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Like Me A Homophily-Based Account of Human Culture

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Abstract

This chapter presents a homophily-based account of human social structure and cultural transmission, wherein a tendency to favor similar others (homophily) is a key driving force in creating human-unique forms of culture. Homophily also accounts for observed striking differences between human groups. From early in development, evidence demonstrates that humans show a strong tendency to interact with, and learn from, individuals who are similar to themselves. It is proposed that homophilic preferences of the group, in general, creates a feedback loop to ensure that children engage in high-fidelity copying of the group's behavioral repertoire. This allows children to reap the benefits of others' homophilic preferences and so maintain their position within the group. In consequence, homophilic preferences have transformed a number of mechanisms which humans share with other species (e.g., emulation and majority-biased transmission) into human-unique variants (e.g., social imitation and conformity). Homophilic preferences have, furthermore, spawned a new tendency to interpret the structure of actions as social signals: norm psychology. The homophily account thus connects previously disparate findings in comparative, developmental, and social psychology and provides a unified account of the importance of the preference for similar others in species-specific human social behavior.

Introduction

In many ways, the stability of human cross-cultural variation is surprising since high rates of migration (Hill et al. 2011) and visitation (Chapais 2008) should, over time, reduce differentiation across groups (Yeaman et al. 2011). Assuming a long enough time period, any difference between human groups should inevitably fade by means of these processes (Boyd and Richerson 2005, 2009; Henrich and Boyd 1998).

Independent of intergroup migration, there is another parallel migration into any group at any given point in time: newborns. Every new generation of children confronts the group with a number of individuals that do not act according to the group-specific behavioral repertoire (Harris 2012). Thus, in addition to immigrants entering the community with conflicting behaviors and norms, there is also a constant influx of individuals who enter the community without any established behavioral patterns or sometimes even with predispositions that are counter to the local cultural variant of a particular behavior (e.g., Haun et al. 2006).

How then do children acquire the appropriate group-specific beliefs and behaviors? Previous accounts of cultural transmission have emphasized the role of learning mechanisms, such as high-fidelity imitation (Lyons et al. 2007; Whiten et al. 2009), or cognitive abilities, such as perspective taking (Tomasello 1999) and sensitivity to ostensive cues (Gergely and Csibra 2006). In contrast to these accounts, we emphasize the importance of more social processes, in particular, homophily (a preference for others we perceive as similar to ourselves). The homophily account is based on two closely related claims. First, children preferentially affiliate with and learn from similar others. Second, and more importantly, the homophilic preferences of the group, in general, creates a feedback loop that ensures children engage in high-fidelity copying of the group's behavioral repertoire. This allows children to reap the benefits of others' homophilic preferences and so maintain their position within the group. This homophily-based account thus unites research on the social functions of imitation (e.g., Carpenter and Call 2009; Over and Carpenter 2012; Nadel 2002; Nielsen 2009; Užgiris 1981) with that on group membership (e.g., Dunham et al. 2011; Kinzler et al. 2007; Turner 1991) and normative behavior (Kallgren et al. 2000; Rakoczy et al. 2008).

We do not claim that the homophily account provides an exhaustive description of how social motivations influence cultural transmission. Other social motivations and preferences (e.g., for prestigious others and competent others) and the interactions between them are also important in explaining social learning in humans (Laland 2004). We simply wish to highlight that the preference for similar others is one key factor in explaining cultural transmission and that species differences in this tendency might be one factor in explaining the origins of species-typical features of human cultural transmission.

Below, we outline our homophilic account in more detail, beginning with a discussion on the importance of homophilic assortment from an evolutionary perspective. Thereafter, we review the available evidence that, from early in development, humans have a strong preference for similar others. Finally, we present evidence that this preference for similar others has transformed a number of preexisting cognitive mechanisms (e.g., emulation learning and majority-biased transmission) into a suite of human-unique traits that includes social imitation, conformity, and a norm psychology.

Homophilic Social Preferences from an Evolutionary Perspective

For cooperation to be maintained within a group, it is essential for group members to be able to distinguish cooperators from defectors. In stable, personalized groups, familiarity serves to reduce aggression and to create a tolerant context; the foundation of any cooperative exchange. As groups increase in size, so does the frequency with which individuals have to interact with others less familiar. Eventually, personal interaction history can no longer accurately account for the reliability of a partner.

At some point during human evolution, social networks increased to a size where group members were increasingly more likely to encounter others that were only vaguely familiar. For instance, even the most mobile extant forager groups live in networks that typically exceed several hundred individuals (Hill et al. 2011; Apicella et al. 2012). Under such conditions, familiarity itself remains important, but is no longer as effective. Thus a proxy measure for familiarity is required that reliably correlates with familiarity. Similarity in aspects of the phenotype (morphology and behavior) provides one such measure. Individuals who grow up within the same community are likely to be similar on a number of dimensions, thus making phenotypic similarity an honest signal of group membership.

We argue that a preference for similar others allowed humans to categorize strangers and identify in-group members who were not personally known to them. Choosing to interact and cooperate with more similar strangers maximized the chance of successful cooperative interactions, because similar individuals were more likely to share relevant behavioral tendencies (McElreath et al. 2003; Cohen 2012). As a result, humans were able to function within qualitatively different forms of social organization available to other primates, and tap into the cooperative potential of strangers. Formal models have shown that such a pattern of cultural transmission, in which individuals are disproportionately influenced by those who are similar to themselves, is adaptive since a homophilic preference causes subpopulations to become culturally isolated. This, in turn, allows the mean value of locally adaptive traits to converge to the optimum. A transmission strategy based, for example, on success would only adapt very slowly to a variable habitat (Boyd and Richerson 1987b). In other words, “the preference to interact with people with markers like one’s own may be favored by natural selection under plausible conditions” (McElreath et al. 2003:123).

We now shift our focus to empirical evidence supporting this hypothesis. We center our discussion on the developmental and comparative data demonstrating that the human preference for similar others is much stronger than that seen in other primate species.

Like Me? Homophilic Social Preferences from a Comparative Perspective

Homophilic Social Preferences in Nonhuman Primates

Interpersonal relations in chimpanzee groups are characterized by tolerance of in-group members and hostility toward out-group members (Wrangham 1999; Wilson et al. 2012). Members of other groups detected within the home range are typically killed, the one exception being migrating females (Kahlenberg et al. 2008). This preference for in-group members over outgroup members is almost certainly based on familiarity rather than similarity as chimpanzees typically encounter all the members of their own group on a fairly regular basis.

A recent study, however, raises the possibility that some nonhuman primates also use similarity as a means by which to assort between others. Paukner et al. (2009) reported that capuchin monkeys who were presented with two human experimenters—one who imitated them and another who just performed monkey-like movements—sat closer to the imitator and exchanged more tokens with him. Hence a transient increase in behavioral similarity (social mimicry) made capuchins prefer one human to the other.

There are thus some hints that nonhuman primates utilize similarity in their social judgments (at least to some extent) and, in consequence, that the common ancestor of humans and other primates had rudimentary preferences for similar others. This may have provided the evolutionary starting point from which homophilic social preferences in humans could emerge. However, as we will see below, the evidence for homophilic preferences in humans far exceeds that of any other primate.

Homophilic Social Preferences in Children

In contrast to nonhuman primates, the evidence that humans assort unfamiliar others based on similarity is quite substantial (e.g., Gruenfeld and Tiedens 2010; Jones et al. 2004; Tajfel et al. 1971). This preference for similar others appears to structure social interactions from early in development. For example, six-month-old children prefer to look at individuals who speak their own versus a different language, and ten-month-olds prefer to accept toys from speakers of their own language (Kinzler et al. 2007). This preference for native language speakers structures social interactions also later in development: five-year-olds preferentially choose native language speakers over foreign language speakers or foreign-accented speakers as friends (Kinzler et al. 2009). However, in all of the above-mentioned studies with children, it is not possible to separate a preference for similar others from a preference for individuals that children find easier to understand.

Fawcett and Markson (2010) have provided evidence that young children's social preferences are, at least at times, based on self-similarity alone. Fawcett

and Markson demonstrated that three-year-old children prefer to play with a puppet who expresses the same food preference as them as opposed to a contrasting preference, and a puppet whose physical appearance matches rather than mismatches their own. Other evidence comes from research on the effects of being imitated. One of the consequences of being imitated is a momentarily increased level of perceived similarity between social partners (Chartrand and Bargh 1999). As of early in development, children appear to prefer individuals who imitate them to individuals who engage in independent behavior. For example, 14-month-old infants look toward and smile more at an experimenter who imitates them than at an experimenter who engages in equally contingent but nonimitative behavior (Agnetta and Rochat 2004; Asendorpf et al. 1996; Meltzoff 1990). Furthermore, infants and toddlers are more likely to help an experimenter who has imitated them than an experimenter who has engaged in contingent but nonimitative behavior (Rekers et al., submitted).

Further evidence for children's preference for similar others comes from the so-called minimal group paradigm (Tajfel et al. 1971), in which individuals are randomly allocated to one of several groups that are only identified by an abstract, seemingly uninformative symbol. In this way, similarity between members of a minimal group is not indicative of any shared behavioral characteristic of the individuals composing the group, but only of shared group identity. Five-year-old children prefer individuals allocated to the same minimal group as them over individuals allocated to a different minimal group. Furthermore, children not only prefer individuals belonging to the same minimal group; they also have more positive expectations about the behavior of in-group members (Dunham et al. 2011).

This preference for similar others seems to occur across cultures (Kinzler et al. 2012; Cohen and Haun 2013). Children's relative reliance on particular cues, however, varies depending on the particular sociocultural context. Recent studies comparing children from different townships along the Brazilian Amazon have demonstrated that children's preferences for certain cues are likely tuned according to locally relevant cue variation. For example, children from accent heterogeneous populations rely more strongly on accent as a similarity cue than children from accent homogeneous populations (Cohen and Haun 2013).

Children Prefer to Learn from Similar Others

Children's preference for similar others not only indirectly channels their own input by creating interaction bubbles of similar others, it also has more immediate implications for children's social learning. Kinzler et al. (2011) demonstrated that five-year-old children are more likely to learn the function of a novel object from an individual who speaks with the child's native accent than from an individual who speaks the same language with a foreign accent. A more recent study claims that even infants preferentially learn from similar others (Buttelmann et al. 2013). In this study, 14-month-old infants listened to

a story either told in their native language or in a foreign language. Children subsequently imitated the actions of the speaker of their native language more closely. Caution must be taken when interpreting this result, however, because the design confounds similarity with other factors, such as the relative comprehensibility of the stories. Nevertheless it raises the possibility that children select their models by similarity already in the second year of life.

Other evidence that children preferentially learn from similar others comes from research on the effects of being imitated. In a recent study, Over, Carpenter, Spears, and Gattis (2013) found that five- to six-year-old children were more likely to adopt the preferences and novel object labels of an experimenter who had previously imitated their choices than those of an experimenter who had previously made independent decisions.

Summary

From the evidence presented above, it appears that the human preference for similar others likely far exceeds that of any other primate. This preference is present early in development and structures children's learning as well as their social interactions.

Like Me! The Consequences of Homophilic Preferences

If we prefer similar to dissimilar others, it follows that increasing the similarity between self and other can be a useful strategy for directing others' positive social activities toward the self. We contend that homophilic preferences in humans have interacted with the social-learning mechanisms inherited from our common ancestor with the other great apes and transformed them into species-unique forms of copying behavior which serve to maintain an individual's position within the group.

In contrast to previous accounts (e.g., Carpenter and Call 2009; Uşgiris 1981), the homophilic account does not require children to have the goal of making themselves more similar to their social partners. Although children may, at times, actively seek to be like others (Carpenter 2006; Over and Carpenter 2013), the more typical pattern may be for children to learn through experience that imitation is successful in improving social relations without any explicit awareness of this connection. In consequence, their only goal within the social situation may be to get along well with others.

Below we discuss evidence that social-learning mechanisms which we share with other species—emulation and majority-biased transmission—have been transformed by homophilic preferences into a suite of human-unique social-learning processes including social imitation, conformity and a norm psychology.

Emulation Becomes Imitation

Chimpanzees use a range of social-learning strategies including, most prominently, emulation (Call et al. 2005; Nagell et al. 1993). In emulation learning, an animal focuses on the outcome that is achieved in the physical world rather than on the particular actions used to achieve it (Tomasello et al. 1993). If chimpanzees copy the particular actions of their conspecifics (i.e., imitate), they appear to do so infrequently and with relatively low fidelity (Tennie et al. 2009).

Children, in contrast, show a strong tendency to copy actions faithfully. In fact, imitation by children is sometimes so precise that they even copy actions that are superfluous or disadvantageous to solving the task at hand (Horner and Whiten 2005; Nagell et al. 1993; Nielsen 2006). For example, children from three to five years of age, who have been trained to identify the causally irrelevant parts of novel action sequences, still reproduce causally irrelevant actions, and they continue to do so even when specifically instructed by the experimenter to copy only necessary actions (Lyons 2009; Lyons et al. 2007). This phenomenon has come to be called “overimitation” (Lyons et al. 2007, 2011). It emerges in the second year of life (Nielsen 2006) and becomes increasingly pervasive throughout the preschool period (McGuigan and Whiten 2009; McGuigan et al. 2007).

The homophilic account presumes that these differences in social learning between chimpanzees and humans have been driven, at least in part, by human homophilic preferences. The increased importance of “how something is done” is owed to the significance of behavioral similarity among individuals in a group. Finding a different way to achieve the same ends is no longer functionally equivalent to copying others’ actions exactly, since the former decreases similarity with others whereas the latter increases it. In humans, imitation could thus serve new social purposes. This added social dimension effectively turned emulation learning into faithful imitation.

Consequently, it is misleading to refer to high-fidelity imitation as “overimitation,” since the term implies that children copy unnecessary parts of action sequences. Under the homophily account, these parts, while being causally irrelevant, still serve an important function for the learner: they produce a high level of similarity between the demonstrator and the learner.

Evidence in favor of the proposal that high-fidelity imitation is used to achieve social goals comes from data which suggest that children increase their tendency to imitate when affiliation is important to them. Over and Carpenter (2009) demonstrated that five-year-old children who have been given the goal to affiliate (through priming with social exclusion) imitate the actions of a model more closely than children who have been given a neutral prime. Further evidence in favor of this hypothesis comes from work demonstrating that children are more likely to copy the specific actions of a model when that model is in the room and so are able to watch their imitation (Nielsen and Blank 2011).

Imitation is also closely associated with social factors in younger children. Nielsen et al. (2008) demonstrated that two-year-old children are more likely to copy the specific actions of a model who engages in a contingent social interaction with them than those of a model whose behavior is not contingent on their own.

The tendency to make the self similar to others can also be used more strategically within social settings. That is, imitation can serve Machiavellian ends (Over and Carpenter 2012). Research with older children has shown that they are able to use imitation to increase their influence over others. For example, Thelen et al. (1980) demonstrated that ten-year-old children are more likely to copy the specific actions of a peer when they will later need to persuade that peer to do something.

Majority-Biased Transmission Becomes Conformity

Homophilic preferences, we argue, have not only influenced how humans interact with individual social partners, but how they respond to the group in general. One way in which humans interact with the group as a whole is through consideration of the majority.

If, due to any combination of underlying mechanisms, an individual is more likely to acquire the behavior displayed by the majority, we refer to it as a majority-biased transmission (Haun et al. 2012). A recent study in chimpanzees showed that naïve individuals copy the behavior of the majority over alternatives, even if those are equally frequent, equally familiar, and equally productive behaviors (Haun et al. 2012).

Thus, chimpanzees follow the majority when they have no prior information available. However, they do not follow a majority if they have to forgo their own behavioral tendencies to do so (Haun et al., submitted). We refer to the tendency to forgo personal preferences in favor of copying the majority as conformity (Haun et al. 2013; van Leeuwen and Haun 2013). In another study, Hopper et al. (2011) argue that chimpanzees conformed against their own preference, based on the finding that individuals retained their socially acquired strategy even though the alternative yielded more preferred rewards. However, because individuals only very rarely experienced the alternative strategy yielding more desirable foods, it remains highly questionable whether individuals were, in fact, fully aware of the alternative.

Similar to chimpanzees, human children follow the majority if they have no relevant information available (majority-biased transmission, Haun et al. 2012). However, in contrast to other primates, human children also adjust their behavior to the majority, even when an equally effective but individually acquired strategy is already available: under one situation, in which a child who has a high level of performance on a certain task is confronted with a majority of peers who unanimously give a false response, children often choose to abandon their own judgment to adjust their behavior to the majority's response

(Berenda 1950; Corriveau and Harris 2010; Haun and Tomasello 2011; Walker and Andrade 1996). Furthermore, children appear to consider the social consequences of conforming versus dissenting. Haun and Tomasello (2011) varied the privacy of the subjects while giving their response and found lower rates of conformity when preschool children were allowed to keep their response private from the majority. Most strikingly, children adjusted their level of conformity from trial to trial depending on the privacy of their response; they conformed more often when they gave their response in public. The authors concluded that the reduction in conformity in the private condition demonstrated a partial contribution of social motivations for children's conformity on the public trials. Hence, children, in contrast to other primates, are additionally guided by social motivations (Haun and Tomasello 2011) when conforming to a majority.

In the absence of a social function, copying the majority when acquiring a new skill is adaptive on an individual level, but there is no reason to follow the majority when the learner already has a different but equally productive strategy available. However, if conformity also serves a social function, then it pays a learner to forgo their own strategy and adopt that of the majority: since sticking to the former will decrease similarity between the self and the group, whereas conforming to the latter will increase similarity between the self and the group. According to the homophily account, this added social dimension increased humans' tendency to conform to the majority, effectively turning majority-biased transmission into conformity.

The Emergence of Norm Psychology

Nonhuman primates, such as chimpanzees, have "rules of conduct" that are reinforced. For example, subordinates tend to display certain gestures when meeting a dominant individual, and violations of this behavioral pattern will result in aggression (Goodall 1986). Although the superficial structure of these patterns of behavior might resemble that of human norms, they differ from norms in important respects (Tomasello 2008). For example, whereas human norms are often variable across groups, gestures negotiating the relationship between dominant and subordinate individuals in chimpanzees are highly similar across different, unrelated populations, thus suggesting they are not culturally learned (Tomasello et al. 1997). Furthermore, chimpanzee "rules" unlike human norms, are not agent neutral. Subordinate chimpanzees failing to submit to the dominant might suffer aggression from the dominant (the affected party), but not from other (unaffected) group members. Chimpanzees do not appear to punish the violations of third parties (Riedl et al. 2012). Humans, on the other hand, punish the transgressions of others even if they do not concern them directly (Henrich et al. 2006). Hence, it does not seem to be the case that chimpanzees collectively intend to do things in a certain way and do not

have normative expectations about their conspecifics' behavior, but that their social interactions are better characterized by behavioral regularities as well as individual and idiosyncratic preferences for certain behaviors.

Human norms are rich in their social interpretation: Norms describe the "right" way to do things, the way things "ought" to be done, the way "we" do things (Bruner 1993). Human children appear to detect such norms spontaneously in many behaviors, even in the absence of normative language (Schmidt et al. 2011). After a single confident and intentional demonstration by an adult, children appear to assume that the way in which an action was demonstrated is normative. Following such a demonstration, children will not only follow that norm, but actively enforce it when later observing someone performing the action "incorrectly," often protesting using normative language about what people ought to be doing (Rakoczy et al. 2008). Thus children readily enforce norms on others even if their violation does not impact upon them directly.

In summary, we argued that the social relevance of similarity among individuals gives previously socially neutral behaviors a new social relevance. The "way something can be done" is effectively elevated to the "way we do something," fitting actions with a social signaling function. This normative dimension to actions which have no intrinsic value (e.g., how to hold a fork) is a direct consequence of the relevance of self-other similarity in cooperative groups of increasing size.

Conclusion

Many accounts exist for the species-unique structure of human social behavior. All of them contain lists of human-specific social abilities and motivations for coordination (Tomasello et al. 2005), social learning (Tennie et al. 2009), teaching (Gergely and Csibra 2006), and norm psychology (Chudek and Henrich 2011). We have provided an account that unites some of these previously unconnected sets of abilities and motivations. According to our homophily-based account, a preference for similar over dissimilar others underlies important aspects of human-unique social behavior.

Evidence suggests that, from early in development, children prefer to interact with, and learn from, individuals who are similar to themselves. This preference for similar others and the potential advantages reaped by being similar to others, ensures that children engage in high-fidelity copying of the group's behavioral repertoire. As a result, seemingly irrelevant parts of actions gain social relevance by serving as a similarity marker. This tendency to interpret the physically irrelevant structure of actions as social signals spawned a human-unique form of interpreting the actions of others: norm psychology.

We argue that species difference in homophilic preferences might be one key factor in explaining the origins of species-typical features of human cultural transmission. We predict that humans are unique among living primates in

the extent of their preference for similar others. We also predict that this preference is universal across human cultures, albeit relying on different similarity cues in different populations (Logan and Schmittou 1998; Cohen and Haun 2013). Future studies should further test these predictions from cross-cultural and comparative angles.

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Group photos (left to right, top to bottom)

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