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Ethnicity, essentialism, and folk sociology among the Wichí of Northern Argentina

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among the
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by

Alejandro Suleman Erut

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ABSTRACT OF THE THESIS

Ethnicity, essentialism, and folk sociology among the Wichi of Northern Argentina

by

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Master of Arts in Anthropology

University of California, Los Angeles, 2017

Professor Harold Clark Barrett, Chair

This work explores the cognitive bases of ethnic ascriptions in the cultural context of a Native American group of Northern Argentina, namely: the Wichi. In the first part, previous hypotheses that attempted to explain the evolved mechanisms involved in ethnic induction and categorization are discussed. In this regard, the explanatory power of folk biology vs. folk sociology is intensively discussed when confronted with the results obtained in the field. The results of the first study suggest that the Wichi do not use biological information, and do not make ontological commitments based on it when ascribing ethnic identity. The second part is devoted to presenting psychological essentialism as a series of heuristics that can be instantiated independently for different cognitive domains. In this sense, the proposal advocates for a disaggregation of the heuristics associated with psychological essentialism, and for the implementation of an approach that explores each heuristic separately as a consequence of the cultural, ecological, and perhaps historical context of instantiation. The results of study two suggest that a minimal trace of essentialism is underlying Wichi ethnic conceptual structure. However, this trace is not related to heuristics that receive biological information as an input; on the contrary, it seems that the ascription of ethnic identity relates to the process of socialization.
The thesis of Alejandro Suleman Erut is approved.

Daniel M. T. Fessler
Erica A. Cartmill
Harold Clark Barrett, Committee Chair

University of California
Los Angeles 2017
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List of Abbreviations

**FBTH**: Folk Biology Transference Hypothesis.

**FBEH**: Folk Biology Exaptation Hypothesis.

**DGH**: Domain-General Hypothesis.

**FSH**: Folk Sociology Hypothesis.

**FWMc**: Wichí father, Chorote mother.

**FpMc**: Chorote father, Wichí mother

**FWMcCwLw**: Wichí Father, Chorote Mother, Wichí Community, Wichí Language.

**FWMcCcLw**: Wichí Father, Chorote Mother, Chorote Community, Wichí Language.

**FWMcCcLc**: Wichí Father, Chorote Mother, Chorote Community, Chorote Language.

**FWMcCcAw**: Wichí Father, Chorote Mother, Chorote Community, Wichí Activity.

**FWMcCcAc**: Wichí Father, Chorote Mother, Chorote Community, Chorote Activity.

**FWMcCrCWLw**: Wichí Father, Criollo Mother, Wichí Community, Wichí Language.

**FWMcCrCWLS**: Wichí Father, Criollo Mother, Wichí Community, Spanish Language.
Introduction

Humans interact with the environment in a way that requires the cooperation and coordination of conspecifics. Consequently, the landscape that results from the integration and articulation of multiple collective initiatives –many of which are the outcome of a functional differentiation of tasks (e.g. sexual division of labor) or the product of social learning heuristics (e.g. model-based learning)- creates the background from which intricate systems of social categorization emerge. Multidisciplinary approaches have shown that these systems encompass both a formal dimension and a specific instantiation (Hirschfeld, 2001; Sperber & Hirschfeld, 2004). Thus, we can expect to identify dedicated psychological mechanisms that evolved to manage the information relative to how humans identify, compare, classify, and categorize their conspecifics in the context that each social structure institutes. This work makes a contribution in this direction by discussing the cognitive bases of ethnicity in a Native South American group, namely the Wichí people of Northern Argentina.

The theoretical strategy that I will follow in the next pages will be presenting the debates on the nature of folk sociology, social ontologies, and psychological essentialism in the light of the empirical results obtained in the field, but also through the integration of ethnological and ethnographic knowledge. Complementarily, although more tangentially, I will also discuss some evolutionary questions about how humans organize social groups in general.

This has two parts. In Part I, I will present a study that aims to contribute to the debate about the role of folk sociology in the cognition of ethnic categories. In Part II, I will try to determine if the Wichí concept of ethnicity makes use of the heuristics of psychological essentialism.
Part I

Domain specificity

In the last decades several authors suggested that the human brain-mind is equipped with evolved machinery that allows individuals to learn and reason fast, selectively and –more or less– accurately about the objects and events that surround them. It was J. Fodor (1983), inspired by the works of Chomsky (1975), who first defined these inference systems –also called modules–and he did so by their non-functional properties. More recently, however, one of these features seems to play a prominent role in the theoretical discussions about how humans apprehend the world, namely, domain-specificity (Baumard & Boyer, 2013; Coltheart & Coltheart, 1999; Hirschfeld & Gelman, 1994; Prinz, 2006; Tooby & Cosmides, 1995). Hirschfeld and Gelman define the domain specificity hypothesis as follow:

“[…a body of knowledge that identifies and interprets a class of phenomena assumed to share certain properties and to be of a distinct and general type. A domain functions as a stable response to a set of recurring and complex problems faced by the organism. This response involves difficult-to-access perceptual, encoding, retrieval, and inferential processes dedicated to that solution.”(Hirschfeld & Gelman, 1994, p. 21)

Following a program of research based on the domain specificity hypothesis, some researchers proposed that there is a primary set of cognitive specializations dedicated to resolve the most basic problems humans had to face in their ancestral evolutionary environment (Atran, 1989; Carey, 2009; Kinzler & Spelke, 2007; Spelke & Kinzler, 2007; Sperber & Hirschfeld, 2004). These core domains gave place to what developmental psychologists deliberately call core cognition and underlies the fundamental ontological discernments from which both conceptual change and conceptual enrichment take place. In other words, core cognition would constitute
the starting point in human cognitive development from which human systems of knowledge arise (Carey, 1985, 2009).

However, the question of which domains effectively compose core cognition is still controversial and not free of problems. On the one side, there is an uncomfortable parallel between core domains and Western science fields (Atran, 1990, 1994, 1998; Carey & Spelke, 1994). For example, disregarding some minor discrepancies among authors, the most prominent nominees are: physical domain (Leslie, 1994), numerical domain (Carey, 2001), folk psychology (Gopnik & Wellman, 1994; Leslie, 1994), folk biology (Atran, 1994; Atran et al., 2001; Atran & Medin, 2008), and folk sociology (Hirschfeld, 1996, 2001; Shutts, Banaji, & Spelke, 2010; Shutts, Kinzler, Katz, Tredoux, & Spelke, 2011; Spelke, 2013). But although it would be difficult to contest that the these domains are probably connected to clear selective pressures, with similar criteria it would be reasonable to include other candidates such as face recognition (Kanwisher, 2000) food (Barrett, 2015), and sex (Bailey, Gaulin, Agyei, & Gladue, 1994). At the same time, some postulated domains are susceptible to be partitioned in more fine-grained cognitive specializations (e.g. physical knowledge about artifacts vs. physical knowledge about space) (see Boyer & Barrett, 2005). On the other side, there is not always consensus about what constitutes the source domain for parsing some classes of phenomena (e.g. specific ontological categories). For instance, while some authors state that social categories are a product of operations that take place as folk psychology (Carey, 2009), other authors state that the proper domain of social categorization is folk biology (Gil-White, 2001). Given this uncertainty, it seems relevant to inquire about the source domain for social categories.

Summarizing, if domain specificity is understood as “a body of knowledge that identifies and interprets a class of phenomena assumed to share certain properties and to be of a distinct and
general type” (Hirschfeld & Gelman, 1994, p. 21), it would be reasonable to ask if there is domain specificity involved in the identification and classification of conspecifics in aggregates, which information the mechanism uses to produce a satisfactory output, what the ontological status of the constructs that the system generates is, and what the problem that the mechanism is designed to solve is. In the next two sections, I will briefly review previous attempts to answer the first three questions and I will show why this work might be relevant –although not conclusive- in this regard. The last one, unfortunately, will not be answered in this paper.

A domain for social cognition

One piece of evidence that supports the hypothesis of domain specificity in social cognition comes from copious developmental data suggesting that children’s psychology is highly sensitive to extracting information about social groups. Previous research shows that early on children develop mechanisms to process specific cues that help them represent human groups in terms of gender (Katz, 1983), age (Spelke, 2013), kinship (Hirschfeld, 1994; Lieberman, Oum, & Kurzban, 2008), occupation (Hirschfeld, 1996), “race” (Hirschfeld, 1996; Shutts et al., 2010) and ethnicity (Astuti, Solomon, & Carey, 2004; Hirschfeld, 1996; Moya, Boyd, & Henrich, 2015). Additionally, Hirschfeld (1994, 1996) shows that children treat human groups as entities (e.g. “race” in American and French children). For instance, they attribute mental states (e.g. intentions) to social groups as a whole, instead of attaching the information to specific individuals (Hirschfeld, Bartmess, White, & Frith, 2007). Moreover, the susceptibility of assigning entitativity to certain social aggregates even applies for categories in which the terminology is ego-centered, like kinship networks (Hirschfeld, 2001, 2013). Finally, the way in which social cognition is developed seems to follow a pattern of maturation: e.g., children
acquire information about gender earlier than information about racialized groups (Hirschfeld, 1996).

The hypothesis of a special-purpose mechanism dedicated to processing information about human groups could be attributed to Hirschfeld (although there have been similar theoretical enterprises before (Jackendoff, 1987)). Succinctly, the folk sociological hypothesis (FSH) refer to the assumption of a domain specific mechanism that comprises

“[…] the way that humans of various cultures represent, acquire and communicate notions about human social groupings, together with how and which inferential patterns and reasonings are used in these processes.” (Kanovsky, 2007, p. 759)

Nevertheless, although children’s predisposition to cognize social groups is necessary to support the hypothesis of a domain specific mechanism, it is not sufficient. After all, it might be the case that the they process information with devices that are either domain-general or special-purpose but dedicated to a function that is unrelated to social cognition. In the first case, a larger but fine grained domain would process an heterogeneous array of stimuli by a general criteria (e.g. similarity-based), generating a nested set of categories that might include, among others, social groups (Sloutsky, 2003). In the second case, social aggregates would be a by-product of mechanisms selected to process information relative to non-social phenomena –or at least information unrelated to social aggregates (see further below). Following this later argumentation, some authors hold that social aggregates are involved in either a domain-transfer

1 This approach is not new to anthropology. In 1966, Levi-Strauss wrote:

“The differences between animals, which man can extract from nature and transfer to culture (either by describing them in terms of opposites and contrasts and thus conceptualizing them or by taking over concrete, non-perishable parts: feathers, beaks, teeth - which equally constitutes an 'abstraction') are adopted as emblems by groups of men in order to do away with their own resemblances. And the same animals are rejected as food by the same group of men, in other words the resemblance between man and animal resulting from the fact that the former can assimilate the flesh of the latter is denied, but only in so
(that is the extension of the machinery dedicated to one domain in order to analyze and operate with information that was not originally the target of the selective pressure that originated the evolutionary appearance of the mechanism (Boyer, 1990)) or an exaptation\(^2\) (that is, the shift of an evolutionary function during evolution (Gil-White, 2001)). Let’s call these proposals folk biology domain-transfer hypothesis (FBTH) and folk biology exaptation hypothesis (FBEH), respectively.

One of the areas in which this debate has taken place is in the study of race and ethnicity. The centrality of these categories might be due to two reasons: the first is that it is manifest that both race and ethnicity have a preponderant role in the resolution of modern socio-political conflicts, and the second is that both race and ethnicity invite, by the very nature of the phenomena, the incorporation of a cross-cultural approach. Saying this, though, doesn’t imply that race/ethnicity and culture should always be treated as equivalent, or that their boundaries always correspond isomorphically. It is clear that dimensions of identity such as race, ethnicity, nationality, and culture instantiate in the individual with some degree of independence (Barth, 1998; Brubaker, Loveman, & Stamatov, 2004; Eriksen, 2010; Gil-White, 2005; Tishkov, 1997). However, it is not at all infrequent to find a superposition of ethnicity and cultural boundaries for many social groups. Additionally, the importance of a cross-cultural perspective resides in that it offers a view on the universal spectrum of ontological commitments that arise from the comparative approach on the conceptual structure of ethnicity.

\(^2\) Exaptation is the original term employed by Gil-White (2001).
Trying to resolve the dispute: the cognitive basis of ethnicity

There are two alternatives to the FSH as the core domain responsible for racial and ethnic ascriptions: FBDH and FBEH. The first one states that these social categories are the byproduct of an evolved mechanism dedicated to process information about living kinds. In the early nineties, Rothbart & Taylor (1990) and P. Boyer (1990)\(^3\) presented a first version of it. The argument was that by using a conceptual structure dedicated to living kinds as a template capable of generating racial and ethnic ascriptions, humans would expend fewer cognitive resources during processing time than by developing a dedicated mechanism. Moreover, the same argument would be able to explain how the assumed perceptual qualities of race result in an ontological adjacency with biological kinds. However, Hirschfeld later showed that children do not base their judgments about race in a bottom-up like process, by parsing first the perceptual information that is matched later with the ethnic or racial labels. On the contrary, as seems to be the case for many other conceptual structures, children first acquire the linguistic labels, and other pieces of abstract information, and only later in development are they able to map the perceptual attributes of race with the abstract constructs (Gelman, 2003; Hirschfeld, 1994, 1996; Hirschfeld & Gelman, 1997).

However, and in spite of this evidence, Francisco Gil-White (2001) also tapped into the question not appealing to an ontological adjacency between race and living kinds in virtue of the perceptual cues, but to an exaptation based on the parsing of descent-based membership and endogamy. It is also worth noting that he was the first researcher that developed an empirical program to support a folk biological based argument, in this case by testing the FBEH. He describes his theoretical proposal as follow:

\(^3\) Years later Boyer (2001) recognized folk sociology as a proper domain for social categories.
“If humans come equipped with mental machinery for naively processing ethnic groups as species, this is obviously a grave mistake from the scientific point of view. An ethnic so-called nature, after all, is nothing if not a set of culturally transmitted norms and behaviors, and therefore believing these literally to result from biological descent is an ontological error. But a bad ontology may be a useful epistemology. Suppose that (1) people have cultural norms very similar to those of their parents, (2) the norms of their parents are those of their ethnic group, (3) norms differ rather sharply across ethnic boundaries, and (4) ethnies are at least normatively endogamous and fairly endogamous in practice. If these obtain, treating an ethnie as a “living kind” will generate the right behavioral prediction most of the time: your “nature” (the norms you automatically and sometimes even unconsciously adhere to) is a function of your “kind” (the ethnie you belong to), which in turn is the “kind” of your parents (since ethnies are largely endogamous). Keeping track of these “kinds” is important, for attempted interactions with aliens with different standards of performance will more likely lead to failed than to mutually profitable interactions”. (pp. 218)

The model has received several criticisms. Astuti (2001b) points out, perspicaciously, that the questions about inter-ethnic marriage presented in Gil-White’s experimental design were perfectly conceivable by the subjects; therefore, the basis of the model in strict rules of endogamy weakened the proposal of an exaptation based in a strict model of (species-level) inbreeding. Gelman (2001) questions the statement that endogamy rules are capable of trigger a priming effect in the system, since children usually have a more accurate and early notion of variables such as group boundaries, inductive potential, perceptually accessible similarities, and perceptual similarities than about rules of marriage and endogamy. In addition, she argues that
knowledge of this latter notion is often belated, in terms of development, with respect to the recognition of racialized human groups. Ma (2001) points out that the classification of living beings in terms of species is a classification of the taxonomic-hierarchical type and that there is no evidence that the category of ethnicity occupies an equivalent locus in a social structure. In addition, this author adds that ethnicities change faster in time than species, among other evident differences between the constructs.

A second alternative to folk sociology came from those who, advocating for a domain-general hypothesis (DGH), claim that domain-specific mechanisms are necessary but insufficient to explain the framework in which ethnic categories operate in a historical and cultural context. Briefly, its supporters state the following:

“[The] hypothesis relies on more domain-general, but structured learning mechanisms. These might be sufficient to allow individuals to acquire local beliefs about how various traits are transmitted, without the need for psychological adaptations specifically evolved for folksociological or folkbiological reasoning. In this case, the fact that concepts were functional for making predictions in the local environment would be a result of individual learning and cultural evolutionary processes rather than natural selection (...) Both the folksociological and structured learning accounts are premised on people’s beliefs reflecting useful and generally accurate ways of interacting with their world, given the distribution of traits across the social landscape. However, the structured learning mechanisms allow beliefs to adapt to local realities more quickly through cultural evolution”. (Moya et al., 2015, p. 599)

This proposal presents a problem that goes beyond the concern about social categories, but it would be good to clarify: the fact that some categories are culturally and historically particular
does not preclude them from being handled by a domain-specific mechanism. Domain specificity by no means conflicts with the acquisition of local sets of beliefs and/or behaviors. Many domains are empirically instantiated by the action of the phenotypic plasticity that is triggered by cues that the organism parses from the environment, and include cultural inputs. A good example is language; although language acquisition activates one or many domain-specific devices, according to some accounts, it is designed in such a way that it calibrates the domain’s parameters to the cultural inputs that the child receives from the local environment. As Chomsky (1975) showed, children implement this process without relying on domain-general mechanisms.

I will present two studies here. The first allows confirming that ethnic ascriptions could be based exclusively in sociological information, showing the relevance of the domain specificity hypothesis discusses above. The second study shows that essentialism might be playing a role in the way folk sociology instantiates ethnic categories, even when these categories are not biologically based.

**Brief introduction to the group**

**Demography and history**

The Wichí are a Native American group that inhabits the southern portion of the Gran Chaco. A majority of its members live at the northern corridor of Argentinian territory, but there are populations that extend towards southern Paraguay and southeast Bolivia. According to the Complementary Survey of Indigenous Peoples of Argentina 2004-2005 (EPCI) of the Argentinian National Institute of Census and Statistics (INDEC), there are approximately 36,000 individuals that auto-ascribe to this ethnic group; but given the difficulties that the census

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4 “Encuesta Complementaria de Pueblos Indígenas” (EPCI)
5 “Instituto Nacional de Estadisticas y Censos” (INDEC).
personnel have to implement the surveys in rural areas, and given the possibility of a social cost associated with the stigmatization of members of indigenous groups —especially for those who live in urban populations—it is very likely that the Wichí community at large exceeds that number. The Wichí constitute the second most numerous Native American ethnic group of Argentina. Nowadays, most Argentinian Wichí people live in the provinces of Salta, Chaco, and Formosa (see EPIC).

The first contact that Spanish conquerors had with Wichí populations dates from the beginning of the seventeenth century, and the scant amount of information that we have of the first centuries of interactions comes to us through the writings of Jesuits and Franciscans missionaries. During the eighteenth century, the life of many South American groups was constrained by their enforced participation in the missions and reductions (colonial settlements for the indoctrination of Native American communities) (Palmer, 2005) (also see Tomasini, 1974). In the nineteenth century and the first part of the twentieth century, the geopolitical delimitation of the national borders of Argentina—as was the case for other South American countries—through the direct coercive action of military forces, and the mechanisms of expansion of agricultural capitalism (specially for the production of sugar and cotton), constitute a second phase in the process of implementing “disciplinary practices” towards the indigenous population. During this period the native communities were forced to participate as low-wage workers for the exploitation of the vast territories of the north of Argentina at the time that their basic rights were ignored.

Nowadays, the situation of the Wichí people is still worrisome. To a great extent, mostly unable to practice their traditional ways of subsistence —given the longstanding appropriation of land by Criollos (the white or Hispanic descendants populations) with the political endorsement of the State—the Wichí are pushed to either work in very unfavorable conditions for a third party
(usually Criollos), or to receive the help of the State through mechanisms established by clientelism and patronage. The most auspicious horizon in this regard, however, is that, during the last decade, the Wichi initiated a process of land restitution; unfortunately, this process still has an indeterminate future.

**Economy**

The economic conditions of the Argentinian Native American populations are precarious. Although the Wichi were traditionally hunter-gatherers, today the major part of their income comes from state support in the form of “Universal Children Support Assignation”, “Non-contributive Retirement”, and “Support for disability”. The first is a stipend that each unemployed –or precariously employed–Argentinian citizen receives per child, with the condition of enrolling the child in school and keeping his or her immunization schedule up to date. The second kind of support establishes retirement benefits for those who do not have previous retirement contributions. The third kind of support includes a simplification of the bureaucratic conditions that allow members of the native communities to access disability benefits.

Supplementary economic activities include fishing (especially for the populations that are close to Pilcomayo and Bermejo rivers), occasional hunting, honey and carob (*Prosopis alba*) gathering (which is fermented to produce *aloja*, an alcoholic beverage), and incipient (non-commercial) agriculture. In this regard, it is worth noting that the Wichi, like the other ethnic groups of the area, do not make a living by hunting, fishing, and gathering. So, today, these activities are never their primary source of income. Other complementary economic activity comes from craftworks (typically textiles of *chaguar*-Bromelia hieronymi- and ceramic pots), logging, and adobe production. Finally, a few (usually the most privileged) community members
are employed by the government as bilingual class assistants, school employees (e.g. cleaning or cooking), forest officers, and construction workers (e.g., road or school construction).

**Language**

There are seven linguistic families in the Gran Chaco, namely Tupí Guaraní, Mataco-Mataguaya (Matako-maka), Guaycurú, Lule-Vilela, Arawak, Enlhetenenlhet (Makoy), and Zamuko. Also, there are two independent languages: Chiquitano and Guató. At the same time, the Mataco-Mataguayo family comprises four languages: Wichí, Chorote, Chulupí, and Maká. However, in spite of being part of the same family, according to ethnographic information, languages like Chorote and Wichí are not mutually intelligible, and when two members of these ethnic groups have to interact they use Spanish.

From the ~36,000 individuals that ascribe to the group, approximately 30,000 of them (the survey is restricted to subjects of 5 years and older) declared being able speak, understand, or speak and understand Wichí (EPIC). Also, Wichí is the preferred language in the household and inside each community. And although most community members speak Spanish, its use is limited to interaction with out-group individuals.

According to data collected in the field, the first language of most of the ethnic group members that inhabit rural areas is always Wichí. However, some of them also declared being able to understand Pilagá, Chorote, and Toba, when one of their parents has social bonds with non-Wichí ethnic groups. For example, during one of my interviews an elder mentioned that his mother was “Chorota”, and that she spoke Chorote to him sometimes during childhood. He also mentioned that he learned some Chorote words in school from other kids when he was young. However, to my knowledge, the degree of competence in second indigenous languages in cases of interethnic parental ties has not yet been fully documented.
Religion

Although there are no official statistics available, the influence of the Protestant Church—through the Anglican Church—in the southern Gran Chaco is pervasive. Nevertheless, the transmission of myths and traditional stories is still alive. Given the flourishing role of the Wichí language within the community, there are plenty of school materials designed to keep the traditional stories present.

Political organization

The Wichí are politically organized by la-ka-niyát (Spanish: “cacicazgos”) that constitute a flexible form of chieftainship. In the last two decades, however, their political system has faced important transformations since governmental regulations instituted the possibility of the bureaucratic creation of la-ka-niyát. After this modification, the traditional chief—a hereditary position—has been quickly replaced with the advent of a bureaucratic system: “Cacique de Personería jurídica” (Legal Status Chief).

Social organization, kinship, and linearity

The Wichí categorize people according to three levels of inclusion. First, the subject (Ego) is linked to both his uterine relatives and his agnates in such a way that the whole is categorized as "similar ones" (ihñaj). At least in terms of the cultural model, the Wichi cannot marry their ihñaj. Beyond this boundary, there are the affines: members of the Wichi ethnic group labeled as "different" (wehnazlamej) and with whom establishing a marriage union is permitted. For wehnazlamej to become potential spouses, there must be at least one previous alliance between parental groups. For example, if two individuals form a union, the possibility of alliance between the wife's brother and the husband's sister is enabled. Finally, members of other ethnic groups are
considered "strangers" (őtājwalniyētaj). In the Wichí's explicit social theory, marriage with őtājwalniyētaj is prohibited. In spite of this, in practice these unions are relatively frequent, especially following the periods during which the Chaco ethnic groups were concentrated on sugar plantations (De los Rios, 1976).

As described, the Wichí’s terminology implies a cognatic tendency since the ihñaj includes both the uterine and the agnatic relatives. However, as any union involves at least two relatives, where each one is the bearer of specific names (the extended family groups or “parentelas” used to have a name), the progeny of this union has a relationship with two parental groups -though both are ihñaj from an egocentric perspective; that is, one parental group connects to Ego via the paternal line and the other group does it via the maternal line. This fact highlights the question of how the Wichí resolve the identity of relatives, since the notion of ihñaj hides the compound in its cognatic nature. In this respect, there are several attempts at description in the ethnographic literature.

Early ethnographic studies suggested that Wichí are unilineal in the transmission of kinship identity, but there was not an agreement: while Metraux (1946) proposed that there is a patrilineal transmission of kinship identity, Karsten, on the other hand, found cases where uxorilocality prevailed in the characterization of identity, suggesting that its transmission is matrilineal (cited in Braunstein (1983)). More recently, it was suggested that the transmission of kinship identity might occur through a patrilineal scheme, giving rise to what De los Rios called preferential patrilineality (De los Rios, 1976). That is, despite a higher incidence of identity transmission by paternal line, the subject’s preferences and the circumstances could counter this tendency for different reasons. For example, if the paternal parental group is small, or if it has little socio-political power, the subject might prefer to identify himself with the maternal group
(it is worth remarking that Wichí are uxorilocal). It may also be the case that the relative distance between parental groups –and the impact of the context on the development of identity- is used as a mechanism for enabling marital unions with a relative. That is, marriages are regulated not only by the categorical relationship of the cognatic base ihñaj-wehnazlamej, but also by the parental identity (parental group name) of the relatives of the subjects involved in the marital union. The examination of these facts allows Palmer (2005) to hold the other end of the spectrum of possibilities: that the identity of kinship is not linear but contextual. That is, it is the individual’s choice to ascribe to his mother or father’s parental group in terms of identity, and this choice might be triggered by the same factors mentioned above regarding De los Rios’ proposal. The difference between preferential patrilineality and contextual linearity would be that there is no one linear option that serves by default. There is no rule, but rather contextual constraints, that the subject assesses while developing an identity.

With respect to the relationship of the Wichí with other ethnic groups (whose members are seen as òtäjwalniyétaj), there is not much information in the literature. At least in the Pilcomayo area (see fieldsite), the ethnic boundaries are shared with four other groups: to the north with the Fwumahnuí (Ethnonym: Iyojwaja/Spanish: Chorote) and the Asowaj (Ethnonym: Nivaklé / Spanish: Chulupí), to the east with the Wanzlai (Ethnonym: Qom / Spanish: Toba), and to the west with the Suwele (Ethnonym: Ava / Chiriguano). According to ethnohistorical information, until the early 20th century, the relations with the òtäjwalniyétaj were essentially hostile, and often warlike, with scant intermarriages. It is mainly after the period in which the Wichí start to
participate in the sugar and cotton plantations where interethnic unions became increasingly frequent, allowing the documentation of the existence of affine relations.⁶

But although the transmission of kinship identity seems to be contextual, and although not much information is available about the linearity of ethnic identity, there are other beliefs that give special status to patrilineality. One of these is the explicit folk model of conception. This model, which constitutes a biological relation with the fetus and the father, states that it is the father who "makes" the child in the womb of the mother by accumulation of semen, indicating a theory of the patrilineal conception:

(...)*We men are as if we plant when we fuck (: we copulate). . . It becomes as if one sowed. And when she is fucked (: copulated) the woman gets pregnant. And women have also been made so that the people increase (= reproduce) because if there were no women nobody would increase. . . That's why there are women. . . So that the married men go fuck (= copulate) and they are going to increase a lot. That is why when I impregnate the woman, I make the child; so, when we having father, we do not follow the mother (= refers to preferential patrilineality). If I have a family, the family of my parents, is my own family. And my mom's family is not like my own, but the one that is valid is the one of

⁶ In this regard, the following testimony of Nowaitsés, a Wichí member of Mission San Antonio, can be informative:

"When they arrived at the sugar mill, they were already separated. If there are captains of Chulupi, they sent them to a lot, and if it is Toba they sent it to another lot and if it is Wichi they sent it to another lot. And so they were separated in the sugar mill. Then, after that, they have already become friends. And when different ethnicities / were joined / they did nothing to each other, they no longer bothered (: they attacked). And then, the Chorote already knows (: used to) to marry the Wichi and the Wichi already know to marry with the Chorote; Tobas also did so. Then when a Chorote marries a Wichi woman, a child comes out. And if a Wichi marries a Chorote woman, the son already leaves Wichi-slès (: lit. son-of-Wichi), because the son always carries (follows) the father (patrilineality). But when the son is already older, he already understands the language of the Chorote. In Mision La Paz (Province of Salta) there are many Wichi who understand words (: language) of Chulupi and, in the Pilcomayo, there are some Wichi who understand the words of Toba. Because the one who used to do that / the different languages / was Tokhwah ." (De los Rios, 1976, p. 93) (Comments are original, emphasis added.)
my father. That's why I take the name of my father's family (= refers to the band or lineage). Because it is the custom. They do so because when the man puts (= inseminated) into the woman, the milk (= sperm) much, then I increase, I make offspring: to my son until the woman stops. (Fillahén-Popnus.) (De los Rios, 1976, p.107) (Comments are original, emphasis added.)

This testimony justifies the patrilineal transmission of the parental group’s name through a biological theory of reproduction. However, as noted, this is not always the case.

Complementarily, during the couvade there is a metaphysical transmission of blood between the father and the son:

"When a Wichi woman reaches the final stage of her pregnancy - that is, when she is very 'big' (wuschê) and her eyes sink, 'as if she were dying' - her spouse becomes a 'withered anus' (Wejsûj). He is called this because he 'becomes sick for his son' (yilêj zlâs) and becomes thin and weak. His illness is because he is transferring blood to the unborn child.

" (Palmer, 2005, p.191)(My translation)

Unlike the theory of conception by accumulation of semen that constitutes a physical phenomenon, the transmission of blood during the couvade constitutes a metaphysical one, but it is a correlate of the first, and a confirmation of a patrilineal imprinting. In this sense, Palmer further emphasizes that "consanguinity is exclusively a paternal relationship" by the fact that the couvade rite would have the purpose, in the cognatic societies, of carrying out a public demonstration of paternity and reaffirmation of the rights over the children, serving as a counterweight to the matrilineal residence prescriptions (2005, p.191).7

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7 See also Walker et al. (2010) for an interesting analysis of paternity in some groups of South America.
In short, the exploration of the theoretical structure of Wichí sociological classifications adds some challenges to any proposal that states that rules of descent and endogamy will be parsed as traits of biological species. The main reason is that there is no cause to think that marriage rules and theories concerning kinship identity and ethnic identity go hand in hand, all under the same set of principles. As it is presented in the ethnographic literature, the distinction between "ihñaj" and "wehnazlamej" is based on cognatic-type principles, kinship identity is inscribed - apparently - in a circumstantial system, and the reasoning about ethnic identity is still unknown. Moreover, both the theory of conception -which is part of Wichí ethno-biology - and the recognition of paternity through the couvade –embedded in ethno-metaphysical beliefs- seem to be based on a (patri)lineal type.

Given this theoretical map, it is legitimate to ask in which of all these lines (or zigzags) of descent should exaptation or transfer be founded: in the theory of parental group identity, in the biological theory of reproduction, or in a metaphysical theory that makes use of blood as an essence? The following study aims to contribute to this discussion by determining the source system that is implied in the cognition of ethnic adscription. I hypothesize that if there is no evidence for a biological basis in Wichí beliefs about ethnicity, there is no reason to claim folk biology as a source domain for social categories.

Study 1

Materials and methods

Study fieldsites
The study site is the small area that spreads through the west coast of the Pilcomayo River, in the southwest Gran Chaco. The Argentinian Chaco is a relatively dry region, with high temperatures throughout the year (more than 50 C/122 F in January for the fieldsite area) except for the period that ranges from June to August, which has temperate weather (~20 C/ ~68 F). The rainy season takes place between November and March, with high levels of precipitation and frequent flooding due to the Pilcomayo’s regular overflows.

The data presented here were collected in several fieldsites that are all close to Santa Victoria Este (22°16′00″S 62°42′00″W), Salta province, Argentina. Santa Victoria Este is a small rural municipality that functions as the administrative center of the region that sits to the southwest of the triple border of Argentina, Bolivia, and Paraguay. The communities visited, all near the west coast of the Pilcomayo River, were Cañaveral, Misión San Luis, San Nicolás, Cruces Santa Victoria, and Santa Victoria Este II.

The data were collected during my last visit during July-August of 2014. The research was carried out –in part— thanks to a grant from the Argentinian National Foundation for the Arts (FNA).

**Design**

Study 1 comprises four sets of vignettes (nine total) that were presented to the subjects during daily conversations. In other words, the context was more ethnographic than that of formal experiments. However, I carefully avoided asking the questions while the subjects were working or participating in activities other than having a one-on-one conversation with me. Thus, the interviews took place in situations where the subject and researcher were alone and relaxed, such as sitting under a tree or standing by the subject’s house.
The template is based on an extension of the adoption task (Astuti et al., 2004; Bloch, Solomon, & Carey, 2001; Gelman & Wellman, 1991; Gil-White, 2001; Hirschfeld, 1996; Kanovsky, 2007; Solomon, Johnson, Zaitchik, & Carey, 1996), which is designed to track if the subjects’ inferences about living kind categories are based on nurture or nurture. In the variants presented here, the goal is to determine if the Wichí ascribe ethnicity by using biological information, or if, on the contrary, they base their ascriptions on sociological information.

**Subjects**

All interviews were performed with adults and in Spanish. Most subjects do not read or write. Paraphrasing was not necessary except for a few occasions when the subject asked for a repetition or clarification. Unusual for a study of this kind, the lack of need to paraphrase was probably due to the fact that the design of the vignettes is very simple. The subjects’ participation was completely voluntary and without payment. Table 1 presents the basic demographic information of the participants for each set. The limited participation of female subjects was due to cultural gender restrictions. The Wichí have strong gender boundaries regarding contact with strangers. For instance, on those occasions when I was talking to the head of the household, if his wife was present, she usually kept some meters away from us. And although they were listening carefully to the conversation, these women’s interventions were without exception indirect: they talked to their husbands, not to me. However, some women agreed to participate in the study, especially those in families with whom I had already established a closer relationship.

<table>
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Set 1

The first set begins with two questions designed to test the following hypothesis:

**H1:** If ethnicity is processed as folk biology, and if endogamy and lineage are parsed as features of biological species, then ethnic identity will be passed from father to offspring in a patrilineal system, from mother to offspring in a matrilineal system, and at random in a cognatic system.

In order to test this hypothesis two questions were adapted from Gil-White (2001):

- **FwMc:** There is a baby who has a Wichí father and a Chorote mother. In your opinion, is the baby Wichí, Chorote or both?

- **FcMw:** There is a baby who has a Chorote father and a Wichí mother. In your opinion, is the baby Wichí, Chorote or both?

**Results**

Figure 1 summarizes the results for sets 1 to 4. For FwMc 29.17% of the subjects assigned a Wichí identity to the newborn. The remaining 70.83% ascribed to the baby a double Wichí-Chorote (W/C) identity. For FcMw the results were 25% Wichí, 8.33% Chorote and 66.67% Wichí-Chorote (W/C) double ascription.

FwMc shows what seems to be a slight father bias, although it is lesser compared to the W/C values. In this condition, no subject ascribed mothers’ identity to the child. However, to
determine if the ethnic identity is effectively passed in a patrilineal way, \( F_C M_W \) should be analyzed as well. \( F_C M_W \) does not show a strong father bias. Just two subjects (of \( N=24 \)) assigned identity according to the father’s ethnic identity (Chorote 8.33%). Complementarily, the W/C option was, as in \( F_W M_C \), the most frequently chosen. Moreover, in \( F_C M_W \) some subjects assigned the father’s identity to the baby, but it might be an in-group bias that could have affected the results of \( F_W M_C \) as well.

In spite of the results, the absence of a clear lineal transmission of ethnicity is not enough to abandon Gil-White’s exaptation hypothesis given that it is based on line of descent and category-based membership. Consequently, the presence of a contextual cognatic system, as the ethnographic literature suggests for the Wichí, would be compatible with the results obtained in Set 1. That is, according to the FBEH, the Wichí inference mechanism would deliver an output compatible with a case in which the newborn has the potential to become a member of both groups given that he shares \textit{biological bonds} with Chorote and Wichí. To better adjudicate between the possible explanations, a new set of vignettes was therefore designed in order to determine the role that the introduction of social information has for Wichí’s inferences, and to determine whether the results of Set 1 represent a \textit{biological/innate potential} (that is the belief or assumption “that a set of characteristics will unfold with maturation, even though they show no sign at birth” (Gelman, Coley, & Gottfreied, 1994, p. 350)(see also Gelman & Hirschfeld, 1999)) or just a by-product of the lack of relevant social markers that the system requires to deliver an unambiguous output.
Set 2

Specifically, this set was designed to test the following hypothesis:

**H2**: If ethnicity is cognitively processed, as the FBEH suggest, by a folk biological domain grounded on group-based endogamy and descent-based membership, we should not expect any particular effect from the divergence or convergence of less-normative social variables such as language or living place.

Wichi often say explicitly that language and living place play a significant role among the criteria by which ethnic ascriptions are based. For instance, in this testimony obtained during my fieldwork, an elder describes his experience as a member that has a “mixed” background and how he ascribes the ethnic identity of his children:

"My father was Chorote (...) I feel close to Chorote, but I am Wichí (...) The language [:Chorote] I cannot speak it, but I understand it. I understand what they are talking about."
No longer (...) because we are far, my children no longer understand anything, then I say they are just Wichí. I have both families but I feel more Wichí because I grew up a lot there [:it is frequent to travel from one community to another to visit relatives, these trips are called “visits”, although possibly it might be a case of uxorilocality](...)

When one gets older one sees which s/he will follow: Chorote or Wichí [:contextual ascription]. If I like it, I'll stay with Wichí; if I don't like it, I'll stay with Chorote.” (Wichí elder, San Nicolás community, July 2014)

In order to determine the strength of either convergence and divergence of social variables, the following questions were employed:

**FwMcCwLw**: There is a child who has a Wichí father and a Chorote mother. He lives in a Wichí community and speaks Wichí but not Chorote. In your opinion, is the child Wichí, Chorote or both?

**FwMcCcLw**: There is a child who has a Wichí father and a Chorote mother. He lives in a Chorote community but also speaks Wichí. In your opinion, is the child Wichí, Chorote or both?

**FwMcCcLc**: There is a child who has a Wichí father and a Chorote mother. He lives in a Chorote community and speaks Chorote but not Wichí. In your opinion, is the child Wichí, Chorote or both?

**Results**

Results for FwMcCwLw, FwMcCcLw, and FwMcCcLc were as follow. FwMcCwLw displays a robust ascription of Wichí identity: 92.31%; Chorote and W/C ascriptions are less significant with 3.85% each. FwMcCcLw shows less robust values, probably random. The percentages for
each category are 30.77% for Wichí, 19.23% for Chorote and 50% for the double identity W/C. Finally, for $F_WM_cC_cL_c$ the results are 84.62% for Chorote, 11.54% for Wichí, and 3.85 for W/C. While $F_WM_cC_cL_w$ shows a prevalence of the ascription of the child as Wichí, $F_WM_cC_cL_c$ exhibits the mirror pattern: that is a prevalence of the child’s ascription as Chorote. This is probably due to the weight of the convergence of sociological variables such as language and place of residence. Unlike $F_WM_cC_WM_cL_w$ and $F_WM_cC_WM_cL_c$, in $F_WM_cC_WM_cL_w$ the results are somewhat ambiguous, showing a pattern that might be random - except for a minor emphasis in the mixed category, which as suggested, could symbolize the cognatic and/or the contextual imprints. Summarizing, the results seems to suggest that biological information is not relevant for Wichí ethnic adscriptions. Moreover, it is clear that the psychological mechanisms involved are sensitive to the convergence or divergence of sociological markers. Thus, given the data, H2 should be rejected.

**Set 3**

Set 3 tested the following hypothesis:

**H3**: If the FSH is correct, it would be reasonable to find a particular effect from the divergence or convergence of social variables such as activities or skills and living place.

In this case the hypothesis is particularly interesting because the Wichí frequently say that although Chorote and Wichí people speak different languages, and have different beliefs, both “do the same things in the same way”.

The set has two questions designed in such a way that they make explicit reference to the ethnic origins of the activities in order to evaluate the importance of these cues during the inferential process:
FWMCcCAW: There is a child who has a Wichí father and a Chorote mother. He lives in a Chorote community but also fishes like a Wichí. In your opinion, is the child Wichí, Chorote or both?

FWMCcCAc: There is a child who has a Wichí father and a Chorote mother. He lives in a Chorote community and only does things the way that Chorote people do, like the way they cut wood. In your opinion, is the child Wichí, Chorote or both?

Results

In FWMCcCAW 60.87% of the subjects assigned a Wichí identity to the child, 30.43% choose the Chorote category, and 8.7% the double W/C category. For FWMCcCAc the results are 21.74% Wichí, 78.36 % Chorote, and none assigned W/C.

It is unclear why in FWMCcCAW there is a prevalence of Wichí ascriptions given that the variables do not converge, but it might be due to a synergetic combination of the “activity” markers in addition to an in-group bias effect. A second explanation could be that if, compared to FWMCcCLW (also with divergent cues), FWMCcCAW shows a lesser “random” effect due to the relative weight that Wichí folk sociological theory may give to language vs. activity. However, this possibility seems unlikely given the prominent role that language has in their explicit references to ethnic markers (it was common for me to find reports about linguistic boundaries when I asked about how they recognize a Chorote member). A third possibility is that the results are merely an artifact of the methodology employed, in which the activity was explicitly marked. This last option may be the most cogent explanation of the distribution observed.

In FWMCcCAc the convergence of activity and living place results in a stronger consensus for the Chorote ascription. It is noteworthy, nonetheless, that the effect on the ascription of W/C
category was less strong in both questions of the set – even in \( F_W M_C C_C A_W \) where divergent cues are clear. As in Set 2, and in spite of the puzzling results of \( F_W M_C C_C A_W, F_W M_C C_C A_C \) evidently shows that Wichí people use social information to infer ethnic adscriptions.

**Set 4**

Set 4 was designed to explore the weight on the inferential process about ethnicity of the group to which the Wichí are compared. The hypothesis is:

**H4**: If FSH is correct regarding the processing of ethnicity, there should not be a particular effect when the groups being compared show marked phenotypic differences.

The questions of this set are similar to those of Set 2 except for the reason that the relation is established with Criollos (English: “Hispanic or White” / Wichí: “Ahatai” – non-indigenous people). It is important to mention that the Wichí explicitly believe that Criollos look different. Specially, they frequently mention a difference in skin color. The questions developed are the following:

- **F_W_M_CR_C_W_L_W**: There is a child who has a Wichí father and a Criollo mother. He lives in a Wichí community and speaks Wichí. In your opinion, is the child Wichí, Criollo or both?

- **F_W_M_CR_C_W_L_S**: There is a child who has a Wichí father and a Criollo mother. He lives in a Criollo community. He speaks Spanish but also speaks Wichí. In your opinion, is the child Wichí, Criollo or both?

**Results**

The results for \( F_W M_C R_C_W L_W \) were 78.95% Wichí, 5.26 Criollo, and 15.79% the double identity Wichí-Criollo. For \( F_W M_C R_C_W L_S \), the results were 44.44% Wichí, and 27.78% for each of the remaining categories.
Regardless of both the power asymmetry (the Criollos represent the ethnic majority at the national level) and the phenotypic differences between Criollo and Wichí, the results were fairly similar to those obtained using questions that compared Chorote vs. Wichí. It is clear that when the social (and relevant) variables are convergent, identity ascription is quite robust. In contrast, when sociological information is divergent or ambiguous, the subjects’ responses are not markedly patterned.

**Discussion**

After exploring many possibilities, it seems clear that Wichí folk ethnic ascriptions rely more on sociological than on biological information. Set 1 shows that there is no linearity in the transmission of ethnic identity. Set 2 shows that the subjects parse social information (e.g., language and living place) to ascribe ethnic identity. Set 3 might show that not every social cue is weighted in the same way. Finally, Set 4 shows that in spite of the power relations and phenotypic differences, the convergence or divergence of social cues play a role during cognitive processing of ethnic ascriptions.

These results provide no evidence to support the hypothesis that folk biology underlies inferences about ethnic adscriptions. Even when Wichí explicit folk biology shows traces of patrilineality—as in their theory of reproduction by accumulation of semen, or during the metaphysical transmission of blood during the couvade—these beliefs do not seem to be part of the information that is being assessed during ethnic ascriptions. Similarly, there is no direct evidence that kinship structure operates during subjects’ inferences about ethnicity, nor that ethnicity is transmitted by lineal means. Moreover, the data suggest that social variables like language, residential location, and activity are effectively and accurately computed to generate
inferences about ethnic identity, which leads to a rejection of folk biology in its two forms, FBDH and FBEH.

Finally, even when the results are unambiguous, all cases presented could give place to a slight form of naturalization (that is, a biological component of ethnicity) since the subjects might infer/believe that there is a biological bond between the baby/child that is described in the vignettes and his/her parents. In this regard, they might interpret this bond as a form of “innate potential” whose phenotype is expressed during development and is triggered through cultural inputs such as living place, language, or other behavioral cues. In other words, the fact that the baby/child has biological links to both ethnic groups allows for a form of innate assumption that could be developed in both directions. For this reason, and in order to ensure that Wichí ethnic adscription do indeed prescind biological information, a different design—in which there is no biological connection with members of one of the compared groups—is needed.

**Part II**

**Ethnic categories as natural kinds and the role of psychological essentialism**

Although the determination of the type of mechanism involved in the cognition of social categories (domain general or domain specific), as well as the causal nature of the constructs that the mechanism delivers (biological or social kind), are both of fundamental importance to understanding the psychological process that underlies ethnic identity, there is a third element that is crucial here, and relates to the following ontological demand: why are some social categories treated as “natural” (i.e., biological) while others are not? As suggested before, part of the argumentation that holds that race and ethnicity result from a domain-transfer or an exaptation from folk biology is founded on the evidence that these categories—though context-dependent—are susceptible to being treated as natural kinds (Gelman, 2003; Gil-White, 2001;
Hirschfeld, 1994). In other words, when that is the case, subjects would believe that the underlying causal mechanism that gives rise to an individual’s racial or ethnic identity is not mediated by deliberate human action, but by natural forces (e.g., by an innate potential and/or by biological transmission mechanism).\(^8\) According to this theoretical approach – implicit in the FBDH – the resemblance that race and ethnicity would share with natural kinds (e.g., animals) results from hypothesizing that subjects cognize these social groupings as the outcome of a biological process in virtue of superficial features (e.g., skin color) – instead of resulting from the acquisitions of social markers / traits. Therefore, and according to the FBDH, this superficial resemblance would constitute the informational input (perceptual) that the mechanism (i.e., folk biology) needs to activate its inferential process.

However, there are at least three problems with this argument. First, not all social categories present the same susceptibility to being treated as natural kinds; although constructs such as “race” are frequently naturalized in folk beliefs, there are other social categories -- such as occupation, body-shape-based categories, or religion -- that are rarely naturalized, and, moreover, this proclivity probably decreases for compound concepts.\(^9\) Thus both the FBDH and FBEH should be able to explain why a folk biological mechanism delivers non-natural ontological commitments for some social categories but not for others – unless supporters of these positions would be willing to posit that the only social category that these hypotheses explain are “race” and ethnicity. Second, it does not follow from the fact that some social categories show an innate potential (i.e., nature-based assumptions), that the underlying source domain has to be biological. After all, the belief in an innate potential could be part of a heuristic that is independently instantiated in different domains (see Kanovsky (2007) for an extended discussion). Third,

\(^8\) Actually, they would make such ontological commitment.
\(^9\) Each society defines which categories are treated as innate. See for instance, the case of witches among the Azande that was described by Evans-Pritchard (1976) (in particular in chapter 1).
although some authors try to persuade us that “the ethnographic literature suggests that all over the world—no matter how culturally marked ethnic actors may be—the ‘rule’ for making ethnic ascriptions is based on blood much more than on enculturation” (Gil-White, 2001, p. 523), this is not precisely what much empirical research suggests. Rita Astuti (1991, 1995), for instance, has shown that the Vezo of Madagascar do not believe that ethnicity is transmitted by natural means. On the contrary, the Vezo believe that it is the set of “things they do”, “in the way they do”, that makes someone a Vezo. In the same line, Christina Moya and Rob Boyd (2015) reported similar results for the Quechua-Aymara communities of the Huatasani area of the Peruvian Altiplano. Finally, I will show that this is also the case for the Wichí people of Northern Argentina. In other words, the scope of the proposal that states that ethnicity is always cognized as a natural kind may be quite constrained.

An alternative to the folk biology-based explanation arises by assuming that ethnic concepts rely on contingencies of the social and ecological context (e.g., ecological factors, historical events, knowledge and experience of past generations) that motivate—or do not—the empirical instantiation (due to phenotypic plasticity) of a set of specific heuristics that coalesce in what is called psychological essentialism. Once they are invoked in a specific domain, these heuristics could—but do not have to—rely on natural assumptions such as innate potential.

According to Susan Gelman, psychological essentialism can be understood as

“(…) the view that certain categories have an underlying reality or true nature that one cannot observe directly but that gives an object its identity, and is responsible for other similarities that category members share.” (Gelman, 2004, p. 404)

Gelman’s definition thus states that essentialism implies the belief in an underlying nature, but does not state that this nature constitutively (i.e., inherently, necessarily, etc.) entails biological
assumptions. Moreover, psychological essentialism does not state that things actually have an essence; on the contrary, it states that it is the representation of the world that implies such a belief, irrespective of the metaphysical fallacies it could demand (Medin & Ortony, 1989). It constitutes an early and ubiquitous bias—explicit, implicit, or both—that leads humans to assess “members of a category as sharing a deep, underlying, inherent nature” (Rhodes, Leslie, & Tworek, 2012, p. 13526) (See also Ahn et al., 2001; Gelman, 2003, 2004; Gelman & Medin, 1993; Medin & Ortony, 1989).

Suggestive evidence supports the hypothesis of an underlying essentialist reasoning heuristic that subjects use to identify, compare, classify, infer, and predict information about category members (Gelman, 2003). This evidence is wide both in terms of the ontological diversity in which essentialism operates (e.g., living kinds, natural kinds, psychological traits, social categories, etc. (Ahn et al., 2001; Atran & Medin, 2008; Gelman & Hirschfeld, 1999; Kanovsky, 2007; Rhodes et al., 2012)) as well as in terms of the variety of cognitive tasks that it is involved in (induction, inference, categorization, sorting, etc. (Ahn et al., 2001; Gelman, 2003; Gelman & Hirschfeld, 1999)). Moreover, psychological essentialism might be an evolutionary adaptation that allows organisms to reduce information by inferring the world’s structure—even when this structure could be epistemologically false or metaphysically erroneous (Barrett, 2001; Boyer, 1994a, 1994b, 2001). It has also been suggested that essentialist beliefs could be related to the way subjects value objects, events, and living things, leading, in some cases, to several types of socio-centrism (e.g., age-, gender-, ethno-centrism, etc. (Cairns, 2011)).

Inherent to the idea of psychological essentialism is the notion of placeholder, as the operational locus where an essence-like-belief is placed—without implying conscious access to the content of such belief (Gelman, 2004). Thus, placeholders might be “filled” by conceptual structures of
different kind: while in some instances a placeholder might encompass beliefs about necessary and sufficient concepts’ properties, in other instances it might contain more complex structures of belief such as scientific theories, philosophical speculations, or other explicit ethno-theories (Medin & Ortony, 1989).\(^{10}\)

In spite of the large number of studies on psychological essentialism, the question of its constitutive properties—or set of heuristics—remains open. Susan Gelman (2003, p. 306), describes its fundamental formal features as follow:

1. “There is a nonvisible part, substance, or quality in each individual (as an individual or as a member of a category).

2. This part, substance, or quality is inherent and very difficult to remove.

3. The part, substance, or quality has the property of transferability—it is passed along from parent or host to offspring or client, typically at a specific moment or brief period.

4. This transfer from parent or host to offspring or client does not diminish the amount of essence or its consequences for identity in the parent or host.

5. This nonvisible part, substance, or quality has vast, diffuse, unknown causal implications.

6. The implications include authenticity and identity.”

\(^{10}\) In this sense, research on psychological essentialism undermined the previous paradigm in psychology of concepts that privileged perceptual over category-based information (as suggested in the FBDH), showing that a good part of the information contained in the conceptual structure does not come from perceptual sources but, instead, it is transmitted and shaped by language and cultural practices—both dimensions that have the particularity of crystalizing the experience of previous generations (see Gelman & Medin, 1993).
In a more recent paper the author added the following properties regarding the essence placeholder:

“The essence placeholder would imply that categories permit rich inductive inferences, capture underlying structure (in the form of causal and other non-obvious properties), have innate potential, and have sharp and immutable boundaries”. (Gelman, 2004, p. 404)

As mentioned, Martin Kanovsky (2007) proposed that these features, or heuristics, can be causally instantiated through different pathways for each mental domain. That is to say, while some of these properties are constitutive (necessary properties) of psychological essentialism, others might be empirical (properties that might be present or not, depending on the contingent facts associated with each instantiation – e.g. cultural beliefs). A consequence of this reasoning is that the classic ontological distinction between nature and nurture is not enough to explain the richness of the products of different combinations of these heuristics. Finally, this would explain – at least as a proximate explanation\(^\text{11}\) - why some social categories are treated as natural in some societies but not in others, given that cultural and historical dynamics might be at work.

To summarize, there are some advantages in adopting psychological essentialism as a theoretical frame to address ethnic categorization. First, by breaking down the heuristics that underlie the Wichi ethnic conceptual structure, it is possible to access a more fine-grained picture of the ontological commitments that this structure implies. Second, by emphasizing the role of beliefs, language, and cultural representations for many conceptual representations, psychological essentialism opens the door to a theoretical discussion about the relationship

\(^{11}\) The ultimate explanations for each particular instantiation remain unaddressed as yet.
between these constructs and the phenotypic plasticity that folk sociology offers, and how it shapes the constructs that the mechanism delivers. Third, it can help organize a matrix—or template—of features that could help implement formal procedures to compare (within and between cultures) the instantiation of multiple social categories.

The following study aims to explore several concerns relevant to psychological essentialism. First, it aims to determine whether Wichí folk sociology instantiates some of the heuristics provided by psychological essentialism. Second, if some essentialist heuristics are indeed at work, the study will try to define whether they imply biological assumptions about ethnicity or, conversely, are compatible with a more sociological instantiation of ethnicity. Third, if some essentialist heuristics are at work, the study will try to determine whether Wichí ethnic category boundaries are sharp or fuzzy. This point is especially pertinent given the frequency of responses in Study 1 that mixed identity ascriptions. Finally, and as a consequence of the previous point, I will discuss the theoretical need for discriminating between constitutive and empirical properties of psychological essentialism. By way of prelude, it is important to first review the ethnographic literature about essentialist beliefs in Wichí ethno-theories.

**Explicit essentialist beliefs among the Wichí**

From the ethnographic introduction presented above, it is possible to infer that both the Wichí ethno-theory of conception and the transmission of blood during the *couvade* show features of essentialist beliefs. In both cases there is a substance, a mechanism of transmission, and a consequence for the identity of the recipient (i.e., human identity in the conception, and son/daughter in the *couvade*). The fact that in one case the process is conceived of as physical and in the other as metaphysical does not affect the formal structure of psychological essentialism.
In addition to the above, a third Wichí ethno-theory, the concept of husek, also presents essentialist features. Described in detail by Palmer (2005), the notion of husek resembles - albeit not identically - the notion of soul (see also De los Ríos, 1976; Montani, 2012; Siffredi, 1976; Taverna, Waxman, Medin, & Peralta, 2012). Moreover, to strip it of Western traces, Palmer prefers to translate the term as "will". Regarding its conceptual extension, husek refers, on the one hand, to a property of the animated beings /ANIMATED/, whether human, not human, or ahot (spiritual beings). On the other hand, it has an extension that corresponds to all living beings /LIVING BEINGS/ (some plants included) (Tavernaa, Waxman, Medin, & Peralta, 2012). However, what is most relevant is that, in its human manifestation, the husek is susceptible to undergoing transformations that accompany the development of the person by the gradual incorporation of the social norms, values, behaviors, and attitudes; in other words, a Wichí’s "goodwill".

The Wichí describe the body (t'isán) as the "house" that the husek inhabits. The body is the instrument by which the husek acts in the physical world (Palmer, 2005, p.189). So the child’s husek must be socialized in order for the child to be able to incorporate himself, as a person, into "the social will" –as a collective representation of the moral community. The developmental process during which the husek is socialized – a situation that is unique to humans (hin'ulh)– is understood as the husek’s first transformation. The last transformation is always posthumous, and co-occurs with the death of the person. However, the way in which the husek is incorporated into the life cycle is not at all clear. Although the embryo is gestated by accumulation of semen, it lacks the vital will until the moment of the couvade. In this sense, is through the couvade that the husek is introduced into the embryo.
Table 2 summarizes and compares aspects of some Wichi ethno-theories. Of course, we lack relevant and sufficient information to determine the psychological salience of each of them. However, it is relevant to note that the first two (i.e., ethno-theories of conception and fatherhood) seem not to be related to the way in which ethnicity is represented. The influence that a theory of *husek* might have on ethnic ascriptions, given that it represents a theory of socialization, is unclear and will not be resolved here, but it is worth pointing to the fact that this connection might exist.

**Table 2**

<table>
<thead>
<tr>
<th>Type of theory</th>
<th>Explanation of</th>
<th>Essence</th>
<th>Lineal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>Conception</td>
<td>Semen</td>
<td>Yes</td>
</tr>
<tr>
<td>Metaphysical/biological</td>
<td>Fatherhood <em>(couvade)</em></td>
<td>Blood</td>
<td>Yes</td>
</tr>
<tr>
<td>Metaphysical/social</td>
<td>Socialization</td>
<td><em>Husek</em></td>
<td>?</td>
</tr>
<tr>
<td>Social</td>
<td>Ethnicity</td>
<td>Unknown</td>
<td>No</td>
</tr>
</tbody>
</table>

**Study 2**

**Materials and Methods**

**Study sites and subjects**

The study sites are the same communities visited for Study 1: Cañaveral, Misión San Luis, San Nicolás, Cruces Santa Victoria, and Santa Victoria Este II. Study 2 was also performed between July and August of 2014.

The subjects are all adults volunteers who participated without compensation. The interviews were conducted under similar conditions to those in Study 1: the questions were asked in Spanish during daily conversations when the researcher and the participants were alone. A number of subjects who participated in Study 1 were also interviewed for Study 2. Table 2 presents the
basic demographic information of the participants for each set. Question Wichí/Criollo (Set 6) has a smaller N (22 instead of 26) because it was included later in the study. The small number of female subjects is due to the same factors discussed regarding Study 1: for a male researcher, interviewing female subjects is usually difficult.

### Table 3

<table>
<thead>
<tr>
<th></th>
<th><strong>All Conditions</strong></th>
<th><strong>Nationality and Wichí/Chorote</strong></th>
<th><strong>Wichí/Criollo</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>26</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td><strong>Age Mean</strong></td>
<td>34.5</td>
<td>34.5</td>
<td>32.2</td>
</tr>
<tr>
<td><strong>Males</strong></td>
<td>23</td>
<td>23</td>
<td>19</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### Set 5

Set 5 contains three questions/hypotheses. The first question (Adoption) refers to a baby that is adopted by a couple whose ethnic identity differs from the identity of the biological progenitors (“parents”). Thus, in this question it was possible to explore whether there is effectively no trace of biological assumptions (e.g., innate potential, biological transmission) in the subjects’ inferences about ethnic identity. The second question (Adult Migration) is designed to look for evidence of psychological essentialism. If ethnicity is treated in an essentialist way, once a person acquires an identity, it will be not removed or replaced, even if the same mechanisms by which he or she acquired the essence are at work (language and residential location) but exercising a contrasting influence. The third question (Family Migration) was designed to examine the influence of horizontal vs. vertical transmission of ethnic identity, that is, its directionality (cf. Moya et al., 2015). Table 3 displays the hypotheses addressed by the set and the questions used to test them.
Table 4

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H5a</strong>: If Wichí believe that ethnicity is biologically transmitted, then there must be an innate potential regarding ethnic identity.</td>
<td><em>(Adoption)</em> There is a baby who has Wichí parents but they died in an accident. After that, a Chorote couple adopted the baby. The child now lives in a Chorote community. In your opinion, is the child Wichí, Chorote or both?</td>
</tr>
<tr>
<td><strong>H5b</strong>: If the Wichí ethnic theory is essentialist, for a target individual who has already acquired an essence, migration should not exercise a sufficiently strong influence as to remove or change that essence.</td>
<td><em>(Adult Migration)</em> There is a man who has Wichí parents. He grew up in a Wichí community and lived there until he was thirty years old. Then he decided to move to a Chorote community. Now he speaks Chorote perfectly. In your opinion, is he Wichí, Chorote or both?</td>
</tr>
<tr>
<td><strong>H5c</strong>: If ethnic identity is vertically transmitted, provided that the child grew up among his or her elder family members, current social context (residential location and social partners) should not influence ethnic identity.</td>
<td><em>(Family Migration)</em> There was a couple with a two-month-old baby. The parents are both Wichí, but they decided to move with the baby to a Chorote community. The baby grew up in this community and mastered both languages: Wichí and Chorote. In your opinion, is the child Wichí, Chorote or both?</td>
</tr>
</tbody>
</table>

**Results and Discussion for Set 5**

Results are summarized in Figure 2. In the Adoption task, 29.63% of the subjects ascribed a Wichí identity to the child, 66.67% a Chorote one, and only 3.7% assigned the double Wichí-Chorote (W/C) identity.

These results suggest that Wichí implicit ethnic categorization does not employ a heuristic of “innate potential”. However, as discussed before, psychological essentialism comprises more features than this concept alone. It might be, for instance, that social information such as language, activity, or living place instantiate essentialist assumptions of a social ontological base. Therefore, other pieces of evidence supporting an essentialist belief could be found, unless
“innate potential” or other biological assumptions are constitutive properties of the given essence.

The results for the Adult Migration task were as follows: 76.92% of the subjects ascribed a Wichí identity to the man, 15.38% a mixed W/C identity, and only 7.7% identified him as Chorote.

Here the results are quite robust: the Wichí seem to believe that once a person has acquired an ethnic identity it is not possible –or easy- to remove it. It seems that, for the Wichí conceptual structure, an adult cannot change his or her ethnic ascription, even when the same cues that they use to ascribe ethnicity are at work. In other words, while residential location and language are enough to acquire an ethnic identity, the same factors do not seem sufficient to remove or replace it.

In the Family Migration task 76.92% of the subjects ascribed a Wichí identity to the child, 15.38% Chorote, and 7.7% a mixed W/C identity. In this case, the results display a bias to ascribe a Wichí identity to the child that supports the prominence of vertical transmission for ethnic identity. This fact, if related to the folk ethnic theory, shows that the beliefs about ethnic identity also instantiate a directionality of transmission. In this specific case, the instantiation
comprises a vertical transmission and gives a prominent role to the family; nevertheless, it does not mean that the ontological commitments are biological, especially when these findings are compared with the results obtained in the Adoption task. It is also remarkable that the strength of this socio-vertical transmission is substantial in spite of the fact that the social institutions implied in the vignette (family vs. community) refer to different ethnic identities. That said, the way in which the convergence or divergence of the ethnic substrate of the family and community impacts different folk sociological theories have still not been exhaustively explored.

Set 6

The last set comprises three questions that address Wichí beliefs about ethnic category boundaries. The first question (Nationality) assesses a hierarchical relation: nationality and ethnicity (as class and subclass). The second question (Wichí/Chorote) explores the boundary between “parallel groups”, both indigenous/Native American: Chorote vs. Wichí. Finally, the third question (Wichí/Criollo) searches for an effect on category boundaries between two ethnic groups with unequal social relations: Criollos (“white” non-indigenous people) and Wichí.

H6: The degree to which the Wichí conceive multiple social ascriptions as possible for themselves and/or others is related to the social relationship of the involved groups and to the abstract hierarchical representation that these categories possess.

The questions were the following:

**Nationality:** It is possible for someone to be Wichí and Argentinian at the same time?

**Wichí/Chorote:** It is possible for someone to be Wichí and Chorote at the same time?

**Wichí/Criollo:** It is possible for someone to be Wichí and Criollo at the same time?
Results and Discussion for Set 6

The results for Set 6 are summarized in Figure 3. For the question about nationality, 100% of the subjects responded Yes and 0% No. For the question about the Wichí/Chorote relationship, 91.31% of the interviewed subjects answered Yes and 8.69% No. Finally, in the question about Wichí/Criollo relationship while 59.09% responded that it is possible to be Wichí and Criollo at the same time, the remaining 40.91% considered this impossible.

First, the fact that 100% of the subjects responded that it is possible to have a nationality and an ethnic ascription at the same time indicates that Wichí people understand the implications of the question. However, it is still not clear how Wichí represent the category boundaries. It could be the case that they cognize the relationship as class and subclass, or as a single multiple identity category.

Second, the differential results between Wichí/Chorote and Wichí/Criollo could be interpreted as a signal of how ethnic boundaries might be affected either by outward appearance or by social factors such as power relations or inequality (both scenarios are plausible for the Wichí-Criollo relationship). In any case, the answers were consistent with the responses to Set 1 where several subjects recognized the possibility of a mixed-like category (e.g., W/C). Nonetheless, what Set 6
does not show is under which circumstances a double ascription or double category is possible. Notably, Kanovsky (2007) obtained very different results in Ukraine with a similar design. He found that the Ukrainian subjects were reluctant to admit the possibility of a multiethnic identity except for pragmatic (e.g., bureaucratic / instrumental) purposes in which they might declare a second ethnic / national identity. He interpreted these results as a strong indication of category boundaries, and therefore as evidence for essentialism. Although I agree with Kanovsky’s interpretation, it is worth noting that the absence of sharp boundaries in Wichí ethnic categories does not preclude the possibility of essentialist instantiation.

Finally, Set 6 does not provide conclusive information about the ontological commitments of these mixed categories. Although weak category boundaries seem conceivable for the Wichí conceptual structure of ethnicity (in contrast to the sharp boundaries that would be expected if an essentialist heuristic were at work), it is not clear if it is a prospective identity—as a potential—or an actual (fixed) state of the person; nor is it clear if these categories have stronger or weaker boundaries compared to the univocal Wichí, Chorote, and Criollo categories. To address these issues, more research is needed.

**General discussion**

**Architectural implications**

Study 1 provides grounds for rejecting the hypothesis that folk biology is a source for social categories among the Wichí. Results indicate that the architecture that underlies social categorization parses social cues, rather than attending to rules about descent that incorporate folk notions regarding biological information. There is abundant evidence of lineality in explicit Wichí folk biology, including beliefs about the predominant and active role of the father as
creator of the baby with semen and the paternal transmission of blood during the couvade as a ritual that leads to a social display of fatherhood. Despite this lineality, in contrast to the entailments of the FBEH, Wichí rules of descent and membership have minimal impact on ethnic categorization. Even the rules of locality (uxorilocal) seem to have no effect on the Wichí ethnic folk theory: as responses to questions F\textsubscript{W}M\textsubscript{C} and F\textsubscript{C}M\textsubscript{W} (see Set 1) show, there is no trace of matrilineal transmission of ethnic identity.

The relevance of Study 2 for mental architectures is ontological: the results suggest that Wichí ethnic identity is not conceived of or treated as natural. In contrast to the entailments of the FBDH, there is no evidence of biological commitments in Wichís’ ascription of ethnic identity. Nonetheless, Wichí folk sociology instantiates some of the heuristics provided by an essentialist psychology.

Finally, some might argue that these studies do not present direct evidence against the DGH; that is true. However, these studies also do not provide any direct evidence in support of the DGH. As mentioned, the fact that different societies make use of dissimilar collections of cues to parse and ascribe ethnic identity need not indicate that there is a general-domain mechanism at work. It is very likely that the resolution of this theoretical and empirical debate might be achieved by the introduction of evidence provided by neuropsychological methods: e.g., studies on selective brain damage or cognitive impairment. An example of this it might be the study by Hirschfeld et al. (2007) in which the authors show, by performing a study with autistic children, that group-based and individual-based mental attributions follow different cognitive pathways. In that study, highly impaired children performed as readily as unimpaired children in mental attributions based on social stereotypes, but they showed lower scores in tasks regarding social
communication and attribution to mental states that were not informed by social cues (e.g., individual traits).

In summary, the findings of Study 1 and 2 suggest that a) there is no evidence of either transference or exaptation from a biological domain; b) there is no evidence of lineal transmission of ethnic identity; c) there is evidence that living place, language, and behavior are computed as relevant social markers for the implicit Wichí ethnic theory; d) it is likely that the underlying mechanism is folk sociological rather than folk biological; and e) Wichí ethnic identity is not treated as a natural kind.

**Implications for psychological essentialism**

This work has three implications for our understanding of psychological essentialism, as follows: a) some, but not all, of the heuristics of psychological essentialism are present in Wichí ethnic theory; b) particularly significant are the absence of biological transmission and sharp boundaries; c) however, the fact that, after a critical period and given certain conditions, ethnic identity is difficult to remove is a minimal expression of an essentialist perspective.

Two competing positions address the role of essentialism in the cognition of ethnic identity. The first position, supported by Gil-White (2001), holds that psychological essentialism is at the core of the mechanism that motivates ethnic categorization. This is consonant with the fact that the ontological commitment to which the FBEH appeals includes such classical essentialist features as innate potential and a specific mechanism of transmission based on descent. The second position concerning the role of essentialism in ethnic cognition is exemplified by the work Rita Astuti (Astuti, 2001a; Astuti et al., 2004). Drawing on her research with the Vezo of Madagascar, Astuti argues that essentialism is not necessary for ethnic categorization. However, Kanovsky (2007) showed that a different interpretation is possible for both Gil-White’s findings
and Astuti’s results if we assume that psychological essentialism is an analytical concept that comprises an array of heuristics that can be independently instantiated in a particular domain, for a specific ecological, historical, and cultural context. In regard to Gil-White’s position, a concern arises from the assumption that the manifestation of “innate potential” and “biological transmission” constitutes sufficient evidence of exaptation from folk biology. An alternative interpretation is that, because any given instantiation of the heuristics is the product of particular cultural and historical circumstances, and is not inherently constitutive of the mechanism, forms of essentialism are possible that do not instantiate biological properties.

The concern regarding Astuti’s proposal is different. Kanovsky (2007) argues that Astuti assumes that the absence of “innate potential” in Vezo ethnic theory implies the lack of essential beliefs. This could certainly be the case, but only if one assumes that the “innate potential” is constitutive of psychological essentialism. Moreover, the reduction of the phenomena to one of its properties seems to not do justice to the facts, given that it could be the case that the Vezo instantiate essential beliefs from sociological cues. After all, the instantiation of psychological essentialism in the conceptual knowledge of artifacts—as it was documented—seems to be enough evidence of the fact that biological attributions (e.g. innate potential) is not constitutive of the phenomenon (cf. Ahn et al., 2001; Gelman, 2003; Kanovsky, 2007).

As evident in the results of Set 5 and Set 6, the Wichi believe that once an ethnic identity is acquired, it is difficult, perhaps impossible, to replace it. Moreover, the specific mechanisms of transmission in which they base the acquisition of ethnic identity privilege vertical (parents) over horizontal (community) directionality. At the same time, they emphasize the disproportionate contribution of the nuclear family relative to the rest of the community. However, it is also clear that category boundaries tolerate a certain degree of fuzziness, at least for the newborn—although
the fuzziness seems to vary depending on the structural relation that the relevant categories imply (e.g., Chorote/Wichí vs. Criollo/Wichí). Together, these observations indicate that properties such as “sharp boundaries” and “difficulty to remove” are instantiated independent of one another.

Table 4 presents an informal comparative analysis of the differential deployment of these heuristics by the various populations that researchers have studied to date. It is evident that each cognitive heuristic may follow a different pathway during its empirical instantiation in the folk sociological domain. While Mongols instantiate the essence in the form of beliefs about “innate potential” or “biological transmission” (Gil-White, 2001), the Vezo (Astuti et al., 2004) and the Wichí follow a different strategy. However, because these research projects did not follow identical methodologies, they do not all address the possibility space equally. For instance, there is no available information about the category boundaries in Mongolia or Madagascar, but the data gathered in Ukraine speaks to the question of sharp identity boundaries (Kanovsky, 2007). Moreover, some aspects, such as the rate of transmission, are either entirely unaddressed by existing research, or can only be examined through indirect inference. Finally, it is as yet unclear yet whether essentialist heuristics might cohere in packages such that their local manifestations are likely to be correlated, or whether each of them has a distinct pathway.
### Table 5

<table>
<thead>
<tr>
<th>Property</th>
<th>Wichí</th>
<th>Mongols</th>
<th>Vezo</th>
<th>Ukrainians</th>
<th>Peru</th>
<th>Fiji</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficult to remove.</td>
<td>Yes</td>
<td>?</td>
<td>?</td>
<td>Yes</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Transferable.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Biological transmission.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>This transfer does not diminish the amount of essence or its consequences.</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Causal implications.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Implication of authenticity and identity.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Sharp boundaries.</td>
<td>No (degree?)</td>
<td>?</td>
<td>?</td>
<td>Yes</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Vertical transmission</td>
<td>Yes</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Is there a *Wichi* notion of critical period?**

The method employed in this work comprises a synchronic analysis of Wichí ethnicity in a double sense. It is synchronic in a structuralist way, given that it is not historical: it merely presents a picture of the cultural representation of the group for a single point in time. It is difficult to know, for instance, to what degree Wichí conceptions of ethnicity change over time, if at all (see Iliev & Ojalehto, 2015).

In another sense, this work is synchronic because the vignettes denote “temporal clips” of the life of the abstract characters depicted. If “clips” are imaginarily mounted in a line that synthesizes the results, it is possible to infer at least three main instances that refer to Wichí intuitive beliefs about the development of ethnic identity. The first is that the baby has the potential of developing multiple identities (cf. the results of Set 1, for instance). The second is that learning a language, living with members of the community (especially family members (cf. Set 5)), and

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12 Data from Peru (Quechua-Aymara communities) and Fiji (Yasawa Island communities) taken from Moya et al. (2015).
acquiring culturally relevant skills constitute, altogether, the cues about how ethnic identity is transmitted and substantiated. The third instance arises by the fact that once the identity is acquired—maybe during a critical period—it is fixed and cannot be removed or replaced (See Figure 5) (cf. Set 5).

Finally, it is difficult to determine what impact—if any—Wichí explicit knowledge (e.g., the ethno-theories summarized in Table 2) might have on Wichí conceptual structure. The results presented here suggest that Wichí biological ethno-theories play little or no role in Wichí conceptual structure. In contrast, the centrality of the theory of *husek* for the social life of the community and its social nature affords a possible relationship. The theory of *husek*, like the theory of ethnicity, seems to constitute a gradual process in which the subject acquires the competences that allow him to fix an identity, in the case of ethnicity, and to be socially proficient, in the case of *husek*. Also, both theories seem to share a social ontology: the subject’s *husek* is socialized by the acquisition of moral norms, and ethnicity is fixed by the acquisition of cultural proficiency (i.e., language, behavior, social bonds, etc.). In the future, it will be worth investigating more direct evidence of the possible bonds between *husek* and local beliefs concerning the development of ethnicity constitute a desirable agenda.
Conclusion

The multiple layers that ethnicity offers to the analytical view make examining this phenomenon challenging. The present work has sought to tackle the issue using a comprehensive collection of “experimental” conditions. However, even with this blanket approach, it has been difficult to resolve some puzzles. First, the ethnographic setting is usually more challenging than work in the lab, where collecting a balanced sample might be easier to achieve. For this reason, it is difficult to know how the results were constrained by the characteristics of the subjects—for instance in terms of possible gender differences in conceptual structures. Second, even with two sets of experiments, it is impossible to cover in a single study all of the dimensions in which the conceptual structure of ethnic categories—and the instantiation of folk sociology in general—can be projected. Some analytic paths, such as the experiential (phenomenological), the behavioral, and the political, although critical to understanding the role that ethnicity plays for the life of any society, were not covered here. Third, the matter of the evolutionary function of ethnicity as a social category is still highly contested in the literature, and deserves its own treatment in a separate paper (see for instance Hirschfeld, 2001; Kurzban, Cosmides, & Tooby, 2003; Van den Berghe, 1987). Fourth, the current project afforded scant room for discussion of the ontogeny of ethnicity, and of folk sociology in general.

Qualified by these limitations, the results of Study 1 and Study 2 converge in one direction, namely that, in ontological terms, Wichí ethnic identity is not conceived by the subjects as biological. In this sense, these findings disconfirm previous folk biological proposals. It appears that the Wichí ethno-theory of ethnicity has three components: a) the baby is born with a potential that is represented in terms of a combined category (although the ontological basis and conceptual structure of this kind of category is not entirely elucidated); b) there is a critical
period in ethnicity formation (an element that suggests structured knowledge), and; c) ethnic identity becomes fixed (suggesting that some essentialist heuristics are at work).

I have made a point of employing ethnographic and ethnological knowledge to enrich and guide my interpretations of the quantitative data. The inclusion of this “third party” material satisfied two functions. In the context of the discussion about mental architectures, the explicit reference to lineal mechanisms of biological transmission in some ethno-theories (conception and paternity) calls into question the role of folk biology as a structuring process of ethnic categories --given the lack of connection between both realms (biological and social) evident in the results. Additionally, ethnographic and ethnological sources inform conjectures about a possible connection between the Wichí theory of husek that underlies the process of socialization, and the gradual fixation of ethnic identity. Cognizant of the speculative nature of this postulated connection, I think that the hypothesis deserves to be addressed empirically.

Finally, this work was not historical. And in this sense it might be a victim of its own weakness. If we could know more about the historical conceptual change in small-scale societies, the analysis about how the conceptual structure of ethnicity is psychologically processed would undoubtedly be much richer and more precise. Thus, it would be desirable to see works in the future that integrate historical information –even in the form of ethnographic productions— with cognitive descriptions and explanations to illuminate the process of change over historical time in conceptual structures (Iliev & Ojalehto, 2015). As Elsie Rockwell (1987) put it, ethnography is a way of “documenting what is not documented,” and, after one hundred years or so of ethnographic investigations, ethnographic knowledge can constitute a historical source in itself for those groups that have been characterized as “people without history” (cf. Wolf, 2010).
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