



AFTER THE FALL

Social Complexity, Modes of Religiosity and the Devolution of Cooperation

Ian Skoggard¹

Christina Carolus²

Carol R. Ember¹

¹Human Relations Area Files and ²Yale University

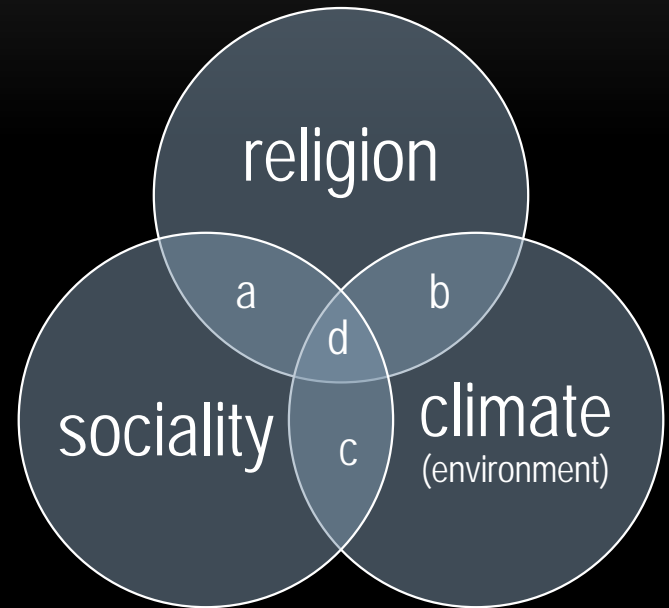


RESEARCH QUESTION

- Do societies that experience chronic scarcity, food-destroying, climate-related hazards, and other resource stressors tend to regard extreme weather events as signs of divine retribution?
 - To what extent do societies that experience such resource stress believe in benign gods that help food supply?
 - Are these divine actions and attributes related to cooperative behavior?
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BACKGROUND

- Examining the overlap of human sociality, (morality, cooperation and sharing), religion and climate.
- Early studies of relationship between resource stress, ritual ecstasy and intergroup alliances (Hayden 1987); and water scarcity and belief in high gods (Snarey 1996)
- Moralizing gods sanctioning cooperative behavior (Boehm 2012; Boyd & Richerson 2009; Johnson 2005); collective ritual enhancing trust and social networks (Power 2017); religion as metalanguage for reciprocity (Purzycki 2013);
- Presence of moralizing high gods associated with high ecological duress (Botero et al. 2014) and material insecurity moderates effect of prosocial religious beliefs (McNamara et al. 2016).





SAMPLE (& PROVISIO)

- Standard Cross-Cultural Sample (186 cases) of which 98 cases were coded for climate-related hazards and sharing in previous studies.
- Each case coded for a 25-year period (-15 years to +10 years around the ethnographic present.
- Questions asked about religion and sharing only pertain to cases in the ethnographic record for which we have information on natural hazards. Therefore, when we talk about supernatural punishment it is only in terms of climate and weather.

INDEPENDENT VARIABLES

- Chronic scarcity – scale: 1) food abundant year round, 2) some “hungry times,” 3) some members of the population usually do not have enough to eat, 4) most members usually do not have enough to eat.
- Famine – scale: 1) low threat, 2) moderate threat—no famine, but ethnographer reports ever present threat of famine, 3) moderately high threat (one famine in 25-year period), 4) high threat (2 or more famines in 25-year period.)
- Natural Hazards – same scale as famine but focusses on incidence of unpredictable severe weather or pest problems that destroy food resources.
- Climate Stability - factor score weighs 12 items; the highly weighted items include temperature predictability, precipitation predictability, annual mean temperature, and low annual mean temperature variance.
- Resource Abundance – factor score of same 12 items; the highly weighted items include plant and animal richness, high annual mean precipitation, and low annual mean temperature variance.
- Political Integration – scale: 1) none, 2) autonomous local community, 3) 1 level above the community, 4) 2 levels above the community, 5) 3 levels above the community.



DEPENDENT VARIABLES

- SUPERNATURAL REALM

- High God

- Sole creator and/or governor of universe/reality. May or may not be actively involved in world.

- Superior Gods

- Represent specialized activities and communal groups. Gods of agriculture, fertility, storms, the sea, etc.

- Minor Spirits

- Ancestral spirits and place spirits.

- Also looked at three religious practices: laymen weather magic, collective weather ritual, and weather magic by religious specialists.
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DEPENDENT VARIABLES – cont.

- **SOCIAL REALM**
- Labor sharing – A summary score of labor shared outside the typical household daily, almost daily, and more than seasonal.
- Food sharing – A summary score of food shared outside the typical household daily, seasonally, or as part of a religious ritual or healing ceremony.

GODS AND RESOURCE STRESS

	Chronic Scarcity	Famine	Natural Hazards	Climate Stability	Resource Abundance
High Gods Associated with Weather	.350*	0.045	.292†	0.171	-.462*
High God Can Hurt Food Supply through Weather	.357†	.456*	.308†	0.119	-0.299
High God Can Help Food Supply through Weather	.551**	0.157	.331*	0.271	-.413*
High God Acted in Anger	0.22	0.219	.277†	0.24	-.383*
† p < .10, *p < .05, **p < .01; ***p < .001 (two-tailed)					

	Chronic Scarcity	Famine	Natural Hazards	Climate Stability	Resource Abundance
Minor Spirits Associated with Weather	.336†	-0.136	0.262	-0.24	0.196
Minor Spirits Can Hurt Food Supply through Weather	.519*	0.173	0.289	-0.143	-0.121
Minor Spirits Can Help Food Supply through Weather	.697**	0.154	0.373	-.569*	0.027
Minor Spirits Acted in Anger	0.119	-0.067	0.315	-0.15	-0.287
† p < .10, *p < .05, **p < .01; ***p < .001 (two-tailed)					

SUPERIOR GODS, CLIMATE, AND SHARING

	Climate Stability	Labor Sharing	Food Sharing
Superior Gods Associated with Weather	-0.201	0.189	0.277
Superior Gods Can Hurt Food Supply through Weather	-.566**	0.277	.398*
Superior Gods Can Help Food Supply through Weather	-.699***	.401*	.462*
Superior Gods Acted in Anger	-0.159	0.198	0.152
†p < .10, *p < .05, **p < .01, ***p < .001 (one-tailed)			

RESOURCE STRESS AND HIGH GODS CONTROLLING FOR POLITICAL COMPLEXITY

	Chronic Scarcity	Famine	Natural Hazards	Climate Stability	Resource Abundance
High Gods Associated with Weather	.366*	0.038	.282†	0.202	-.455*
High God Can Hurt Food Supply through Weather	.347†	.459*	.308†	0.106	-0.310
High God Can Help Food Supply through Weather	.590**	0.122	.329*	0.321	-.447*
High God Acted in Anger	0.195	0.209	.279†	0.219	-.371†
Pearson r's, <u>no controls</u> ; † p < .10, *p < .05, **p < .01; ***p < .001 (two-tailed)					

	Chronic Scarcity	Famine	Natural Hazards	Climate Stability	Resource Abundance
High Gods Associated with Weather	.283	.042	.241	.146	.389†
High God Can Hurt Food Supply through Weather	.486*	.486*	.300*a	-.031	-.261
High God Can Help Food Supply through Weather	.578**	.186	.225	.256	-.426*
High God Acted in Anger	.103	.185	.263† ^a	.114	-.309
Pearson r's, <u>controlling on Political Integration</u> ; † p < .10, *p < .05, **p < .01; ***p < .001 (two-tailed); ^a one tail					



CONCLUSION

- Societies that experience food-destroying, climate-related hazards, or chronic scarcity do tend to regard these events or conditions as signs of divine intervention.
 - These societies see supernatural agents as either harming or helping food supply, or both.
 - Contrary to the literature on moralistic gods and human sociality, we did not find supportive evidence that high gods enhance food and labor sharing, only superior gods in societies experiencing unstable climatic conditions.
 - Severe climate and weather mediated by religion may be second-order “leveling” mechanism enhancing cooperation and human sociality.
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- References:

- Atkinson, O.D. and Whitehouse, H. (2010). The cultural morphospace of ritual form: Examining modes of religiosity cross-culturally. *Evolution and Human Behavior*.
- Boehm, C. (2012). *Moral origins: The evolution of virtue, altruism, and shame*. Basic Books.
- Boyd, R., & Richerson, P. J. (2009). Culture and the evolution of human cooperation. *Philosophical Transactions of the Royal Society of London B: Biological Sciences*,
- Botero, C. A., Gardner, B., Kirby, K. R. Bulbulia, J., Gavin, M.C. and Gray, R. D. (2014). The ecology of religious beliefs. *PNAS*
- Ember, C. R. and Ember, M. (1992). Resource unpredictability, mistrust, and war: A cross-cultural study. *Journal of Conflict Resolution*
- Johnson, D. (2005). God's punishment and public goods. *Human Nature*.
- McNamara, R. A. , Norenzayan, A., and Henrich, J. (2016). Supernatural punishment, in-group biases, and material insecurity: Experiments and ethnography from Yasawa, Fiji. *Religion, Brain and Behavior*.
- Murdock, G. P. and Provost, C. (1971). Measurement of cultural complexity. *Ethnology*
- Power, E. (2017). Social support networks and religiosity in rural South India. *Nature Human Behavior*
- Purzycki, B. G. (2013). The minds of gods: A comparative study of supernatural agency. *Cognition*