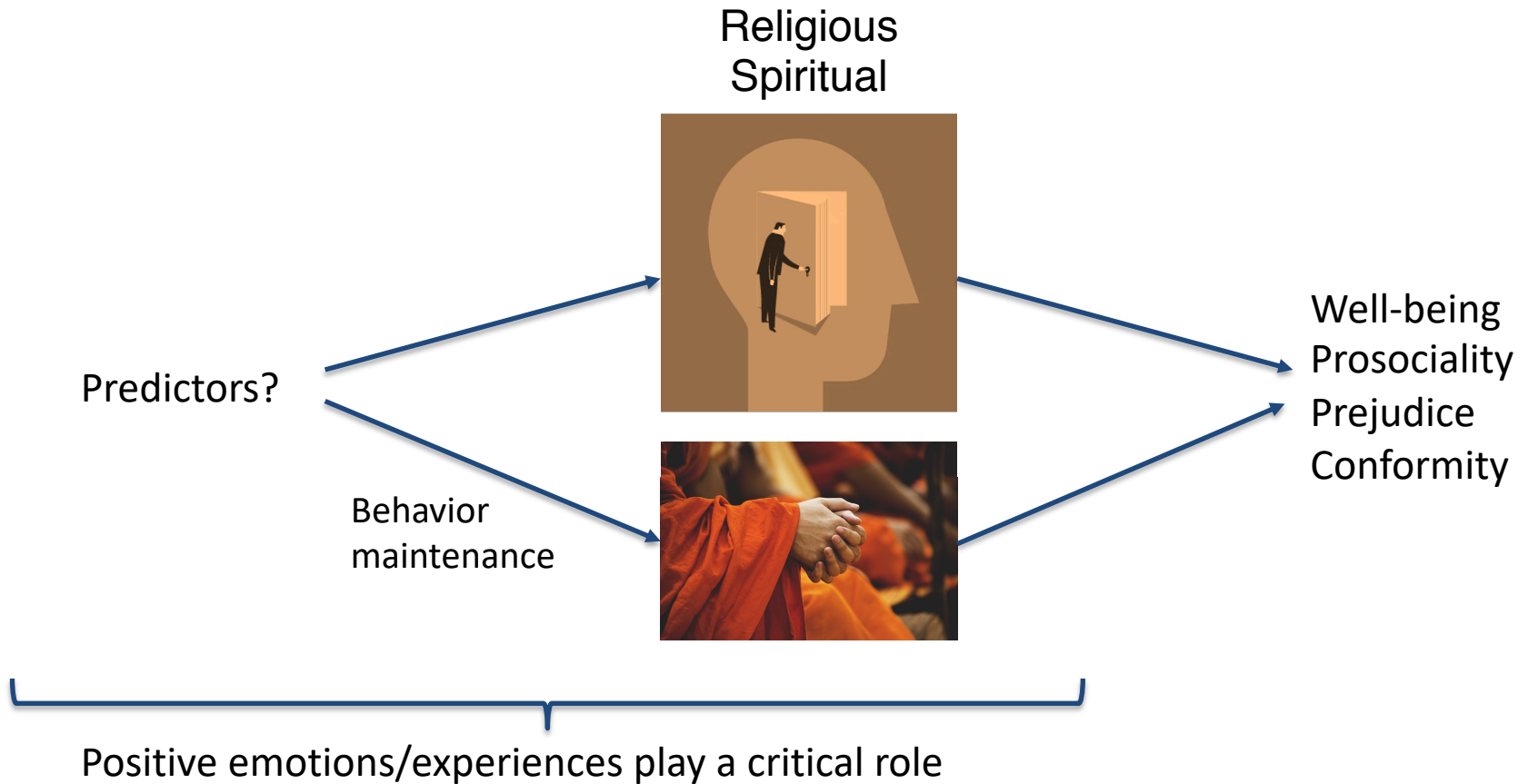
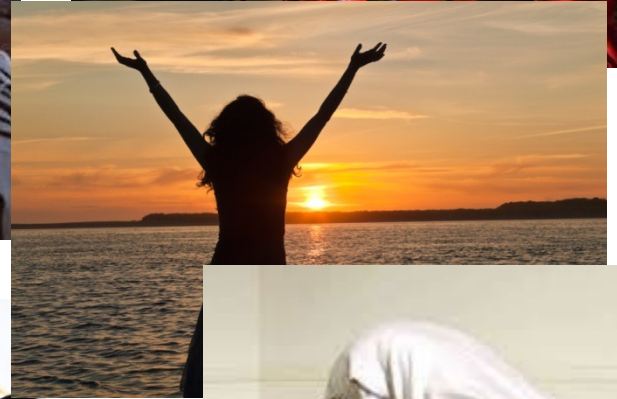


Why don't people stand on their head to pray? Mind-body connections in religious practice

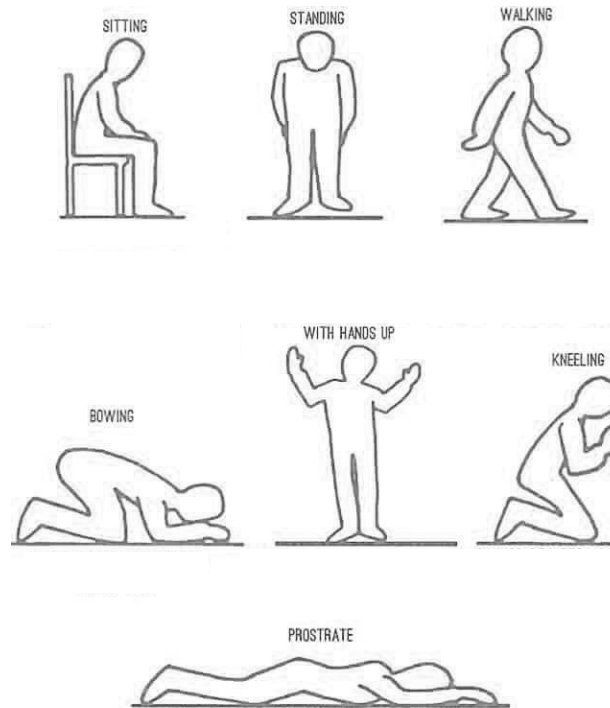
Patty Van Cappellen, Ph.D.
Social Science Research Institute
Department of Psychology and Neuroscience
Duke University

A social psychologist's take on:



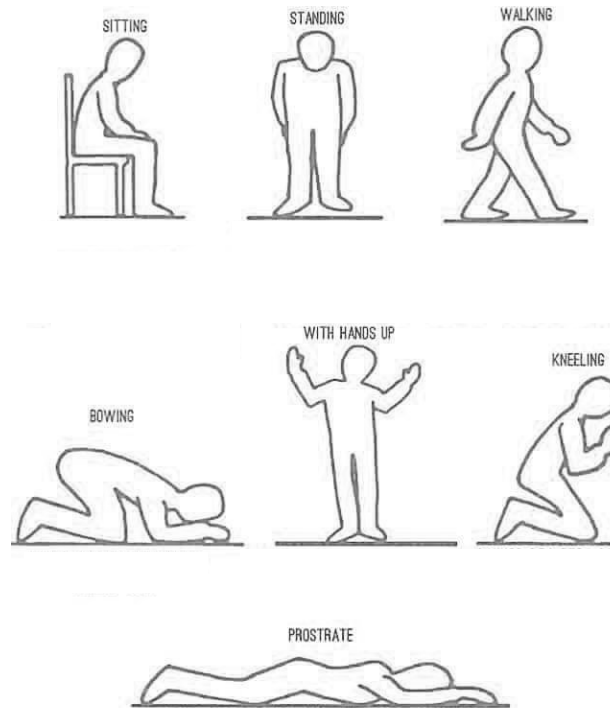


Grant funded project:
“The Embodiment of Worship: Relations Among Postural, Psychological, and Physiological Aspects of Religious Practice”



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

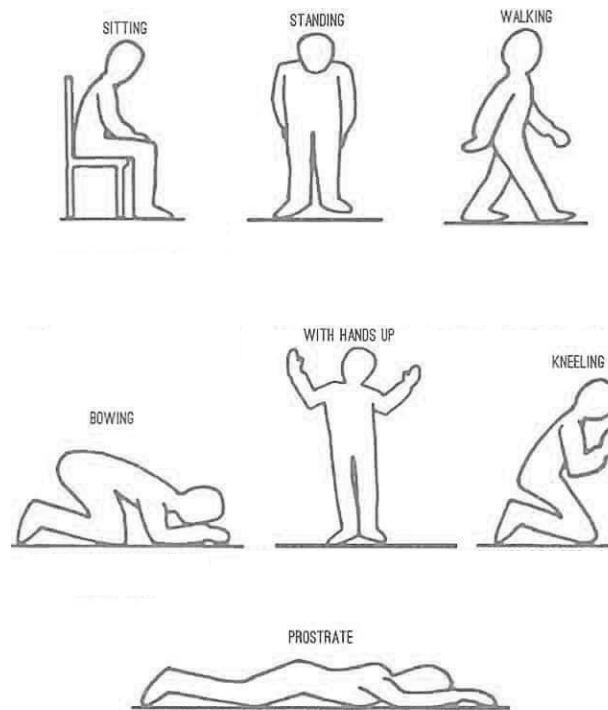
James-Lange theory

Constructionist theory of emotions

Grounded cognition



Why do people pray using specific postures?



Van Cappellen, P. & Edwards, M. E. (2021). The embodiment of worship: Relations among postural, psychological, and physiological aspects of religious practice. *Journal for the Cognitive Science of Religion*, 6, 56–79. <https://osf.io/3fx7j/>

Why do people pray using specific postures?

Psychological and social functions of prayer postures



APPROPRIATE NONVERBAL
COMMUNICATION WITH
GOD



FOSTERING GROUP
IDENTITY

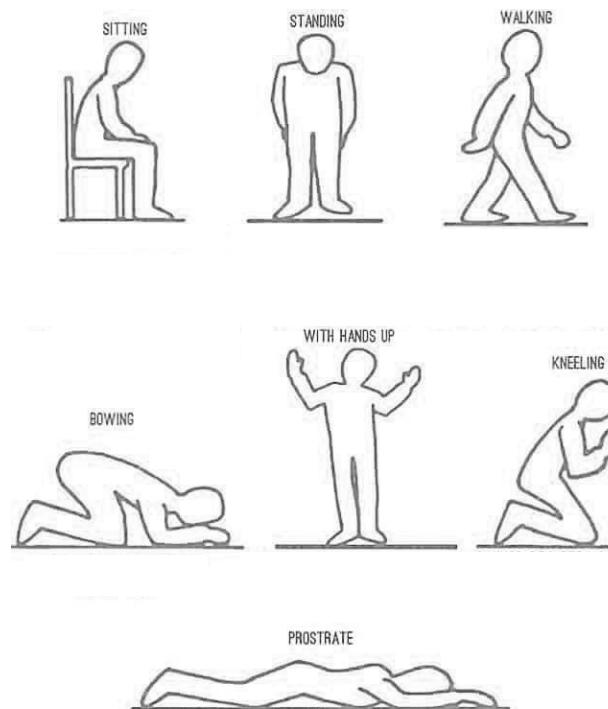


UNDERSTANDING
ABSTRACT BELIEFS



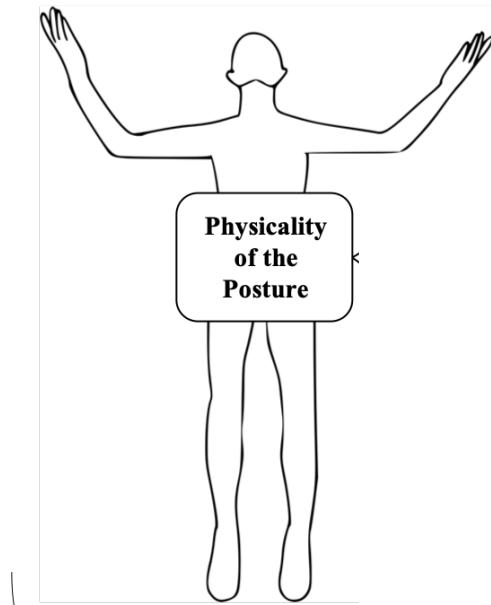
PROMOTING VALUED
EMOTIONS AND
THOUGHTS

➔ Postures may serve critical roles for religion



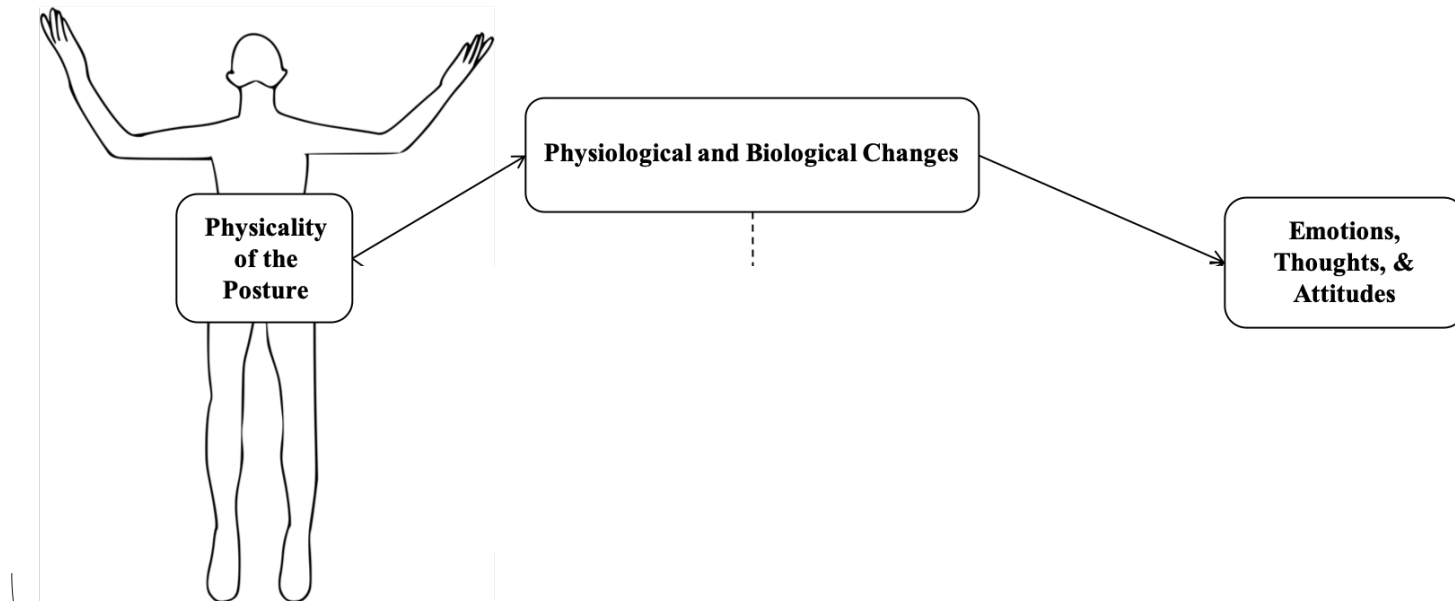
How do these postures relate to psychological experience?

A model of embodiment effects

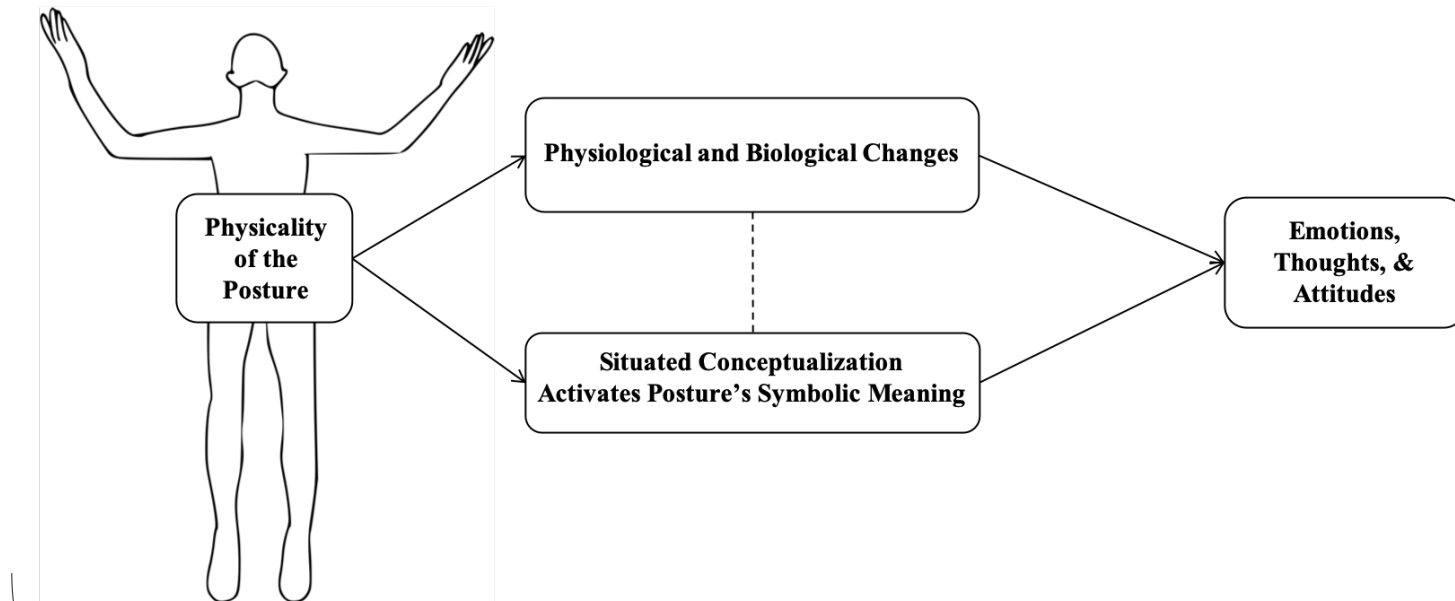


Van Cappellen, P. & Edwards, M. E. (2021). The embodiment of worship: Relations among postural, psychological, and physiological aspects of religious practice. *Journal for the Cognitive Science of Religion*, 6, 56–79. <https://osf.io/3fx7j/>

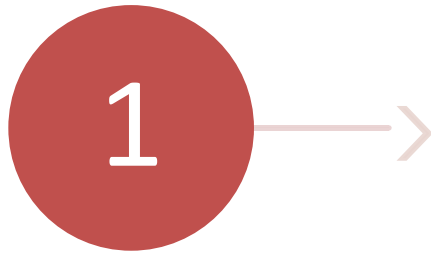
A model of embodiment effects



A model of embodiment effects



Needed steps for research on embodiment in religion



Document prayer
postures

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?

See full report here: Van Cappellen, P., & Edwards, M. (in press). Emotion expression in context: Full body postures of Christian prayer orientations compared to specific emotions. *Journal of Nonverbal Behavior*. <https://osf.io/ner28/>

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

$N = 93$ 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

*Positively-valenced
prayer orientations*

Prayer

Confession

Repentance

*More self-reflective
and difficult prayer
orientations*

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

Benchmarks:

Valence

Joy

Sadness

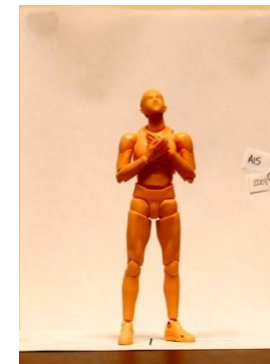
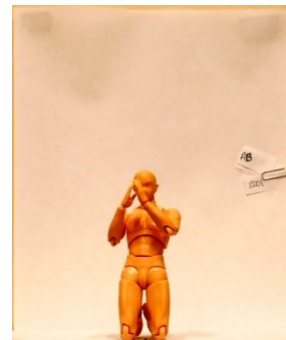
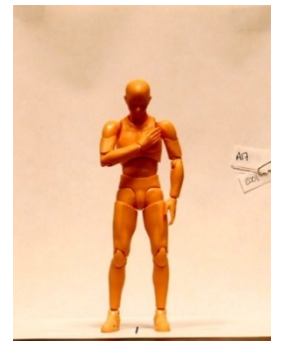
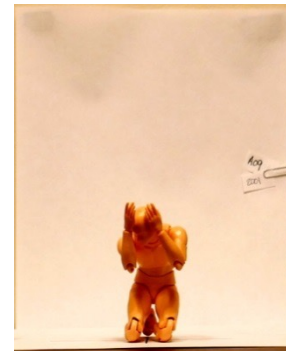
Dominance

Dominance

Submission



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

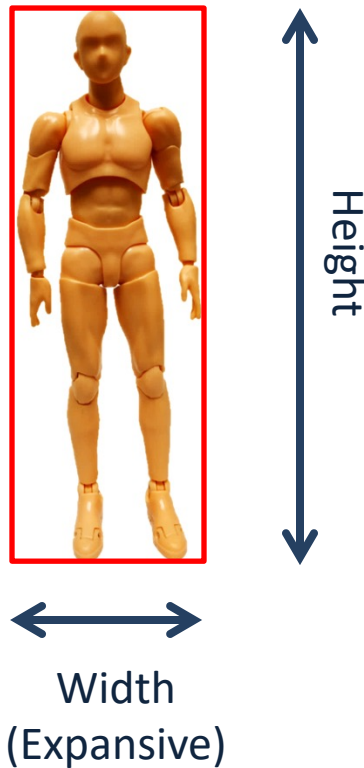


Study 1: How are religious experiences represented in the full body?

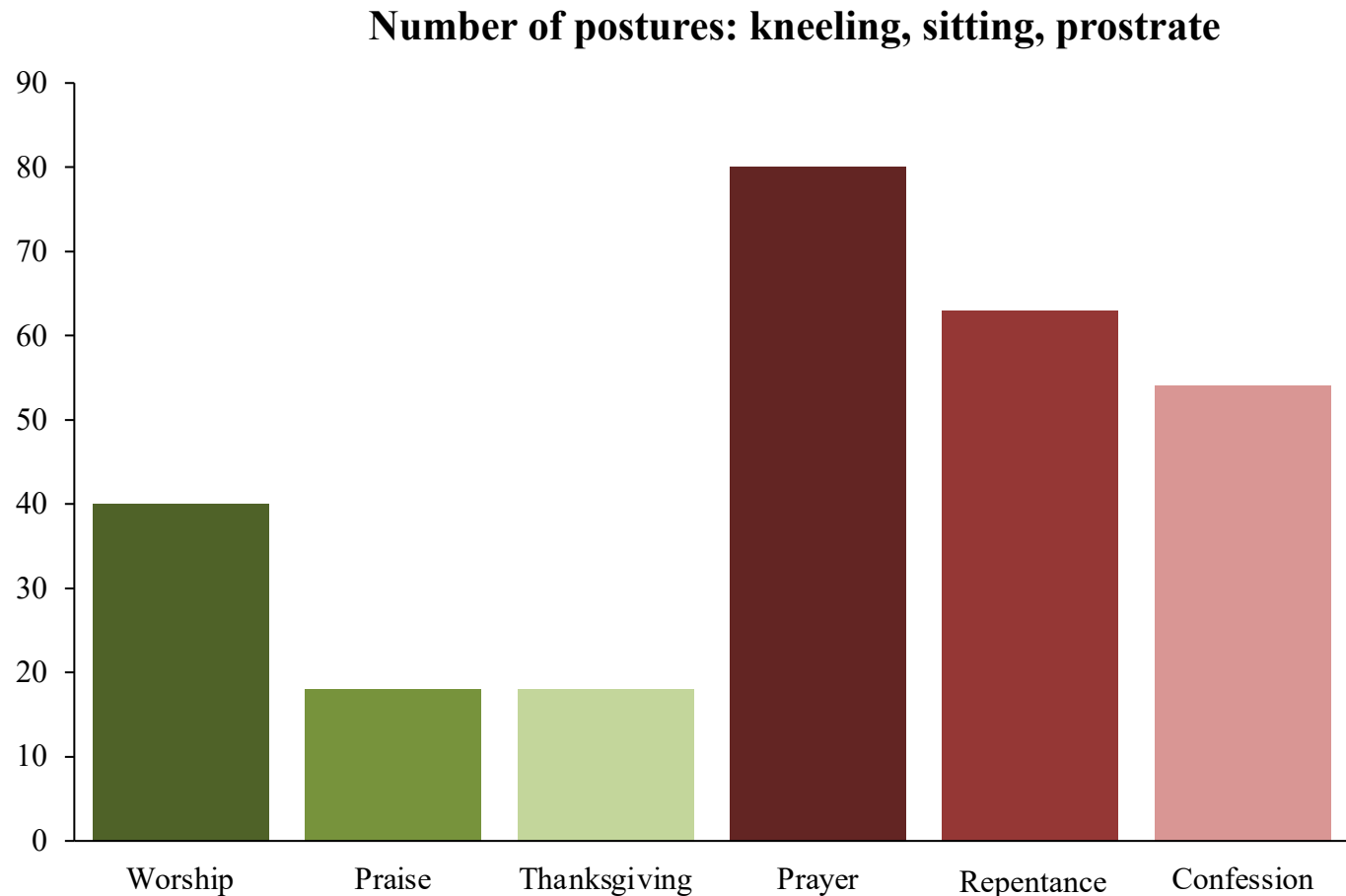
$$\text{Area} = \text{width} * \text{height}$$

Coding of pictures:

- 1) Objective measurements
- 2) Head and body positions coded by independent coders

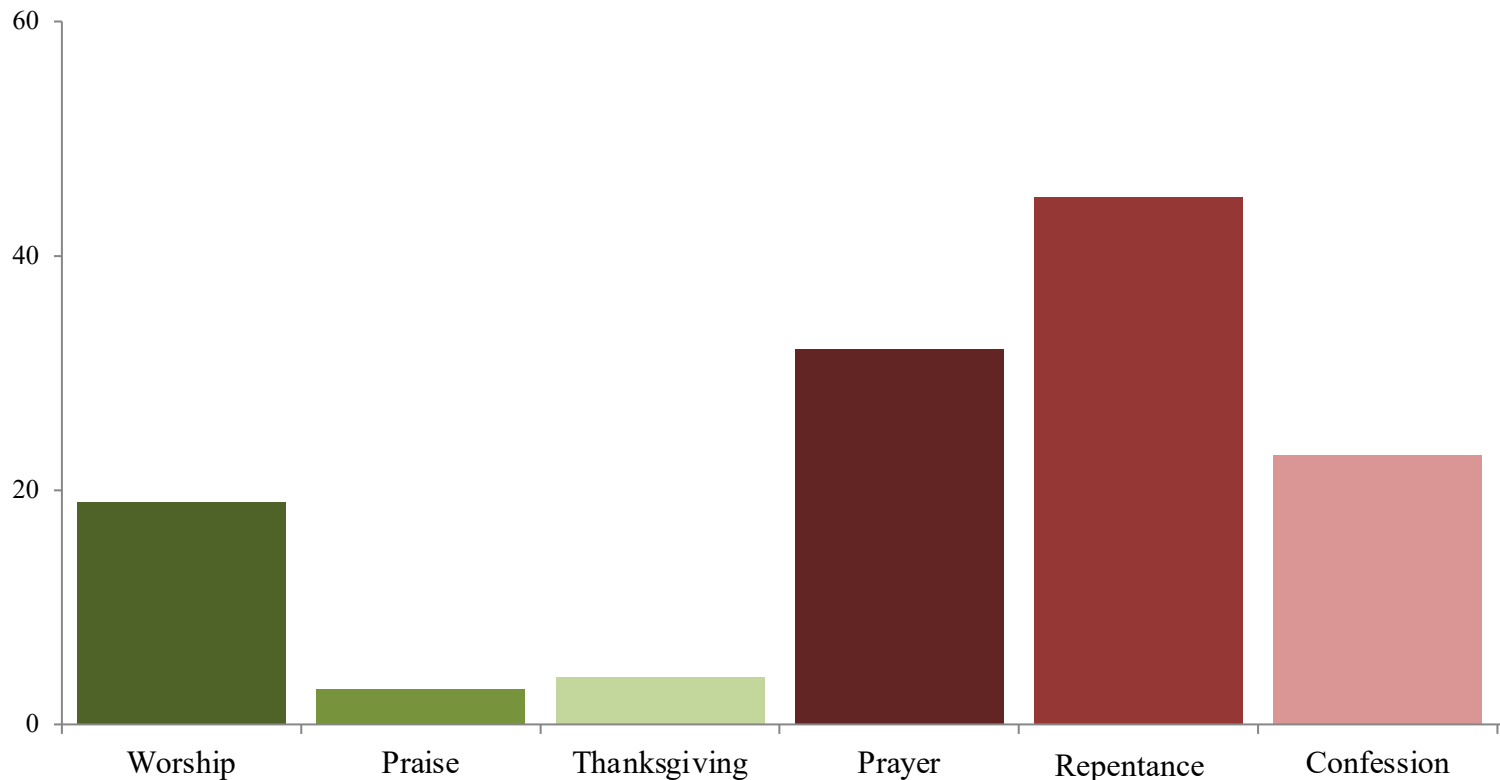


Study 1: How are religious experiences represented in the full body?

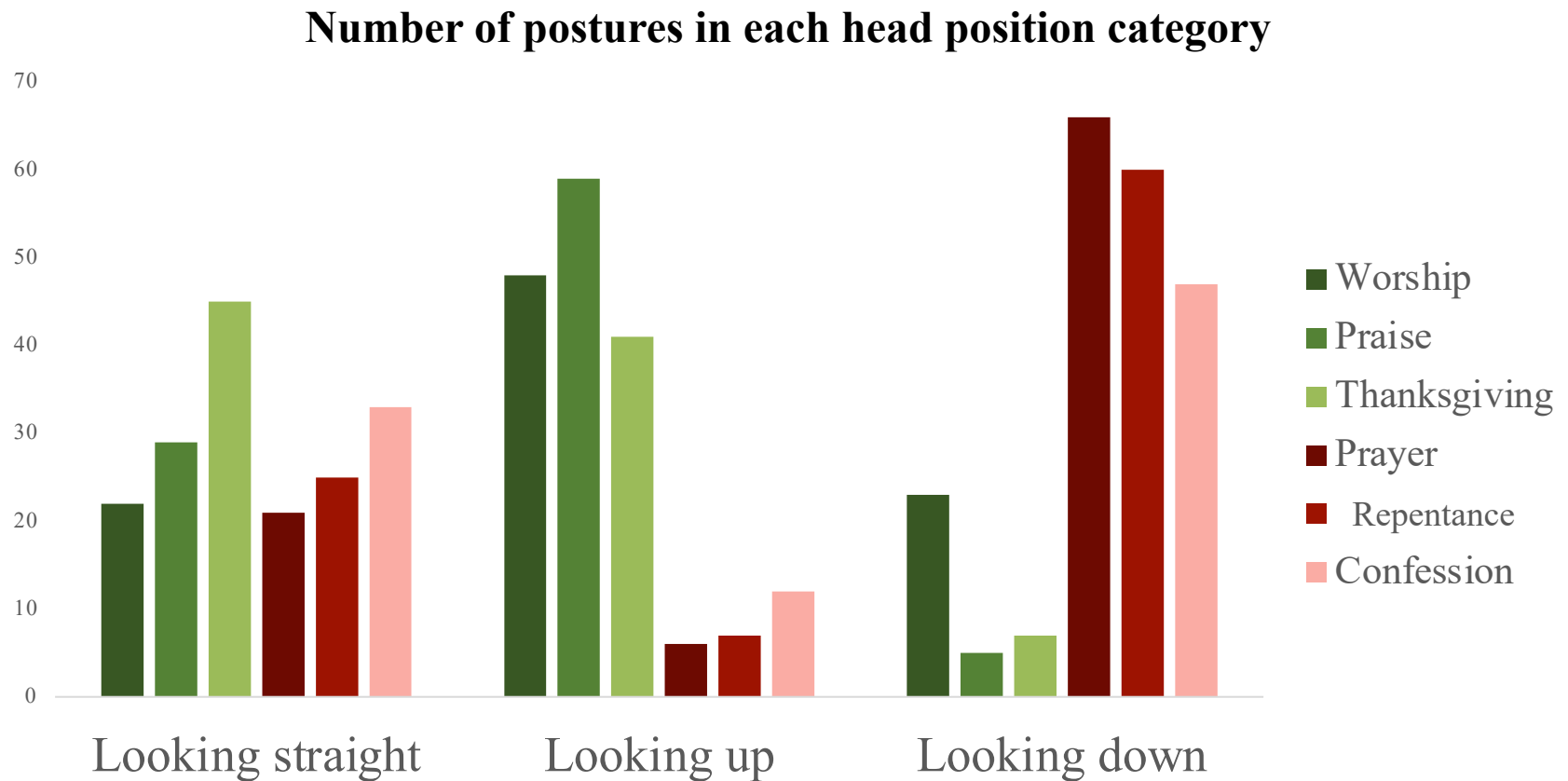


Study 1: How are religious experiences represented in the full body?

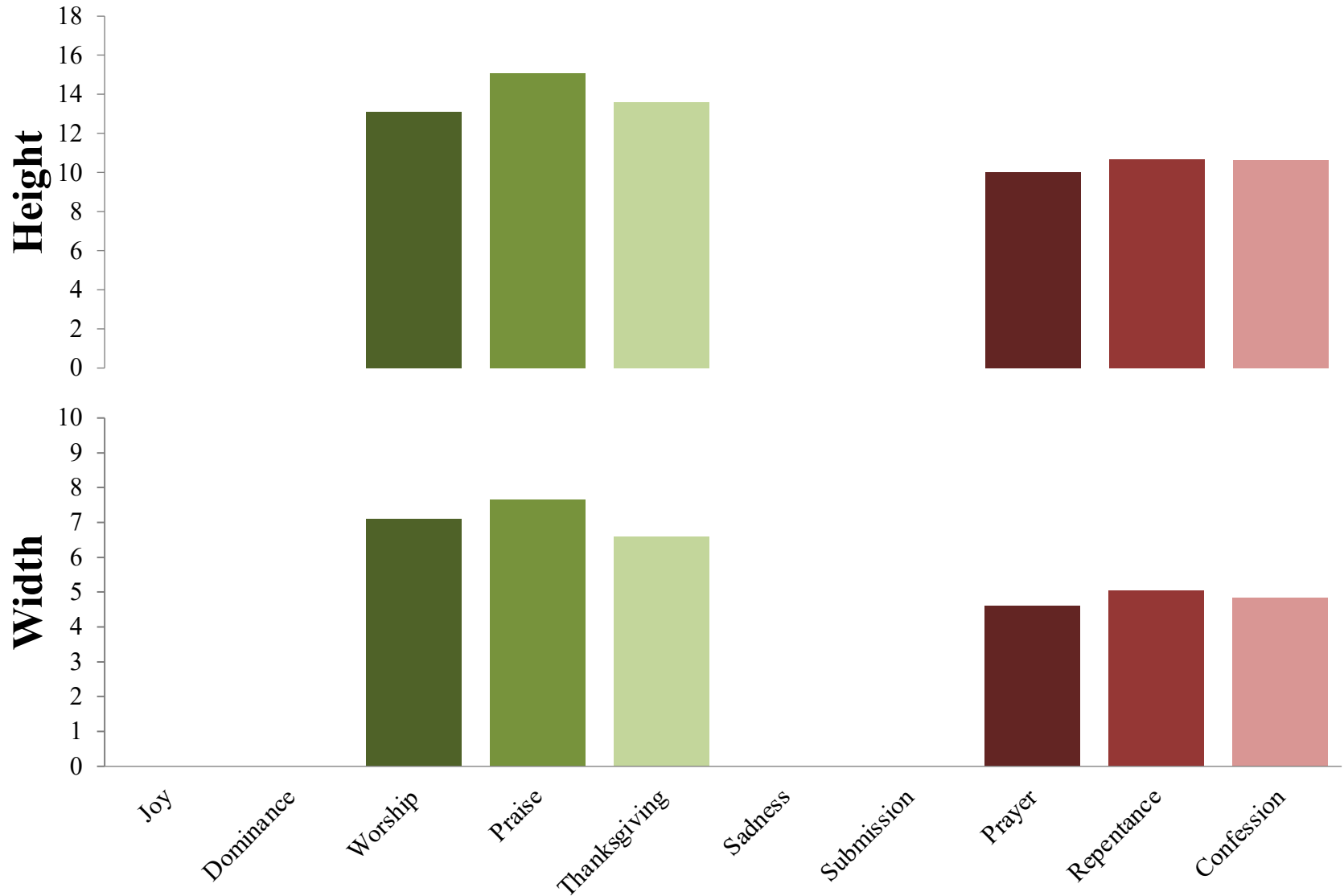
Number of postures: bowing



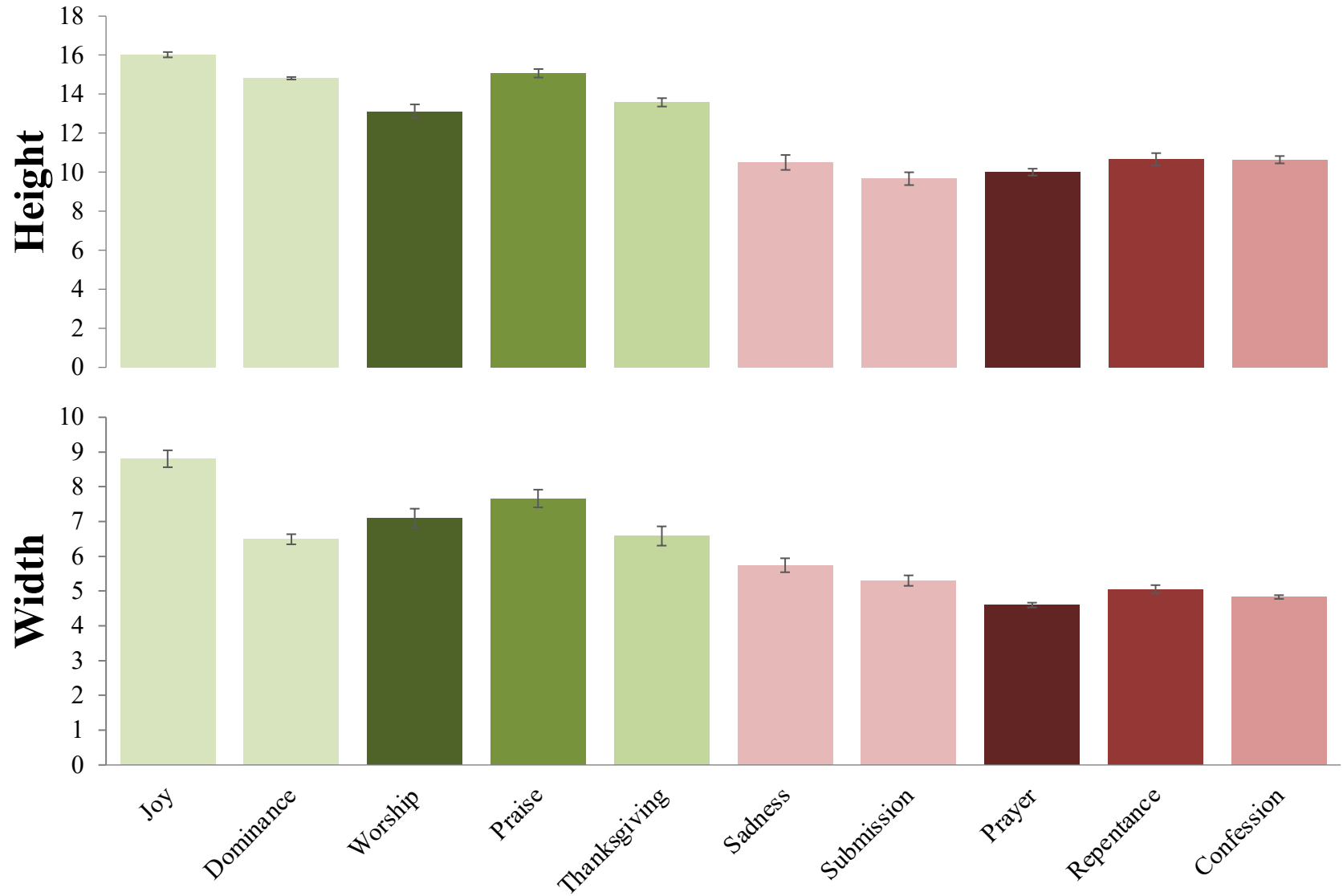
Study 1: How are religious experiences represented in the full body?



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:

See full report here: Van Cappellen, P., & Edwards, M. (in press). Emotion expression in context: Full body postures of Christian prayer orientations compared to specific emotions. *Journal of Nonverbal Behavior*.
<https://osf.io/ner28/>

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:

Positive emotions,
warmth,
dominance/pride



Expansive and
oriented upward

Negative emotions,
submission



Constrictive and
oriented downward

Study 2: Are postures associated with different emotions, behaviors, and perceptions in a naturalistic religious context?

Van Cappellen, P., Cassidy, S., & Zhang, R. (in press). Religion as an embodied practice: Organizing the various forms and documenting the meanings of Christian prayer postures. *Psychology of Religion and Spirituality*. <https://osf.io/g9azu/>

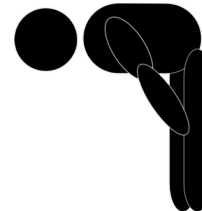
Study 2: Are postures associated with different emotions, behaviors, and perceptions in a naturalistic religious context?

$N = 682$ U.S. Christians (67% female);
 $M_{age} = 43$

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

Context studied: Sunday Christian service
Online survey completed after service

Total postures reported: 1932



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

DVs: Emotions felt during church on that Sunday +
Orientations while Praying

Study 2: Postures reported

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

- *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?



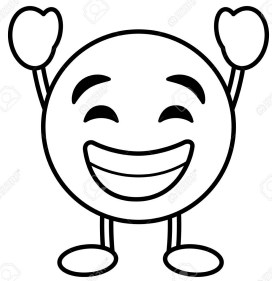
Expansive and
oriented upward



Constrictive and
oriented downward

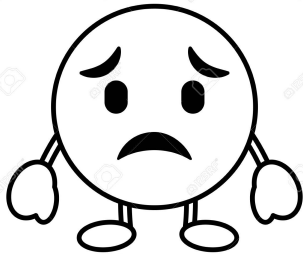
Study 2: Are postures associated with different affective experiences in a naturalistic religious context?

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.”

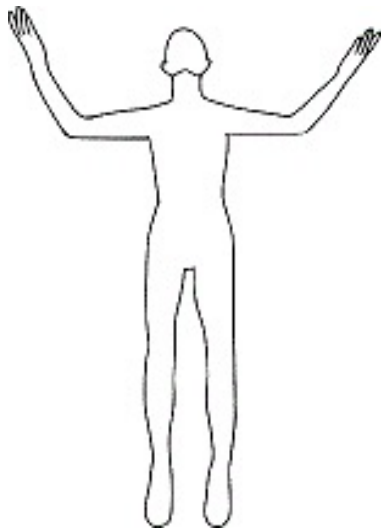
Following each posture, participants responded to questions on the *emotions & thoughts* they think they would feel in each posture.

! 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:

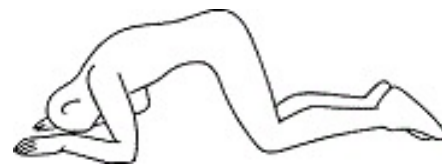


Constrictive and Oriented downward

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:

Disagreement between groups:



High arousal
Dominance

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

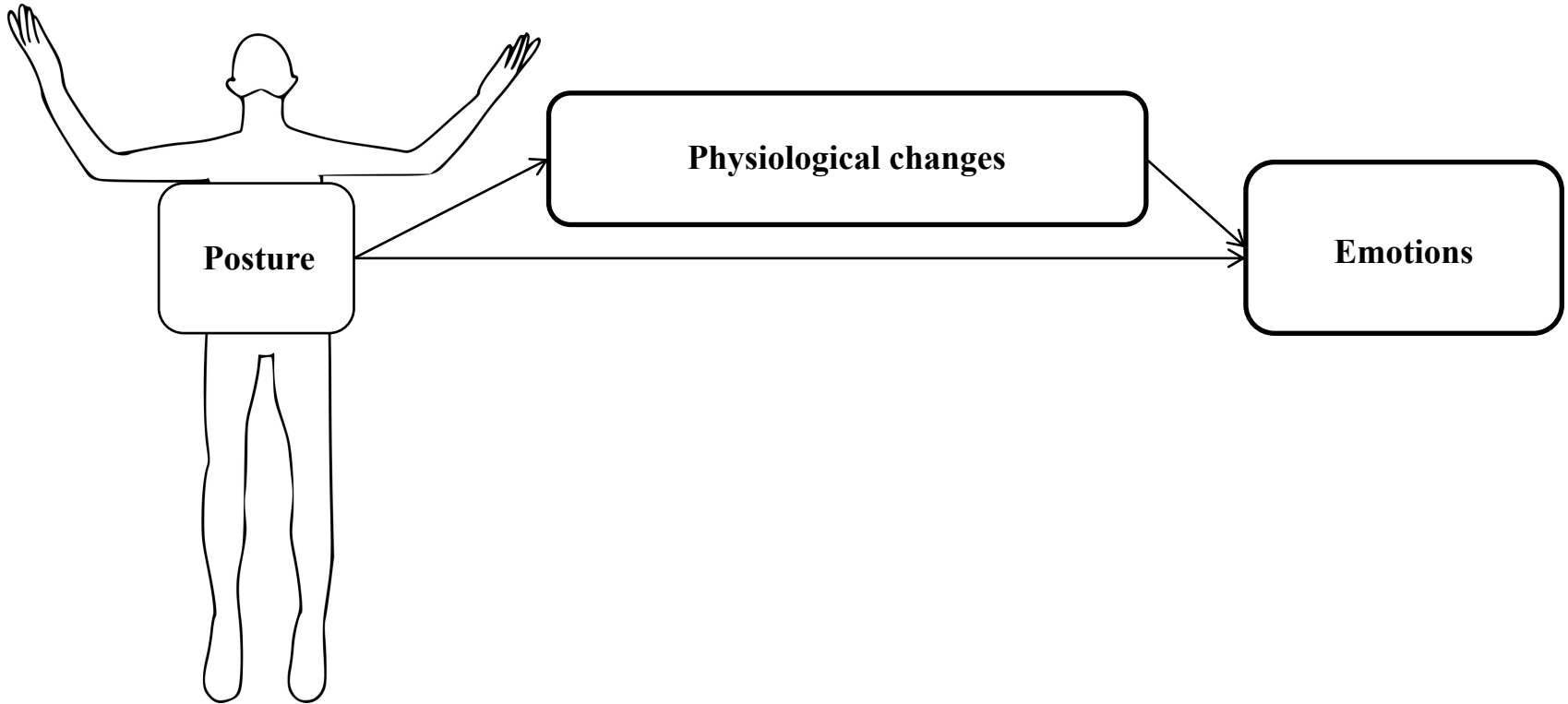


Explicit and Implicit
measures of emotions



Physiology

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



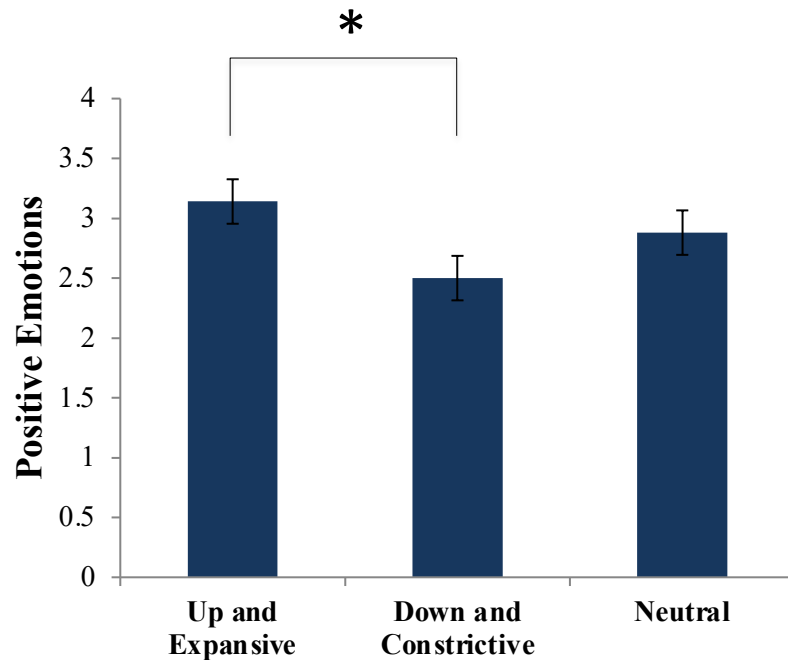
Study 4: Does adopting a specific posture change people's emotions and physiology?

Participants

110 UNC students, age range (18-23) Female 72%

Religious affiliation 71% Christian, 9% other religions, 20% nonreligious

- Explicit Emotions

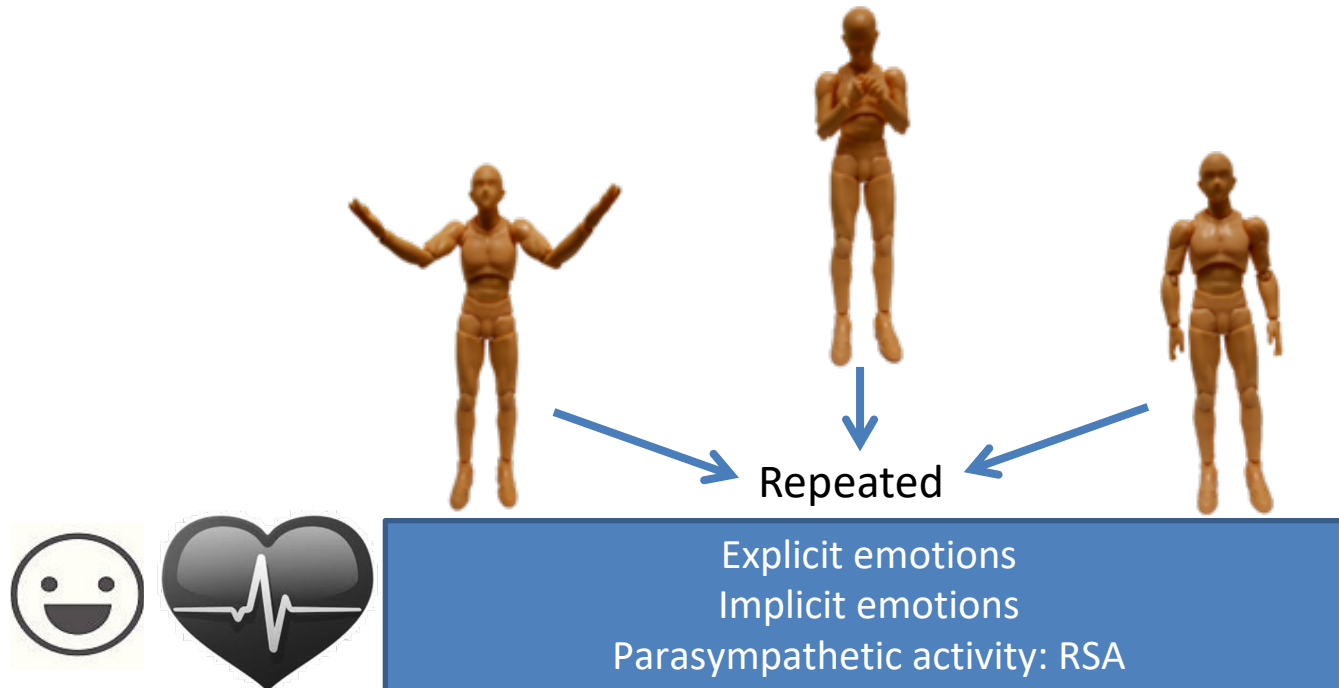


No difference for negative emotions

Study 5: Does adopting a specific posture change people's emotions and physiology?

Method

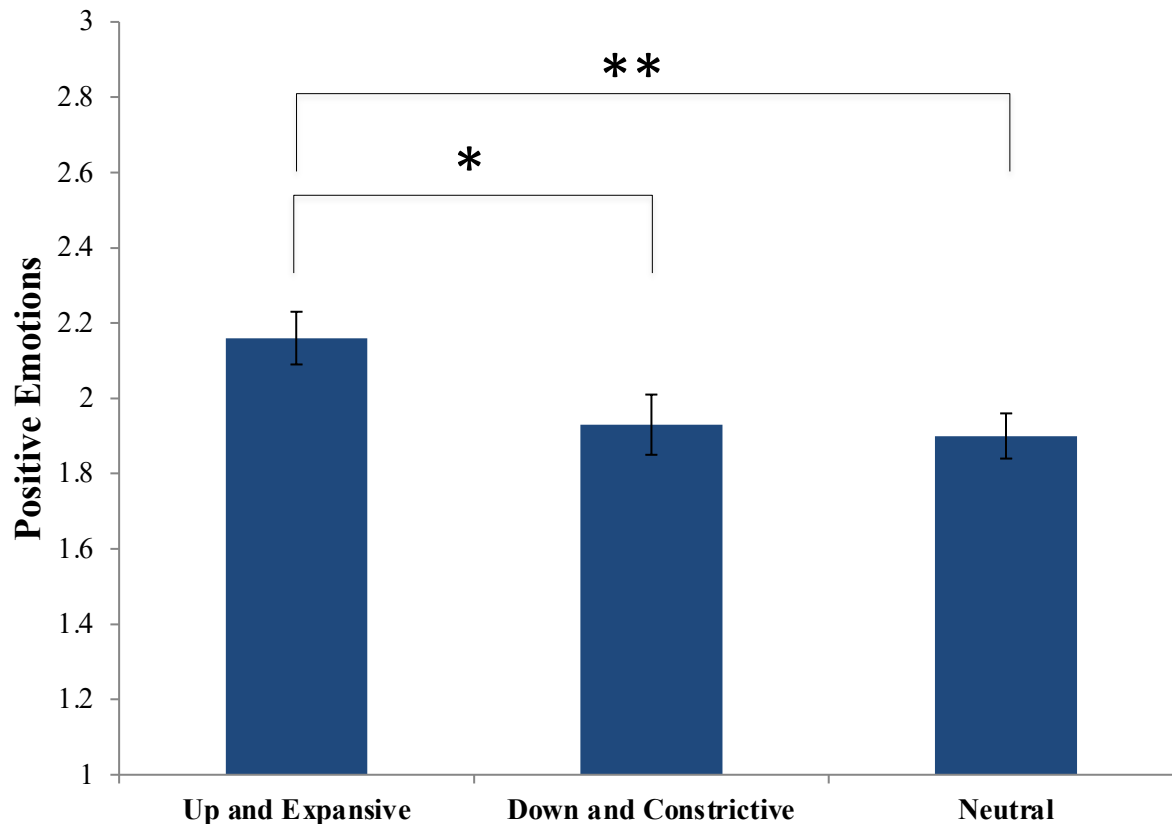
- ▶ Participants
 - Multiple study sites (UNC & Indiana)
 - Community based sample: N = 79, Age range (18-73) Females 67%
 - Religious affiliation: 58% Christian, 3% other religions, 39% nonreligious
- ▶ Procedure
 - Double blind (Participants saw images on the computer that depicted the posture)



Study 5: Does adopting a specific posture change people's emotions and physiology?

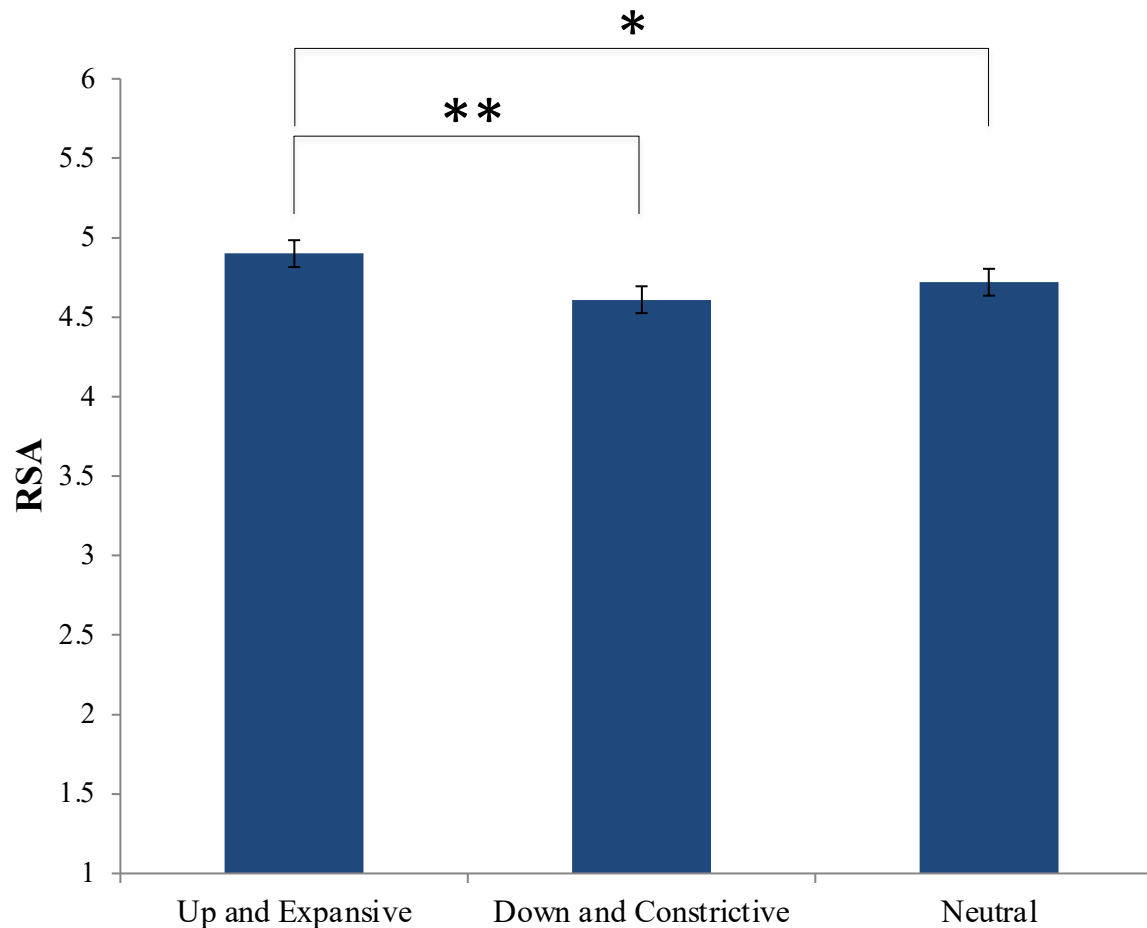
- Explicit Emotions
 - No significant differences
- Implicit Emotions

No difference for negative emotions



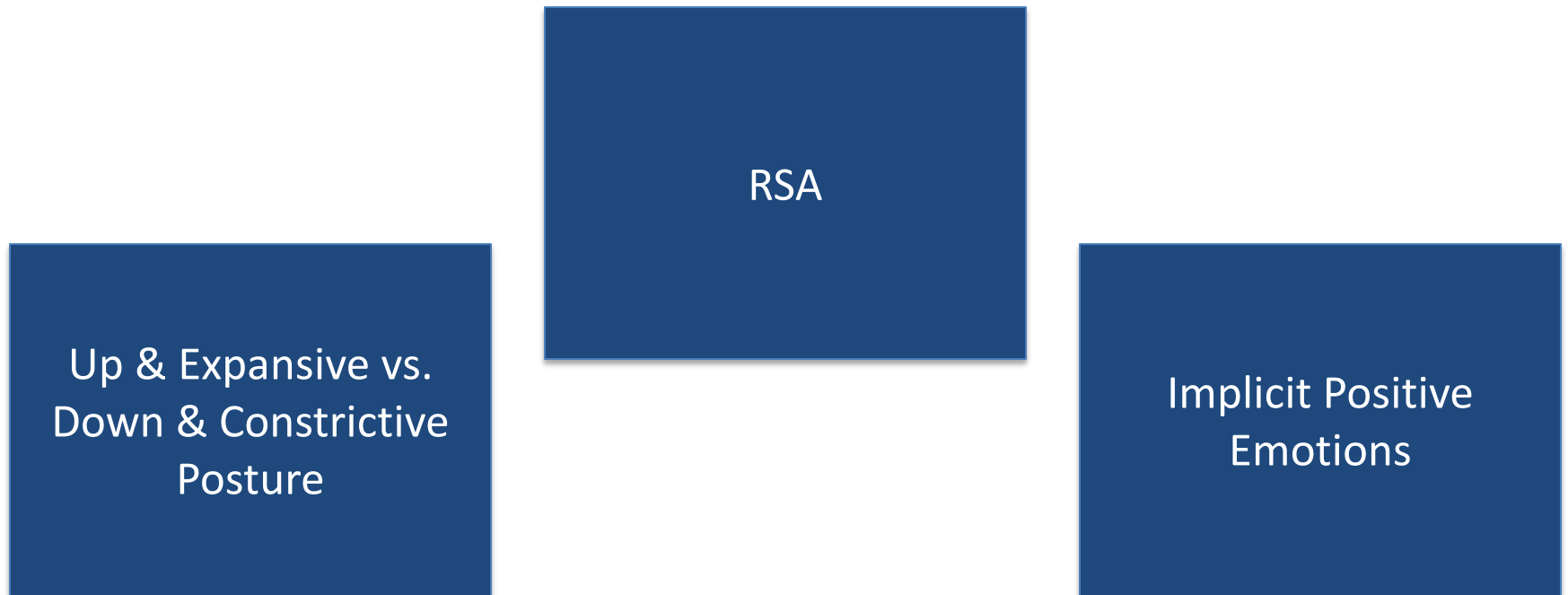
Study 5: Does adopting a specific posture change people's emotions and physiology?

- 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

In conclusion



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

In conclusion



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



Website: <https://sites.duke.edu/bablab/>

Contact: Patty.VanCappellen@duke.edu



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