

Folksociology: A cross-cultural and developmental investigation of how groups influence thinking about individuals

1. Summary of Proposed Research

Human social life is dominated by groups. Clans, clubs, castes and guilds, along with a constellation of other groups, shape all aspects of human life, from trade and cooperation to marriage and child-rearing. Casual observation suggests that not all kinds of groups are equally salient and durable. Some groups, ethnic and racial groups in particular, seem to stand out in their ability to variously motivate in-group trust and out-group oppression. Our project team aims to probe the psychological foundations of how people in very different societies think about ethnic and racial groups, whether such groups evoke different patterns of inferences vis-à-vis other social groups, and how these patterns develop in children.

Since membership in ethnic and racial groups, in contrast to other kinds of groups, appears to be often ascribed by birth or rearing community, we will begin by investigating how people from different societies reason about relative influence of genetic vs. cultural inheritance in the transmission of a range of characteristics (physical attributes, skills, preferences, and beliefs), including group membership. By eliciting subject's judgments in two story tasks, involving cross-group adoptions and immigrations, we will measure the relative weightings given to birth parents, adoptive parents, and socializing communities in inferring an individual's characteristics. Data will be collected from children and adults from (1) five Fijian villages, (2) Fijian immigrant populations in Los Angeles, and (3) North American populations in L.A. and Vancouver. The adult data will allow us to assess the differences in mature inferential patterns, while the comparative developmental data will be used in tracing the ontogeny of adult differences. Do children from Fiji and North America begin with similar inferential patterns, only to diverge during adolescence? Or, are substantial cultural differences already evinced in children? How durable are these cultural differences: Do Fijian immigrants in L.A. show patterns more similar to North Americans or Fijian villagers?

Treatments that vary the subjectively perceived ethnic-racial differences between social groups will allow us to explore how these differences influence reasoning about the inheritance of different characteristics, including group membership. Such data will enable us to study the kinds of cues, across different societies, that lead to more primordialist judgments (i.e., from birth parents) for the inheritance of group membership.

In addition to providing essential comparative data for testing hypotheses about the reliably developing aspects of human cognition, studying people in isolated Fijian villages (lacking mass media) permits us to both map the pathways of cultural transmission (e.g., who learns what from whom) and assess the nature of the cultural input that shapes children's reasoning about social groups using detailed data on social interactions, child-rearing practices, and daily conversations accumulated over the last four years.

Building on this, it is essential to examine how the cues associated with different kinds of groups influence inductive generalizations: Do "ethnic cues" for groups (e.g., marital endogamy) preferentially activate category-based induction, in which information about one member is unconsciously extended to all members. To explore this, we use another story format with treatments that vary the initial group cues (e.g., cues associated with occupations, ethnicity, and political coalitions). In the story, subjects receive information about a focal actor who is a member of a group. Afterwards, subjects are tested on the facts of the story, with one question testing to see if subjects mistakenly recall the actor's attribute as one characterizing all members of his social group. This approach allows us to study which group cues that activate category-based induction, and how these cues vary among different societies.

Illuminating how people think about different kinds of groups, when they tend to primordialize membership and perform category-based inductions, and what aspects of our cognitive processes are reliably developing aspects of human minds (vs. culturally influenced) stand as crucial for understanding the ethnic and racial conflicts now afflicting global communities.

2. Detailed Description

Objectives: The project’s objectives are to (1) explore how people reason about the relative influence of genetic vs. cultural inheritance on a range of individual characteristics, including group membership, (2) examine whether cues of ‘ethnicity’ (vs. cues of occupation, coalition, etc.) favor automatic category-based induction from one individual to all members of a group, (3) assess both the reliably developing aspects of these inferential patterns and their cultural variation by studying children and adults in North America and Fiji, and (4) trace the pathways of cultural transmission for the learned input to these reasoning patterns through detailed observational studies in Fijian villages, where small isolated populations and a lack of mass media make the problem tractable.

Context: Our theoretical framework emerges from Dual Inheritance Theory (Boyd & Richerson, 1985), a paradigm unfamiliar to many psychologists. Unlike some evolutionary approaches, Dual Inheritance Theory takes seriously both the influence of human cultural learning and the fact that cultural evolution has, over hundreds of thousands of years, shaped the social context of human evolution (Henrich & McElreath, 2003). With regard to the issues at hand, this theoretical avenue proposes that humans possess cognitive processes for reasoning about other humans that anticipate, in some sense, the joint influence of culture and genes have on individual characteristics. Culture-gene coevolutionary models have shown how cultural learning often gives rise to a ‘clumpiness’ in cultural variation across space such that members of different social groups tend to behave in different ways (Henrich & Boyd, 1998). Other models show how the cultural transmission of both social norms (e.g., rules of exchange and related motivations, beliefs and values) and symbolic markers (e.g., dress, hairstyle, and dialect) give rise to ‘ethnic groups’, in which boundaries between different norm-clumps are symbolically demarcated. This means that geographic origins and symbolic markers often provided a reliable cue to an individual’s underlying norms, skills, preferences, ways of thinking, or beliefs (McElreath et al., 2003). Since empirical evidence from small-scale societies and paleoarchaeology indicates that these conditions were common, and had likely existed for hundreds of thousands of years, natural selection may have shaped our cognition to take advantage of these socio-cultural regularities (Gil-White, 2001).

This combination of theoretical and empirical findings leads to three hypotheses. First, in attempting to infer a person’s characteristics (perhaps a potential trade or marriage partner), individuals should distinguish cues of genetic heritage (e.g., birth parents) from cultural heritage, weighting birth parents more heavily for some traits (e.g. finger length) than others. Second, individuals should partition the cultural influence of parents or families from those of larger social units (village, ethnic group, etc.). Given what is known about the relative importance of parents vs. communities *in cultural transmission* (including peers; Harris, 1998), particularly from studies of small-scale societies where parental teaching is relatively rare (Fiske, 1998; Lancy, 1996), we expect people to weight the influence of communities more strongly than parents in their intuitive judgments about many individual characteristics. Third, since symbolically-marked, endogamously-marrying social groups (‘ethnic groups’) partition key social norms—often involving child-rearing and exchange (Barth, 1969)—and underlying norm-motivations are relatively stable adult properties,¹ we expect such groups to generate more essentialist reasoning about individual characteristics (i.e., perceive characteristics as stable over the life course) and greater category-based induction (generalize readily from one member to the group).

Unlike ethnic groups, racial groups are distinguished by non-symbolic (non-culturally transmitted) phenotypic differences. Since individuals in ancestral human environments did not likely encounter people marked by such *non-symbolic* phenotypic differences, these non-symbolic (‘racial’) cues trigger, *by happenstance* in the similarity of input, the above described cognitive processes (folksociology), and

¹ Recent behavioral experiments indicate that motivations related to fairness in exchange develop gradually during the first two decades of life and then remain stable through adulthood (Henrich, forthcoming).

often a set of processes for reasoning about living kinds (folkbiology: Atran, 1990; Medin & Atran, 1999). This leads to a prediction: the more a group is perceived as marked by non-symbolic phenotypic differences, the more folkbiological reasoning will be brought to bear in inference. Since both sets of cognitive tools, folksociology and folkbiology, contain category-based induction and essentialism, the key difference lies in primordialism, i.e., in folkbiology, species membership passes from birth parents to offspring; in folksociology ethnic ascription is acquired during childhood from the community. Thus, the stronger perceived non-symbolic markers are, the more folkbiological tools will be primed, and the more group membership, and other characteristics, will be judged to pass from birth parents to offspring.

The two areas *most* germane to the above program have studied inferential processes related to parent-offspring resemblance in living kinds (Inagaki & Hatano, 1993; Solomon et al., 1996; Springer, 1992, 1995, 1996; Springer & Keil, 1989) and children's conceptions of race (Hirschfeld, 1996; Hirschfeld & Gelman, 1997). As a point of departure for this project, work on living kinds has demonstrated that by age seven Western children distinguish differences in the transmission of beliefs vs. physical characteristics, seeing beliefs as coming from an adoptive parent (or implied community?) and physical characteristics coming from a birth parent. This basic dualistic pattern has also been found in small-scale societies in Madagascar (Astuti, 2001; Block et al., 2001). Paralleling this, work on race among Westerners indicates: (1) children first learn about social categories culturally, rather than by recognizing observable physical differences (Hirschfeld, 1993), (2) parents do not explicitly provide essentialist interpretations for children to acquire (Gelman et al., 1998), and (3) adults use race to unconsciously categorize people (Stangor et al., 1992; Taylor et al., 1978), but this effect can be erased by contradictory symbolic markers of group membership (Kurzban et al., 2001). It appears that preschoolers readily infer the existence of underlying property-determining essences for these transmitted categories, which they use in reasoning about the members' characteristics. Only later, do children learn which social categories (like plumbers) are not essentialized. Consistent with the framework presented above, preschoolers—*before* learning about the nature of phenotypic differences between races—essentialize these categories (just as they initially do occupations) but do not initially primordialize them.

While prior research has made important progress in understanding how people reason about groups, this project will fill key research gaps, address various ambiguities, and potentially integrate a range of otherwise disconnected results from research on folksociology, folkbiology, entityity, and social categorization. Within folkbiology, e.g., work on reasoning about parent-offspring resemblance has failed to consistently distinguish between how people think about humans vs. non-humans, despite evidence that this distinction emerges early in childhood. The assumption appears to be that people will reason about human and non-human inheritance similarly (Atran et al., 2004).² In contrast, I have theorized that, in thinking about humans, subjects will consider both our systems of inheritance. Work on folksociology has not explored how people think about relative importance of parents vs. communities in transmitting culture and analyses have focused on categorizing subjects as either 'dualists' or something else. Our protocols examine the relative effects of parents vs. communities, and we expect subjects to integrate different cues and produce a continuum of judgments, with some characteristics, such as skills and preferences, being deeply influenced by both birth parents and the community. Moreover, since such dualistic thinking in Western kids does not begin to emerge until age 7 (Solomon et al., 1996), it's quite plausible that human societies will vary dramatically in this tendency. Thus, while some cross-cultural work has been done, the available data is insufficient to claim that any

² The exposure of North American children to stories about non-human animals who talk, go shopping, and do aerobics, coupled with psychologists' tendency to present non-human stimuli in human terms (giving animals names, like "Mr. and Mrs. Dog"), may create confusion in whether to apply folkbiological or folksociological tools. Research in small-scale societies, where kids have daily exposure to animals and 'animals as people' stories are rare, reveals none of this confusion.

of the observed patterns are reliably developing pan-human patterns. Our comparison of children and adults from diverse societies should weight heavily in this debate.

This project builds on my earlier work in two ways. First, the research we are completing in Fiji has focused on (1) the development of folkbiological categories and patterns of inference and (2) the pathways of cultural transmission for folkbiological knowledge (how children learn it and who they learn it from?). For this study, I will use the same approach of integrating experiments with systematic observations of real life, now honed over four years. Since folkbiological thinking may be involved in reasoning about certain human groups, these prior studies provide an important foundation. Second, much of my earlier cross-cultural work has focused on using experimental tools from behavioral game theory to study decision-making in social situations across a wide range of societies (Henrich et al., 2004; Henrich et al., 2005; Henrich et al., 2006). One outcome of this work is that people's willingness to be altruistic, fair-minded, and/or punitive depends on the social group of the others involved (Tajfel, 1970, 1978; Tajfel & Turner, 1986) and their ethnicity (Cummings & Ferraro, 2002; Gil-White, 2004; Henrich & Henrich, in press: Chapter 9). A natural next step in understanding this kind of social decision-making is to explore how people think about social groups, how information about groups influences judgments about individuals, and why some types of groups may be more likely to influence social decision-making than other kinds of groups.

Studying how people in Fijian villages think about inheritance and social groups is particularly valuable for several reasons. First, these villages provide excellent opportunities for studying cultural learning because (1) there is little mass media, with no TVs, books, or magazines, to influence cultural transmission and (2) there are only approximately 200 people in regular contact, so it is literally possible to study and test everyone. Second, we already have extensive background data that will be integrated with the experimental tools described below. Over four years our team has been systematically recording people's behavior, including their conversations, play activities, child rearing practices, and religious sermons. Third, unlike North America where racial and ethnic differences often appear stark, Fijians are exposed to both a continuum of ethnic-racial groups, and a stark contrast with Indo-Fijians. The dialects and customs of indigenous Fijians change gradually from the Northwest to the Southeast of the 260 inhabited islands that make up the archipelago, as do skin color and other morphological characteristics. Contrasted with this, Indo-Fijians, who self-identify as ethnically East Indian and cluster on the main island, are perceived as physically and culturally quite distinct.

Methodology *Subject Populations:* Subjects in the experiments described below will be drawn from (a) five different villages in Fiji, (b) Fijian migrants in Los Angeles, (c) undergraduates at UCLA and UBC, and (4) non-student children and adults in Vancouver and L.A. In Fiji, we will test everyone from age 7 up, in the first two experiments. Villages are relatively small so only by testing everyone can we compare the response patterns among parents and children, and members of the same clan and village. By doing this we can also examine the influence of networks of peers and relatives and networks centered on prestigious individuals. With children, we begin at age 7 because we want to use the same dialect for all experiments with Fijians. Village children do not achieve fluency in 'standard Fijian' until age 7 (they first learn the village or island dialect, which varies substantially across Fiji). We've chosen our villages, with three on Yasawa Island (northwestern Fiji) and two on Moala (southeast), in order to maximize any cultural variation that our instruments might tap. For Experiment 3, we will use all children (for sample size reasons) and random samples of adults. In the other populations, we will rely on standard techniques for sampling and recruiting subjects.

Experiments 1 and 2 (E1 and E2): Our first two experiments explore subjects' inferences about a range of characteristics possessed by a target individual by providing different information about the target's (1) same-sex birth parent, (2) same-sex adoptive parent, and (3) socializing community. Three parallel treatments in each experiment vary the ethnic-racial difference between the target's birth parents and either their adoptive parent (E1) or their socializing community (E2). Since we've done pilot work in

Fijian villages using this method, I will describe the experiments from the Fijian perspective. Experiment 1 involves a simple adoption story in which a target infant from a different place and social group (which varies across our treatments) washes up on the beach of a village in the Yasawa Islands (northwestern Fiji). The infants' birth parents were in the process of migrating to another island when a storm washed them overboard. The infant is adopted by a village family and raised to adulthood. The subject is then asked to answer a series of questions about the adult characteristics of the target. In each case the subject is provided contrasting information about the birth father and the adopted father. We will ask about 15 attributes: group membership, ear shape, finger length, heart size, eyesight, temperament, shyness, intelligence, helpfulness, food taboos, sense of direction, fishing skill, knot knowledge, and beliefs about the number of teeth in a bat's mouth and the importance of formal education. The subject must judge in each case whether the target is more like the birth or adopted father. After answering, the story continues on to explain that the target marries someone from the village and raises a son to adulthood. Then, asking about target's offspring, we again go through the list of individual attributes, asking if the offspring, as an adult, will resemble his same-sex birth or adoptive paternal grandparent.³

Three different treatments will vary the origin of the target's birth parents, and thereby vary the degree of ethnic-racial difference perceived by the subjects (see check on this, below). In Treatment 1, the infant's birth parents come from Kadavu, another region of the Fijian archipelago. The various regions are Fiji are well known and part of daily conversations and stories. Background research on Yasawa Island indicates (1) all adults believe that Kadavians possess some minor cultural differences (although people cannot name those differences) and (2) 64% claim that Kadavians look physically different, although there is no agreement on what the specific physical differences are. In Treatment 2, the target's birth parents are from the Solomon Islands. Villagers recognize the name Solomon Islands, and are aware that the inhabitants are fellow Pacific Islanders who look fairly similar to themselves, but otherwise possess no specific knowledge of this group. In Treatment 3, the infant's birth parents are Indo-Fijians from the largest island in Fiji. Indo-Fijians are perceived to be physically and culturally quite distinct. All adult Yasawians believe Indo-Fijians look physical different, and can readily name differences in cuisine, dress, religion, language, habits, and practices.

To measure of perceived ethnic-racial differences, every subject—months before doing E1 and E2—will be asked to perform three triad tasks that compare 6 different social groups. Focused on 3 at a time, subjects will judge which group is most different from the other 2 groups. In the first task, the instructions will be merely to pick the group *most different* from the other two. In the second and third tasks, subjects will pick the one *most culturally different* (using *itovo*, meaning “customs”) and *most physically different* from the other two. Here we will imbed the groups used in our experiments with other groups known to villagers. Multidimensional scaling will yield a measure of each subjects' perception of the relative differences among these groups.

Experiment 2 follows exactly the same pattern as E1, except now the entire family washes up on the Yasawan beach, their boat destroyed. With the permission of the village, the family sets up a household and lives as members of the community. Subjects again face questions about the same characteristics listed above for the adoption story, but now information about the same-sex parent is contrasted with information about the people of the village. The subject must judge in each case whether the target grows up to be more like the villagers, or his same-sex parent. After subjects make these judgments, the story tells about how the target marries and raises a son to adulthood. Subjects are then asked about this individual. Following E1, 3 treatments will vary the origin of the target family.

³ As in all of Polynesia, adoption is quite common in Fiji, with 15% of village children being reared by adoptive parents.

Experimental Check 1: Since some research on reasoning about non-humans suggests a possible difference in judgments about the effects of mothers vs. fathers on offspring (see Solomon et al., 1996), we will construct a mother-daughter treatment for the Solomon Islanders versions of our Experiments.⁴ This treatment will allow us to assess how the sex of the target and parent influence the results. Since our previous work indicates that Solomon Islanders are likely to be perceived as intermediate along an ethnic-racial continuum, applying the mother-daughter treatment here gives the best chance of detecting any effect—the 2 extremes of the ethnic-racial continuum might mute any differences with ceiling effects. If the differences are significant, we’ll do mother-daughter versions of the other treatments.⁵

North American adjustments: For non-Fijian subjects in North America we will need to substitute different groups with the goal of still capturing an ethnic-racial continuum. To accomplish this, we will first run the above described triad tasks with North Americans, using different combinations of groups, like Japanese, Chinese, Taiwanese, Indonesian, European and Indian. From these data, we will be able to select the three groups that most parallel the Fijian perceptions of the groups used there. Only qualitative comparisons of the findings from Fiji and North America may be permitted.⁶

Analysis of Experiments 1 and 2: Our first step will be to run a cluster analysis on each adult population. This will tell us which of the 15 attributes our subjects tended to judge in similar ways. So, for example, is the transmission of ‘intelligence’ inferred like ‘ear shape’ or more like ‘helpfulness.’ With this, we can examine the development of the adult clustering pattern by analyzing different age cohorts.

At a theoretical level, these analyses will allow us to assess (1) whether *dualistic* thinking (beliefs v.s. physical characteristics) about different kinds of attributes accurately characterizes judgments—and if not, what are the patterns?), (2) how much do adult populations vary in their reasoning, and (3) what developmental patterns characterize the emergence of dualism, or whatever emerges. For example, is there one reliable pattern of development, or multiple routes to the same place? Do population differences start out differently (at age 7) and converge, or start out similarly and diverge?

Next, for each population we can analyze the frequency of primordialist judgments (similarity to birth father) from ages 7 to adulthood for each characteristic and group treatment. This will allow us to assess whether patterns of primordialist judgment are similar across populations (e.g., is ear-shape highly primordial compared to beliefs about formal education). We will use our measure of difference—gathered using the triads—to assess whether greater perceived physical differences engage more primordialist judgments. Of particular interest will be how different treatments influence the frequency of primordialist judgments about of ‘group membership’.

By combining these experimental results with our existing Fijian database, we will explore the influence of various aspects of cultural learning. For example, since both formal educational possibilities and exposure to western media (time spent on the main island) varies among adults, we can include these in our regressions to assess potential relationships between these variables and our experimental responses. Second, if systematic variation exists among families, clans, villages or islands in experimental

⁴ Obviously, cross-sex treatments (e.g., father-daughter) are also possible, but that variation is less of an immediate priority.

⁵ Ethnographers have reported that some Fijian communities, like many populations, believe that a child’s characteristics may come, via milk, from their wet nurse. Our preliminary interviews on this have *not* revealed any evidence of this in our communities. However, in constructing the above mother-daughter experiments, we will highlight that the adopted-mother is also the wet nurse. If our measures of transmission from the adopted mother are significantly higher than those of the father, we will develop tasks that partition the birth mother, social mother, and wet nurse in order to assess the impact of nursing.

⁶ *Experimental Check 2:* The design of E1 and E2 force subjects into a binary choice. In pilot work we considered allowed wider spectrum of choices, but many with little formal education had trouble with this complexity. Thus, the binary choice design represents our best chance to deploy these experiments across the widest range of ages and cultures. As a check, we will apply both our binary choice version and a version of E1 and E2 using a Likert Scale design to assess whether any qualitative differences depend on the aspect of the design.

responses, especially among children, our data on conversations will permit analyses of the frequency of different kinds of statements (e.g., essentialist), which can be used to explain such variation. Third, since much of the input of cultural learning in this domain is likely verbal, the distribution of different kinds of statements (e.g., category assignments as explanations) will help us understanding the nature of input to cultural learning, and assess what inferences learners bring to incomplete or ambiguous cultural input.

Experiment 3 (E3). This third experiment focuses on people's tendency to infer characteristic of a group from information about one of its members—i.e., category-based induction. To avoid the comparative issues in the above experiments, which necessarily rely on people's familiarity with locally-relevant groups, we will use a purely hypothetical story about two groups, “gloobins” and “shiblines.” The story first introduces a character, M, who is a “gloobin.” Some details about gloobins and shiblines are given, and these vary across 4 treatments: (1) ‘ethnic treatment’—gloobins generally marry other gloobins, live near other gloobins, and have gloobin children, (2) occupational treatment—gloobins get paid for their specialized skills, but may or may not marry and live near each other gloobins, (3) coalitional treatment—some people met and decided to help each other out in all kinds of conflicts (and call themselves “gloobins”), but they may or may not live near and marry other gloobins, and (4) name-only treatment—no information is given about gloobins or shiblines. In the story, M demonstrates an interesting characteristic. At this point, we have developed four versions: M has (1) excellent eyesight, (2) a good sense of direction, (3) a food taboo, and (4) a helpful disposition. After the story, subjects are asked a series of questions, most of which are merely factual questions about their comprehension. Imbedded in this series of questions is one that indirectly asks about a characteristic of gloobins, in which the characteristic at issue is the one that M, *and only M*, demonstrated.

Analysis of Experiment 3: Our prediction is that the ‘cues of ethnicity’ (living in proximity, endogamous marriage, etc.) provided in the ethnic treatment will lead to automatic inferences from the characteristic demonstrated by M (1 group member) to all members of the group. Simple exact tests comparing the frequency of individuals who made the automatic inference in the ethnic treatment to all other treatments tests the hypothesis. By varying the key characteristic (eyesight, etc.), we can assess how this automatic inference is influenced by different characteristics. Pilot work, using albeit non-random internet samples, indicates that our predictions are correct: the ethnic treatment unconsciously cues category-based induction much more than the other treatments.

Initially, all of these 16 treatments will be performed with university students at the UBC and the UCLA. If this work reveals interesting findings, we will begin work with children in L.A. and Vancouver, and with kids and adults in our Fijian villages. Comparisons between Fiji and North Americans in E3 will allow us to assess whether observed patterns are purely products of growing up in North American cultural environments or perhaps something more general about human reasoning.

Follow-up work: If this works the way we hypothesize, the next step will be to assess the strength and interaction of all the potential ‘cues of ethnicity’. Theoretical work suggests the following cues should be important (1) shared symbolic marking (dress, dialect, etc.), (2) intermarriage, (3) living in proximity, and (4) automatic group membership by offspring. Using the above approach, we can establish the relative strength of these cues, and whether they have additive or multiplicative effects on inferences.

Communication of Results

As with my prior work, I intend to address a broad academic audience, crossing several disciplines, as well as a popular science audience. Within Psychology, my goal is to publish the empirical findings in journals like *Cognition* and the *Journal of Personality and Social Psychology*. At the end, I aim to publish a review piece in *Psychology Review* that integrates work on folksociology, folkbiology and race. To reach broadly, I will seek to publish in *Behavioral and Brain Sciences*. I'll also present this work in many interdisciplinary international conferences. From these venues, I've typically been contacted by journalists, who've written about my work (below). A project website will be maintained.

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4. Research team, proposed student training and previous output

A. Description of the research team

Since this is a multi-site comparative project, integrating observational, ethnographic, and experimental data, a team approach is essential.

In Fiji: During summers Boyd and I will run 2 to 3 month long intensive data collections in the five Fijian villages mentioned, often with Boyd in Moala and Henrich in Yasawa. These summer projects will involve our two experienced Fiji projector directors, Joape Kuruyawa (Moala) and Samisoni Nanovu (Yasawa), who have work with me over the last 4 years, as well as graduate students from both UBC Psychology and UCLA Anthropology (for training), and Fijian research assistants from both local villages and the University of the South Pacific. During the winter, Kuruyawa and Nanovu will continue data collection in Fiji, with the emphasis on collecting the observational data (recording and transcribing conversations, coding play activities, etc.).

In Los Angeles, Boyd will work with two research assistants (not part of this grant) to perform the experiment with Fijian immigrant populations, non-student adults, and undergraduates.

In Vancouver, Henrich will work with graduate students and a post-doc to perform the experiments with non-student adults, children, and undergraduates. A post-doc (funds from elsewhere), with expertise in developmental psychology, will direct the experimental work on children in Vancouver (in my previous work with children in Atlanta, this approach worked very well).

B. Description of proposed student training strategies

Both undergraduate and graduate students at the University of British Columbia will receive training through this grant. In addition, we will continue training students and recent graduates from the University of the South Pacific (Fiji).

My approach to training students reflects my general approach to studying psychology. Students will be trained collaboratively in the Laboratory for Culture and Cognition, which will include not only my own students and post-docs (with various levels of experience) but also those of Ara Norensayan, Darrin Lehman, and Mark Schaller. More senior graduate students and post-docs will run the laboratory, under my direction. Methodologically students will help develop and implement standard social psychological tools (and apply them to undergraduates and children), as well as learning ethnographic interviewing and observational techniques (focal follows, spot-check time allocation). The goal is to develop a program in cross-cultural developmental psychology that freely draws tools and insights from across the human sciences.

At UBC, two graduate students will start in fall 2007, with the goal of recruiting 1 per year over the next three years. One of the two starting in the fall is a student of mine from Emory University, James Broesch, who is transferring to finish up at UBC (he'll have a Master's in Anthropology). Each summer two graduate students and two honors undergraduate students will be invited to Fiji for cross-training (working with either Boyd and/or myself). Senior graduate students will be given increasing administrative responsibilities: James Broesch, for example, will run the data collection in Moala for part of the summer next year. All will participate in developing and implementing the experimental work with children and adults in Vancouver, while processing the data collected in Fiji from the summer. As noted, a post-doc will be in charge of recruiting and working with the younger subjects.

C. Description of previous and ongoing research results

Previous Results

Roots of Human Sociality (Phase I), 1997-2001, was funded by MacArthur Foundation (70K; Boyd PI, Henrich co-PI). In this project we brought 12 ethnographers to UCLA and trained them in experimental techniques and behavioral game theory, with the goal of systematically performing the same social decision-making experiments across a diverse swath of 15 small-scale societies, including groups from

Africa, Amazonia, New Guinea and Asia. In an effort to reach as broad an audience as possible, we published our findings in the leading Economics journal, *American Economic Review* (Henrich et al., 2001) as well as a leading interdisciplinary journal, *Behavioral and Brain Sciences* (Henrich et al., 2005). We also published a complete record of this phase of the project in our edited volume, *Foundations of Human Sociality: Economic Experiments and Ethnography in 15 Small-Scale Societies* (Henrich et al., 2004)

I've lectured on these findings to many audiences across the social sciences, including the World Bank, United States Air Force, Goizueta Business School, National Science Foundation, and the Max Planck Institute for Human Development (Berlin).

This work has been described in many popular venues as well, including magazines, such as the *New Scientist* and *Science News*, newspapers, such as the *Wall Street Journal* and the *Dallas Morning News*, radio programs on the BBC, and television programs such as *Catalyst* (ABC TV).

Ongoing Work

Building a Program in Culture and Cognition, 2002-2007, was funded by the National Science Foundation in the United States (420K, PI Henrich). This *Presidential Early Career Award* funded the development of the Fiji project which this proposal seeks to build on. Our work in Fiji has focused on cultural learning in two domains, folkbiology and social norms. Our results are showing the learning trajectories children take to achieve adult levels of competence, who they are learning from (e.g., parents, prestigious peers, conformity to age mates), how they make inferences when cultural input is sparse, when direct instruction is required, and how play facilitates cultural learning. Methodologically, we have integrated observational and ethnographic tools from Anthropology with a wide range of experimental techniques drawn from both Psychology and Economics. Since this is a five year project, and many of our measures are longitudinal and require years of data, we've not gone to press with anything yet.

Origins of Prosocial Sentiments, 2003-2007, funded by the MacArthur Foundation (279K, Silk PI, Henrich co-PI, Povinelli, co-PI). This project uses a simple experimental measure of prosociality (a willingness to do something for other without hope of immediate return), involving real returns, to comparatively study chimpanzees and human children. Our initial chimpanzee work was published in the journal *Nature* (Silk et al., 2005). Our work with children in Atlanta continues, as do more naturalistic experiments with chimpanzees.

Roots of Human Sociality (Phase II), 2002-2006, funded jointly by the Risk and Decision Sciences, Economics, and Anthropology at the National Science Foundation (475K, PI Ensminger, co-PI Henrich). This research replicated and substantially extended our Phase I project by employing social decision-making experiments involving real money to measure altruism, fairness, and willingness to engage in both 2nd and 3rd party punishment across 15 small-scale societies. In addition to new experiments designed to measure punitive sentiments (sanctioning of norm violators), we also gathered extensive ethnographic data on market participation, local cooperation, kinship, and other economic, social, and demographic variables. Our first paper was recently published in the journal *Science* (Henrich et al., 2006), and we are about ready to send our edited volume out for review.

5. Budget Justification

Personnel Costs

Graduate Students

Yearly: I request funds for 1 master's student and 1 PhD student.

Yearly Total: 12,000 + 15,000 = 27,500.

3 Year Total = 81,000

Undergraduates

I request funding for two work study research assistants. The work study research assistants will be undergraduates who will help coordinate the lab's activities, contribute by recruiting study participants, and engage in library research, data entry and management, and other research duties.

Yearly Total: 4,000

3 Year Total: 12,000

Non-students

I request funding to continue the employment of my two Full-Time Fijian Project Directors, one in Yasawa and one in Moala. These funds are *crucial* for the success of the project. Local Fijian project directors facilitate (1) political interactions with villages, (2) participation of the project in village life (formal Fijian style speeches on behalf of the project at funerals, feasts, etc.), (3) adherence to village protocols and customs, (4) recruiting and training Fijian RAs, and (5) data collection throughout the year.

Yearly, I request 9,000/year/director

Yearly totally: 18,000

3 Year total: 54,000

Additionally, I request funding for periodic use of Fijian Research Assistants to assist with translation, data entry, observational data collection and interviews while in Fiji. This will require about 2000 per year per RA., an amount sufficient for roughly three months of full time work. Fluency in Fijian is necessary job skill rarely found among Canadian university students, so we must hire educated Fijians. Most of these RAs have been recruited from the University of the South Pacific, and thus most were students or recent graduates (The experience and training during their work with the project has provided important career boost for several people).

Yearly Total: 8,000

3 Year Total: 24,000

Release Time Stipend

I am not requesting a release time stipend.

Travel and Subsistence costs

Travel to Fiji for 4 people for 3 years (all for research).

Air fare \$1200 per person per year

Yearly Total: \$4,800

3 Year Total: \$14,400

Subsistence for 2.5 months per year for 4 people: 1500/person/year

Yearly Total: \$6,000

3 Year Total: \$18,000

In-Fiji travel, boat trips between islands for entire project team (directors, Fijian RAs, etc.).

Yearly Total: 2,000

3 Year Total: 6,000

Gifts to Villages for participation and village stays: \$500 per year per village

Yearly: \$1500

3 Year Total: \$4,500

Previously, NSF money was used to construct housing and field laboratories for the project. Part of the subsistence costs here include rent paid to the owners of the land that the houses are built on. Gifts to the villages are a necessary part of this kind of work. Villagers see it as a compensation for their time and assistance (we pay for some, but not all interviews and experiments). Village Chiefs view it as a sign of respect to them, and we cannot even visit a village without the Chiefs' support.

Compensation for participants: Recruiting non-student participants, including Fiji immigrants in Los Angeles, and non-student adults in Vancouver and LA, will require compensation. For experiments 1 and 2, we request \$10 per subject, for 150 subjects.

3 Year Total: \$1,500

Consulting and construction of Project Web Site: \$600 per year

3 Year Total: 1,800.

Supplies

Software, photocopying, shipping, international telephone calls.

I request funds for photocopying (\$100 a year), shipping to/from Fiji (\$200 a year), international calls (\$100 a year), software and software license updates (\$300 a year)

Yearly Total: \$700

3 Year Total: \$2100

Non-disposable equipment: computer hardware.

I request funds to purchase two semi-ruggedized field laptops, \$2700 each.

One mini-printer for use in Fiji: \$250

One laser printer for the UBC laboratory: \$500

One solar panel (to generate electricity to run computers and printer in Fiji): \$1000

3 Year Total: 7,150

Four year ago we brought four computers, three standard laptops and one semi-ruggedized Toughbook. The three standard computers have all died from the humidity, storms, or rough seas experienced during inter-island travel. The Toughbook continues on.

Communication of research results

We will present our finding at numerous conferences. However, we not requesting funding for this, since other sources will likely be available.