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The innate code of charisma[☆]

Omri Castelnuovo, Micha Popper^{*}, Danny Koren

University of Haifa, Israel

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ABSTRACT

We argue that the sources of charisma are innate and can be explained as part of unique human cultural transmission mechanisms. Recently, developmental models and experiments have been presented, for example, natural pedagogy theory (Csibra & Gergely, 2006, 2009, 2011) and over-imitation studies (Lyons, Young, & Keil, 2007; McGuigan, 2013). Inspired by these, we maintain that certain universal principles of conspicuous influence are embraced with very little critical thinking, on the basis of certain signals the charismatic leader radiates in a particular communicative manner (“evolutionary syntax”). We point out expressions of these principles in charismatic leadership and propose a conceptual framework that can advance the formulation of a general theory on charisma anchored in evolutionary processes.

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Introduction

The phenomenon of charismatic leadership has preoccupied philosophers, sociologists, political scientists and psychologists (Carlyle, 1841; Conger & Kanungo, 1987; House & Howell, 1992; Lindholm, 1990; Popkin, 1993; Shils, 1965; Weber, 1946). The early writers on charisma—the philosophers—perceived it as “God’s gift” (the literal translation of the Greek word). In other words, charisma was perceived as an innate characteristic of leaders (Carlyle, 1841). More recent writers see it as a more complex phenomenon related to sociological and psychological aspects beyond an individual leader’s personal characteristics (e.g., Shils, 1965). A significant milestone in this direction was passed when Max Weber argued that charisma is in the eye of the beholder and results from the follower’s tendency to believe in “the extraordinary quality of the specific person” (Weber, 1946, p. 295). This observation served to expand the discussion to broader social and psychological contexts. Shils (1965), for example, presented a sociological perspective in which charisma derives from the centrality of values in a given society. The charismatic leader is a representative of such values in his or her followers’ eyes.

Such conceptual directions have led researchers to ponder the sources of followers’ attraction to charismatic leaders (Popper, 2012). Scholars of the psychoanalytic school, for example, explained this attraction as arising through unconscious processes. These may be regressive yearnings for the parent figure, perceived as providing a sense of security (Hill, 1984; Kets de Vries, 1988), or a follower’s resolution of his or her narcissistic longing for an idealized self-concept gained through identification with a glorified leader (Lindholm, 1988; Post, 1986). Similarly, social psychologists have used notions such as “self-concept,” “self-worth” and “self-esteem” to explain followers’ attraction to charismatic leaders. The rationale behind these explanations is essentially that identification with a leader perceived as charismatic enables followers to feel an enhanced sense of self-worth (Shamir, House, & Arthur, 1993).

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^{*} Corresponding author at: Department of Psychology, University of Haifa, Mt. Carmel, Haifa 3498838, Israel.

E-mail address: mpopper65@gmail.com (M. Popper).

Other social psychologists (with a more cognitive-psychology orientation) have treated charisma as an attributive phenomenon. They believe followers attribute charismatic qualities to certain leaders out of a need to achieve a sense of causality or order to explain the complex reality engulfing them (Popper, 2014; Weick, 1995). Meindl, Erlich, and Dukerich (1985) and Meindl (1995) claim that such followers' needs lead to a romanticizing of leadership—a feature further intensified through social contagion processes (Meindl, 1990). Other researchers discuss charisma in behavioral terms, arguing that certain behaviors, for example, those perceived as assertive and decisive, increase charisma inferences (Conger & Kanungo, 1987).

In a comprehensive review of the concept and studies of charisma, Antonakis, Bastardo, Jacquart, and Shamir (2016) point to Weber's outstanding contribution. Of the 280 articles they reviewed on charisma, 74% refer to Weber's work. Two features are highlighted by Weber's contribution. First, the emotional component is central to the charisma phenomenon. In fact, argued Weber—as did many charisma scholars who followed him (e.g., House & Howell, 1992; Kets de Vries, 1988; Lindholm, 1990), the charismatic impact is felt on an emotional level; it is “revolutionary and transvalues everything, it makes a sovereign break with all traditional or rational norms” (Weber, 1968, p.24). Second, the outcomes of charisma (termed “charismatic effects” by Antonakis et al., 2016) are particularly evident “in times of psychic, physical, economic, ethical, religious and political distress” (Weber, 1968, p. 18). Antonakis et al. (2016) point out that despite the consensus that emotions play a major role in charisma, research ambiguities and inconsistencies still arise regarding the definition and measurement of charisma. This is mainly due the confusion between charisma's antecedents and outcomes.

This article offers an evolutionary view of charisma, suggesting answers to questions that still preoccupy charisma scholars (e.g., Allison & Goethals, 2011; Antonakis et al., 2016), namely: (a) What is charisma?; (b) What are the antecedents and effects of charisma?; and (c) Are there conditions conducive to the emergence of charisma? An evolutionary approach to these questions may shed light on the foundations of charisma as well as delineating ways to conduct empirical studies on it.

The point of departure for the present discussion is anchored in Weber's claim that the followers determine who is a charismatic leader. That is, followers perceive certain signals that a charismatic person displays and consequently are willing to act in a manner described by Weber and others (e.g., Meindl, 1995; Lindholm, 1990; Popper, 2001) as “non-rational.” In this article we attempt to decipher the ambiguous elements underlying people's perceptions of charisma and the reactions such perceptions trigger. To deal with these aspects, we adopt Antonakis et al.'s definition of charisma: “Charisma is value based, symbolic and emotion-laden leader signaling” (Antonakis et al., 2016, p. 304). We find this definition apt, as it distinguishes signaling as a central radiation channel, and it touches on *emotions*, *symbols* and *values*. Each of these aspects will be discussed.

We begin with the foundations of signals that clearly exert conspicuous influence and can be seen in an initial and pure manner in infants and young children (thus they illustrate well the evolutionary aspect). Then we discuss how these signals are expressed in adults where values and symbolic aspects are more abstract and implied more indirectly. Inspired by new directions presented by Csibra and Gergely's (2009, 2011) work, indicating evolutionary biases affecting children's imitating behaviors in learning missions, we seek to expose the evolutionary base of charisma. We argue that *charisma is rooted in an evolutionary foundation*, as part of a unique, powerful human capacity to transmit knowledge through cultural learning processes.

The article is structured as follows:

1. Presentation of the evolution-based perspective, which allows us to analyze the developmental origins of charisma's signals and effects.
2. Analysis of key aspects related to charisma: (a) the behavioral consequences of charisma; (b) the signaling of charisma; and (c) the context in which charisma is maintained.
3. Illustrations of the effects of charisma demonstrating the described evolution-based principles.
4. Discussion of two issues: (a) the connection between the discussed evolutionary principles and charisma; and (b) the different susceptibility levels of various collectives to different leadership cues.

The early foundations of charisma

In a classic experiment (Meltzoff, 1988), 14-month-old infants sat with their mothers opposite the experimenter. The experimenter looked at an infant, then at a “magic box” set on the table in front of her, and then performed this surprising action: she bent forward toward the box and by pressing her forehead on it turned on a light attached to its top. A week later the infants returned to the lab and were allowed to play with the box. Most of them leaned toward the box spontaneously and turned on the light using their heads, although they could easily have used their hands. In a later version of the experiment (Gergely, Bekkering, & Király, 2002), the same conditions were applied except one: the experimenter's hands were hidden under a blanket, indicating that they were not accessible. In this case, most of the infants turned on the light with their hands, rather than their heads. And in a still later version (Király, Csibra & Gergely, 2004, in Csibra & Gergely, 2006, p. 12), no eye contact preceded the demonstration. Again, most of the infants turned on the light with their hands, emulating (but not imitating) the experimenter's actions. What can explain the surprising fidelity of the infants' imitation (termed in the literature over-imitation; Lyons et al., 2007; McGuigan, 2013) in Meltzoff's original study, even though the behavior was actually quite inefficient compared with using their hands? What caused the difference in the replications?

Csibra and Gergely's (2006, 2009, 2011) theoretical model—“natural pedagogy,” based on their empirical studies—suggests an answer. They claim that humans have a unique, specific mechanism for vertically transmitting cultural knowledge and practices. This learning mechanism is much more efficient than others, such as trial and error. It enables a naïve learner (small figure) to immediately trust a figure perceived as competent and benevolent (large figure), demonstrating for him/her some relevant but opaque (for the learner) cultural knowledge. This ability of the naïve figure to efficiently learn and generalize the knowledge (her pedagogical stance) is anchored in the following evolutionary propensities (Csibra & Gergely, 2006, 2009):

1. *Epistemic trust in “large figures.”* We define as “epistemic” trust in the authenticity and relevance of transmitted information (Wilson & Sperber, 2012). Such trust, as will be elaborated, is connected to trusting in the ability and benevolence attributed to the transmitter (e.g., a baby’s trust in his/her parents: Gergely, Egyed, & Király, 2007; Klucharev, Smidts, & Fernández, 2008; Mayer, Davis, & Schoorman, 1995).

2. *Bias to ostensive cues,* a communication perceived as being addressed to and for the recipient (delivering an intention to communicate with him/her). It was reported that infants are sensitive to at least three kinds of ostensive stimuli from the moment of birth: eye contact, contingent responsivity and infant-directed speech—“motherese” (Csibra & Gergely, 2006).

3. *Referential signals,* which specify the referent of ostensive communication through joint attention that shifts the learner’s attention to the intended referent. It was reported that if infants saw that the gaze direction of a communicator shifted, their attention was sensitized to events in the indicated direction (Csibra & Gergely, 2006).

4. *Relevance,* which is the bias to perceive and generalize a referent (object or event) after ostensive referential cuing as culturally relevant, that is, *shared and normative* — without the extended acquisition process of trial and error or statistical observational learning. For example, when observing others’ emotional displays about objects, after ostensive referential cuing, infants will be more likely to interpret these displays as conveying valence information about the referent than as expressing the communicator’s subjective attitude state. The opposite attribution will take place without ostensive communication (Csibra & Gergely, 2009). Going back to the “magic box” study, the factors that determine the process can be clearly seen: the experimenter engages in *ostensive communication* with the infant, *signals the referent* to him/her, and then demonstrates its *relevance* by performing a surprising action with a clear result: turning a light on with one’s head. This sequence of communicative actions was followed by the infants’ exact imitation of the experimenter’s behavior after only one exposure and a one-week interval. If, however, there was nothing new or opaque in the demonstrator’s actions (she could have turned the light on only with her forehead, because her hands were occupied) or if no ostensive signal preceded the act, the accurate imitation pattern was replaced by free (and more efficient) emulation, that is, imitation not of the act, but in regard to the end result: turning the light on using the hands.

Such experiments and the evolutionary thinking behind them represent two research topics currently stimulating a great deal of interest in the developmental and evolutionary literature. These are: trust and over-imitation: children’s and adults’ tendency to imitate with high fidelity what appear to be causally *irrelevant* actions considering their current knowledge and inferences (Lyons, Damrosch, Lin, Macris, & Keil, 2011; McGuigan, 2013; McGuigan, Makinson, & Whiten, 2011). These studies shed more light on some specific aspects underlying epistemic trust. For instance, even though children are biased toward epistemic trust (or evince a conformist bias), they are selective in bestowing their trust. Young children, for example, tend to over-imitate familiar caregivers, in-group members (models with their cultural group accent), and older, more dominant people who are perceived as experts with high status or prestige (McGuigan, 2013). In sum, this literature presents a strong and early trust bias, moderated by model selectivity (see McGuigan, 2013). *These biases are not specific to children. In fact, it is reported that adults tend to over-imitate more than children, with high selectivity with respect of the model’s age, expertise or prestige* (Flynn & Smith, 2012; McGuigan et al., 2011).

The phenomenon of over-imitation is pivotal for understanding the interactions among biology, cognition, and culture and their role in the evolution of human culture (Boyd, Richerson, & Henrich, 2011; Richerson & Boyd, 2005). It allows examination of the origins and purpose of social influence processes that appear uniquely in humankind. The models and studies in the fields of epistemic trust and over-imitation (Boyd et al., 2011; Csibra & Gergely, 2006, 2009; Lyons et al., 2007, 2011; McGuigan, 2013; McGuigan et al., 2011) indicate that under obscure circumstances, from infancy to adulthood, humans are biased toward trusting figures perceived as *competent* (typical “signals” of competence are expertise, prestige, dominance, etc.) and *benevolent* (typical “signals” of benevolence are ostensive communication, “costly” demonstration such as personal example, etc.). These biases produce reactions reflected in “anomalous” behaviors. In Boyd et al.’s (2011, p. 10922) words, “These models predict that an adaptive evolved psychology will often cause individuals to acquire the behaviors they observe used by others, even though inferences based on environmental cues suggest that alternative behaviors would be better.” Such behaviors reflect transition from “practical rationality” (Gergely & Jacob, 2012), based on environmental cues, to another system which is unique to humans and is based on collective norms. This argument suggests that humans are a priori ready for social and cultural adaptation, and are prepared to learn, through faithful imitation of selected models, enormous amounts of cultural knowledge and practices acquired and accumulated over generations, some of which have become obscure and complex (Boyd et al., 2011; Csibra & Gergely, 2006, 2009, 2011; Richerson & Boyd, 2005).

This perspective yields new insights into the phenomenon of charisma. In-depth scrutiny of the results and antecedents of over-imitation clearly shows a resemblance to the results and antecedents of charisma. Since the domain of over-imitation is replete with experimental studies (which are scarce in the charismatic leadership literature), it constitutes a good platform for more accurate explorations and examination of factors related to charisma. Moreover, the suggested comparative analysis can better illustrate the contribution of the cultural evolutionary perspective and provide a more comprehensive conceptual framework for understanding the charisma phenomenon. The following table summarizes the similarities between essential dimensions of charisma and over-imitation (Table 1).

We now examine more thoroughly the categories presented in the table.

Behavioral consequences

The similarity of the resulting manifestations in the two domains is arguably not accidental. In over-imitation research, the large figure (perceived as competent and benevolent) who applies the described syntax, diverts the individual (due to his/her early evolution-based readiness) from an instrumental motivational system to another system at the heart of which lies a general

Table 1

Over-imitation and charisma—common dimensions.

Dimension	Over-imitation	Charisma
Behavioral consequences	Accurate and rapid imitation of the model. Reflects transition from “practical rational” behavior based on environmental cues and efficiency inferences, to behaviors based on collective norms (Boyd et al., 2011; Gergely & Jacob, 2012; McGuigan, 2013; McGuigan et al., 2011).	Behaviors expressing effort beyond instrumental self-interest. Unreserved adoption of normative messages displayed by the leader. “Ask not what your country can do for you. Ask what you can do for your country.” (Bass, 1985; Burns, 1978; Popper, 2001).
Competence and benevolence signals/communication patterns.	Competence signals: Model signals of expertise, status, prestige, dominance and age. (Boyd et al., 2011; Henrich & Gil-White, 2001; McGuigan, 2013; McGuigan et al., 2011). Model signals as in-group member. (Buttelmann, Zmyj, Daum, & Carpenter, 2013; Kinzler, Corriveau, & Harris, 2011). Benevolence signals/communication patterns: Intentional ostensive, referring and demonstrating communication (evolutionary communication syntax) perceived as conveying benevolence, commitment and relevance for the recipient (“Csibra & Gergely, 2006, 2009, 2011, Gardiner, Greif, & Bjorklund, 2011; Henrich, 2009; Lyons et al., 2011).	Leader perceived as a “person with powers,” competent, represents major symbols of the collective (Antonakis & Dalgas, 2009; Bass, 1985; Kets de Vries, 1988; Shils, 1965; Todorov, Mandisodza, Goren, & Hall, 2005). Individualized consideration, Presentation of compelling vision, direction, demonstrative behaviors. Conveying sense of direction, care and commitment (Awamleh & Gardner, 1999; Bass, 1985, 1999; Conger, 1999; Shamir et al., 1993).
Context	“Epistemic hunger” typical of new or obscure situations in which valid environmental cues are absent or do not match the observer’s personal experience (Boyd et al., 2011; Csibra & Gergely, 2006, 2009).	Weak psychological situations, crises, rapid changes, situations of cognitive ambiguity (Jacquard & Antonakis, 2015; Mischel, 1973; Pillai, 1996; Shamir & Howell, 1999)

inference regarding what is right and what is wrong (as opposed to what is “economically” utilitarian). In this regard, the large figure represents a deep-seated convention from which such inference is derived (Butler & Markman, 2012; Gergely & Jacob, 2012). This is precisely the claim made in research on charismatic leadership under a variety of headings, such as inspirational, visionary, charismatic or transformational leadership (Bass, 1985; Burns, 1978). Various researchers (Bligh & Robinson, 2010; Shamir et al., 1993; Shamir, Arthur, & House, 1994; demonstrate in detail how through symbolic acts and a certain manner of presenting speeches (e.g., using certain types of metaphors), charismatic leaders transform their followers’ motivation from personal-instrumental to motivation grounded in symbolic-collective values.

Signals

The signals underlying the behaviors described in natural pedagogy and over-imitation studies (Csibra & Gergely, 2006, 2009; McGuigan, 2013), as well as works on charisma (e.g., Bass, 1985; Lindholm, 1990), are reported to generate references of competence, benevolence and commitment. A series of studies by Todorov and his colleagues (Bellew & Todorov, 2007; Olivola & Todorov, 2010; Todorov et al., 2005), point to the signals of competence. Todorov and his colleagues (Todorov et al., 2005) exposed Princeton University students to men’s faces for short periods of up to a second, and then asked them to rate the faces on various traits, one of which was competence. The faces were not a random sample but faces of politicians. The experimenters compared election results in various states with the Princeton students’ quick rating and without any political context (they did not know who the candidates were). In 70% of the ratings for the position of senator, congressman or governor, the election winners were candidates whose faces the students rated higher in competence. Addressing the possibility that people relate to general likability rather than to competence, the researchers asked participants to judge various other trait dimensions such as intelligence and honesty. From a simple halo-effect perspective, competence emerged as the most important trait attribute on which people evaluated candidates for leadership positions. Such remarkable results have been replicated in Finland, in regional council elections in England, and in various election races in Australia, Germany and Mexico (Bellew & Todorov, 2007; Olivola & Todorov, 2010). Antonakis and Dalgas (2009) played an election game with children and discovered that children and adults were influenced by similar cues in judging competence from facial appearance. This line of experiments highlights humans’ inner sensitivity to signals perceived as indicating competence.

However, being perceived as competent is not enough. To feel trust, humans (as well as other species) must feel that competence is not being used for the benefit of the competent figure alone (Batson, 1998). That is, there must be signals indicating care (see Fiske, Cuddy, & Glick, 2007, for a discussion of warmth and competence, as universal dimensions of social cognition, reflecting evolutionary pressure). Reviewing the literature on hunter-gatherer societies, Boehm (1999) concludes that “strong figures” gain respect by being generous. The group sometimes disobey, replace or even kill, those who are stingy.

Prominent signals in the context of willingness to exert “extra effort” are related to the extent of commitment attributed to the “large figure.” Henrich (2009) demonstrates how humans reduce their suspicions of being exploited by assessing the model’s investment in behavior (e.g., sacrifice, level of involvement). The costlier the model’s behaviors are perceived, the more trust the model is likely to gain. Natural pedagogy and over-imitation studies certainly show clearly and powerfully at a very early stage (infancy), the centrality of inferences of competence, benevolence and commitment in generating conspicuous influence. Many

Table 2

The components of evolutionary syntax.

Evolutionary syntax	Clarification/illustration of the syntax notions
Ostensive communication	Communication clarifying that the communicator's intent to communicate is addressed to the recipient. ("Hey you...")
Reference	Reference on a particular subject ("Pay attention to what I show.../talk about.../...")
Relevance	Demonstrating the relevance of the presented act/content to the recipient ("This is how it happens/works.")

(Csibra & Gergely, 2006; Gergely & Jacob, 2012).

studies indicate that the deliberate benevolent acts of ostensive, referential demonstration of the model addressed to the recipient are a necessary condition for the over-imitation phenomenon (Csibra & Gergely, 2006, 2009; Gardiner et al., 2011; Lyons et al., 2011). We argue that this influence is so fast and enormous because the described signals fall on evolutionary biases inherent in us.

The "evolutionary syntax" is anchored in three innate sensitivities expressed in hierarchical order. The fundamental sensitivity is communication that singles out the recipient, delivers the intent to communicate with him or her, and creates joint attention: this is *ostensive communication*. When this is present, another type of sensitivity (e.g., innate bias) comes into play: sensitivity to *referential signals* (in the process of joint attention), to objects, events or states of affairs. Finally, there will be a bias to perceive the conveyed address through the specified syntax as *relevant*, normative and worth adopting, rather than episodic information.

In the table below these biases are summarized and clarified (Table 2).

A military lesson on how to attack the enemy reflects these principles (Pail, 1992). The chain of orders is as follows: "Platoon" (ostensive address), "straight ahead at 12 o'clock" (referential signal), the "enemy" (relevance) is there. Following the command comes an act of personal example (like the experimenter's act in Meltzoff's experiment). The commander leads the storming of the enemy—an act which under these circumstances immediately fosters trust ("In the eyes of the followers, the commander is not only competent and knows what to do, he is also so committed that he is ready to risk his life; therefore, he is trustworthy...") (Popper, 1996). This is consistent with Conger and Kanungo's claim that: "... charismatic leaders transform their concern for followers' needs into total dedication and commitment to the common cause they share with followers in a disinterested and selfless manner. They engage in exemplary acts that followers perceive as involving great personal risk, cost, and energy" (Conger & Kanungo, 1987, p. 642). This military procedure, as taught and practiced in military command schools, obviously includes the entire "package": trust in the "large figure" (the leader) and an address conveyed in a manner that embraces the three principles specified in natural pedagogy theory.

Charismatic leadership theories usually include these principles as key elements, that is; (a) reference is made to the desired state, (direction, vision); (b) these messages are transmitted ostensively, namely making clear that the communication is addressed specifically to and for the recipient; and (c) the messages are demonstrated symbolically by speech or by behaviors (e.g., "invested behaviors") in a way that is perceived as relevant to the recipient and recruits his/her commitment (see Conger, 1999, pp. 153, 154).

Context

At root, evolutionary developmental research into cultural transmission is based on the assumption of "epistemic hunger": the need for rapid adaptation to an unknown environment. The innate readiness ("pedagogical stance" using Gergely and Csibra's phrase) to quickly learn and absorb new adaptive information passed on by a large, trustworthy figure is part of the response to this need. The more ambiguous and uncertain the situation, the more intense the desire for epistemic certainty (Csibra & Gergely, 2006) and security (Bowlby, 1973). Under uncertain conditions innate sensitivities are more strongly activated. There is a greater tendency to be influenced by figures perceived as large, competent, benevolent and trustworthy. This idea appears in social psychology studies, as well as in studies on charismatic leadership (albeit not linked to innate developmental foundations).

Wheeler, Deci, Reis and Zuckerman (1978, in Pastor, Meindl, & Mayo, 2002), for example, found that people's judgment was more open to the influence of others in situations of ambiguity. Pillai (1996) and Pastor et al. (2002) found that charismatic leadership tended to transpire more quickly in situations of ambiguity or crisis. Shamir and Howell (1999), analyzing the feasibility conditions of charismatic leaders' emergence in organizations, adopted the distinction suggested by Mischel (1973) between "weak psychological situations" — characterized by high uncertainty — and "strong psychological situations" — characterize by the opposite, situations of clarity. They argue that weak psychological conditions are fertile ground for the emergence of charismatic leaders. Jacquard and Antonakis (2015) argue that in conditions of attributional ambiguity, where performance signals are inconclusive, the "charismatic leader will shine." The general claim is that in situations of greater adaptive need (from crises to technological, economic, or organizational changes) epistemic hunger is greater. People tend more to accept, even construct, large figures—charismatic leaders.

The proposed perspective provides an answer to some resounding criticism of existing models of charismatic leadership (Yukl, 1999), as well as laying the foundations for formulating a general theory of followership and charisma. The affinity between psycho-biological and evolutionary-cultural perspectives, as reflected in contributions of scholars like Boyd et al. (2011), Lyons et al. (2011) and Tomasello (2014), provides a theoretical basis for a different outlook on the intense influence processes expressed in willingness to move from instrumental to normative motivation. Such an outlook facilitates identifying the essence of impact processes as well as explaining phenomena such as the "romance of leadership" (Meindl, 1990; Meindl et al., 1985) and the fading of charisma (Popper, 2012; Roberts & Bradley, 1988). Moreover, the proposed perspective may explain Yukl's critique of the unexplained contradictions between the "dark side" of charisma and the "illuminated" side — the social, ethical and moral (Burns,

1978). Since the evolutionary biases described are so powerful, in certain circumstances (e.g., weak psychological situations) the contents and direction implied in the leaders' messages are sometimes not fully weighed by the followers (Popper, 2001) (this point will be elaborated later). Consequently the platform described, on the one hand, sheds light on the fast and efficient cultural adaptive transmission, and on the other, can clarify why under certain circumstances individuals may follow someone blindly, ignoring independent inferences (Boyd et al., 2011, p. 10923).

To conclude this part, the reviews, studies and evidence presented so far seem to lead to the following arguments:

1. One of the most significant expressions of the impact of charisma is people's willingness to follow the charismatic leader uninhibitedly.
2. The ideal model (in Weberian terms) of this impact is clearly seen in natural pedagogy and over-imitation studies (Csibra & Gergely, 2006, 2009; Gardiner et al., 2011; Lyons et al., 2011; McGuigan, 2013), where experimentally there appear both (a) the uncompromised following of the large figure and (b) the conditions under which such an effect occurs.
3. If there are communication elements (applied by a figure perceived as competent and benevolent) that include ostensive communication and referential signals (presentation of direction: Drath et al., 2008), and are perceived as relevant (Berson, Shamir, Avolio, & Popper, 2001), the influence will be of such intensity as to transfer individuals from a utilitarian-motivational system to a symbolic-collective one.

In the rest of the article we analyze the explanatory power of the innate code with regard to charismatic effects, using notions of epistemic trust, model selectivity, over-imitation and natural pedagogy as a frame of reference. We can analyze which variables in the formation of prominent effects are universal, and which change as a result of socialization processes that adults undergo.

First we shall demonstrate expressions of charisma on a descriptive level, after which we shall discuss the theoretical implication of socialization processes and the "leap" from the experimental and developmental perspective of natural pedagogy and over-imitation studies to research in charisma.

Some illustrative examples of charismatic leaders analyzed through natural pedagogy principles

A known and investigated channel of charismatic leaders' effects is clearly reflected in their speeches. A significant part of the effect is attributed to specific behaviors and tones utilized by leaders in their delivery (e.g., Atkinson, 1984; Schweitzer, 1984; Willner, 1984). This effect was presented and discussed in a laboratory study by Awamleh and Gardner (1999). Subjects watched a video of a manager speaking while manipulating three variables: (a) content (an inspirational/non-inspirational message); (b) level of organizational performance (high/low); and (c) how the message was conveyed: "strong delivery," which included eye contact, smiling, facial expressions, hand gestures (the ostensive component of natural pedagogy) and "weak delivery," devoid of these components (non-ostensive communication). The manager's charisma and effectiveness levels were measured as evaluated by the subjects. A strong (ostensive) delivery of weak content, and feedback indicating weak performance, secured higher evaluation than weak delivery (non-ostensive communication) of inspirational content and good performance data. This illustrates the superior influence of the "ostensive condition" in leadership communication.

Analysis of these behaviors and tones in real leadership speeches plainly indicates the implementation of principles used in natural pedagogy studies. Charismatic leaders make wide use of ostensive communication and referential signals by integrating intimate tones, hand gestures, and eye contact (Atkinson, 1984; Bull, 1986) into their speeches. They also incorporated many personal examples in the form of stories and metaphors, giving listeners the feeling that the leader was "talking to them in a personal manner" (Shamir & Eilam, 2005; Willner, 1984). One of the most famous illustrations of two of the natural pedagogy principles is John F. Kennedy's Berlin speech in June 1962. Kennedy used the "natural scenery," pointing to the Wall (in natural pedagogy terms referential signals) as a physical illustration of the gap between tyranny and freedom: likening Berlin to a battlefield and the citizens to freedom fighters. The enthusiasm of the crowd of Berliners climaxed when Kennedy declared, in German, "Ich bin ein Berliner" (I am a Berliner) — a rhetorical gesture (an act of ostensive communication), which made such a strong impact that many individuals in the audience felt that they had been addressed personally by the leader (Popper, 2012). Martin Luther King's influential "I have a dream" speech is a clear example of the signals described as essential for charismatic effects. Prior to the speech King was introduced as the "great moral leader," which positioned him as a "large figure" in the context of a desire for deep change. King's address contains the communication components described as "evolutionary syntax." "I am happy to join with you today" (ostensive communication) "in what will go down in history" (symbolic reference to the future) "as the greatest demonstration for freedom in the history of our country" (relevant content). The apparent motivational consequence was a powerful collective experience of hope for change.

From universal relevance to local cultural relevance

The component of relevance, as can be seen from the illustrations, unlike the other components of the syntax, is more related to specific content elements. Sperber and Wilson (1995), who formulated the theory of relevance, argue that the hearer/reader will search for meaning in any given communication, and having found meaning that matches their expectations of relevance, will stop processing. In other words, there is a "relevance threshold" that determines whether or not an "ostensive stimulus" merits additional processing. For instance, research conducted by Schjoedt, Stødtkilde-Jørgensen, Geertz, Lund, and Roepstorff (2010) showed that a devout Christian audience, listening to a priest believed to possess "extraordinary forces," evinced significant deactivation of the social executive functions (medial and dorsolateral prefrontal cortex)—indicating the giving up of control,

much like the effect of hypnosis. By contrast, when the subjects believed they were listening to a non-Christian preacher, the opposite reaction was reported: an increase in activation of those parts of the brain. Consistent with these findings, when asked later to assess the charisma of the two preachers, the devout Christians perceived the Christian preacher as more charismatic than the non-Christian preacher. Moreover, such differences in the brain's activity were not found in a parallel group of secular people exposed to the same conditions. On a neurological level this experiment highlights two major points previously discussed: (a) there is a tendency to trust a “large figure” perceived as having the “right signals”; and (b) the experiment clearly shows evidence of both “model selectivity” and “relevance threshold.”

The claim is that charismatic leaders succeed in targeting relevant messages at associations already existing in followers. This position is also consistent with approaches to long-term memory and information processing (McClelland, McNaughton, & O'Reilly, 1995; Semin & Smith, 1999); namely, that past events are gradually moved into a long-term storage system, which uses an abstract, schematic form of information representation. This argument is empirically supported in comparative studies of various national societies (Den Hartog, House, Hanges, Ruiz-Quintanilla, & Dorfman, 1999; Gerstner & Day, 1994; Hofstede & Hofstede, 2005). Followers acquire “leadership schemas” formed in socialization processes when exposed to, among other things, various figures of leaders through textbooks, novels, films and other socialization channels (Schwartz, 2000). As Hofstede and Hofstede (2005) argue, leaders are “cultural heroes”. Examples exist of figures that have come to be core symbols of the collective being used to harness motivation. Jesse Jackson in his reportedly highly influential speech in Atlanta, Georgia, before the Democratic Party National Convention on July 19, 1988 (Shamir et al., 1994), compared himself to President Lincoln as a person “in whose symbolic shadow” he followed. Theodore Roosevelt often said in his speeches that he was simply walking in Lincoln's footsteps (Roosevelt, 1913). Lincoln, the most revered American leader, is quoted and mentioned more than any other president (Schwartz, 2000). In fact, Lincoln has become an icon of leadership, a symbolic figure who serves as an interpretative frame of reference for the charismatic leadership phenomenon in America (Popper, 2012).

In conclusion, these examples attest to certain organizing principles behind the effect of charismatic leaders. These principles are consistent with those presented in natural pedagogy theory. They contain universal signals of competence and care (a large figure perceived as competent, utilizing ostensive communication and referential signals), and cultural signals, which may vary in different cultures or groups. In other words, there are different “relevance thresholds” in various collectives deriving from different schemata formed in socialization processes. These signals, displayed in different cultural environments characterized by various “relevance thresholds”, are the keys to understanding the main charismatic effect: moving from an instrumental to a normative symbolic mode of action.

Discussion

This article has attempted to show that the phenomenon of charisma rests on innate foundations. The clearest example was shown to appear in the infancy and childhood stage (Csibra & Gergely, 2006, 2009, 2011) and in various over-imitation experiments (Lyons et al., 2011; McGuigan, 2013). These studies clearly reflect how a “small figure” has unconditional trust in a “large figure,” perceived as competent and benevolent and with whom the former maintains joint attention. Under terms that include ostensive referential signals, the impact of the “large figure” will be beyond the efficiency level and will produce behaviors which do not necessarily “pay off” instrumentally. In salient cases of charisma, the foundations underlying the leaders' enormous influence appear with particular clarity. Their speeches and behaviors are characterized by significant expressions of ostensive communication, referential signals, and relevance cues. These examples and the research results make it clear that “charisma” is anchored in the following inherent principles.

Principle 1: The influence of charismatic leaders is anchored in evolutionary foundations.

This claim is based on the findings of many scholars who resort to an evolutionary rationale (e.g., Langer, 1967; Osgood, 1962; Zajonc, 1980) and believe that feelings precede thinking. As Zajonc (1980, p. 156) argues: “Affect is the first link in the evolution of complex adaptive functions that eventually differentiate animals from plants. And unlike language or cognition, affective responsiveness is universal among the animal species.” Izard (1977) states that affect is clearly primary in phylogeny. The limbic system that controls emotional reactions came first, to carry out fundamental adaptive functions. Meltzoff and Moore (1977) report that human infants twelve days old can imitate emotional expressions — long before they acquire language.

As mentioned earlier in the discussion on signaling and context, the adaptive evolutionary rationale linking emotions and leader attraction is better observed in situations that highlight primary needs. For example, it was reported that manifestations of followership develop faster and more visibly in emergency and crisis situations, when survival and adaptive needs are intensified (Pillai, 1996; Samuelson, Rutte, Wilke, & Messick, 1984). Also, people tend to show increased preference for authoritarian leaders, who are perceived as strong (an “enlarged figure”) when they are threatened by war (McCann, 1992; Schlesinger, 1958) and reminded of their mortality (Cohen, Solomon, Maxfield, Pyszczynski, & Greenberg, 2004). This can explain, for example, why leadership correlates with such factors as age, indicating experience (Van Vugt, Hogan, & Kaiser, 2008), and inferences of competence (Todorov et al., 2005).

Followers' yearning for a large, competent and benevolent figure in crisis situations is congruent with the rationale underlying the distinction between two systems of inferences: System 1 and System 2 (Evans & Frankish, 2009; Kahneman, 2011). The former is an automatic system that operates quickly with little or no effort. The latter however requires the attention, focus and efforts needed for complex mental activities (e.g., calculations). Obviously, System 2 is slower and needs more time to “digest” data. The quick inference based on System 1 (e.g., Todorov et al., 2005) can be clearly explained by evolutionary psychological models or information-processing models. In other words, signals exist to facilitate a quick inference as to whether the “candidate” has the qualities to protect, care for and contribute to adjustment processes (Van Vugt et al., 2008).

These explanations might indicate universal patterns that probably exist in certain circumstances. However, we also know that different collectives have different desired and actual leadership images (Gerstner & Day, 1994). This apparent contradiction can be resolved by the “relevance principle” demonstrated in natural pedagogy experiments. Namely, in addition to universal *processes*, which explain the yearning for leaders, different collectives may have different susceptibilities to various “leadership cues,” manifested in different images and messages (*contents*) engaged in diverse “relevance thresholds”. This is particularly evident in reference to charismatic leaders. The fact that some leaders are perceived as charismatic in certain collectives (some even become “icons”) indicates that they have become cultural heroes. As such, they have symbolic value for the collective (Allison & Goethals, 2011; Hofstede & Hofstede, 2005).

We now examine this principle.

Principle 2: Followers in different collectives might be susceptible to different leadership cues.

The discussion of the various images of leadership in different collectives is grounded in the conceptual frameworks proposed by Bruner (2002), Csibra and Gergely (2006, 2011), Tomasello (1999) and Tomasello, Carpenter, Call, Behne, and Moll (2005). The basic argument is that mechanisms exist for generating cultural knowledge based on the foundation of adaptation needs (Van Vugt et al., 2008). In many cases, that cultural knowledge has moved away from the adaptive function it originally filled (Gergely & Csibra, 2006), but is maintained and transmitted as a means of preserving the group's boundaries and uniqueness (Tomasello, 1999; Tomasello et al., 2005). This argument is grounded in the following claims.

1. Humans are much more skillful than other species at discerning what others perceive, intend, desire, know and believe. Human beings possess the foundational skill of understanding intentions. The pinnacle of this ability is understanding beliefs that are indisputably mental and normative.
2. Humans can engage better than other species in complex collaborative activities, such as preparing a meal together or playing a cooperative game. These collective activities and practices are based on shared symbolic artifacts, such as linguistic symbols and social institutions, which facilitate their “transmission” down generations. In that sense humans are also expert at culture.
3. These two dimensions of human expertise—reading intentions and interacting with others culturally—are intimately related. Specifically, the way humans understand the intentional actions and perceptions of others creates species-unique processes of cultural cognition. The ability to maintain the type of symbolic communication needed for cooperative activities is also the foundation of individuals' identification and solidarity with the group they feel they belong to, as well as the source of feelings of separation and difference with regard to other groups. These differences might at times seem somewhat vague, but many phenomena confirm their reality, particularly the many types of group biases that humans exhibit, for example, helping in-group more than out-group members, caring more about one's reputation within a group, and so on (Bennett & Sani, 2008). Tomasello and Rakoczy (2003) call this “we” feeling “group mindedness,” it being based on certain specific motivations: not merely a type of intentionality jointly with other individuals at a given moment, but an ongoing “collective intentionality.”

One of the most powerful means of maintaining a collective life is *narrative*. As Bruner (2002) states, stories are an unparalleled means of making meaning. Stories fascinate children; more than any other medium, they help them to interpret reality. In this basic sense, the desire for stories and the role of stories in interpreting and shaping reality do not end with childhood (Popper, 2012). According to Bruner (2002), collective life is possible because of the qualities described by Tomasello (1999) above: the human capacity to organize and communicate experience in a narrative form. Some experiences, as researchers of “collective memory” note, become “cultural building blocks,” used to erect what has been termed a “community of memory” (Halbwachs, 1926/1950; Schwartz, 1986) — stories and facts that influence interpretations of reality on the collective level. This common “software of the mind” (Hofstede & Hofstede, 2005) has a function, as Bruner argues: “Being able to read another's mind need depend no longer on sharing some narrow ecological or interpersonal niche, but rather on a common fund of myth, folktale, and ‘common sense.’ And given that folk narrative — like narrative generally, like culture itself — is organized around the dialectic of expectation supporting norms...it is no surprise that story is the coin and currency of culture” (Bruner, 2002, p. 16).

This argument is consistent with the claim that humans' ability to read each other's intentions and mental states is an important adaptive contribution (Tomasello, 1999). So presumably, individuals sharing the same cultural background — the same norms and familiarity with the same symbols (including linguistic) — are better equipped, in Bruner's terms, to communicate effectively with each other. In Tomasello terms, they are better able to understand each other's intentions, hence to collaborate on a level higher than that attainable with individuals of different cultures. Some social psychologists have formulated notions and measurements of individuals' “social or collective self.” Such measurements indicate differences in feeling and thinking in members of various collectives (e.g., Hogg, 2001; Tajfel & Turner, 1979). These studies support the claim that it is easier, faster and more precise for individuals to communicate with their collective's members than with individuals from different collectives (Heine & Buchtel, 2009; Markus & Kitayama, 1991; Markus & Wurf, 1987).

One of the most influential channels for conveying messages of shared intention and its consequences is that of narrative — passed on through stories about “great figures,” especially heroes and charismatic leaders (Allison & Goethals, 2011) or told by heroes and leaders (Shamir, Dayan-Horesh, & Adler, 2005; Shamir & Eilam, 2005). Indeed, mythologization — turning a leader into a symbolic figure — is a common psychological mechanism for imparting meaning. As Cooley (1964) argued: “The function of the great man is to be a symbol. The real question in mind is not so much ‘What are you?’ as ‘What can I believe that you are?’ and ‘How far can I use you as a symbol?’” (p. 341).

Charismatic leaders in this sense enhance collective identity. Shamir et al. (1993), for example, claim that: (a) people have a hierarchy of identities that influences their attitudes, decisions and behaviors; and (b) salient events and people (e.g., charismatic leaders) can affect the hierarchy of the individual's identities. The argument is that leaders can exercise a significant effect on the

salience of the individual's identities if they are perceived as representatives of a meaningful narrative, a suitable story, which touches people's emotions. As Reicher and Hopkins (2003) argue, leaders may well be “entrepreneurs of identity” (p. 66). This idea already appeared in the works of early sociologists (Durkheim, 1973) and social psychologists, who perceived the leader as the embodiment of the group's characteristics, as well as the catalyst of processes of identification with the group (Hogg, 2001). This is congruent with the psychological mechanism described earlier: the leader as a means that contributes (among other means) to common inferences needed for effective communication necessary for adaptive collective purposes (Van Vugt et al., 2008). Exposure to a more familiar stimulus (some of the feelings of “familiarity” might come from leadership schemata originating in socialization processes) can generate inferences regarding the suitability of leadership and encourage collaborative efforts. Metaphorically, these processes can be likened to a literary canon; certain books may touch one group's collective feelings and sentiments but arouse no such feelings in another culture. Similarly, leaders are much like stories: they carry different emotional meanings for different collectives.

These explanations make it possible to complete and expand the theoretical reasoning presented earlier. As noted, natural pedagogy theory and over-imitation studies have demonstrated the impact of the “large figure” — an impact akin to charismatic leaders. The unconditional trust invested in these figures, along with ostensive communication and referential signals, create willingness in followers to be harnessed to the leaders' message. However, the stimulus awakened by the leaders (through speech or symbolic action) will bear a powerful meaning for the target individual and “move” him/her if it is perceived as *culturally relevant*. In infancy, when environmental effects are minimal, almost everything done by the “large figure” in the communicative manner described in natural pedagogy experiments might be perceived as relevant. Later on, socialization processes, social exposure, as well as reduced unconditional trust in “large figures” in general, set in. So leaders' impact also depends on what might be termed “differential collective cultural receptivity,” which determines the relevance “thresholds” — an individual's level of readiness to accept certain stimuli as relevant. If the leader's message is perceived as belonging to the group, that is, within the boundaries of the “we” concept (Tomasello, 1999; Tomasello et al., 2005), it will be accepted as relevant. This means that the followers (given that the signals of competence, benevolence and commitment have been generated) will stop processing (Sperber & Wilson, 1995), will trust the leader unconditionally, and will be influenced to move from personal instrumental considerations (i.e., “what is beneficial for me”) to normative ones (“what is right and proper”). If the leader's stimulus is not perceived as relevant, the followers will continue processing.

An analysis indicating the link between the discussed concepts: charisma, context, “group mindedness” (Tomasello & Rakoczy, 2003) and relevance (Sperber & Wilson, 1995), can be illustrated by comparing how President Bush was perceived as a strikingly charismatic leader immediately after the 9/11 events with how he was perceived as much less charismatic after Hurricane Katrina in New Orleans (Davis & Gardner, 2012). The 9/11 events were a deliberate action by an external group (out-group) that hit a major in-group symbol. This created a distinct reference that can be explained through the terms discussed in this article. We may analyze each component separately and then examine their combined effect.

“We”–“They”

As already mentioned, the centrality of the “we” feeling is related to an early bias anchored in an evolutionary rationale (Buttelmann et al., 2013; Kinzler et al., 2011). Darwin (1873, p. 156), already argued that “groups with a greater number of courageous, sympathetic and faithful members, who were always ready to warn each other of danger, to aid and defend each other...would spread and be victorious over other tribes”. Indeed, the importance of group mindedness (Tomasello & Rakoczy, 2003) is also supported by physiological evidence. For example, it is reported that social support expressed by the “we” group increased levels of oxytocin more than support given by strangers (De Dreu, 2012). Indeed, collectives cultivate common symbols as part of their effort to maintain collaborative abilities needed for adaptive advantage (Tomasello, 2014). The charismatic leader who is considered a prominent representative of the group's identity (e.g. Durkheim, 1973; Hogg, 2001) is one of the most powerful adhesives maintaining the “we” feeling.

Intentionality

Sensitivity to deliberate actions of others also has an evolutionary basis (Gardiner et al., 2011; Lyons et al., 2011). As described, pedagogical learning starts with ostensive communication: identification of the deliberate intent to communicate with the recipient (Csibra & Gergely, 2006, 2009). Ames and Fiske (2013) show a different, yet relevant, aspect of the same phenomenon: intentional harm is experienced as worse than random harm.

Symbolic relevance

Group mindedness (Tomasello & Rakoczy, 2003) is defined through symbolic representations: language, narratives, and prominent figures. These symbolic representations form the “relevance thresholds” that determine the collective consensual boundaries.

The 9/11 case is a clear illustration of stimulating these fundamental sensitivities. It includes a *deliberate action*—an attack by a foreign group (“they”) on major American symbols (the Pentagon and the World Trade Center) — unlike the Hurricane Katrina case, which was perceived as a random disaster with less symbolic significance. Apparently then, the difference between the perceived levels of President Bush's charisma in the two cases can also be interpreted by evolutionary cultural factors.

To conclude this point: although the phenomenon of over-imitation, its origins and its consequences, can be observed in infants and adults alike, in the latter there is more epistemic vigilance (Sperber et al., 2010), more caution. There are “relevance

thresholds” that do not exist in infants. Because of cultural internalization, a leader's messages are examined more selectively by adults. In other words, if the charismatic leader's addresses breach certain symbolic boundaries they will likely be suspected or rejected (e.g., Gandhi's ideas regarding the truth [Satigara] and spirituality [Brahmcharia] – two cornerstones in his philosophy and messages as a leader – would probably have been rejected in Western culture...) (e.g., Chadha, 1997).

This is a subtle game between conservation and change played within a given cultural receptivity. Outstanding examples of charismatic leaders clearly indicate this. Their impact has been related to their successfully connecting the collective past to required future needs as, for example, illustrated by Martin Luther King's speech discussed above) see Popper, 2012; Shamir et al., 1993, 1994). That is, the change linked to charismatic leaders' impact (assuming that all other conditions of natural pedagogy exist) crossed the relevance threshold of a given group. This threshold is essentially cultural.

In sum: The claim is that charismatic effects are related to primary adaptive components in human psycho-biological systems. Natural pedagogy and over-imitation studies indicate that certain phylogenetic codes deriving from evolutionary biases can surpass instrumental cost-benefit considerations. These biases reflected clearly in natural pedagogy in infancy (Csibra & Gergely, 2006) act also on the effect of symbols in adulthood (Bruner, 2002; Tomasello, 1999). This argument is consistent with Zajonc's (1980) general claim that feelings precede thinking and that emotions are essential as informative channels.

The great number of studies and experiments on infants (such as those presented by Meltzoff, 1988; Csibra & Gergely, 2006) clearly demonstrate the emotional (or System 1) components of influence. In these studies the “small figure” perceives the “large figure” as responsible for his or her basic needs (e.g. security, epistemic needs) so it is easier to show more clearly how all the natural pedagogy principles are fully expressed. In situations where the “small figure” has absolute trust in the “large figure,” his or her exact imitation (e.g., Meltzoff, 1988) can be interpreted as indicating a decisive impact. The studies on infants largely represent a singular state in which a universal emotional impact is clearly observed. Such an influence does not derive from specific content, and can be referred to basic needs; thus, it can be interpreted through biological and psycho-evolutionary models dealing with primary needs and emotions (e.g., Evans & Frankish, 2009). Similar patterns can be observed in adults at times of crisis (Pillai, 1996) or in situations termed “weak psychological states” by Mischel (1973) (e.g., states of uncertainty and anxiety), times that highlight basic needs. Indeed, leadership theories and models based on psychobiological or psychoanalytical reasoning focus on these kinds of contexts (e.g., Kets de Vries, 1988). However, along the developmental path, additional socialization processes take place and the impact of social and cultural factors intensifies. Thus, psycho-biological models (e.g., Bowlby's (1973) attachment theory), which have a great deal of validity in explaining infant as well as adult behavior in weak psychological situations, might not be comprehensive enough. True, the “evolutionary bias” to be influenced by a “large figure” is inherent, but adults evince more epistemic vigilance; not all the words and actions of the “large figure” are easily accepted as adaptively relevant. In adulthood a certain measure of “collective cultural receptivity” is also at play; therefore, notions such as “social-self” (Hogg, 2001; Tajfel & Turner, 1979), “collective intentionality” (Tomasello, 1999) and “narratives” (Bruner, 2002; Shamir & Eilam, 2005; Shamir et al., 1993) become more central in determining what might make an impact. So, in many adult contexts, in addition to engaging in ostensive referential communication, which are universal processes of influence, there is also a content dimension determining the relevance of the messages conveyed by the leader that might impact different collectives differently.

The perspectives and conceptual framework suggested in this article can shed more light on the origins and nature of charisma. They may also serve to advance the formulation of a general theory of charisma, which will explain universal as well as specific aspects related to charismatic influence. Moreover, the proposed framework allows for empirical research (including experimental studies) of the charisma phenomenon. For example, situations characterized by different degrees of uncertainty – different levels of “epistemic hunger” – can be experimentally manipulated (as they are in our lab by means of maze situations). Different types of figures signaling different levels of competence (e.g., age, professional expertise) and benevolence can be displayed along with different communication patterns (“evolutionary syntax”). That is, knowledge is transmitted by means of ostensive communication and referential signals, as against transmission of the same knowledge without these characteristics. In short, combinations of competence/incompetence signals, full syntax/partial syntax, can be experimentally conducted. Their effects (“charisma effects”) can be measured by physiological variables (e.g., activation of the medial and dorsolateral prefrontal cortex, as measured by Schjoedt et al., 2010; oxytocin measurement, e.g., De Dreu, 2012; De Dreu & Kret, 2015); or there may be psychological/behavioral variables such as reaction time or level of persistence in submitting to the leader's request.

In short, all the described signals deriving from an evolutionary rationale can be experimentally manipulated and validated. However, the suggested conceptual perspective can also be used as an interpretation framework to analyze real situations involving charismatic effects such as election campaigns (leaders' “influential” speeches, treatment of crises and organizational changes). As briefly demonstrated (e.g., the case of Bush, as well as Kennedy's and King's speeches), the interpretation models based on an evolutionary perspective may provide insights into aspects beyond the here and now, which are fundamental and inherent in human nature.

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