

## The Psychology of Kinship – Research Proposal

Throughout history, most societies have been organized by complex kinship systems. Kinship systems are sets of culturally-transmitted norms that specify the nature of relationships among people in different genealogical positions. Among many functions, kinship systems (1) extend primary kin relations (e.g., mother, father & sibling) to more distant relatives, (2) integrate affines with blood relatives, and (3) define certain cousins (but not others) as marriageable. Despite the centrality of these systems across diverse societies, little is known about their psychological impact. Even within modern societies, little research illuminates the psychology surrounding cousins, uncles and grandparents.

Evolutionary psychologists have argued that humans—like other species—possess evolved mechanisms that assess one’s genetic relatedness to others and supply motivations that affect our prosociality and sexual interest. Evidence for these hypotheses derives from examining the treatment of, or feelings toward, stepchildren, genetic siblings, half-siblings, cousins and adoptees. With some challenges, the evidence indicates that perceived relatedness matters in the predicted ways, and often despite contrary cultural prescriptions. This is important work, but there is likely more to our species’ elaborate kinship systems than merely evolved psychology. Much ethnography suggests that while evolutionary incentives clearly shape our motivations, cultural norms also impact behavior at key nexuses by variously extending and suppressing these evolved mechanisms. Cultural evolutionary processes may thus have shaped norms, perceptions and motivations to its own ends.

This project focuses on motivations related to altruism, authority and sexual interest toward individuals in different genealogical relationships. We take advantage of key details in the relationships prescribed by Yasawan (Fiji) kinship norms. For example, Yasawans—as in many societies—categorize half of their cousins as “siblings” (with incest taboos) while the other half are preferred marriage partners. For comparison, we will perform parallel studies with Euro-Canadians lacking such cultural distinctions. To measure altruism and authority/reciprocity, we will use experimental games and subliminal priming techniques. In a series of experiments, participants will have to decide how to split sums of money between pairs of relatives in which evolved mechanisms and cultural norms make contrasting predictions (e.g., by contrast with Euro-Canadians, are Yasawans more altruistic toward those cousins occupying the culturally-defined positions of “siblings”?). Games will also allow us to study whether the cultural prescriptions for authority vs. equality that are built into Yasawan kinship distinctions help subjects to solve a social dilemma. Subliminally priming participants with various relatives before they express their willingness to help an unknown person will allow us to implicitly assess their prosocial inclinations toward various relatives (via affect misattribution). For sexual interest, by similarly priming participants with various relatives before they express sexual interest in a stranger, we can observe the relative impacts of siblings, “sibling-cousins”, and cousins who are preferred marriage partners, on sexual interest. By morphing unknown faces with siblings and cousins, we can further explore how different relatives impact sexual interest.

In developing an understanding of how genetic and cultural evolution jointly shape our most important personal relationships, those with our kin, this project fosters a new research line that joins evolutionary and cultural psychology in a manner that lays a foundation for a deeper understanding of who we are, and where we came from.

**Objectives:** The focus of this project is to open up a detailed psychological study of how we think and feel about our kin relations—in terms of altruism, authority/equality and sexual attraction—that examines the possibility that this psychology is jointly influenced by both evolved psychological mechanisms and by culturally-evolved kinship systems that vary across historical and cultural contexts. Theoretically, this work re-frames nature vs. nurture debates by arguing that the social norms that comprise kinship systems emerged to harness—differentially suppressing and re-enforcing—various aspects of our evolved psychology because these effects benefit large kinship units (where genealogical relatedness is low), such as the clans and lineages, that have dominated human social organization over much of our evolutionary history (Johnson and Earle 2000). This line of cultural evolutionary theory is important because it provides hypotheses about the origins and persistence of cultural differences (Chudek and Henrich 2010); it also suggests a reason why the complex kinship systems found throughout the anthropological record tend to simplify with the emergence of modern, industrialized, societies. Broadly, our comparative study of kinship psychology in Fiji and Vancouver will foster a new line of research for cultural psychologists while at the same time providing crucial tests of evolutionary hypotheses in a small-scale society.

**Context:** Despite their centrality in human life, relatively little work examines our kinship relationships (non-marital) within psychology, though evolutionary psychologists have focused on testing several ideas from biology, and this work provides a point of departure. Evolutionary biologists have long hypothesized that organisms can increase their fitness by preferentially bestowing benefits on genetic relatives. The logic of this idea is captured in Hamilton's Rule,  $rb > c$ , where  $r$  is genealogical relatedness,  $b$  captures the marginal benefits bestowed on others and  $c$  is the marginal cost of bestowing those benefits. Genealogical relatedness should also be linked to sexual interest among close relatives in a manner aimed at suppressing mating. These approaches are now underpinned by substantial evidence, in humans and across species (Daly and Wilson 1988; Anderson, Kaplan et al. 1999; Lieberman, Tooby et al. 2003; Fessler and Navarrete 2004; Henrich and Henrich 2007; Park, Schaller et al. 2008). In setting up our experiments, we will also attend to two other evolutionary ideas—reproductive value (RV) and paternity certainty (PC). RV is a measure of the expected number of future offspring for an individual, which can be proxied with age (age has a non-linear but reliable relationship to expected fertility). RV predicts, for example, when a daughter will favor her sister's life over her mother's, and vice-versa (e.g., when a sister is 19 yrs old and mom is post-menopausal, the sister has higher RV). PC accounts for the fact that males cannot be certain if their mate's offspring are theirs. This means that people who are related through a male are—in expectation—somewhat less related than recognized kin lines suggest. Empirical work indicates that both RV and PC are important for kin-based altruism (Barrett, Dunbar et al. 2002; von Hippel, Laham et al. 2005; Jeon and Buss 2007).

Our primary effort will be on understanding how these evolved aspects of our psychology interact, and compete, with a culturally-evolved kinship system, involving kin categories, terminology, norms, and expectations that are re-enforced in daily life. This approach derives from the view that humans are a highly cultural species (Richerson and Boyd 2005), equipped with cognitive adaptations that permit us to acquire and internalize local norms, as motivations in themselves that can then compete with other motivations, including genetically-evolved ones (Henrich, Boyd et al. 2005; Henrich 2008). Moreover, cultural evolutionary theory (Chudek and Henrich 2010) suggests that kinship systems have developed in ways that harness various aspects of our evolved psychology in order to (1) bind people more tightly in extended kinship units, (2) establish reliable lines of authority within large extended families, clans, and lineages, (3) create open and enduring relationships between these kinship units, and (4) foster marriage alliances between kinship units. Thus, we have predictions about *how* culture will matter, and why kinship systems evolve in particular ways.

This project will compare the kin-related behavior of participants from societies with two quite different kinship systems. In Fiji, the kinship system distinguishes two separate categories of both

cousins and aunts/uncles. Despite being indistinguishable in terms of genealogical relatedness ( $r$ ) and average paternity certainty (PC), one set of cousins are “classificatory siblings” (with incest taboos) while the other are “cross-cousins” (and preferred marriage partners, see below). Similarly, one set of aunts and uncles are “classificatory parents” while the other set are not. Such distinctions are extremely common in the anthropological record (Lévi-Strauss 1969). Leveraging these distinctions allows us to partition the independent effects of cultural norms and evolved psychological mechanisms on altruism, authority and sexual interest. Comparing our Fijian findings with Euro-Canadians in Vancouver, who possess a highly simplified kinship system that makes no such cultural distinctions, will provide a reference point. Along this dimension, as along many dimensions, Western populations are unusual in a global and historical perspective (Henrich, Heine et al. 2010).

On Yasawa Island in Fiji, this work will extend our in-depth study of cultural learning, social norms, and cooperation, a project running continuously since 2003. The five villages on this remote pacific island (10km long) provide an ideal site to study the psychological impacts and operation of a traditional kinship system. These populations organize themselves in extended families that form patrilineal clans, which together form *Yavusas* (the largest Fijian kinship). Governed by a hereditary chief, Yavusa usually compose one or two villages and see themselves as kin, related through a single apical ancestor. The kinship system dominates daily life as people routinely address each other with kin terms, sit in rank order by kinship at meals, joke only with appropriate kin, and routinely have to avoid speaking with, or defer to, specific categories of relatives.

Eight years of prior work in Yasawa provides a rich foundation, including (1) complete genealogies (including details on adoption), (2) GPS maps of the villages, (3) social kinship matrices (how people label everyone else using kin terms), (4) time allocation measures, which allow us to calculate who hangs out with whom, (5) detailed social networks, (6) longitudinal measures of anthropometry and health (e.g., height, blood pressure), and (7) close-up, standardized, digital images of everyone. We also have a trained staff of local Fijian research assistants.

All of our tasks in Fiji will be administered using a solar-powered laptop. We write specialized programs so that participants can respond using large colored buttons. Villagers have no access to computers or the internet, but in our many years in Yasawa we have found that people enjoy doing computer tasks and have no problem learning to make push-button choices. Use of such specialized programs, with the instructions built-in and read aloud, greatly facilitates comparisons when these protocols are translated into English for Vancouver. In these villages, we have previously successfully adapted the IAT (Tracy, Shariff et al. n.d.), deployed priming techniques, and often used behavioral games (Henrich, McElreath et al. 2006; Henrich, Ensminger et al. 2010; Henrich and Henrich n.d.).

**Methodology:** Our first step will be to deepen our understanding of the kinship systems found among Euro-Canadians and Yasawans. We already have much background knowledge regarding how these kinships systems work. However, to develop a systematic and detailed database, a large sample from each community will be recruited for a five year study. Participants will complete a series of tasks that involve visually ranking all the different kin relationships (in Vancouver: mother, brother, uncle, 1<sup>st</sup> cousin, 2<sup>nd</sup> cousin, wife, etc.) in terms of their willingness to help, authority, closeness, respect and the acceptability of sex or marriage. We’ve piloted this in Yasawa already, and are also developing a single target IAT that will examine associations between various kinship categories and concepts of authority, closeness, equality, and sex. In Vancouver, we will recruit paid participants whose parents have a minimum of two living siblings, and use this first meeting to obtain detailed information (including genealogical information and images) on people’s relatives. While this phase is primarily to obtain background information for our subsequent studies, it will provide rich details on how two different kinship systems carve up the world, and how people should behave with different kinds of relatives.

Since we will be repeatedly testing the same people each year, we will be able to use individual-level responses in these tasks to predict subsequent behavior, as well as assessing population-level

differences between Yasawa and Vancouver. In Vancouver, we will also run fresh samples in parallel with our returning participants to examine at the effects of returning repeatedly. Since a year will separate each set of tasks, we are not expecting substantial issues related to repeated testing.

**Do genetic relatedness and cultural kinship categories both influence prosociality, and what's the relative importance of each?** To examine how our evolved psychology interfaces with the cultural kinship system we zoom in on those nexuses where genetic relatedness and cultural kinship favor different behaviors, and potentially conflicting motivations. As noted, Yasawans distinguish “cross” from “parallel” cousins (anthropological terminology). These two categories have the same  $r$  and average PC values, and roughly the same RV (same generation); yet, the Fijian kinship system says they are supposed to be treated quite differently. Parallel (1<sup>st</sup>) cousins are your mother's sisters' children and your father's brothers' children; these are your classificatory siblings, which means you are supposed to treat them like “real” siblings (in Fijian it's literally “true” siblings). As with true siblings on Yasawa, relations between same-sex parallel cousins are supposed to be caring and respectful, with authority always going to the older individual, and especially to an older brother. Between opposite-sex parallel cousins, there is a strong incest taboo (they're siblings). This means these cousins cannot talk directly to each other, and must work through 3<sup>rd</sup> parties when communication is necessary; they certainly cannot be seen alone together. Meanwhile, your mother's brother's children and your father's sister's children are “cross-cousins” (in Fijian: *tavale*). Same-sex cross-cousins have a mandatory joking relationship in which they constantly play pranks on each other (especially males), playfully poke each other (even old men), and make jokes at their cross-cousins expense. Reciprocity and equality are paramount, even when age differences exist. Opposite-sex cross-cousins are potential sex partners and preferred marriage partners—thus, explicit sexual joking is both acceptable and rampant. Yasawans distinguish aunts/uncles in a similar fashion. Your parent's same-sex siblings are classificatory parents (and so addressed). These relationships are supposed to be characterized by respect, care, responsibility, closeness, and authority to the parent. Your parents' opposite-sex siblings are *gwadi*. These relationships are more equal, joking, playful and easygoing. *Gwadi* are the parents of your *tavale*.

In Study 1, we will start with explicit measures by showing everyone in Vancouver and Fiji images of their various relatives and ask them to rate their degree of caring about each person's well-being, their emotional closeness, and how often they communicate with the person. We will also ask how likely they'd be to run into a burning house to rescue each relative. This procedure parallels that used by Jeon and Buss (2007) with Americans, to study differences among cousins; this work shows the most altruism and closeness toward cousins with high paternity certainty (mother's sister's children) and the least toward those with the lowest PC (father's brothers). We expect to (1) replicate this with Euro-Canadians, and (2) show Fijian choices are influenced by the fact that Mom's sisters and Dad's brothers and their children are classificatory parents and siblings, respectively. The use of second cousins will also allow us to examine the impact of  $r$ . Regression analyses will allow us to estimate the effects of cultural kinship on altruism and closeness, relative to PC and  $r$ , controlling for variables such as proximity (now and during development), RV, clan, household size, time spent together (time allocation), age and sex. We will complete this in Year 1.

These are explicit responses with no real costs or benefits, and thus potentially subject to heavy demand and self-presentation biases. We will deploy a multi-pronged strategy to address this, involving monetary incentives, subliminal priming and facial morphing. Using an economic decision task, participants in Study 2A will face a series of decisions about how to divide a sum of money between pairs of *categories* of relatives. One person from each category will be randomly selected to actually receive the money. Subjects will receive nine coins to divide between each pair. Since nine is uneven, they will have to favor one or the other category of relatives. To eliminate any cross-sex motives, all pairings will occur within sex, and match the participant's sex. Table 1 shows the pairings of relatives for male participants. Pairings will be presented in one of seven different orderings, with each ordering

starting with a different pair. This will allow us to address any order effects. The secrecy of the decision will be clear as a randomly determined sum of money will be added to the outcome of the subject's decision in order to prevent the receiver from figuring out the participant's actions.

With the exception of the categories Father (Mother) and Brother (Sister), most Yasawans have two or more relatives in each category. Our genealogies allow us to know precisely who and how many relatives are in each category, so we can control for those who will know with certainty who will receive the monetary allocation (have only 1 relative in a particular category). We also suspect that age differences will play a role in allocations.

But, on-average across our sample, people will have just as many older cousins and brothers as younger ones; thus, we can begin with a straightforward comparison of mean allocations for each of the seven pairings. These can then be set against the predictions in Table 1.

In Vancouver, where the kinship systems lack these distinctions, we can run the same set of pairings, though we will have to deal with a larger of number of cells that have only 1 relative in them (Vancouverites have much smaller families than Fijians). We will know this, and be able to control for it.

Study 2B will be run very much like 2A, except that actual images of the relatives receiving money will be used in lieu of the genealogical information. All pairings will be selected to minimize age differences (RV) between the pairs.

Study 2C is similar to 2A, except now we will pit the participants themselves against their various categories of relatives, as shown in Table 2. Participants decide how to divide nine coins between themselves and each category of relative. Whatever they give to the other player is doubled. Evolved mechanisms should find three key breaks where individuals should increase their allocations to themselves: brothers ( $r = 1/2$ ), 1<sup>st</sup> cousins ( $r = 1/8$ ) and 2<sup>nd</sup> cousins ( $r = 1/32$ ). Fijian cultural kinship predicts that everyone labeled as *taci* ("brothers") will be treated similarly and all *taci* should be treated better than cross-cousins *tavale*. To be clear, we expect both relatedness and cultural kinship to matter: people will likely reveal the major breaks based on genealogy (as predicted by kin psychology) but they will also treat 1<sup>st</sup> cousin-brothers (*taci*) better than 1<sup>st</sup> cousin-buddies (*tavale*), and will treat 2<sup>nd</sup> cousin-brothers (*taci*) better than 2<sup>nd</sup> cousin-buddies (*tavale*).

For each subcomponent in Study 2, a first analysis will compare the mean allocations between pairings to the predictions (Tables 1 & 2). Next, we will regress the amounts allocated for each choice on the  $r$  values for that choice, age

**Table 1. Parings for monetary allocations (males) Study 2A**

#	Pairing of relatives (Yasawa kin terms)		Genealogical relatedness predictions	Cultural kinship predictions
1	Brother ( <i>taci</i> )	1 <sup>st</sup> cousin-brother ( <i>taci</i> )	Favor strongly the real brother	No distinction
2	1 <sup>st</sup> cousin-buddy ( <i>tavale</i> )	1 <sup>st</sup> cousin-brother ( <i>taci</i> )	No genealogical distinction (same $r$ )	Favor the cousin-brother
3	Father ( <i>Ta</i> )	Father-uncle ( <i>Ta levu</i> )	Favor strongly the father	No distinction
4	Father-uncle ( <i>Ta levu</i> )	Uncle ( <i>Gwadi</i> )	PC weakly favors Uncle-brother	Favors the father-uncle
5	1 <sup>st</sup> cousin-brother ( <i>taci</i> )	2 <sup>nd</sup> cousin-brother ( <i>taci</i> )	Favor 1 <sup>st</sup> cousin-brother	No distinction
6	2 <sup>nd</sup> cousin-brother ( <i>taci</i> )	2 <sup>nd</sup> cousin-buddy ( <i>tavale</i> )	No distinction	Favor cousin-brother
7	1 <sup>st</sup> cousin-buddy ( <i>tavale</i> )	2 <sup>nd</sup> cousin-brother ( <i>taci</i> )	Favors 1 <sup>st</sup> cousin-buddy	Favors cousin-brother

**Table 2. Study 2C Decision pairings and predictions**

#	Self vs. Others	Genealogical relatedness predictions	Cultural kinship predictions
1	Brother ( <i>taci</i> )	Least allocated to self	No distinctions <u>within the <i>taci</i> and <i>tavale</i> categories.</u> Less allocated to self when paired with <i>taci</i> then <i>tavale</i>
2	1 <sup>st</sup> cousin-brother ( <i>taci</i> )	More allocated to self then above, but no difference between 1 <sup>st</sup> cousins	
3	1 <sup>st</sup> cousin-buddy ( <i>tavale</i> )		
4	2 <sup>nd</sup> cousin-brother ( <i>taci</i> )	More allocated to self then above, but no difference between 2 <sup>st</sup> cousins	
5	2 <sup>nd</sup> cousin-buddy ( <i>tavale</i> )		

differences, and a dummy variable for the cultural category. For Study 2B, we have actual  $r$  values for all possible pairings in Fiji, which include small adjustments in  $r$  that capture multiple genealogical lines of relatedness. This will allow us to estimate and compare, e.g., the increase in allocation created by a 0.125 change in relatedness to the effect of switching from a *taci* to a *tavale*. We will use GEE regressions to deal with repeated observations, and include controls for such things as participant’s age, education, village and sex.

All participants (with sufficient cousins) will do 1A, 1B and 1C, though the order of play will be randomly assigned and recorded. This will be completed in Year 2.

As a converging line of evidence, we will modify the AMP (Affect Misattribution Procedure: Payne, Cheng et al. 2005). Participants will be subliminally primed with images of their same-sex (1) true siblings, (2) mother’s brothers’ children, (3) father’s brother’s children, (4) father’s sisters’ children, (5) mother’s sisters’ children, (6) 2<sup>nd</sup> cousins (cross), (7) 2<sup>nd</sup> cousins (parallel) and (8) a control image (grey oval). After the prime, they will briefly see a superliminal image of an unknown person who was judged in pre-tests as being average in terms of trustworthiness, kindness and attractiveness. By hitting one of four large buttons laid out in front of them, they will rate how willing they’d be to rescue this person from a burning building. This will be repeated 64 times (2 times for each prime category and 4 times for each unknown face).

First-pass analyses will compare mean ratings in each of the conditions. In both Fiji and Vancouver, we expect primes of true siblings to create the most willingness to help and 2<sup>nd</sup> cousins the least. In Fiji only, we expect parallel cousins to create more willingness to help than cross-cousins, controlling for  $r$  (i.e. 2<sup>nd</sup> vs. 1<sup>st</sup> cousins). The effects of PC may emerge, but only looking within the parallel and cross categories. In Vancouver, we expect no differences based on the cross-parallel distinction, though for all cousins we expect PC to matter (mom’s sister evokes the most help and dad’s brother the least). Regressions will explore proximity effects, as well as actual  $r$ , sex, age and education.

**Do kinship categories influence authority vs. equality, independent of evolved mechanisms associated with age, a history of interaction, local prestige or physical size?** Our work on the Yasawan kinship system indicates that it may also manipulate our understanding of dominance relations (vertical hierarchy or authority) and our notions of equality or reciprocity (Toren 1990). We hypothesize that both dominance (authority) and reciprocity are rooted in our evolved psychology (Fiske 1992; Henrich and Gil-White 2001; Thomsen, Frankenhuis et al. 2011); but, we suspect that many of the cultural practices described above exploit these mechanisms in ways that result in psychological adjustments aimed at cultural, not genetic, evolutionary ends.

Table 3. Study 3		Top Player		
		~	A	B
Side Player	A	(4,2)	(0,0)	(0,0)
	B	(0,0)	(2,2)	(0,0)
	C	(0,0)	(0,0)	(2,4)

In Study 3, Year 3, to explore the dimensions of authority and equality, participants will engage in interactions with known relatives. In these games, the other players are not passive recipients. Both players make choices (A, B or C) and the outcomes (payoffs) depend on both choices. Table 3 shows the payoff matrix, with the first number giving the side-player’s payoffs and the second number providing the top player’s payoffs. The most important thing players have to do is coordinate—both pick the same (A, B or C). However, each player has a financial incentive to pick A (or C if he’s the Top Player). Coordinating on A or C generates more total money to the pair, but both players have to accept inequality. We don’t use kin categories here to conceal identities because anonymity is not a concern. Players have the common goal of coordinating. The question is whether they can do it.

Participants will play this game with a series of partners seeing images which will be drawn from various categories of relatives, including older brothers, younger brothers, older cousin-brothers, younger cousin-brothers, cousin-buddies (older and younger), father-uncles (father’s brothers), and uncles (mother’s brothers). In Fiji, age differences are built into the terminological system for brothers and cousin-brothers (*tukaqu*), but not for cousin-buddies (*tavale*).

To analyze these choices we will use multinomial logistic regression (three categories, repeated measures) to regress our decision variable (A,B or C) on the kinship categories (as dummies), height (or weight), age difference, local prestige, age, sex and the  $r$  values for each pair. In Fiji, because kinship categories prescribe relative authority and equality differently among pairs, they should facilitate coordination. When classificatory siblings are combined with higher  $r$  values (creating interaction terms), coordination on the higher payoffs should be especially likely. Meanwhile, cross-cousins will pass up higher payoff to maintain equality (pick B, reliably). By contrast, Vancouver participants will struggle to coordinate, since Euro-Canadian kinship norms do not prescribe hierarchy, especially among cousins.

In Fiji, we will do all of these tasks with children and adolescents, as well as adults. We expect to only be able to go as young as 7 year olds before we hit the limit of understanding, but if we can go younger we will. Our pre-game tests will determine who participates. This work allows us to examine the development of these behaviors and motivations across the lifecycle.

**How do  $r$  and cultural kinship norms influence sexual attraction?** Evolutionary approaches suggest psychological mechanisms favoring the avoidance of inbreeding will (often) create a lack of sexual attraction toward siblings, and other close relatives. Much evidence now supports this (Lieberman, Tooby et al. 2003; Fessler and Navarrete 2004). Our question is whether cultural systems that classify and prescribe the treatment of some cousins as “siblings” (with incest taboos) and other cousins (with the same  $r$ ) as sex and marriage partners will create implicit aversions to the sibling-cousins relative to the cross-cousins. We propose two techniques to get at this. The first approach parallels our use of the AMP above: using a computer presentation, participants will be subliminally primed with images of their opposite sex (a) true siblings, (b) 1<sup>st</sup> classificatory siblings, (c) 1<sup>st</sup> cross-cousins, (d) 2<sup>nd</sup> classificatory siblings, (e) 2<sup>nd</sup> cross-cousins and (f) a control (grey oval). After the prime, they will briefly see a superluminal image of an unknown opposite-sex person of average attractiveness. By hitting one of four buttons, they will rate their sexual interest in the unknown person. This will be repeated 72 times (3X for each category and 4X for each target). First-pass analyses will compare mean ratings in each of the prime conditions. We expect true siblings to create the most sexual aversion, followed by classificatory sibs then cross-cousins. Cultural norms suggest that cross-cousin primes may even increase sexual attraction relative to the grey oval (Note, we are modifying a procedure that allowed subjects to study the target images as long as they wanted and failed to remove women using oral contraception (Fraleley and Marks 2010; Lieberman, Fessler et al. 2011)). The relative differences in these categories will tell us about the strength of cultural vs. genetic processes. Because we hypothesize that cultural norms piggy-back on our evolved systems, we expect the aversive effects of both true and classificatory siblings to be strongest in women (relative to men), who are not on the pill or pregnant. Regression analyses will explore proximity effects (did the cousins grow up together?), as well as address any issues related to differences in the attractiveness of relatives, age, and education. In Fiji, this is facilitated by the fact that every relative will be a cross and parallel cousin for multiple participants. In Vancouver, we will use control subjects who will experience other people’s relatives as primes (each participant will be matched with a control who will see their relatives subliminally).

Finally, we will test this using a parallel procedure that involves all participants rating morphed faces on dimensions of sexual attractiveness, trust, and kindness. Morphed faces will be created by computer morphing the same unknown face with the subject’s opposite-sex (a) true sibs, (b) classificatory sibs, (c) cross-cousins, and (d) another unknown face. Cultural and evolutionary approaches jointly predict that participants will express the least sexual interest in and most trust in true sibs, followed by classificatory sibs, followed by cross-cousins. The magnitude of the differences between these categories will tell us the relative influence of cultural processes. These studies will be completed in Year 4.

Year 5 will be reserved for analysis, follow-up experiments, and writing.

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