

## The inter-dependence between beliefs and feelings about a *yagna*: a correlational study

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*Yagnas* are an integral part of ancient Indian traditions. There are textual descriptions that attending a *yagna* results in psycho-physiological benefits. This correlational study intended to correlate beliefs that a *yagna* does have beneficial effects with self-rated feelings in terms of calmness, compassion and warmth towards other people, physical relaxation and physical tiredness following the *yagna*. There were 172 participants including 116 patients and 56 caregivers who attended a *yagna* performed in a residential *yoga* therapy camp. In general, beliefs about positive effects were positively correlated with positive feelings. The single negative feeling assessed (i.e., feeling physically tired) did not correlate with beliefs about the benefits of the *yagna*. Hence, when considering subjective responses to any intervention which has philosophical and spiritual components, it is desirable to assess participants' beliefs about the intervention.

**Keywords:** *Yagna*, Mind-body interventions, Positive feelings

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In western medicine, a physician treats the body of patients; a psychological counsellor attends psychological health and interpersonal behaviour while a pastoral counsellor provides spiritual guidance. Hence body, mind, cognition, emotion and spirituality are viewed as discrete entities<sup>1</sup>. In contrast, oriental philosophies adopt a holistic concept of an individual in relation to their environment. This distinction is important as it is now recognized that spirituality, religion and personal beliefs impact an individual's quality of life<sup>2</sup>. Spirituality, religion and personal beliefs (SRPB) were found to be highly correlated with all the domains of the World Health Organization's (WHO's) quality of life instrument. Hence, it is suggested that spirituality, religion and personal beliefs, as well as inner peace, faith, hope and optimism make a difference in the quality of life, particularly for people with compromised health. With respect to spiritual connection or connectedness, in the ancient Indian Vedic tradition, *yagnas* are the most ancient rituals connecting a human being with the divine presence<sup>3</sup>. A *yagna* is not merely a fire sacrifice, but combines esoteric and exoteric practices. In performing a *yagna*, the heat from the *yagna*'s fire and the sound of the *mantras* are combined to achieve the desired physical, psychological and spiritual benefits.

Adding of specific substances to the *yagna* also has significance<sup>4</sup>.

In ancient Vedic society, a *yagna* was an integral part of daily life, and played a vital role in providing communal prosperity, social peace, and harmony with nature. Persons performing a *yagna* are believed to experience physical, mental and emotional beneficial changes<sup>5</sup>. *Yagna* may be effective in enhancing the psychosomatic health of an individual<sup>6</sup>. A study assessed the impact of (i) *mantra* chanting compared to (ii) a *yagna* or (iii) selected *yoga* practices on physiological, haematological and psychological parameters in healthy individuals. Following 30 days of the *yagna*, a significant increase occurred in alpha waves and a trend of increase in haemoglobin content was found<sup>7</sup>. Apart from this a trend of reduction in the level of anxiety, depression and fatigue was observed. There have also been studies on *yoga* as another complementary therapy, an example is referred to here<sup>8</sup>. A review on 'yoga for asthma' suggests that *yoga* practice can improve the quality of life of the patients with improvement in pulmonary functions<sup>8</sup>.

However, it is now well recognized that the way we think influences the way we feel. This can be supported by a study mentioned below. Neuroimaging studies of conscious and voluntary regulation of various emotional states highlighted the fact that metacognition and cognitive recontextualization can selectively alter

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the way the brain processes and reacts to emotional stimuli<sup>9</sup>. Collectively, the findings of a series of neuroimaging studies strongly support the view that the subjective nature and the intentional content (i.e., what mental processes are about from a first person perspective) such as thoughts and beliefs, significantly influence various levels of brain functioning, and hence the behaviour.

To the best of our knowledge, there is no study published on the correlation between the belief about a *yagna* and feelings after witnessing the *yagna*. Hence, the present study was designed to evaluate whether the personal beliefs about a *yagna*, influenced subjective feelings (in terms of calmness, compassion, physical relaxation and physical tiredness) of the participants after the *yagna*.

## Materials and methods

### Participants

The participants were 172 persons from a total of 526 persons who had different illnesses for which they had enrolled for a one week intensive yoga-based lifestyle change program. The program was conducted at Patanjali Yogpeeth, a residential *yoga* and *Ayurveda* center located near Haridwar in northern India. Selection of the sample was based on convenience sampling and the survey was administered to persons observing the *yagna*. It was based on the participants' choice whether to attend the *yagna* ceremony or not. The age range of the participants varied between 20 and 70 yrs, (group mean  $\pm$  S.D, 46.0  $\pm$  12.3 years). There were 83 females in the sub-group of 172 who attended the *yagna*. Those who willing to follow the study condition were included in this study and those having impaired cognition were excluded. None of them were excluded for the above reason. Their participation was voluntary and no incentive was given to them. All the participants were familiar with the concept of a *yagna*. Among the participants there were patients with different diseases or pre-morbid conditions such as type 2 diabetes (n=25), hypertension (n=29), obesity (n=6), hypo or hyperthyroidism (n=6), bronchial asthma (n=8), rheumatoid arthritis (n=18), infertility (n=5), chronic renal disease (n=7), acid peptic disease (n=8), cancer (n=4), and there were 56 participants who were healthy and attending the camp as 'care givers' of a patient or for the promotion of positive health. None of the patients had psychiatric or neurological conditions which could have affected their mental orientation. All of them had normal mental orientation. Signed consent from all the participants was obtained prior to the study.

### Design

The participants were seated around the site at which the *yagna* was performed for the last 45 min before the *yagna* ended. The total duration of the *yagna* ceremony was two hours however the actual sacrificial fire into which oblations were offered was for 45 min. The participants were given two questionnaires (i.e., about beliefs and about feelings) to fill in. They were asked to fill in the first questionnaire (about beliefs) before the *yagna* started and then asked to fill in the second one (about feelings) after the *yagna* ended. The first questionnaire assessed their existing beliefs about the *yagna* while the second questionnaire assessed their feelings immediately after the *yagna*.

### Assessments

The two questionnaires were intended to quantify the participants' beliefs about the *yagna* as well as their subjective feelings immediately after the *yagna*. The beliefs were chosen after carrying out an informal interview of approximately 50 participants who had attended the *somayagna*. The first questionnaire had linear analogue scales and participants were asked to respond by making a mark on each of the five 10.0 cm long linear analogue scales. This response form presents the respondent with a continuous line (10.0 cm in length as mentioned above) between a pair of descriptors representing opposite ends of a continuum<sup>10</sup>. Participants were asked to make a mark at a point on the line that most closely represented his or her beliefs. Visual analogue scales are considered useful to measure phenomena before and after some intervening events. The two descriptors for the questionnaire which dealt with beliefs about the *yagna* were (i) 'no belief at all' at one end of the line or at 0 cm and (ii) a very strong beliefs at the other end of the line or at 10.0 cm. The five questions about beliefs were: (i) Do you believe that the *yagna* purifies the environment? (ii) Do you believe that the *yagna* has a beneficial effect on the physical health of people around? (iii) Do you believe that the *yagna* has a beneficial effect on the mental state of the people around? (iv) Do you believe that the *yagna* can change a person and bring out divine qualities in them? (v) Do you believe that the *yagna* can influence world peace? For all five questions [(i) to (v)], participants were asked to indicate their level of belief on a linear visual analogue scale.

The second questionnaire was concerned with the way participants felt immediately after the *yagna*. For this questionnaire as for the first one, there were four

linear analogue scales. They were all 10.0 cm in length. Since, they dealt with the feelings of the participants the two descriptors were ‘not at all’ at one end of the line and ‘very strong’ at the other end of the line. The questions were: at the end of the *yagna*, (i) Do you experience feelings of calmness? (ii) Do you experience feelings of compassion and warmth towards other people? (iii) Do you feel physically relaxed? And (iv) Do you feel physically tired? For the five linear visual analogue scales of the first part which dealt with beliefs, and as well as the part which dealt with feelings, the analogue scales were scored from ‘0’ to ‘10’, from the left or the right side. Whether the left end of the scale corresponded to ‘0’, and the right end to ‘10’, or whether the right end of the scale corresponded to ‘0’ and the left end of the scale corresponded to ‘10’, was determined using a random number table. Both the questionnaires used (Form A for beliefs about the *yagna* and Form B for feeling after attending *yagna*) have been mentioned as Figs. 1&2, respectively.

**Somayagna as intervention**

The word *yagna* is derived from the *Sanskrit* verb ‘*yag*’ which means ‘to sacrifice’<sup>5</sup>. *Somayagna* is named after the *soma* plant with the botanical name *Sarcostemma brevistigma* L.. The juice of the plant (*soma-rasa*) is believed to be the ‘ambrosia of the gods’ and forms the main offering. The *somayagna* performed here was the *agnistoma*, the first of the seven *somayagnas* described in the *Yajurveda*. The participants sat around the area in which the *yagna* was being performed, not more than three feet away. The *somayagna* was continuous for two hours that is between 09:00 a.m. and 11:00 a.m. The *yagna* was started at the scheduled time, i.e., at 09:00 a.m. There were no concurrent events at the time of the *yagna*.

**Data extraction**

The beliefs about the *yagna* of each participant were obtained using the 10 centimetre (cm) linear visual analogue scales. The calculation was made from the left of the line (considered as zero) till the mark made by the participants; this distance was measured in cm. Measurements were precise up to 0.1 mm. For this part there were hence 5 values (between ‘0’ and ‘10’) corresponding to the 5 questions on beliefs. Similarly for the 4 questions asked about feelings there were 4 values (between ‘0’ and ‘10’) corresponding to the 4 questions which participants were asked about their feelings after attending the *somayagna*.

**Data analysis**

Each of the 5 values related to beliefs were tested for correlation with each of the 4 values related to the feelings after the *somayagna* using SPSS (Version 18.0). For the statistical analysis, Pearson correlation was done. This has been schematically depicted in Fig. 3.

**Results**

The belief that the *somayagna* purifies the environment was positively correlated with: (i) a

**SOMAYAGNA: AN INVESTIGATION (Part A)**

Please fill in the following details about yourself:  
 Name..... Age.....  
 Sex..... Date.....

**BELIEFS ABOUT THE SOMAYAGNA**

1. Do you believe that the *Somayagna* purifies the environment?  
 No belief at all ----- Strongly believe

2. Do you believe that the *Somayagna* influences the physical health of people around?  
 No belief at all ----- Strongly believe

3. Do you believe that the *Somayagna* has a beneficial effect on the mental state of people around?  
 No belief at all ----- Strongly believe

4. Do you believe that the *Somayagna* can change a person and bring out divine qualities in him?  
 No belief at all ----- Strongly believe

5. Do you believe that the *Somayagna* can influence World Peace?  
 No belief at all ----- Strongly believe

Fig. 1—Linear visual analogue scales for the assessment of beliefs about the *yagna*

**SOMAYAGNA: AN INVESTIGATION (Part B)**

Please fill in the following as accurately as possible. This information is purely for research purpose and will be kept confidential:  
 Name..... Age.....  
 Sex..... Date.....

**FEELINGS AFTER ATTENDING THE SOMAYAGNA**

Some questions are given below about how you are feeling now, immediately after the *Somayagna*.

1. A feeling of calmness  
 Very strong ----- Not at all

2. A feeling of compassion and warmth towards other people  
 Not at all ----- Very strong

3. Physically relaxed  
 Not at all ----- Very strong

4. Physically tired  
 Very strong ----- Not at all

Fig. 2—Linear visual analogue scales for the assessment of feelings after attending the *yagna*

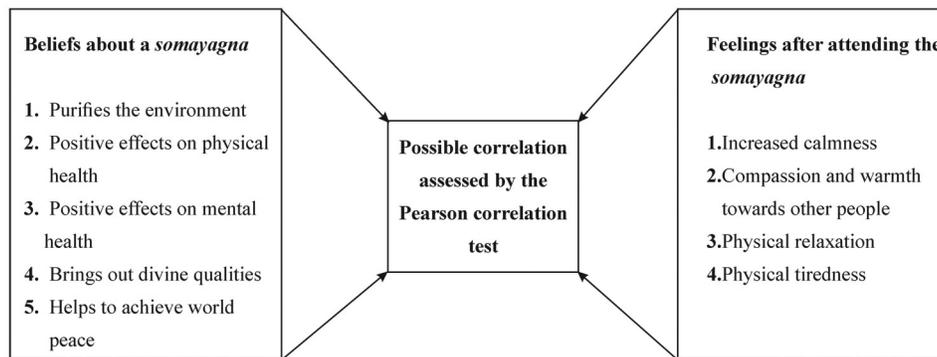


Fig. 3—Descriptive diagram showing the correlation between beliefs about the *yagna* and feelings after attending the *yagna*

feeling of calmness after the *yagna* ( $r = .424, p < 0.001$ ), and (ii) a feeling of warmth and compassion towards others ( $r = .309, p < 0.001$ ). The belief that the *somayagna* has a positive effect on the physical health of people correlated positively with: (i) a feeling of calmness after the *yagna*, ( $r = .394, p < 0.001$ ) (ii) a feeling of warmth and compassion towards others ( $r = .339, p < 0.001$ ), and (iii) a feeling of being physically relaxed ( $r = 0.158, p < 0.05$ ). Another belief, that the *somayagna* positively influences the mental health of people was positively correlated with: (i) a feeling of calmness after the *somayagna* ( $r = .417, p < 0.001$ ), and (ii) a feeling of warmth and compassion towards others ( $r = .338, p < 0.001$ ). Finally, the belief that the *somayagna* can bring out ‘divine qualities’ in people was correlated positively with: (i) feelings of calmness after the *somayagna* ( $r = .462, p < 0.01$ ), (ii) feelings of warmth and compassion towards other people ( $r = 0.236, p < 0.01$ ), and (iii) feelings of being physically relaxed ( $r = 0.190, p < 0.05$ ). These correlations are provided in Table 1.

**Discussion**

The present study showed definite positive correlations between the beliefs about the *somayagna* and the feelings people had, after witnessing it. For example, feelings of calmness and compassion correlated with all 5 beliefs that the *somayagna*: (i) purifies the environment, (ii) positively impacts physical and mental health and (iii) helps bring out divine qualities in people, as well as (iv) facilitates world peace. There was no correlation between any of the beliefs and feelings of tiredness. This was possibly related to the fact that a large number of persons (i.e., 63 %, or 109 out of 172) rated their tiredness after the *somayagna* as less than 2.5 out of 10.0 (i.e., less than 25 %). However, even in those who rated their ‘feeling of physical tiredness’ more than 50 %, there was no

Table 1—Correlations between beliefs about the *somayagna* and subjective feelings experienced after it

Belief about the <i>somayagna</i>	Feelings after attending the <i>somayagna</i>			
	Calmness	Compassion	Physical relaxation	Physical tiredness
Purifies the environment	√	√	-	-
Positive effect on physical health	√	√	√	-
Positive effect on mental health	√	√	-	-
Brings out divine qualities	√	√	√	-
Helps to achieve world peace	√	√	√	-

√ indicates a positive correlation and – indicates no correlation, based on the Pearson correlation test.

correlation with beliefs about possible benefits. Feelings of being physically relaxed correlated positively with beliefs related to ‘bringing out’ divine qualities, facilitating world peace and positively impact on physical health. On the other hand feelings of relaxation did not have any correlation with a belief that the *somayagna* purifies the environment, and also did not correlate with a belief that the *somayagna* has a positive impact on mental health.

The present results in general do corroborate the general impression that our beliefs and feelings are closely associated. However, there was one exception. A belief that the *somayagna* can positively influence the mental health of individuals did not correlate positively with feelings of physical relaxation. In spite of this we may say in a non-specific sense, people who had beliefs that the *somayagna* had positive effects were more likely to experience positive feelings after it.

These findings can be indirectly considered along with the results of an international study, conducted across 18 countries which observed in 5087 persons on

how spirituality, religion and personal beliefs (SRPB) related to quality of life<sup>2</sup>. Spirituality, religion and personal beliefs (SRPB) were highly correlated with all domains of the WHO quality of life questionnaire. Among the sample (n = 5087), in a sub sample (n = 588) who reported poor health, it was found that SRPB, in addition to the level of independence, environmental factors and physical factors, influenced the quality of life (QOL) and the extent of influence was greater in those with poor compared to those with normal health. This report concludes with the suggestion that SRPB should be more routinely addressed in the assessment of QOL, which it can substantially influence.

As described in the introduction, neuroimaging studies have shown that beliefs and expectations can markedly modulate neurophysiological and neurochemical activity in brain regions involved in perception and various aspects of processing emotions<sup>9</sup>. These findings suggest that for most studies on mind-body interventions it would be both important and useful to correlate the beliefs that the intervention would benefit the participants with any effect found. This also makes it interesting and important to determine whether a person who has no belief or interest that a particular mind-body intervention would positively impact them, would get any benefit at all. A previous study did show that when the effect of a one month *yoga* program was studied in persons who had self elected to join for the program compared to persons who did not choose to join, but were deputed for the program by their employers, both groups benefited, with the former benefiting more than the latter<sup>11</sup>.

The findings of the present study are limited by the following factors: (i) the participants were not randomly selected, it was based on convenience sampling, (ii) the participants were a mixed population, i.e., they were patients as well as caregivers (116 out of 172 persons had an illness), (iii) beliefs about the *yagna* and feelings after the *yagna*, were subjective which could cause bias, (iv) not attending the *yagna* either because of no belief in it or some other reason could further have biased the sample, and (v)

participants self-elected to join the *yoga*-based lifestyle change program, which indicated an inherent belief in traditional Indian practices.

Despite these limitations, the *somayagna* did appear to induce feelings of physical and mental relaxation in participants attending it. These feelings showed a positive correlation with their beliefs that the *somayagna* has beneficial effects.

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