	0.32	0.45	0.30
Control Group	0.33	0.17	0.25	0.22

### Discussion

Among the Iranian subjects, there was again a clear difference between ΔSF and ΔST/ΔSV variants: subjects more often chose the second option in the ΔSF variant than they did in the ΔST or the ΔSV variants. This follows our prediction that people draw influences suggested by their core narratives when they can be structurally aligned. As in experiment 1, we found a high rate of sacrificial inferences when *both* structure and surface were changed (ΔSS).

Also, similar to the results of the first experiment, modifying the sacred value had the same effect as modifying the structure of the scenario. Altering the role of the sacred value(s) involved in a decision making scenario, seems to have structural effects, and this reduces the possibility of analogical inference from the base. There was no difference between ΔSF and ΔSV among the control group, which is expected given that defending Muslim land is not a sacred value for the American subjects.

The major difference between the two experiments is the reverse trend in the number of sacrificial answers among the two cultures. The Iranian subjects made significantly more sacrificial choices in the first experiment than they did in the second experiment ( $\chi^2 = 17.0665$ ,  $df = 1$ ,  $p < 0.001$ ). However, this was reversed among the American subjects, who made more sacrificial choices in the second experiment than they did in the first ( $\chi^2 = 23.7252$ ,  $df = 1$ ,  $p < 0.001$ ). This may be because the American subjects were often reminded of super-hero movies. Among Iranians, the overall rate of retrieval was higher in Study 2 than in Study 1. We speculate that the rate of retrieval of the core narrative was higher for the second story is because that story is highly publicized in the media (In fact a picture of Hossein is on one of Iranian bills).

### General Discussion

The results of our experiments suggest that analogical mapping from core cultural narratives can influence moral reasoning about current moral dilemmas. Supporting the hypothesis that analogical processing occurs during moral decision making, our results manifest some of the keynote phenomena that characterize analogical processing: (1) changes to surface structure of the scenarios allowed inference from the original cultural stories, while changing the deep structure blocked the inference; (2) to a large degree, the rate of retrieval of cultural narratives varied based upon the degree of surface and structural similarity with the presented dilemma; and (3) these effects were seen only for Iranians, not for Americans, consistent with the

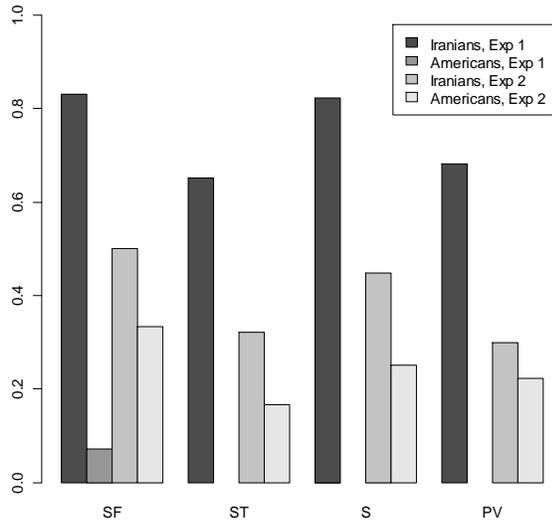


Figure 1. Proportions of Sacrificial Answers

claim that the effects stem from core narratives of the Iranian culture. One difference from laboratory studies was the very high rate of retrieval overall. We conjecture that this high retrieval rate stems from the importance of the narratives in Iranian culture, as well as from their frequent repetition and schematization (Blanchette and Dunbar, 2000; Gentner et al., in press).

Our results suggest that a core differentiating factor in moral reasoning between cultures may be familiarity with different collections of cultural narratives. Even if the foundations and the logic of morality were universally present, the different cultural stories would cause differences in the judgment of morality between cultures. We believe some well known findings on moral reasoning might be explained by formal examination of moral narratives present within and across cultures.

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