

Original Article

Social learning across the life cycle: cultural knowledge acquisition for honey collection among the Jenu Kuruba, India[☆]

Kathryn Demps^{a,*}, Francisco Zorondo-Rodríguez^b, Claude García^{c,e}, Victoria Reyes-García^d

^aUniversity of California, Davis

^bInstitut de Ciència i Tecnologia Ambientals, Universitat Autònoma de Barcelona, 08193 Bellaterra, Barcelona, Spain

^cCIRAD, Ressources forestières et politiques publiques, Montpellier 34398, France

^dICREA and Institut de Ciència i Tecnologia Ambientals, Universitat Autònoma de Barcelona, 08193 Bellaterra, Barcelona, Spain

^eCIFOR, Environmental Services and Sustainable Use of Forest Programme, Bogor Barat 16115, Indonesia

Initial receipt 16 May 2011; final revision received 20 December 2011

Abstract

Accounting for age-dependent patterns of knowledge transmission is critical for understanding cultural evolution in age-structured populations. Cultural evolution theory predicts which social learning biases we expect people to use, but much less often when—during a person's life cycle—different social learning biases will be used. By measuring knowledge and skill variation among age cohorts, it is possible to infer how people socially acquire different types of knowledge at different ages. We use this strategy among the Jenu Kuruba, a tribal community in South India. We document the accumulation of local knowledge required for collecting wild honey among 71 children and 125 adults from five communities. Combining quantitative measurements of knowledge with measures of four honey-collecting skills and self-reported data on learning age, we infer patterns of social learning across the lifecycle. We find that (1) most knowledge related to honey collecting is acquired by the early 20s, and later social learning mainly functions to update information; (2) the eldest cohort has the highest average explicit knowledge, although the most knowledgeable or skilled individuals do not always belong to the most elderly cohort; (3) length of learning can be affected by age-dependent trade-offs of costs and benefits to learners; and (4) children tend to learn from parents, but individuals use other demonstrators later in life. These results have implications for current models of cultural evolution.

© 2012 Elsevier Inc. All rights reserved.

Keywords: Social learning; Overlapping generations; Knowledge acquisition

1. Introduction

Humans are characterized by our unique penchant for cumulative cultural evolution and the consequent adaptations for social learning like psychological learning heuristics and an extended juvenile period (Bogin, 2001; Boyd & Richerson, 1985; Kaplan et al., 2000). Overlapping generations in human populations are the key to a social structure which can promote such a successful system of nongenetic information inheritance. Because the right measure of fitness in age-structured populations is not simply reproductive

success, but rather comparison to the success of current and previous age cohorts (Schaffer, 1974), we expect individuals to optimize the timing of learning for different domains of knowledge acquired during the life cycle. Additionally, any behavior dependent on adaptations to different points in the life cycle results in a phenotype that reflects a combination of evolutionary forces (Ozgul et al., 2009). Since knowledge is age relevant, the age structure of a population will influence the cultural demonstrators and information available to naive individuals and the efficiency of various learning pathways as they age. Different learning pathways have consequences for the transmission of knowledge and its rate of change over time (Boyd & Richerson, 1985).

Age-dependent patterns of knowledge acquisition are not taken into account in current models of cultural evolution, and there is a shortage of empirical data, especially from non-Western populations. Carotenuto, Feldman, and Cavalli-Sforza (1989) produced an unpublished working

[☆] This research was funded by NSF-Cultural Anthropology Program (BSC-0726612) and ANR-French National Research Agency Project (ANR-05-PADD-0XX Public Policies and Traditional Management of Trees and Forests-POPULAR).

* Corresponding author. Department of Anthropology, UC Davis One Shields Ave. Davis, Ca 95616. Tel.: +1 408 315 8429.

E-mail address: kedemps@ucdavis.edu (K. Demps).

paper on age-structured transmission and found that a greater number of age groups lead to stronger effects of nonparental transmission. Cavalli-Sforza and Feldman (1981) infer elements of age structure with their vertical–horizontal–oblique terminology, but most social learning models do not make assumptions, less so predictions, about age structure and timing of learning. They average across the development of adult beliefs with probability statements (Boyd & Richerson, 1985; Cavalli-Sforza & Feldman, 1981; Henrich, 2009; McElreath, 2004). And while valuable, more general theories about the timing of learning in the life cycle, such as embodied capital, fall short of testing the effects of age structure on cultural transmission because they cannot predict specific learning pathways, only that learning will occur during certain periods.

Empirically, knowledge about the effects of the life cycle on cultural transmission is piecemeal. Previous research has shown that children know a lot about the identity, behavior, and location of animals in their habitat before adolescence (Lee, 1979; McDonald, 2007; van Beek, 1987). In contrast, hunting skill has been observed to peak around the age of 40 (Gurven et al., 2006; MacDonald, 2007; Walker et al., 2002). Some researchers have documented learning periods after which individuals have greater difficulty acquiring skills (Hannon & Trehub, 2007; Oyama, 1976; Omaghari & Berkes, 1997). Aunger (2000) looks at the acquisition of food taboos across the life cycle and finds that parents are important demonstrators mainly at early ages. Peers become more important at later ages, and different categories of demonstrators are emphasized for different skills (Aunger, 2000; Hewlett & Cavalli-Sforza, 1986; Hewlett et al., 2011).

Our study attempts to connect social learning pathways with patterns of knowledge acquisition across the life cycle to tie the population-level evolution of a body of knowledge to the mechanisms that transmit that knowledge between individuals of different ages. We present data from empirical work with the Jenu Kuruba, a tribal group living in the state-protected reserve forests of Karnataka, South India. The Jenu Kuruba pursue a mixed strategy of foraging and wage labor and are experts in wild honey collection (Misra, 1975). Our sample of individuals aged 6–65+ years participated in (1) a multidimension interview about their honey-collecting knowledge and social learning experiences and (2) practical measures of honey-collecting skills to demonstrate knowledge and skill not easily verbalized, like tree climbing. By combining quantitative measures of local ecological knowledge associated with honey collecting with self-reports of social learning patterns, we infer age-dependent transmission pathways at different stages in the life cycle. We expect patterns of physical development to condition learning patterns, and we expect to see differences for explicit and tacit knowledge. Similarly, as individuals age, we expect that changes in social context affect transmission pathways with changes in cultural settings (Whiting, 1980). Finally,

we expect that age can affect length of learning and accuracy of knowledge.

2. Background

Researchers suggest that the greatly lengthened adolescence period in our life history is meant for cultural learning so individuals can acquire the skills and knowledge needed to live in a great diversity of habitats with an intensely complex social order (Bogin, 2001; Kaplan et al., 2000). Social learning streamlines the interpersonal transmission of knowledge and skills required to exploit a local ecology—saving time and effort over pure individual learning (Boyd & Richerson, 1985). Because humans can acquire information from individuals other than parents, we can access a cumulative, evolved body of knowledge (McElreath, 2010). Cultural transmission balances the costs of access to demonstrators and potentially unreliable information with the benefits of a greater sample size and intragenerational transmission (Richerson & Boyd, 2005). Learning from kin can reduce learning costs, but copying nonrelatives increases the potential for sampling adaptive cultural variants (Henrich & Boyd, 2002; Richerson & Boyd, 2005; Henrich & Boyd, 1998).

Training in economic activities can be age, gender, sequence, location, and teacher specific (Ruddle & Chesterfield, 1977; Ruddle, 1993). Among the Tsimane', children's ethnobotanical knowledge is positively associated with age (Martinez-Rodriguez, 2009). In the Orionoco delta of Venezuela, tasks are taught sequentially—age, strength, skill, and experience determine advancement to successive levels (Ruddle & Chesterfield, 1977). For example, explicit knowledge which can be verbalized—like naming bees in the forest—might be learned before tacit knowledge which cannot be verbalized—how to cut honey combs (Nonaka, 1998). MacDonald (2007) provides a cross-cultural review of the acquisition of hunting skills across the life cycle. Children begin practicing hunting skills at around age 5–6, mostly with their fathers. They start participating in hunting activities at around puberty, usually with older kin. Experience, skill, and rates of return seem to peak at around 40 years of age. Learning hunting skills occurs throughout the life cycle, and MacDonald concludes that, “a wide range of people are involved in different parts of a child's hunting education, and there is considerable variation from group to group in the people concerned” (MacDonald, 2007: 397). Because theoretical development of this topic is nascent, we begin with an exploratory analysis of field data.

3. Study site

We collected data from an indigenous population of honey collectors living in a dry deciduous forest in the Western Ghats of South India. The Jenu Kuruba are a small-

Download English Version:

<https://daneshyari.com/en/article/943202>

Download Persian Version:

<https://daneshyari.com/article/943202>

[Daneshyari.com](https://daneshyari.com)