Why don’t people stand on their head to pray?
Mind-body connections in religious practice

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A social psychologist’s take on:

Religious
Spiritual

Predictors?

Behavior maintenance

Well-being
Prosociality
Prejudice
Conformity

Positive emotions/experiences play a critical role
Grant funded project:
“The Embodiment of Worship: Relations Among Postural, Psychological, and Physiological Aspects of Religious Practice”

Multiple observational and experimental studies
Why do people pray using specific postures?

How do these postures relate to psychological experience?
Reciprocal influences between body and mind

- Indian philosophies
- James-Lange theory
- Constructionist theory of emotions
- Grounded cognition
Why do people pray using specific postures?

Why do people pray using specific postures? Psychological and social functions of prayer postures

Postures may serve critical roles for religion

How do these postures relate to psychological experience?
A model of embodiment effects

A model of embodiment effects

Needed steps for research on embodiment in religion

1. Document prayer postures

2. Establish relation between postures and experience

3. Establish causality from posture to experience
Needed steps for research on embodiment in religion

1. Document prayer postures
   Study 1: How are different prayer contents represented in the body?
   Study 2

2. Establish relation between postures and experience
   Study 2: during a Christian Sunday service
   Study 3: across religions

3. Establish causality from posture to experience
   Studies 4-5: Does adopting a specific posture change people’s emotions and physiology?
Postures and experience?

- Emotions: valence, arousal, dominance
- Prayer content (e.g., confession, thanksgiving)
Study 1: How are religious experiences represented in the full body?

Study 1: How are religious experiences represented in the full body?

\[ N = 93 \text{ U.S. community participants with knowledge of Christianity (74\% female); } M_{age} = 27.9 \]

**Goal:** How do people represent in the full body different prayer orientations (e.g., prayer, confession)? Are there systematic variations?

Now for the following words, assume that this mannequin here is religious. What posture would it assume to represent...
Study 1: How are religious experiences represented in the full body?

Worship
Praise
Thanksgiving

Prayer
Confession
Repentance

Positively-valenced prayer orientations

More self-reflective and difficult prayer orientations
Study 1: How are religious experiences represented in the full body?

Benchmarks:

Valence
Joy
Sadness

Dominance
Dominance
Submission
Study 1: How are religious experiences represented in the full body?
Study 1: How are religious experiences represented in the full body?

Coding of pictures:
1) Objective measurements
2) Head and body positions coded by independent coders
Study 1: How are religious experiences represented in the full body?

Number of postures: kneeling, sitting, prostrate

- Worship
- Praise
- Thanksgiving
- Prayer
- Repentance
- Confession
Study 1: How are religious experiences represented in the full body?

Number of postures: bowing
Study 1: How are religious experiences represented in the full body?

Number of postures in each head position category

Looking straight  Looking up  Looking down

- Worship
- Praise
- Thanksgiving
- Prayer
- Repentance
- Confession
Study 1: How are religious experiences represented in the full body?
Study 1: How are religious experiences represented in the full body?
Example of postures

Worship
Praise
Thanksgiving
Prayer
Repentance
Confession
Study 1: Conclusion

• Postures are what we expected and show systematic variations depending on the content of prayer

• Two clusters of postures:

Across our work: Postural groups of interest

- Expansive and oriented upward
- Constrictive and oriented downward
Expansive and oriented upward

Constrictive and oriented downward

Neutral / Resting
In the broader embodiment research these postures have been associated with the expression of:

<table>
<thead>
<tr>
<th>Positive emotions, warmth, dominance/pride</th>
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</thead>
<tbody>
<tr>
<td>Expansive and oriented upward</td>
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<table>
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<tr>
<th>Negative emotions, submission</th>
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</thead>
<tbody>
<tr>
<td>Constrictive and oriented downward</td>
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</table>
Study 2: Are postures associated with different emotions, behaviors, and perceptions in a naturalistic religious context?

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\[ N = 682 \text{ U.S. Christians (67\% female)}; \]
\[ M_{age} = 43 \]

*Context studied: Sunday Christian service*
*Online survey completed after service*

Reported three postures adopted during service, along with their emotional experiences and prayer behaviors

Total postures reported: 1932

**IV:** Frequency: 0, 1, 2, 3 out of 3 reported postures

**DV:** Emotions felt during church on that Sunday + Orientations while Praying
Study 2: Postures reported

<table>
<thead>
<tr>
<th>Postural Codes</th>
<th>% Participants with 1+ Posture</th>
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</thead>
<tbody>
<tr>
<td>Upward + Expansive</td>
<td>23%</td>
</tr>
<tr>
<td>Downward + Constrictive</td>
<td>77%</td>
</tr>
<tr>
<td>Intense Downward + Constrictive (e.g., kneeling)</td>
<td>35%</td>
</tr>
<tr>
<td>Standing vs. Sitting in Chair</td>
<td>89% vs. 75%</td>
</tr>
<tr>
<td>Kneeling vs. Sitting on Floor</td>
<td>28% vs. 3%</td>
</tr>
<tr>
<td>Looking Up vs. Down vs. Straight</td>
<td>78% vs. 73% vs 34%</td>
</tr>
</tbody>
</table>

- **Catholics**: more downward-constrictive poses
- **Baptists and Non-denominational**: more upward-expansive poses

Black/African-American participants adopted more upward-oriented poses than White participants (no difference with Latinx participants)
Study 2: Are postures associated with different affective experiences in a naturalistic religious context?

- Expansive and oriented upward
- Constrictive and oriented downward
Study 2: Are postures associated with different affective experiences in a naturalistic religious context?

Positive & High-arousal Emotions

Expansive and oriented upward

Negative & Low-arousal Emotions

Constrictive and oriented downward
Study 2: Are postures associated with different prayer orientations in a naturalistic religious context?

Expressing Praise during prayer

Glory to God!

Expansive and oriented upward

Expressing Confession during prayer

I must confess I have sinned...

Constrictive and oriented downward

No association with Thanksgiving, Repentance
Study 3: Cross-cultural/religious investigation of the association between prayer postures, emotions, and religious experience

Participants

– U.S. Christians (N = 674), Muslims (N = 494), Hindus (N = 402)
– Turkish Muslims (N = 498) recruited through Ankara University

Procedure

Participants were shown an image of a posture and were asked to “Imagine yourself praying while adopting the following posture.” Following each posture, participants responded to questions on the emotions & thoughts they think they would feel in each posture.

Imagining is similar to doing
Study 3: Cross-cultural/religious investigation of the association between prayer postures, emotions, and religious experience

Expansive and oriented upward

Christian: 

Muslim: 

Constrictive and Oriented downward

Christian & Hindu:

Muslim:
Study 3: Cross-cultural/religious investigation of the association between prayer postures, emotions, and religious experience

Agreement between groups:

High arousal Dominance

Humility
Prayer: examination of one’s difficulties
Study 3: Cross-cultural/religious investigation of the association between prayer postures, emotions, and religious experience

Agreement between groups:
- High arousal
- Dominance

Disagreement between groups:
- Positive emotions: true for Christians and to some extent Muslims but opposite for Hindus
- Prayer of praise: true for Christians, opposite for Turkish Muslims, and no association for other groups

Humility
- Prayer: examination of one’s difficulties
Studies 4-5: Does adopting a specific posture change people’s emotions and physiology?

Up and Expansive

Down and Constrictive

Neutral

Cover story

Explicit and Implicit measures of emotions

Physiology
Studies 4-5: Does adopting a specific posture change people’s emotions and physiology?
Study 4: Does adopting a specific posture change people’s emotions and physiology?

Participants
110 UNC students, age range (18-23) Female 72%
Religious affiliation 71% Christian, 9% other religions, 20% nonreligious

• Explicit Emotions

No difference for negative emotions
Study 5: Does adopting a specific posture change people’s emotions and physiology?

Method

- **Participants**
  - Multiple study sites (UNC & Indiana)
  - Community based sample: N = 79, Age range (18-73) Females 67%
  - Religious affiliation: 58% Christian, 3% other religions, 39% nonreligious

- **Procedure**
  - Double blind (Participants saw images on the computer that depicted the posture)
Study 5: Does adopting a specific posture change people’s emotions and physiology?

- **Explicit Emotions**
  - No significant differences

- **Implicit Emotions**

  ![Graph showing positive emotions for different postures]

*No difference for negative emotions*
Study 5: Does adopting a specific posture change people’s emotions and physiology?

- Respiratory Sinus Arrhythmia
Study 5: Does adopting a specific posture change people’s emotions and physiology?

- No evidence of mediation
Summary of most robust findings

1. Document prayer postures
   Two postural dimensions of interest: expansiveness-constrictiveness and upward-downward orientation

2. Establish relation between postures and experience
   U&E – praise, positive emotions, high arousal
   D&C – confession, (negative emotions), low arousal

3. Establish causality from posture to experience
   U&E è positive emotions compared to D&C
In conclusion

Choice of prayer posture is not arbitrary or just following customs; it is intimately connected to the religious experience.
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Choice of prayer posture is not arbitrary or just following customs; it is intimately connected to the religious experience.

Causality from posture to experience exists: Locus of religion is not only in the mind but in the body.

Implications for emotions and for health.
Thank you for your attention

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Find materials, datasets, and preregistrations on OSF: osf.io/4w36g