

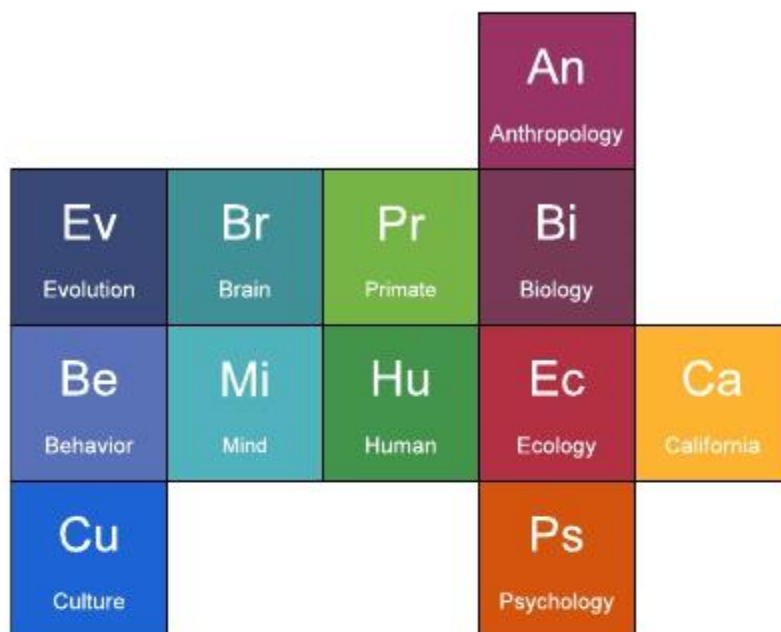
*9th Annual*

# *California Workshop*

*on*

## *Evolutionary Social Science*

*April 24<sup>th</sup>-26<sup>th</sup>, 2015*



- *Program at a Glance*
- *Organizational Team*
- *Conference Sponsors*

- *Registration*
- *Camping*
- *Abstracts*

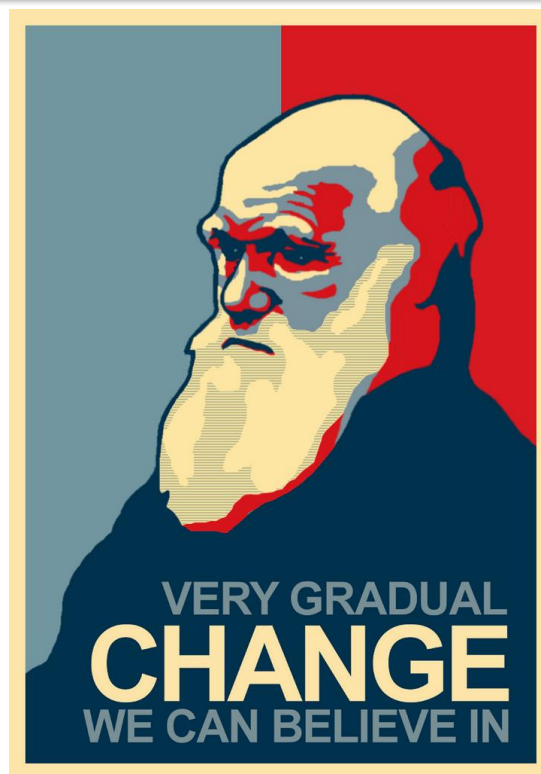


## Aims & Scope

Since the inaugural meeting in 2007, this conference has been guided by a single, unifying goal; to maximize familiarity and opportunity for interaction among the greater California community investigating human behavior from an evolutionary perspective.

This small meeting emphasizes discussion and collegiality, and celebrates our points of convergence and divergence. Collectively, California is home to the largest community of scholars working in this area, and is characterized by a diversity of approaches and areas of expertise.

The program this year includes faculty, postdocs, and graduate students from UCD, UCLA, UCSB, Cal Poly SLO, Stanford, CSU Fullerton, and Chapman. We welcome both the familiar and new faces to the 2015 meeting.



## PROGRAM AT A GLANCE

## Schedule of Events

Friday April 24<sup>th</sup>, 2015

(Ludwick Community Center)

## 6:00PM Opening Reception

## 6:30PM Welcome & Lightning Powerpoint Session

## 7:00PM DINNER

**8:00PM** Pete Richerson, UC Davis, “Retrospective Career Talk”

Saturday April 25<sup>th</sup>, 2015

(Ludwick Community Center)

## 7:30-8:30AM BREAKFAST

**8:30-9:45 EXPERT PANEL**  
**“Changes in the field”**

*Panel members:* Elizabeth Pillsworth, Clark Barrett, Greg Bryant. *Moderator:* TBD

**9:45-10:00 BREAK**

**10:00-10:45** Michelle Brown,  
UCSB, Anthropology &  
Christopher Schmitt, Berkeley,  
Comparative Zoology, "Male  
monopolies and female gangs:  
conflicts of interest during primate  
intergroup interactions"

**10:45-11:30** Margaret Crofoot,  
UC Davis, Anthropology,  
“Democracy or Despotism: How  
do baboons decide?”

## 11:30-12:30 LUNCH

**12:30-1:15** Timothy Shields & Eric Schniter, Chapman, Economics, “The Demonstrability of What You Have Not Done (But Could Have) Matters In Trust-based Exchange”

**1:15-2:00** Michael Price, Stanford, Anthropology, “Expected Utility Theory (EUT), risk preferences, and resource availability”

## 2:00-2:30 COFFEE BREAK

## 2:30-4:00 POSTER SESSION

## 4:00-7:00 AFTERNOON BREAK

## 7:30 DINNER

Sunday Morning April 26<sup>th</sup>, 2015

(Ludwick Community Center)

## 8:00-9:00AM BREAKFAST

**9:00-9:45** Sangin Kim, UCSB  
Anthropology, “Adjustment of  
Sanctioning Effort among Punishers in  
Public Goods Games”

**9:45-10:30** Eleanor Power, Stanford, Anthropology, “Religious Signals, Dramatic and Subtle”

**10:30-11:00 COFFEE BREAK**

## 12:00-12:30 WORKSHOP STEERING MEETING



## Organizational Team

## Local Host Extraordinaire!

## Stacey Rucas, Cal Poly

### Co-Lead Coordinators

## Justin Lynn, CSUF

## Curtis Atkisson, UCD

## Campus Reps

**Eric Schniter**, Chapman

# Cody Ross, UCD

**Michael Bartlev, UCSB**

## Chris Peterson, UCLA

## Jessica Ayers, CSUF

**Elly Power**, Stanford

## Conference Funding

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- Human Behavior and Evolution Society (join now! [www.hbes.com/join](http://www.hbes.com/join))
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- UCLA, Center for Behavior, Evolution and Culture
- UCSB, Dept. of Anthropology
- CSUF, College of Humanities and Social Sciences, Depts. of Anthropology and Psychology
- Stanford, Dept. of Anthropology
- Chapman, Economic Science Institute

# REGISTRATION AND INFORMATION

**By April 15<sup>th</sup>, 2015**

1) [Complete Registration Doodle Survey \(includes camping reservation\)](#)

2) Put yourself in the program!  
(Attendees, speakers, everyone!)

Email a photo\* of yourself, affiliation, & several key words describing your research interests to Justin or Curtis ([jtlynn@csu.fullerton.edu](mailto:jtlynn@csu.fullerton.edu); [cjatkisson@ucdavis.edu](mailto:cjatkisson@ucdavis.edu))

For example:



Jondalar Neanderman  
Shanidar University  
Paleoanthropology, archaeology, speciation

*\*Returning attendees:* if you submitted a photo and key words last year we will use these unless otherwise notified or updated.

3) ***Poster session participants:***

**Please be sure to submit a title and abstract (< 200 words) NO LATER THAN April 15<sup>th</sup> for inclusion in the final program.**

4) [Submit questions for the panel discussing changes and directions in the various sub-disciplines of evolutionary social sciences](#)

4) For students interested in mileage reimbursement, please register here: <http://doodle.com/iztm9m4riiw76gb5>

4) See our website for additional information: [www.c-wess.com](http://www.c-wess.com)

# ACCOMODATIONS & DIRECTIONS

## CAMPING:



This year we will be camping at El Chorro Regional Park ([http://www.slocountyparks.com/activities/el\\_chorro.htm](http://www.slocountyparks.com/activities/el_chorro.htm)). Camping is FREE, though extra vehicle charges apply.

The El Chorro Regional Park is about an 11 minute drive from the conference site. We have reserved campsites to accommodate 48 people Friday and Saturday night. Campers: we are limited to 12 cars, i.e., there should be four people in each car parked at the campground. For each car we go over the limit, we will collectively owe \$13 to the Park.

If you wish to camp (again, FREE!), please let us know on the workshop registration website: <http://doodle.com/ckqe6ifdtq6spu4x>. We will be spread across adjacent campsites: Bishop 8, 10, 11, 12, 13, 14 (see red circle, above left). Check-in time on Friday, April 24<sup>th</sup> at 3pm.

Directions: *Heading South on 101:* Once you enter San Luis Obispo city limits take the Santa Rosa Street exit and turn left on Santa Rosa. Santa Rosa Street will turn into Highway 1. Follow Santa Rosa Street / Highway 1 for approximately 4 1/2 miles. El Chorro Regional Park will be located on the right side of the road. It is across the highway from Cuesta College. *Heading North on Highway 101:* Take the Highway 1 / Morro Bay Exit and follow signs to the stoplight at Santa Rosa Street. Turn right onto Santa Rosa Street. Santa Rosa Street will turn into Highway 1. Follow Santa Rosa Street / Highway 1 for approximately 5 miles. El Chorro Regional Park will be located on the right side of the road. It is across the highway from Cuesta College.

## HOTEL ACCOMODATIONS:

Group rates (\$99.95 + 12% tax for 2 adults for one king or two queens, + \$5 for each additional person, includes breakfast) are available at the Lexington Inn (formerly Days Inn) in San Luis Obispo. The hotel is located 0.9 miles (an 18 minute walk) from the conference. Call (805) 549-9911 to make reservations!

Address: 2050 Garfield St., Garfield and Monterey St., San Luis Obispo, CA, 93401  
[www.lexingtonhotels.com/property.cfm?idp=22057](http://www.lexingtonhotels.com/property.cfm?idp=22057)



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CALIFORNIA STATE UNIVERSITY  
**FULLERTON**

Saturday, April 25<sup>th</sup>, 2015

**Male monopolies and female gangs: conflicts of interest during primate intergroup interactions**

*Michelle Brown, UCSB, Anthropology & Christopher Schmitt, Berkeley, Comparative Zoology, 10:00-10:45*

Between-group competition is an important component of non-human primate socioecological models and has the potential to exert strong effects on individual fitness. Existing hypotheses posit that, for the most part, females participate aggressively in these conflicts to maintain or gain access to food resources but make predictions that are frequently contradicted by a growing body of literature. We propose a novel female food defense hypothesis: specifically, that females participate in a majority of aggressive intergroup interactions (IGIs) when (a) they can overcome male attempts to prevent their participation, either through sheer numbers or body size, (b) access to food limits reproductive success, and (c) home ranges are defendable, indicated by the Mitani and Rodman (1979) Defendability Index (Di). We conducted a phylogenetically weighted meta-analysis of published reports on female participation during IGIs, spanning 84 populations from 50 species. The results strongly support our new hypothesis: when sexual dimorphism is pronounced (i.e., female body mass is <80% of male mass), frequent female participation occurs when females outnumber males by at least three-to-one. When sexual dimorphism is minimal, female participation occurs when home ranges are highly defendable ( $Di > 2$ ). Among the populations with high rates of female participation in aggressive IGIs, male participation declined as female participation increased; in the remaining populations, male participation was consistently high (>80% of aggressive IGIs) whereas female participation was low ( $\leq 25\%$  of IGIs). We further illustrate the effects of male monopolies and female gangs using data from aggressive IGIs in redtail monkeys (*Cercopithecus ascanius*) and grey-cheeked mangabeys (*Lophocebus albigena*) at the Ngogo site in Kibale National Park, Uganda.

**Democracy or Despotism: How do baboons decide?**

*Margaret Crofoot, UC Davis, Anthropology, 10:45-11:30*

Understanding how groups maintain cohesion, reach consensus decisions, and potentially overcome conflicts of interest is central to understanding the evolution of complex social systems. In contrast to other vertebrate systems which have been previously explored in the context of collective decision-making (primarily fish and birds), primate groups are characterized by relatively low apparent coordination between individuals, a relatively high heterogeneity of individual traits, and a complex social organization. As a result of these factors, and the inherent challenge of observing many individuals at once, the mechanisms underlying movement decisions within primate groups have remained unclear.

*Crofoot, continued*

Here we used simultaneous high-resolution GPS tracking of individuals in a troop of baboons to extract successful and failed movement initiations, revealing that decisions to follow involve different mechanisms depending on the level of conflict within the group. When conflict was low, typically when the group was in directed travel “on the move”, decisions were shaped by a consistent leader-follower hierarchy. In contrast, when conflict was high, typically when the troop was “making the move” from stationary to moving, it relied on quorum-based consensus decision-making. Individuals’ ability to influence group movements was unrelated to their rank in the dominance hierarchy. Our study presents a single framework that uncovers elements of both despotic (some individuals have disproportionate influence) and democratic (all individuals have equal influence) group decision-making in a wild primate. Our results emphasize the complex interplay of group-level state on individual-level behavior, and explain why previous studies of leadership in primates, and other species, have shown conflicting evidence for different models of leadership.

**The Demonstrability of What You Have Not Done (But Could Have) Matters In Trust-based Exchange**

*Timothy Shields & Eric Schniter, Chapman, Economics, 12:30-1:15*

We describe results of a study in trust-based exchange that supports the proposition that humans perceive intention not only through what others do but also through what others choose not to do. Crucial to this proposition is the notion that trust-based exchanges entail decision dilemmas where mutually exclusive goals are traded off and the forgone opportunities produce clues about our intent – affecting others’ reactions. Classical economic theory has considered how choices define trustors and inform trustees’ responses to trustors’ choices. We also consider how that which trustors have not chosen further affects trustees’ responses. To manipulate the availability of foregone opportunities, we used two versions of the trust game in a 1x2 between subjects design. In two experimental trust games, the action space governing trustors’ transfers was manipulated to examine the effects on trustors’ transfers and trustees’ returns. In the “all-or-nothing” game the trustor could transfer either \$10 (all) or \$0 (nothing), while in the “continuous” game the trustor could transfer any amount between \$10 and \$0. In both games, the trustee received the tripled transfer and then could return any amount (to trustor). Trustors transferred significantly more in the all-or-nothing game than in the continuous game. However, higher initial transfers in the all-or-nothing game did not lead to larger returns. To the contrary, conditional on \$10 transfers, on average trustees returned significantly less in the all-or-nothing game than in the continuous game.

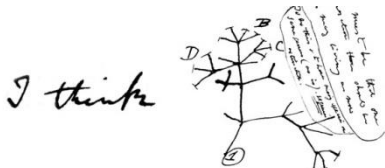
*Shields & Schniter, continued*

Although the all-or-nothing action space results in greater wealth overall, it also appears to “backfire” for trustors who do not benefit from this increased wealth. These results are important because they suggest that the availability of alternative options is paramount in shaping social behaviors.

### **Expected Utility Theory (EUT), risk preferences, and resource availability**

*Michael Price, Stanford, Anthropology, 1:15-2:00*

The standard model of economic decision-making, which is based on Expected Utility Theory (EUT), assumes that decision-makers maximize cumulative expected utility in which future rewards are exponentially discounted. However, a weight of evidence has accumulated suggesting that actual behavior deviates from the normative predictions of EUT in systematic ways. We show that an evolutionary perspective on preferences can explain several of the more important deviations, including the Allais paradox, Rabin's critique, and the overweighting of negative outcomes that is a crucial component of rank-dependent utility theory and cumulative prospect theory. Our key proposition is that for biological entities, humans included, the ultimate objective function that is optimized is evolutionary fitness. However, fitness is an outcome that is not available to the individual decision-maker for feedback because its effects extend beyond the lifetime of the individual. As a result, individuals use proximate objectives, known as “utilities” or “fitness determinants” in the economics and evolutionary biology literatures, respectively. Because the salient proximate currencies which organisms maximize differ from the ultimate evolutionary currency, systematic mismatches can occur between the directive to maximize proximate outcomes and maximize fitness, which selection “fixes” by instilling systematic biases in proximate preferences and in how organisms utilize proximate utilities. We formalize this verbal model and present both a general framework for deriving biases from the potential mismatch between proximate preferences and evolutionary fitness and an implementation of the framework which includes risk preferences to understanding reproductive investment decisions that affect infant survival. Our model predicts much higher risk-aversion than expected under EUT for people at the lowest levels of resource availability. We suggest that these results help make sense of the stubborn risk-aversion of the poorest poor and other economically marginal groups that vexes many development programs.



Sunday, April 26<sup>th</sup>, 2015

### **Adjustment of Sanctioning Effort among Punishers in Public Goods**

*Sangin Kim, UCSB, Anthropology, 9:00-9:45*

The existence of altruistic punishment, the sanctioning of uncooperative group members at one's own cost, is a puzzle because punishment is considered a public good, which should not be provided by a self-interested, rational actor. This puzzle revolves around second-order free riding, a situation where non-punishers benefit from punishers' sanctioning effort and an increased level of group cooperation. Thus, the question, “Why do people altruistically punish?” is actually asking, “Why are people seemingly indifferent towards this second-order disadvantage and not second-order free ride themselves?” This question presumes an empirical claim that I call the “second-order indifference” hypothesis. I will report the results of a direct test of this hypothesis with a series of public goods games. In these games, potential punishers were given options to adjust their sanctioning effort with respect to their own place in the sanctioning expenditure ranks. I will discuss the patterns of adjustment choices by punishers, especially those with a greater commitment to sanctioning, and how these patterns shed a new light on the evolution and adaptation of human punishment.

### **Religious Signals, Dramatic and Subtle**

*Eleanor Power, Stanford, Anthropology, 9:45-10:30*

How can we explain the investments of time, money, and energy that people make in the name of the divine? The costly signaling theory of religion contends that costly religious acts can be a way to demonstrate the strength of one's commitment and convictions. In this talk, I evaluate some of the predictions of the costly signaling theory of religion with data from two villages in rural South India. There, religious devotees pierce their skin with spears, walk across hot coals, and become possessed by the deity. I use reputational and social support network data to see how the nature of people's religious participation influences their reputational standing and their social capital. I find that people who undertake greater and costlier ritual acts do gain in reputational standing: they are seen not only as devout, but also as holding a suite of other-focused prosocial traits. And, they hold better positions in the village social support network. Importantly, these relationships hold as well for those who simply worship regularly at a church or temple. Noting this, I conclude by discussing the importance not only of dramatic, conspicuous acts of devotion, but also of subtler, more frequent demonstrations of faith to securing and maintaining one's reputation and social capital.

## Berkeley

### Maternal effects influence the heritability of adult obesity traits but not obesogenic growth trajectories in a model system

C. Schmitt, S. Service, R. Cantor, A. Jasinska, M. Jorgensen, J. Kaplan, & N. Freimer

There are known maternal effects on obesity outcomes in humans and nonhuman primates, but few have investigated these effects on obesogenic growth throughout the lifespan. To investigate the impact of maternal effects on the genetic underpinnings of obesogenic growth we used growth curve analysis on measures taken thrice yearly from 2000 to 2013 on body size and composition in a captive population of 641 vervet monkeys (*Chlorocebus* spp). Of these, 38 were defined as chronically obese, having had an adult waist circumference above 40.5 cm for three successive measurements. Growth was modeled using three-parameter logistic growth curves in nonlinear mixed models, with parameters modeled as fixed and subject and sex/obesity status modeled as random effects. We assessed heritability of individual growth parameters using SOLAR, with the variance attributed to maternal ID (c2) partitioned from environmental variance to determine maternal effects. We found significant heritability and maternal effects on all static measures of adult body condition (e.g., BW,  $h^2=0.86$ ,  $p=6.52 \times 10^{-10}$  and  $c^2=0.11$ ,  $p=0.04$ ; BMI,  $h^2=0.77$ ,  $p=1.39 \times 10^{-9}$  and  $c^2=0.12$ ,  $p=0.05$ ), and high heritability but no significant maternal effects on parameters of growth (e.g., BW, asymptote of growth,  $h^2=0.77$ ,  $p=4.93 \times 10^{-21}$  and  $c^2=0.05$ ,  $p=0.11$ ). This study suggests that although adult obesity is a developmental process driven in part by heritable obesogenic trajectories resulting in larger adult size, those trajectories do not appear to be influenced by maternal effects. A better understanding of how growth can be decoupled from maternal effects on adult obesity will be necessary to assess early obesity risks.

## Chapman

### Does speech content affect cooperative exchange?

Hillard Kaplan, Robert Roussel, Eric Schniter, Vernon Smith, & Bart Wilson

We investigate the effects of speech content to inform our principle research question: "How does cooperative exchange of asynchronously acquired goods develop?" We have begun preliminary study of the role of various types of speech content produced by participants interacting in a virtual terrarium (modeled after Kaplan, Schniter, Smith, & Wilson 2012). Participants earn money by individually foraging for and then consuming acquired resources in a central place where they can share and fight over food.

Kaplan, Roussel, Schniter, Smith, & Wilson (continued)

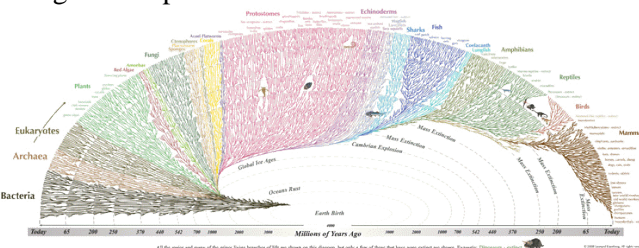
Our experiment manipulates group size (2, 4, and 6 person) and resource acquisition risk (high and low variance). We code chat messages based on content (envy, reciprocity, theft, coalition, pleasantry, encompassing terms, positive and negative valence) and investigate the relationship between these kinds of speech content and exchange. We consider how speech content may be associated with three explanations of exchange – not all of which are "cooperative": to buffer risk (e.g. of starvation), to avoid costs of being targeted by others envy or contest for possession (e.g. demand sharing, tolerated theft), and to win spoils from "war of attrition" contests for possession. Preliminary results are provided and future research is discussed.

## CSU Fullerton

### Is women's intrasexual competitiveness heightened at high fertility?

Jessica Ayers, Aaron Goetz, & Elizabeth Pillsworth

In an investigation of how sexual cues influence female intrasexual competition, we manipulated the amount of cleavage shown in an image across two conditions. We collected data on women's ovulatory cycles to investigate the influence of cycle phase on perceptions of the image. We used both reverse and forward cycle methods, but these methodologies did not provide convergent cycle days for all participants. We started with cycle data from 732 women, but after screening for irregular cycles (more than 40 days) and discrepancies between calculated cycle day (more than 3 days), we were left with usable data from 304 women. Results from seven multiple regressions indicated that the effect of ovulatory cycle was only significant when participants were asked to rate the pictured woman's intelligence, such that women with a higher probability of conception rated the pictured woman as more intelligent. Perceptions of the pictured woman's friendliness, likelihood of having one night stands, not "playing by the rules", cheating on her boyfriend, cheating with someone else's boyfriend, and being included in a study group were not influenced by probability of conception. There was no interaction between probability of conception and amount of cleavage shown for any variable. These results suggest one of two possibilities: 1) there may be no effect of cycle phase on female intrasexual competition, or 2) there may be ovulatory effects in female intrasexual competition but the methods we used are not precise enough to detect them. Without hormonal confirmation, our study cannot disentangle these possibilities.





### **Assortative Mating and Sex-Biased Parental Investment**

*Amanda Barnes-Kennedy & Elizabeth Pillsworth*

The Trivers-Willard hypothesis (Trivers & Willard, 1972) predicts that parents will invest differently in male and female children based on differential reproductive potential of men and women given parental condition. Tests of the Trivers-Willard hypothesis in modern populations have yielded conflicting results, likely in part due to a reliance on government census data which provides only gross measures of parental condition. Another shortcoming in the literature is a tendency to treat the entire population as a single reproductive population, thus comparing parental condition across individuals who are unlikely to include potential reproductive partners or competitors. The hypothesis rests on the idea that parents of poorer or greater condition within a reproductive population will preferentially specialize in either daughters or sons, thus producing a complete reproductive population. When looking at large-scale census data from countries such as the U.S. and comparing, for example, highly educated parents to poorly educated parents, it is likely that researchers are looking at more than one mating population, thus obscuring any sex-biased investment effects that might occur within mating populations. The current study seeks to address this shortcoming by utilizing existing data on marriage patterns to define reproductive subpopulations and constructing a comprehensive index of parental condition and offspring outcomes to test for sex-biases within reproductive populations.

### **Does sickness, injury, or fatigue recalibrate perceptions of formidability?**

*Patrick Durkee, Gorge Romero, & Aaron Goetz*

Little is known about how handicaps and incapacitation affect assessments of formidability in humans. Fessler & Holbrook (2013) demonstrated that men's perceptions of another's formidability increased when their own ability to inflict costs was impaired, which was surprising given the evolutionarily novel nature of the incapacitation in these studies (i.e., being tied to a chair and standing on a balance board). In the present study, we explored the extent to which naturally-occurring impairments to fighting ability (i.e., sickness, injury, and fatigue) influenced perceptions of formidability (e.g., size, strength, toughness, fighting ability). In a large and culturally diverse sample ( $N = 604$ ), men reported their current health, injury status, and fatigue, as well as their perceptions of a target male's formidability and perceptions of their own formidability. Despite our large sample, use of established measures, and use of evolutionarily recurrent impairments, there were no effects of sickness, injury, or fatigue on perceptions of formidability, and including various controls and moderators did not help to uncover any effect or relationship. These results begin to suggest that various naturally-occurring forms of incapacitation might not recalibrate perceptions of formidability. More research is needed on how specific types of incapacitation modify perceptions of formidability.

### **Armed and dangerous: effects of weapons on self-estimated formidability**

*Michael Lopez & Aaron Goetz*

Recent research has suggested that when a man holds a gun or knife this leads him to be perceived by others as taller, larger, and more muscular (e.g., Fessler, Holbrook, & Synder, 2012). What has yet to be examined is whether holding a weapon influences self-perceptions. That is, does holding a weapon (vs. some other object) cause you to think of yourself as taller, larger, and stronger? This proposed research (whether an effect is found or not) could have significant practical applications surrounding law enforcement and firearm safety. Participants will be brought into Dr. Goetz's psychology lab at CSUF and shown a table with several items on it. Among them will also be a baseball bat, a pellet gun with a deactivated firing mechanism, an empty beer can, and a pair of nonfunctional handcuffs. In order to see if participants' perception of size is affected by the object they're holding, they will be asked to make estimates of height, size, muscularity (Frederick and Peplau, 2007) forearm circumference, handgrip strength (Aankwe, Huntley, & Mceachan, 2007) and fighting ability. After these estimates, actual size measurements will be taken. We anticipate that participants holding the weapon stimuli will be more likely to rate themselves as more formidable than those holding a distractor/control item.

### **What it means to be a man: male morphology and intrasexual competition**

*Giovanni Maggini*

Previous research has shown that females prefer men who display more masculine traits, such as: social dominance, muscular body composition, lower voice pitch, and wider faces (Gangestad, Simpson, and Cousins 2004; Little Jones, and Burriss 2007; Puts 2005; Penton-Voak and Perret 1999; Little, Jones, and DeBruine 2008). This seems to be especially true during ovulation, in the short-term context, and in already mated women. These results have largely been interpreted as evidence of female preference for males with high testosterone and thus better immunity; the 'good genes' hypothesis of immunocompetence (Folstad and Karter 1992). Recently this hypothesis has been challenged both in animals and humans (Roberts, Buchaman, and Evans 2004; Scott et al 2012); and when investigated cross-culturally preferences for masculinity are negatively correlated with disease prevalence – contrary to immunocompetence predictions (Scott et al 2014).



*Magginetti (continued)*

An alternative view is that sexually dimorphic morphology – from 2D:4D digit ratio; upper body strength (especially in the head and neck); masculine facial features; even beards – are related to intrasexual competition – namely (mostly) non-lethal fist-to-face status competitions – that this style of combat goes back to our earliest ancestor (4mya) – and that these features have been reduced due to group living (Morgan and Carrier 2013; Carrier and Morgan 2015; Cierri et al 2014). This poster presents evidence for this view of masculinity, as well as briefly describes current research being conducted at CSUF correlating trait rankings from conspecifics of a population of male Amazonians with both objective measures of fWHR and participant ratings.

**Cooperation: coalitional aggression and competition**

*James Zerbe*

This poster will present proposed research concerning the evolution of cooperation in the realm of coalitional aggression and competition. A conundrum confronting an evolutionary approach to the study of human behavior is how to adaptively account for human cooperation. Cooperative tendencies are thought to be difficult to explain given the vulnerability of cooperators in social-interactions with defectors. One particular instance of cooperation common to human groups is in the collective-action involved in coalitional aggression and warfare, wherein individuals risk injury and death to acquire a potential suite of shared benefits. Given the cost-benefit structure of individual costs, collective benefits, and the incentive to free-ride on cooperation, how are individuals motivated to participate in coalitional aggression? This research investigates variation in individual access to resources as a mechanism for solving the collective-action problem of coalitional competition, in a tribal population of Amazonian forager-horticulturalists. Methods include conducting public goods games, with experimental treatments eliciting coalitional and competitive motivations into game structure. Data analysis will utilize social network and social ranking measures, along with PGG data, to investigate the individual level characteristics that influence cooperative participation in coalitional competition. Data collection will occur in Ecuador from June to July 2015.

## Cal Poly

**Effects of Sleep on Hookup Culture Acceptance in the Life History Perspective**

*Kelsey Molidor*

This work examines the relationship between sleep, health, quality of life, and hookup culture acceptance among Cal Poly SLO students using a framework and predictions driven by life-history theory.

*Molidor (continued)*

Cal Poly Students (n=450, aged 18-25) completed an online survey consisting of social health, physical health, and quality of life measures. They also answered questions from the Sociosexual Openness Inventory (SOI) and questions regarding personal acceptance of hookup culture. Average hours slept at night, chronotype (larks vs. night-owls), insomnia measures, and number of sex partners in the last year were also collected. Results show that when controlling for gender, relationship status, and chronotype, people who sleep less on average are more accepting of hookup culture. Additionally, results suggest that chronotype influences the number of sex partners in the past year as well as hookup culture acceptance. This data supports that sleep may play a role in mediating the psychological and physical acceptance of a promiscuous life style. This is predicted by life history theory in that sleep quantity affects risk-taking behavior, in this case, adherence to a hooking up standard during college years. This data contributes to and highlights the need for additional work with the fields of anthropology.

## UC Davis

**Snack Snatchers: an evolutionary model linking resource distribution to competitive regime**

*Katrina Brock, Grace Davis, Tamar Boussina, & Margaret Crofoot*

Verbal models of the relationship between resource distribution and intensity of feeding competition are common in the primate literature. Many attempts have been made to empirically test these socioecological models. However, the lack of quantitative predictions has hindered the cross-species comparisons that would demonstrate how environmental variables drive competitive dynamics in primates. We propose an analytical model that describes resource distribution as a function of forager behavior to facilitate such cross-species comparisons. Our model uses a game theoretic framework to generate predictions about the relationship between resource variables and the emergence of contest competition, scramble competition, or a stable mixture of the two in a population of interacting foragers. It predicts that the frequency of aggressive contests will increase as individuals' encounter rates with resources go down, and as the ratio of feeding patches to foragers increases. It also predicts increased contest competition as the value of feeding sites goes up relative to the cost of fighting. Our model reveals the complexity of the relationship between resource distribution and competitive regimes in group-living species. It also demonstrates that tractable evolutionary models can shed light on primate foraging behavior.

## UC Los Angeles

### **Stranger danger: Parenthood increases the envisioned bodily formidability of menacing men.**

*Dan Fessler, Colin Holbrook, Jeremy Pollack, & Jen Hahn-Holbrook*

Due to altriciality and the importance of embodied capital, children's fitness is contingent on parental investment. Injury suffered by a parent therefore degrades the parent's fitness both by constraining reproduction and by diminishing the fitness of existing offspring. Due to the latter added cost, compared to non-parents, parents should be more cautious in hazardous situations, including potentially agonistic interactions. Prior research indicates that relative formidability is conceptualized in terms of size and strength. As erroneous under-estimation of a foe's formidability heightens the risk of injury, parents should therefore conceptualize a potential antagonist as larger, stronger, and of more sinister intent than should non-parents; secondarily, the presence of one's vulnerable children should exacerbate this pattern. We tested these predictions in the U.S. using reactions to an evocative vignette, administered via the Internet (Study 1), and in-person assessments of the facial photograph of a purported criminal, collected on the streets of Southern California (Study 2). As predicted, parents envisioned a potential antagonist to be more formidable than did non-parents. Significant differences between parents with children and non-parents without children in the threat that the foe was thought to pose (Study 1) were fully mediated by increases in estimated physical formidability.

## UC Santa Barbara

### **How does modernization impacts health-seeking behaviors in a high mortality population? Testing the role of locus of control on treatment seeking.**

*Sarah Alami, Jonathan Stieglitz, & Michael Gurven*

The adoption of health-seeking behaviors among remote indigenous populations is of critical significance given their high morbidity and mortality. To better understand how beliefs affect treatment-seeking in a population undergoing socioeconomic change, we assess the Multidimensional Health Locus of Control (MHLC) among Tsimane Amazonians. We hypothesize that Tsimane should display a greater "externalized" Health Locus of Control (HLC) than residents of low mortality countries. We assess the effects of increasing acculturation on health beliefs and treatment-seeking, and test whether a greater "internalized" HLC mediates this relationship. 908 Tsimane completed the Multidimensional Health Locus of Control questionnaire (Wallston et al., 1978). Their scores were compared to published samples from post-industrial societies. Regression models were used to determine the relationship between measures of acculturation, HLC and treatment-seeking.

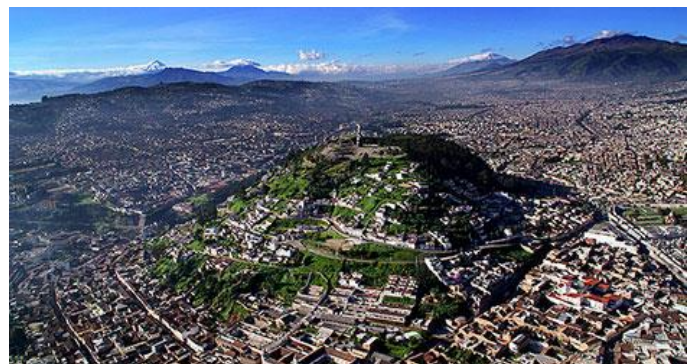
*Alami, Stieglitz, & Gurven (continued)*

A mediation analysis assessed whether the HLC mediates the relationship between acculturation and treatment-seeking. Tsimane scored higher on external HLC dimensions. Higher levels of acculturation indicators among men were associated with a more internal HLC, but the opposite was found for women. A lower Chance HLC predicted the likelihood of seeking treatment. The Powerful Others HLC was found to mediate the relationship between acculturation and the likelihood of seeking modern treatment. Our findings are consistent with the life history theory prediction that an unpredictable environment is associated with discounting of deliberate health care planning and treatment seeking during periods of illness. They underline the importance of shifts in beliefs about the causal connections between self-initiated actions and outcomes, for improving uptake of novel health initiatives.

### **Inferring causal relationships and patterns in ambiguous information predicts reports of anomalous experiences**

*Michael Barlev & Michael Kinsella*

Taves (2009) argued that "religious experience" is not a natural kind category, but rather that experiences can be deemed religious. The sorts of experiences that can be deemed religious include anomalous experiences as well as ordinary experiences, and the same experience can be deemed religious by some and pathological by others (e.g. the experience of hearing voices). The present study investigates a related phenomenon: the circumstances under which people deem ambiguous experiences anomalous. Although experiences that violate an intuitive inference about reality are intuitively categorized as anomalous and, thus, constitute a "natural kind," the majority of experiences that people characterize as anomalous are in fact ambiguous experiences that they deem anomalous (and may further deem as religious, spiritual, paranormal, etc.). The current study examines whether individuals who are more able and/or willing to identify causal relationships and patterns in ambiguous events will report more anomalous experiences. In two samples (individuals affiliated with a New Age Spiritual group and a matched community sample) likelihood that subjects would identify causal relationships in ambiguous vignettes and identify patterns in images of black-and-white noise predicted reports of anomalous experiences, regardless of whether those experiences were interpreted as religious or spiritual.





**A different kind of cooperative breeding: Roundworm increases human fecundity and leads to earlier reproduction, while hookworm entails costs to reproduction**

Aaron Blackwell, Marilyne Tamayo, Bret Beheimb, Benjamin Trumble, Jonathan Stieglitz, Melanie Martin, Paul Hooper, Hillard Kaplan, & Michael Gurven

Few studies have investigated how parasitism affects human reproduction, despite several pathways through which parasitism might influence fecundity. These include decreased reproduction due to costs of parasitism, altered fertility schedules due to changes in host life history, and effects from manipulation of host physiology. For example, helminths bias host immune function in a way that resembles the changes that allow a mother to tolerate a genetically distinct fetus during pregnancy. We hypothesized that infection with helminths might affect human fecundity through immune biasing and alterations in life history allocations. We investigate with seven years of longitudinal data from the Tsimane, Bolivian forager-horticulturalists, experiencing both natural fertility and a 70% helminth prevalence. We observed 192 nulliparous women, 53 of whom became pregnant during the study period, and 506 intervals following births for 427 multiparous women. Controlling for physical condition, season, and acculturation, roundworm (*Ascaris lumbricoides*) was associated with earlier first pregnancy ( $HR=2.04$ ,  $p=0.02$ ) and shortened IBIs at younger ages ( $HR=2.58$ ,  $p<0.001$ ). In contrast, hookworm was associated with both delayed first pregnancy ( $HR=0.36$ ;  $p=0.002$ ) and extended interbirth intervals ( $HR=0.76$ ,  $p=0.037$ ). Our results suggest that these species have different effects on life histories, through a combination of both mechanistic and life historical interactions.

**Socio-environmental stress, cortisol and metabolic syndrome on the island of Utila, Honduras**

Angela Garcia & Aaron Blackwell

When inequality is high individuals at the bottom tend toward faster life histories compared to individuals at the top, e.g. earlier reproduction, lower investment in immune function, and shorter lifespans. Unstable and/or resource scarce environments encourage different life history tradeoffs (different investments in growth, reproduction and maintenance) than stable and/or resource rich environments. Individual differences in perceptions of environmental stability and resource scarcity may help drive the process of negotiating life history tradeoffs at the behavioral and physiological levels. Perceived scarcity (feeling you have less resources than you need) and low social status are associated with psychosocial stress. Psychosocial stress may alter HPA activity, which is associated with deleterious metabolic outcomes and conditions of poor health.

*Garcia & Blackwell (continued)*

Because of the expansion of the global market economy and growing inequality, an important question is: How do rapid increases in social and economic inequity affect stress and health? And, although studies find associations between inequality, stress, metabolic risk and poor health: What are the associated psychological, behavioral and physiological pathways?

On the island of Utila, the rapidly growing tourist economy has created a socioeconomic gorge separating tourists and business owners from traditional Utilian natives and Hondurans, who already face high risk of metabolic disease. Here we evaluate the relationship between biological and social predictors of cortisol and metabolic risk factors among Utilian natives and Honduran immigrants; and begin to address the pathways through which perceived inequality affects life history tradeoffs.

**Is early complementary feeding a strategy to reduce the metabolic cost of lactation?**

Melanie Martin, Ben Trumble, & Michael Gurven

Exclusive breastfeeding for six months of age is optimal for infant health, but complementary feeding before this age is observed globally—including in resource poor settings in which breast milk alternatives are not widely available and the risks of infant nutritional and infectious morbidity are high. From an evolutionary perspective, six months of exclusive breastfeeding is indicative of high investment in current infants, but maternal reproductive investment may be simultaneously constrained by the energetic demands of existing and/or future dependents. Early complementary feeding may therefore be a strategy to shift maternal reproductive investment by reducing the metabolic costs of lactation.

We test for an association between early complementary feeding and reduced metabolic costs among Tsimane mothers. The Tsimane are an indigenous forager-horticulturalist population residing in the Bolivian Amazon. Tsimane mothers have high fertility and typically breastfeed for two to three years, but begin complementary feeding at four months of age on average. Using anthropometric, behavioral, and biomarker data collected from 43 Tsimane mother-infant pairs over ten months, we tested if complementary feeding introduced at 0-3 months of age relative to 4-6 months of age was associated with subsequently greater maintenance of postpartum energy balance or increased urinary c-peptide concentrations. Early complementary feeding was associated with relatively lower postpartum weight gain and no change in urinary c-peptide concentrations. In this population, early complementary feeding may compensate for poor lactational performance or poor infant growth, and appears to supplement, but not supplant infant breast milk intake.



**Despite lifelong practice reflective religious beliefs do not replace conflicting intuitive inferences**

*Spencer Mermelstein, Michael Barlev, & Tamsin German*

Boyer (2001) suggested that certain novel concepts, such as some religious and scientific concepts, co-opt evolved ontological categories (see Tooby, Cosmides, & Barrett, 2005; Delton & Sell, 2014; Boyer, 2015) and violate one or more of the intuitive inferences of the co-opted categories. For example, representations of supernatural agents in modern monotheistic religions, which include transcendent gods, angels and demons, co-opt the ontological category “person” and violate certain characteristics typical to persons – that is, automatic inferences that follow from an entity being categorized as a person – such as about psychology and physicality. Barlev, Mermelstein, & German (2015) used a sentence verification paradigm to show that violations of automatic inferences (“reflective beliefs”) co-exist alongside those inferences rather than replace them. The current experiment extended these findings by replicating the effects across a lifespan sample of adult religious adherents (ages 18-87), showing that despite lifelong practice reflective religious beliefs do not replace conflicting intuitive inferences.

**Love thy neighboring group, when things can get rough: Early life resource shortfalls and current resource availability predict affiliation with out-groups among Bolivian horticulturalists**

*Anne Pisor*

While the archaeological and ethnographic literatures document extensive social interactions between small-scale groups and outsiders, little theoretical attention has been given to how actors decide to affiliate with other groups. Do actors use affiliation with out-groups to buffer resource shortfalls, as they do in the choice of social partners? From a life history perspective, will actors who experience early life shortfalls seek out-group connections as a resource buffering strategy, or alternatively, avoid these sometimes costly relationships to conserve available resources? The present study examines how early life and recent resource shortfalls, as well as the availability of local social support, affect trust towards and investment in out-groups among three populations of lowland Bolivian horticulturalists. Interview, economic game, and anthropometric data were collected from 202 participants from June 2014-March 2015. Results suggest that individuals who experienced early life resource shortfalls but have adequate resource availability at present are more likely to trust in and engage in initial cooperation with out-group ethnic, religious, and work organizations. Social support shows no effect. The possibility that investment in out-group alliances is a response to cues of recurrent local shortfalls will be discussed.

# Stanford

**Food sharing and social structure in a mixed market-subsistence economy**

*Elsbeth Ready*

Extensive food sharing is common among arctic and subarctic groups, and reciprocal altruism as a risk-reduction strategy is an intuitively appealing functional explanation for this phenomenon, one that has frequently been espoused by subarctic and arctic ethnographers. However, although food sharing remains an important part of life in northern aboriginal communities today, there is a lack of empirical data on sharing-based distributions of country (hunted, fished, and gathered) foods in the contemporary mixed market-subsistence economy of northern Canada. This is particularly important because social scientists studying the human dimensions of climate change in the Canadian Arctic claim that traditional food sharing networks will assist Inuit and northern First Nations people to cope with environmental and economic stresses associated with climate change. In this presentation, I examine the economic function of contemporary country food sharing in an Inuit village in Nunavik (Arctic Quebec), Canada. My social network data stems from household questionnaires collected over a 12-month period of fieldwork in the community. Using exponential random graph modeling, I test several classic sharing models against these data. The patterns that emerge suggest that country food sharing among settled Inuit is about far more than risk-reduction. In fact, traditional food sharing is integral to the maintenance of political and economic inequalities that structure Inuit society today.

