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Non-Conscious Routes to Building Culture

Nonverbal Components of Socialization

Abstract: *Gesture and elaborate forms of nonverbal behaviour have been posited as necessary antecedents to language and shared conceptual understanding. Here we argue that subtle and largely unintentional nonverbal behaviours play a key role in building consensual beliefs within culture. Specifically, people extract a great deal of information from even brief exposure to subtle nonverbal behaviour and much, if not most, human communication occurs nonverbally. We propose a model that focuses on the subtle and automatic nonverbal transmission of attitudes, beliefs and cultural ideals. Specifically, people extract attitudes and beliefs from nonverbal behaviour — such extraction is both ubiquitous and efficient. The extracted attitudes and beliefs become individual beliefs if encountered frequently enough. Consequently, people may come to adopt the same attitudes, beliefs and behaviours in the absence of verbal communication. Finally, one's own nonverbal behaviour reflects the extracted attitudes, beliefs and ideals of those of one's group, serving as a means for transmitting culture. The implication is that subtle nonverbal behaviour is important for the creation and maintenance of culture.*

How do we form conscious beliefs that just happen to be similar to those of our neighbours? Some argue that geographical considerations, such as warmer temperatures or rough terrain, lay the cognitive foundation for all types of beliefs and behaviour (Nisbett and Cohen,

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1996; see Heine and Norenzayan, 2006). Others argue that people are motivated to achieve a ‘shared reality’ in order to achieve the social cohesion and cognitive certainty that facilitate human survival (e.g. Hardin and Higgins, 1996). One general approach to the phenomenon of shared consciousness has been the social psychological model of social influence. According to this perspective, shared beliefs emerge largely as a consequence of *social influence* — the purposeful or incidental transmission of belief from one person to another. Considered broadly, social influence is responsible for shared beliefs ranging from stereotypes (e.g. ‘Asian people are smart’) to attitudes (e.g. ‘smoking is bad’) to ideologies (e.g. Christianity). Hence, for the development of culture to be understood social influence must also be understood. We argue here that a blind eye has been turned to processes that may account for much or most social influence — nonverbal processes. Moving beyond arguments about the primacy of gesture to language (cf. Durkheim, 1895; see also Knight, this issue), we note the social influence of more subtle nonverbal behaviours such as facial expressions, prosody and body language. In particular, we argue that these actions are ubiquitous and irrepressible and that people spontaneously, efficiently and often without awareness attribute meaning to subtle nonverbal behaviours. Such meaning influences one’s own conscious beliefs and, to the extent that people are exposed to similar nonverbal behaviour patterns, the shared consciousness that characterizes culture.

Social Influence: A Brief Overview

Culture is defined in part by consensually-held beliefs. Although few beliefs are completely consensual (or ‘shared’) in any one culture, there must be some degree of consensus for culture to exist. Anthropologists and philosophers have long speculated about the role of various processes in the development of shared beliefs whereas sociologists have begun to explore the macro-level processes responsible for such development. For example, there now exist many sociological ‘network’ models detailing patterns of connectivity between persons that may account for shared beliefs (see Mason, Conrey and Smith, 2007). In contrast, psychologists have devoted considerable energy to experimental research on the micro-level processes responsible for shared beliefs. Specifically, empirical (largely experimental) social influence research has examined the cognitive, affective and behavioural processes involved in persuasion and conformity. For example, the ‘informational’ and ‘normative’ functions of conformity

have been examined in dozens of experiments, as have the non-conscious processes contributing to persuasion. The purpose of this article is to broaden the social influence perspective so as to more carefully consider the communicative component of social influence. In particular, we argue for a renewed focus on nonverbal communication processes in social influence and the acquisition of beliefs. More broadly, subtle nonverbal behaviours may play an important role in building the shared beliefs that help to create culture.

Psychological research suggests that beliefs can be acquired and changed in a variety of ways. Research on *persuasion* (also called *attitude change* research) has shown that the stated arguments of a single entity may produce or change a belief of one's own. Research on *conformity* has shown that the behaviours and stated beliefs of multiple others can cause an individual to adopt the same behaviour or belief. And research on *learning* has shown that direct experience can produce specific beliefs, such as 'if I touch the stove, it will hurt'. These categories of research should not be considered mutually exclusive domains — for example, both 'conformity' and 'learning' characterize the adoption of behaviour modelled by others. Nonetheless, it is likely that the acquisition of most or all beliefs could be characterized as the result of persuasion, conformity and/or learning.

As an empirical research domain, social influence is most broadly concerned with the acquisition of beliefs through social means. In theory, there are probably only a few (if any) beliefs which could not *possibly* have been learned via social influence. Even my belief that my toe hurts depends on my knowledge of the meaning of the words 'my' 'toe' and 'hurt' — words which were learned socially. In practice, however, research on social influence has been largely restricted to persuasion and conformity. Hence, when the concept of social influence is invoked to explain why Bill does not like heavy women (given the importance of culture in body ideals; cf. Rodin, Silberstein and Striegel-Moore, 1984), the implication is that (a) Bill has either been persuaded to think heavy women are bad or (b) Bill has conformed to this same belief held by those around him. Although both persuasion and conformity may contribute to shared beliefs and although they are closely related, experimental persuasion research has generally been segregated from conformity research. Accordingly, a brief review of each of these two areas is warranted in preparing our more integrated model of nonverbal social influence.

Persuasion research

With regard to persuasion, hundreds of true experiments (i.e. in which participants are randomly assigned to groups) have been published in the last three decades in psychological journals. In that time, persuasion research has been dominated by two similar models — the Elaboration Likelihood Model (ELM: Petty and Cacioppo, 1986) and the Heuristic-Systematic Model (HSM: e.g. Chaiken, 1987). According to both models, there are two routes to belief (and attitude) change. One route is via higher-level cognitive processes — an individual changes his or her belief as a consequence of thinking long and hard about arguments made by another individual. A second route is via lower-level cognitive processes — an individual changes his or her belief as a consequence of relatively uninspired thinking. By this latter route, cues that have little logical relationship to the belief itself may nonetheless change one's belief. For example, for individuals engaging in lower-level processing, the logical arguments of a spokesperson may not influence beliefs but the fact that the spokesperson is attractive may be effective. The majority of persuasion research has been devoted to exploring these models, including studies on the antecedents of higher- and lower-level thought processes, the manner in which certain persuasive cues (e.g. statistics, source credibility) impact beliefs, and the consequences of beliefs learned via the 'high' or 'low' route. One methodological constant throughout all of this research is that the persuasive act itself is a verbal argument; whether persuasion occurs through the high or the low route, it is always in reference to a belief stated verbally.

Conformity research

Several of the most well-known social psychology experiments have been conformity experiments. For example, in Asch's (1951, 1956) classic research, participants were to select the longest line from several visible options. Several confederates (actors posing as participants) always preceded the participant and these confederates explicitly selected an obviously short line. Remarkably, about one-third of participants conformed and indicated that the obviously short line was the longest. Since then, research has confirmed that people sometimes conform in order to fit in (*normative influence*) and at other times simply because they do not know the truth (*informational influence*). Unsurprisingly, the ELM and HSM have been applied to conformity research (see Chaiken, Wood and Eagly, 1996; Petty, Priester and Wegener, 1994; van Knippenberg, 2000), in part to explain the

extent to which a great deal of thought goes into belief change resulting from conformity. As with persuasion research, the vast majority of the evidence regards conformity to verbal acts — for example, conformity to audible claims that a line is short or a written claim that 75% of people believe that acid rain is damaging the earth.

In summary, empirical research on social influence has largely been research on *verbal* social influence. Although non-linguistic moderators of verbal influence have been investigated (cf. Burgoon, Dunbar and Segrin, 2002), the means by which beliefs are ‘sent’ remain intelligible words. For example, experiments have been conducted to investigate the degree to which physical attractiveness, clothing or race of the source enhances or reduces the effectiveness of a *verbal argument* (for a review, see Petty and Wegener, 1998). It is our argument that the methodological focus on verbal influence has unnecessarily limited the scope of what might be theorized and concluded with regard to social influence and shared beliefs. Specifically, as a channel of influence, nonverbal communication may be equally prevalent, more influential, and based in a more primitive and spontaneous psychological system than verbal communication. If so, cumulative knowledge of the psychological processes responsible for shared beliefs — and hence culture — may require considerable revision. In the next section we develop these arguments with regard to a model of nonverbal social influence.

The Probability of Nonverbal Influence

Although few good definitions of ‘nonverbal behaviour’ exist, we here refer to facial expressions, body language and prosodic vocalization (e.g. tone, pitch, rhythm) interchangeably as nonverbal behaviour and nonverbal communication. Whereas intentional and symbolic gestures are often included in nonverbal communication definitions and have previously been described as preceding language (e.g. Durkheim, 1912), our discussion focuses on the more subtle (often unintentional) nonverbal behaviours described as facial expressions, body language (e.g. posture) and prosody. Such nonverbal behaviour is ubiquitous, influential, meaningful and irrepressible. A great deal of information can be, and is, communicated in this manner and it is our contention that such information heavily contributes to shared beliefs. There are several reasons to believe that nonverbal forms of social influence are at least as important as verbal influence in the formation of shared beliefs and these reasons are elucidated in what follows.

The first reason that nonverbal influence may be as important as verbal influence is that people enact a constant stream of nonverbal behaviour whereas even the most garrulous individuals spend a great deal of time *not* speaking or writing. It is impossible to *not* behave nonverbally — even the absence of movement may be considered nonverbal behaviour, as when a first date leads a nervous person to remain perfectly still. In fact, nonverbal stiffness often leads to inferences of anxiety or fear and ‘freezing’ is considered a prototypical fear response in rats (LeDoux, 2000). Speaking with a monotone voice is likely to compel inferences just as a variable tone of voice does. And a lack of facial expression often leads perceivers to make inferences of aloofness, even among those perceivers who should know better (e.g. Tickle-Degnen and Lyons, 2004). Any social activity that can be imagined includes a constant stream of nonverbal behaviour whereas only some include verbal behaviour. This simple fact means that we are necessarily exposed to more nonverbal than verbal behaviour. Nonverbal behaviour is — almost by definition — more prevalent than verbal behaviour. If we consider only the prevalence of exposure to potentially influential acts, then the capacity for influence is larger for nonverbal than verbal communication.

Second, as compared to nonverbal communication, verbal communication is a relatively recent evolutionary innovation (Darwin, 1872; Sackett, 1966). Organisms were communicating long before the advent of language (Darwin, 1872). Sensitivity to nonverbal behaviour is exhibited by bacteria in sensing a ‘quorum’ for collective action (e.g. Waters and Bassler, 2005), by status-sensitive animals in recognizing dominance cues (e.g. Gerald, 2001; Kitchen *et al.*, 2003), by most mammals in assessing courtship displays (e.g. Andersson, 1994) and so on and so on. Our nearest non-human ancestor — the chimpanzee — is remarkably sensitive to emotional facial expressions and body language (Nakayama, 2004). Moreover, many of the neurological structures responsible for reading and responding to nonverbal behaviour (e.g. the amygdala; Adolphs *et al.*, 2000; LeDoux, 2000) are present in humans and non-speaking mammals alike. These empirical findings and others have led a diversity of scholars to the conclusion that culture can emerge among non-speaking mammals (e.g. Avital and Jablonka, 2000; Seyfarth and Cheney, 2003; Wrangham *et al.*, 1994). Although such assertions about ‘animal culture’ remain a topic of some debate (see de Waal, 1999), it is clear that many non-human species have social and perhaps cognitive processes similar to those that underpin the ability for humans to develop shared beliefs and behaviours.

The third reason that nonverbal influence may be at least as important as verbal influence is that nonverbal behaviour emerges earlier in development than does verbal behaviour (Izard, 1994; Field *et al.*, 1982; Gratier and Trevarthen, this volume; Sternberg, Campos and Embe, 1983). Nonverbal sensitivity in humans begins prenatally, as people are born sensitive to the prosody of their mother's voice (DeCasper and Fifer, 1980). And humans recognize facial expressions far prior to understanding words (e.g. Kestenbaum and Nelson, 1990). In fact, if infants are to be socialized in their first year or so, this process must occur in the absence of language. In summary, sensitivity to nonverbal communication precedes sensitivity to verbal communication. Human sensitivity to nonverbal cues must thereby be considered quite basic and does indeed appear to rely in part on primitive brain areas (e.g. LeDoux, 2000). Early developing psychological processes are likely to play an especially important role in nonverbal influence.

A fourth point is that although people are often conscious of their own and others nonverbal behaviour, we often perceive and process others' nonverbal behaviour at the non-conscious level. There is substantial evidence that facial expressions are processed and elicit meaningful responses prior to perceivers' conscious recognition of those expressions (e.g. Murphy and Zajonc, 1993). Facial expressions (presented briefly) elicit reliable responses in subcortical brain regions such as the amygdala (LeDoux, 2000) whereas conscious recognition of emotion appears to require additional cortical resources (e.g. the orbitofrontal cortex; Kawasaki *et al.*, 2001). The fact that nonverbal behaviour is perceived and processed non-consciously suggests that people may be influenced by others' nonverbal behaviour without paying much attention to it. Although single words may also be processed prior to conscious awareness, there is little evidence that people have the capacity to process meaningful grammatical phrases in this manner (Abrams and Greenwald, 2000). Given the tremendous *capacity* of the human mind to process information automatically, the non-conscious *sensitivity* of the human mind to nonverbal behaviour and the *ubiquity* of nonverbal behaviour, a socially-situated human mind should be vulnerable to a tremendous amount of nonverbal influence occurring prior to our awareness of that influence or even prior to awareness of the nonverbal behaviour itself. The implication is that shared consciousness is built in part from non-conscious processes influenced by locally-prevalent nonverbal behaviour.

One consequence of such automatic nonverbal influence is that it may be quite difficult to reverse. When one lacks awareness for an influence, the possibility of intentional counter-argument or correction

is reduced or even eliminated (Wilson and Brekke, 1994). Without knowledge of an influence — as when one is subtly influenced by others' nonverbal behaviour — a changed belief is simply 'one's belief' and there is no reason to suspect that the belief is a result of intentional persuasion or conformity. And people are quite reluctant to give up beliefs that seem self-generated (e.g. Lord, Ross and Lepper, 1979). Moreover, a belief created via nonverbal influence may be 'tacit' — the belief itself may be difficult to verbalize though behaviour itself reveals the belief (e.g. Reber, 1989). For example, tacit knowledge of computer keys is exhibited when touch-typists type yet are unable to verbally identify the location of the 'w' key on the keyboard. Such tacit beliefs may be especially difficult to change, even if one is informed of how the belief was generated. Thus for example, Americans may be both reluctant and unable to change their positive attitudes toward slim women if those attitudes were generated via exposure to nonverbal responses. In summary, people may be reluctant and/or unable to change beliefs generated via nonverbal influence.

Even when people are consciously attending to nonverbal behaviour, it is likely to be equally or more influential than verbal behaviour. Since time immemorial, people have believed that nonverbal behaviour is more revealing than verbal behaviour. For example, the Roman rhetorician noted that when inconsistent with nonverbal behaviour, words will 'not only lack weight, but will fail to carry conviction' (Quintilian, 1922/90 CE, chap. III, 67; see Knapp, 2005). Most people believe that it is more difficult to control nonverbal than verbal behaviour (e.g. Mehrabian and Ferris, 1967; Mehrabian and Wiener, 1967) and consequently, impressions of others are based more on nonverbal than verbal behaviour (Argyle, Alkema and Gilmour, 1971; Argyle *et al.*, 1970; see DePaulo, 1992). Such emphasis has important consequences for comparing nonverbal and verbal influence. For example, inferences of genuine beliefs are based more on nonverbal than verbal behaviour, especially when an individual may be disingenuous (see Fleming and Rudman, 1993). Hence, if people are especially likely to be influenced by apparently genuine beliefs, nonverbal influence should be greater than verbal influence. For example, an individual who idolizes the American President may be more influenced by the President's negative facial responses to foreign leaders than by the same President's words about foreign leaders.

The final reason that nonverbal influence is likely to be important to producing shared beliefs is that nonverbal behaviour *is* harder to control than verbal behaviour. To date, nearly all of the social influence literature concerns intentional behaviour. In conformity research,

beliefs are expressed verbally as when a confederate says 'Line C is the longest' or as when a purported opinion article reads '68% of people favour X'. This verbal behaviour is clearly intentional, even if persuasion is not the intention. Although there is little doubt that many culturally-shared beliefs derive from intentional speech and behaviour, it is at least a testable proposition that shared beliefs emerge in the absence of intentional expressions of that belief. For example, Europeans may come to believe that smoking is fun despite their own attempts to communicate negative beliefs about smoking. The shared belief that smoking is fun may derive from unintentionally expressed positive affect emanating from or towards smokers. Hence, nonverbal influence may be one important source of shared beliefs whose development is otherwise unaccounted for.

In summary, there are several reasons that nonverbal influence may be at least as prevalent and effective as verbal influence. The prevalence of nonverbal behaviour paired with sensitivity to others' nonverbal behaviour creates the potential for an enormous amount of nonverbal influence. Primitive, species-general and sometimes non-conscious psychological processing mechanisms are especially likely to guide nonverbal (versus verbal) influence. Finally, people believe that nonverbal behaviour is spontaneous and revealing; consequently, conscious processing is often directed toward nonverbal behaviour when social judgments are necessary. Thus, nonverbal influence should not only be an extremely powerful culture-building mechanism but consideration of a nonverbal influence model should also give rise to alternative conceptions of how beliefs are shared. For example, perhaps shared beliefs can develop in the absence of intentional expression or perception.

Pathways of Nonverbal Influence

The foregoing analysis included only a very general outline of *why* rather than *how* nonverbal communication is likely to contribute to shared beliefs. In this section we discuss several ways in which nonverbal communication is likely to influence individual and shared beliefs.

Affect-laden nonverbal influence

It is not rare for a particular type of person, product or idea to evoke or be paired with consistent affective responses. For example, many White people appear to have negative nonverbal responses to Black

people (see Dovidio *et al.*, 2002; Dovidio, Kawakami and Gaertner, 2002).

Affect-laden nonverbal influence occurs when perceivers are repeatedly exposed to the pairing of a target (e.g. a Black person) with others' nonverbal affective responses. In this section we describe the impact of affect-laden nonverbal influence on beliefs and on categorization.

(i) The role of affect-laden nonverbal influence in shared beliefs.

Affect-laden nonverbal influence is likely to occur through several automatic mechanisms. First, such influence may occur via 'contagion'. That is, over the last decade it has become clear that nonverbal behaviour — especially affective nonverbal behaviour — is contagious (Chartrand, Maddux and Lakin, 2005; Hatfield, Cacioppo and Rapson, 1994; Neumann and Strack, 2000). Such nonverbal contagion occurs unintentionally and often outside the awareness of both the mimicking and mimicked (see Chartrand, Maddux and Lakin, 2005). Even primates exhibit nonverbal contagion (Nakayama, 2004). Research suggests that contagion is often associated with changes to subjective affective states — for example, unintentional mimicry of sad tone of voice or facial expression produces subjective sadness in the mimicker (Hatfield, Cacioppo and Rapson, 1994; Neumann and Strack, 2000). These effects extend to attitudes as well — for example, consumers who unintentionally mimicked the positive facial affect of a confederate while in the presence of a product exhibited heightened liking for that product (Howard and Gengler, 2001).

In accounting for such effects, Hatfield, Cacioppo and Rapson (1993) argued that nonverbal feedback resulting from behavioural mimicry drives emotional contagion effects; specifically, mimicry of others' emotional facial expression leads back to neuronal circuits important to subjective emotional experience. The initial mimicry itself may be driven by a mirror neuron system that includes the somatosensory cortex and is said to contribute heavily to both the perception and the performance of bodily motion. Hence, another's nonverbal joy expression might set in motion a series of events: mirror neurons first produce a similar nonverbal expression in the perceiver and this expression then feeds back to create a positive affective or emotional state. It would follow that this perceiver would like a product encountered in the context of his or her positive affect. Considering the broader impact of such processes for multiple perceivers, Ramachandran (2000; see Oberman and Ramachandran, 2007) has argued that mirror neurons enable the high fidelity transfer of cognitive and behavioural practices necessary for culture. Hence, beliefs

may spread within a group or culture much like illnesses spread within particular groups or regions. Here, the infectious agent is nonverbal behaviour, the infected entity is consciousness, and the outcome is group-wide infection or shared consciousness.

Affect-laden nonverbal influence may also occur via *implicit learning*. Implicit learning occurs when an individual learns — unintentionally and without awareness of the learning process — abstract knowledge about a complex environment (Reber, 1989). Such learning often occurs with regard to environmental covariation — working knowledge of the degree to which certain things occur together. For example, if people are exposed to a social environment in which (short) shin-length and likability covary, they may conclude that short-shinned people are especially likable and expect to like people with short shins (Hill *et al.*, 1989). Such effects occur even though people are typically unable to explain how they came to value short-shinned people. Note that such implicit learning may include nonverbal contagion but does not theoretically require such contagion.

To examine how implicit learning might produce shared beliefs via exposure to nonverbal behaviour, participants watched a series of *silent* 10-second video clips. These clips portrayed heavy and slim women interacting with other people. The key variable was whether heavy or slim actresses elicited more positive nonverbal responses from others. When later asked for their ideal female body size, female participants who had viewed the pro-heavy (anti-slim) clips indicated a larger body size than those who had viewed the pro-slim clips. Hence, participants had ‘learned’ to desire a slim body size via nonverbal influence. Importantly, this learning process appeared to be implicit — people could not consciously identify the nonverbal pattern in the clips, even when offered a monetary incentive for correctly identifying the pattern. In other words, exposure to a consciously indecipherable pattern of nonverbal behaviour influenced body ideals (and also attitudes toward slim women and attitudes attributed to others; Weisbuch and Ambady, 2008). Hence, affect-laden nonverbal influence occurred automatically. The broader implication is that implicit learning — often regarded as a basic cognitive phenomenon — may play an important role in building consensual beliefs within a culture.

The implicit learning route to affect-laden nonverbal influence overlaps somewhat with a third route — conditioning. Whereas the implicit learning route occurs when value-laden nonverbal behaviour is directed *at* a particular person, group, product, place or idea, the conditioning route occurs whenever affectively-laden nonverbal

behaviour (e.g. smiling) occurs *in the presence of* a particular person, group, product, place or idea. Much of the vast literature on *affective priming* demonstrates the effectiveness of conditioning on attitudes. In one type of affective priming experiment, participants are subliminally exposed to a positive or negative facial expression followed by an image presented for a second or more (presented supraliminally). In such studies, images that follow positive facial expressions are rated more positively than those that follow negative expressions (e.g. Murphy and Zajonc, 1993; Niedenthal, 1990). Hence, even in the absence of awareness of nonverbal behaviour, nonverbal influence can exist.

In summary, there are at least three routes to affect-laden nonverbal influence: contagion, implicit learning and conditioning. In all three routes, affectively-laden nonverbal behaviour of one or more individuals is paired (temporally or spatially) with another person, group, product, place or idea. Repeated (or sometimes single) exposure to such pairing changes perceivers' attitudes or values, often in a manner that could be characterized as non-conscious. To the extent that affective nonverbal behaviour is paired with a type of object, affect-laden nonverbal influence can lead to shared values. At the broadest level, value-laden nonverbal influence may account for cultural values as well (as in Weisbuch and Ambady, 2008).

(ii) The role of affect-laden nonverbal influence in perception and categorization.

Beyond influencing shared values and attitudes, affect-laden nonverbal influence may also influence the manner in which people categorize and perceive the world. That is, others' nonverbal behaviour is an important component of the social environment and the environment can shape the manner in which people perceive and categorize the world. For example, in advanced cultures much of the environment is carpentered and hence inundated with right angles. Accordingly, people living in advanced cultures are more likely to perceive non-rectangular figures (a) as rectangular, (b) in perspective and (c) as representations of three-dimensional referents (Segall, Campbell and Herskovits, 1966). Much as perception in advanced cultures has adapted to the increasingly carpentered environment, perception and categorization in any given culture may be adapted to the social environment communicated nonverbally.

If categories are at least sometimes formed because of their function to the perceiver, then it would make sense for a social being to afford meaning to those characteristics which elicit strong social

responses. To the extent that people are motivated to 'fit in' (see Baumeister and Leary, 1995), there should be a drive to align one's understanding of the world with those of relevant others (see Hardin and Higgins, 1996; Lun *et al.*, 2007). Many have referred to this drive as instrumental and basic to the human condition (Heider, 1958; Baumeister and Leary, 1995; Fiske, 2003; Pyszczynski, Greenberg and Solomon, 1997). A productive mechanism for satisfying this drive would be the automatic and efficient human capability for processing nonverbal information. If two stimulus characteristics tend to elicit affectively-opposing nonverbal responses, that perceiver would be likely to pick up on this and categorize people or objects according to those characteristics. To categorize people or objects in this manner would facilitate shared understanding between the perceiver and others. Given that especially early development of nonverbal communication skills among humans, it seems likely that others' nonverbal behaviour influences perception and categorization (at least to the extent that perception and categorization is influenced by culture). In summary, affect-laden nonverbal influence might produce shared categorization schemes as well as shared values.

Trait-laden nonverbal influence

Although nonverbal affect has been examined in hundreds, if not thousands, of empirical studies, nonverbal communication can impart a great deal of information beyond affect. From nonverbal behaviour alone, people can efficiently identify others' sexual preferences (Ambady, Hallahan and Conner, 1999; Gangestad *et al.*, 1992), criminal intent (Trosianko *et al.*, 2004), personality and personality disorders (e.g. Borkenau and Liebler, 1992; Friedman *et al.*, 2006), chronic mood and mood disorders (e.g. Waxer, 1976, 1977), prejudice (Richeson and Shelton, 2005), interpersonal relationship type (Ambady and Gray, 2002), and intelligence (Murphy, Hall and Colvin, 2003). Beyond stable characteristics, inferences about transient psychological states are also meaningful; for example, a nonverbal anger display may signal aggressive intent and fear may signal danger (e.g. Knutson, 1996; Montepare and Dobish, 2003; Weisbuch and Ambady, in press). And beyond dynamic nonverbal behaviour, facial structural cues evoke judgments of trustworthiness and maturity (Zebrowitz, 1997). Not only *can* perceivers extract trait information from nonverbal behaviour, they probably *will*. Considerable research now attests to the fact that upon exposure to human behaviour, people automatically and spontaneously form trait inferences (for a review, see Skowronski,

Carlston and Hartnett, 2008). There is a tremendous potential, then, for the nonverbal environment to ‘teach’ the perceiver something about the social environment. That is, any interpersonal setting will involve an enormous amount of nonverbal behaviour, much of which will be processed (consciously or not) with regard to social meaning. For example, a woman in a movie theatre line with twenty other people will probably be sensitive to the nonverbal behaviour of those other people, even if she is speaking with only one of them. Consequently, a variety of social constructs may become active by virtue of spontaneous nonverbal inferences (e.g. of trustworthiness). Repeated activation of this same concept (‘trustworthy’) may cause the moviegoer to be more likely to endorse and adhere to norms regarding honesty (e.g. no cutting in line). To the extent that others are also exposed to the same twenty individuals, the others will probably have the same concept activated. In this sense, a fairly specific norm may develop.

The more general nonverbal influence on trait category activation may play a much larger role. Over the last thirty years, several hundred social cognition experiments have provided evidence that cognitively activated concepts can ‘automatically’ alter perception, categorization, stimulus interpretation, memory, and so on (see e.g. Bargh and Morsella, 2008). Most of these experiments have been conducted with the use of *primes* — covert presentation of words or pictures intended to activate particular concepts in perceivers’ minds. These experiments have largely been conducted without reference to the types of stimuli which may serve as primes in the natural environment. We have argued here that nonverbal behaviour should act as one such prime; the implication is that many of the effects observed in experimental priming research could be applied to trait-based nonverbal influence. For example, the individual with whom ‘gay’ has been activated may consequently be more likely to perceive gay-consistent actions, to categorize actions with regard to gayness or femininity, and to form impressions of people that centre on sex-role and sexual orientation. If many individuals in the same context experience similar effects, the result may be shared social cognition, in which the social environment is perceived, categorized and interpreted with regard to sexual orientation and sex-role. In short, trait-laden nonverbal behaviour may influence shared beliefs and also shared perception, categorization and interpretation. More broadly, trait-laden nonverbal influence could account for a variety of cultural phenomena including patterns of perception, categorization and behaviour interpretation.

In summary, nonverbal influence includes at least affect-laden influence and trait-laden influence. There are probably other pathways of nonverbal influence but given the infancy of research on the topic we have limited our discussion to two broad and clearly important pathways. Even with just these two pathways, there are a variety of complicating factors which must be considered in completing a description of nonverbal influence.

Issues in Nonverbal Influence

Again, the model we have described here is only a general overview and does not account for the many factors that may moderate pathways of nonverbal influence. These complexities include: (1) the importance of nonverbal dominance; (2) the perceiver as an 'encoder'; (3) the role of conscious awareness in nonverbal influence; (4) interactions among the pathways of nonverbal influence; and (5) interactions between nonverbal and verbal influence.

The importance of nonverbal dominance/status

Dominance hierarchies exist among many species, including humans. It seems likely that nonverbally communicated status exerts an especially strong moderating impact on nonverbal influence, with high-status facilitating influence. This claim is based largely on the importance of nonverbal communication in displaying status. Non-human animals of necessity communicate their status nonverbally. In face-to-face interaction, non-speaking animals exhibit contextually-appropriate status-relevant cues. For example, ranking in a chimp social hierarchy can be estimated with reasonable accuracy by examining the occurrence of a submissive 'pant-grunt' greeting that is often accompanied by crouching or bobbing (e.g. Bygott, 1979). Status is also communicated nonverbally via dynamic physical differences corresponding to rank or status. For example, among male mandrills, changes to rank are accompanied by changes to (observable) testicular size (e.g. Setchell and Dixon, 2001). Conspecifics use such cues to guide their behaviour. Among male vervet monkeys, scrotal colour signals status such that when other vervet monkeys recognize this signal, their responses change (depending on whether the other monkey is of the same or different rank; Gerald, 2001). And baboons can distinguish position in a dominance hierarchy from acoustic cues exhibited during characteristic 'wahoo' sounds (Kitchen *et al.*, 2003). Nonverbal communication provides the primary means for primates to immediately learn status; it is important to note that in learning

status of specific conspecifics from nonverbal communication, primates are linking particular types of nonverbal behaviour (e.g. acoustical characteristics of the voice) with a particular status and consequently linking the status with a particular identity. The take-home point is that our nearest non-human ancestors — non-human primates — rely nearly exclusively on nonverbal behaviour to infer status.

A voluminous literature attests to the fact that people communicate (e.g. Ellyson and Dovidio, 1985) and attribute (Hall, Coats and Smith-LeBeau, 2005) status/dominance to others on the basis of nonverbal behaviour alone. Notably, inferences of status from nonverbal behaviour may occur spontaneously more often than they occur deliberately. Moreover, these inferences often have little relationship to the actual (e.g. occupational) status of a target person (cf. Hall, Coats and Smith-LeBeau, 2005). These inferences are probably initiated by a cognitive system that reflects our primate heritage and are likely to produce conscious output whose origin is blocked to introspection. In short, primates rely heavily on nonverbal behaviour in communicating status and we make status inferences rather spontaneously.

In light of the fact that in verbal influence, high-status individuals are able to evoke more belief change than their lower-status counterparts (e.g. Raven and French, 1958), it seems likely that status communicated nonverbally will impact nonverbal influence. For example, affect-laden nonverbal influence may have an especially powerful impact when the observed affect is displayed by individuals also exhibiting high-status nonverbal cues. A dominant-looking individual who prefers slim women may evoke more belief change than a submissive-looking individual. Moreover, traits attributed to high-status individuals may be especially likely to exert a nonverbal influence. These influences are likely to occur efficiently as one navigates through his or her social world and are likely to be constantly updated as that navigation proceeds.

Because a target individual might exhibit a variety of status-relevant nonverbal behaviours and since most perceivers are exposed to a great number of such behaviours in any day, the potential for dynamism in nonverbal influence is great. A cognitive system sensitive to frequent changes to status might help to account for the dynamic nature of trends, such as fashion, which otherwise appear to abide by rather chaotic laws. For example, an analysis focused on the clothing activity associated with *actual* social status (e.g. popularity) might not be as sensitive to the influence of status as would be an analysis focused on the clothing activity associated with the more dynamic

nonverbal status. Moreover, perceivers may learn to make fine discriminations between the clothes worn by high-status individuals and those worn by low-status individuals. A plaid pattern that includes 45% green might be perceived as a different category from a plaid pattern with 40% green, but only as a consequence of repeated interactions in which nonverbal status covaried with these two alternatives. In general, nonverbal status cues are likely to exert a powerful moderating influence on nonverbal influence.

The role of nonverbal 'encoders'

The discussion thus far has focused on perceivers and how others' nonverbal behaviour will influence perceivers' beliefs, values and social cognition. Yet perceivers can be 'encoders' — indeed, Patterson (1995) has formulated a parallel-process model that captures the idea that perception and performance of nonverbal behaviour can occur simultaneously, owing to the highly automatized nature of both. Consequently, people may be both sources and recipients of nonverbal behaviour (sometimes simultaneously), such that their nonverbal behaviour influences others' beliefs, values and social cognition. For example, nonverbal behaviour is often contagious and this is especially true with people who share group membership (Weisbuch and Ambady, in press; Yabar *et al.*, 2006). For this reason, many types of social situations should automatically produce similar nonverbal behaviours among individuals, such that an individual's nonverbal behaviour varies as a function of others' nonverbal behaviour. Of course there will be considerable variation in nonverbal behaviour among encoders but in progressively dense social milieus, perceivers should be exposed to increasingly strong and consistent nonverbal influence. The single perceiver/encoder in a crowd may unintentionally become part of a group exhibiting similar nonverbal behaviours which consequently exert an influence on others' beliefs. In other words, as the size of a group increases so too does nonverbal influence. Consistency among encoders should produce an especially large press on perceivers — in this sense, nonverbal influence may increase exponentially over time to quickly create shared cultural beliefs.

The role of conscious awareness in nonverbal influence

In this model of nonverbal influence we have emphasized the relatively non-conscious pathways through which nonverbal behaviour might influence socially-shared beliefs and cognitive processes. By no means do we mean to imply that conscious awareness is lacking in

the perception or performance of *any* behaviour that occurs without spoken language. Indeed, we limited our definition of nonverbal behaviour to subtle facial, bodily and vocal expressions and excluded more complex nonverbal behaviour such as dance, song and representational art, as well as the physical manipulation of objects. Our emphasis on the subtlety of nonverbal behaviour draws a contrast with other theories regarding the role of dance, song and the like in producing personal and social consciousness. For example, social mirror theory suggests that social displays lead to reflective awareness of experiential states by making them salient, so that we learn to pay attention to them (see Whitehead, 2001). Contrariwise, the current model suggests that others' subtle nonverbal behaviours — which are often not consciously recognized by sender or perceiver — can nonetheless give rise to beliefs about others or the world in general. The distinction is itself subtle yet important: subtle nonverbal behaviours which are often not consciously recognized or reflected upon can still generate an impressive influence on shared beliefs and cognitive processes.

The limited role we give conscious awareness in the current treatment also limits the speed with which socially-shared cognition might occur. Consistent with recent dual-process models of reasoning and memory (Sloman, 1996; Strack and Deutsch, 2004), it seems reasonable to argue that our model of nonverbal influence highlights changes to cognitive associations that typically occur slowly over time. These models suggest that reasoning, knowledge and memory are either cognitively-represented in the form of associations or in the form of propositions. By these same dual-process models, conscious reflection facilitates relatively fast (propositional) changes to beliefs, such that complex and temporally extended behaviours such as song, dance and art may exert more immediate changes to belief than subtle nonverbal behaviours. Thus, the model we present here is likely to be most appropriate for those cognitive processes and beliefs that do *not* change immediately after a single exposure to a behaviour.

Interactions among nonverbal influence pathways

We have described two pathways of nonverbal influence (affect laden and trait laden) and in theory each of these pathways can be considered independently. Indeed, because there is little empirical evidence that nonverbal influence is important as a culture-building process, research should begin by demonstrating that any single pathway of nonverbal influence is capable of social influence. Although there are

important scientific benefits of examining each pathway in isolation, there is a large potential for pathway interactions in ‘real life’. For example, affect-laden nonverbal influence may be moderated by traits spontaneously attributed to targets on the basis of nonverbal behaviour. Positive nonverbal behaviour directed toward aggressive individuals may be mitigated or even amplified when an especially kind and unaggressive individual is the one behaving positively. In this same scenario, one might argue that trait-laden nonverbal influence (i.e. of ‘kindness’) would be mitigated by the positive nonverbal displays directed toward a more aggressive individual. More generally, positive nonverbal behaviours may be discounted when enacted by targets who also exude extraversion or agreeableness. And negative nonverbal behaviours may be discounted when enacted by targets who also exude trait-level ‘meanness’. In summary, even though both nonverbal influence pathways point to relatively unintentional and quick cognitive processes there is substantial potential for interaction among these processes.

Interactions between nonverbal influence and verbal communication

It is clear that nonverbal behaviour moderates verbal influence (cf. Burgoon, Dunbar and Segrin, 2002; Petty and Wegener, 1998). Here, the converse must be considered. What people say is clearly important, as reflected in fifty years of research on social influence — our beliefs change in response to the arguments and verbal behaviour of others. But how much does verbal communication influence nonverbal behaviour?

We suspect that in some cases verbal moderation of nonverbal influence will be quadratic, rather than linear. That is because people often place greater weight on nonverbal than verbal influence; when the two channels conflict people may disregard the verbal channel. For example, if people nonverbally favour slim women despite their words to the contrary, third-parties may still be influenced to favour slim women (though of course, this is an empirical question). On the other hand, it is possible that confluence between nonverbal and verbal communication will amplify nonverbal influence. If people nonverbally favour slim women and say as much, third-parties may be especially influenced to favour slim women. The overall pattern then would be one in which verbal behaviour does not moderate nonverbal influence unless verbal behaviour clearly agrees with the exhibited

nonverbal behaviour. This pattern would be expected for both affect-laden and trait-laden nonverbal influence.

Verbal communication may exert linear moderation effects in an indirect manner. In particular, all of the moderating influences described thus far could also be applied to verbal communication. For example, we have described status cues as an important moderator of nonverbal influence. We would likewise expect that verbal indications of status ('I am the head of accounting') would exert a large moderating influence on nonverbal influence. And just as the positive nonverbal behaviour of a kind-appearing individual may be discounted, so too may the positive nonverbal behaviour of an individual who claims 'I like everyone'.

In summary, verbal communication is likely to moderate nonverbal influence. However, because nonverbal influence preys on largely non-conscious processes and occurs over time, verbal communication may not exert a uniquely large moderating effect on nonverbal influence.

Summary and Conclusion

For culture to emerge, social influence processes are required. We have argued here, however, that the empirical focus on verbal influence has neglected a perhaps more important process in culture-building — nonverbal influence. Subtle nonverbal communication is ubiquitous and irrepressible and is encountered far more often than verbal communication. Nonverbal communication is evolutionarily and ontogenetically older than verbal communication — bacteria and newborn humans alike have reliable and meaningful responses to nonverbal communication only. Nonverbal behaviour is perceived and processed non-consciously such that behavioural responses to others' nonverbal behaviour do not require conscious cognitive resources. Finally, even when considering conscious processes, people will attend more to the nonverbal than verbal behaviour of an individual whose true beliefs are in question. In general, despite experimentalists' heavy reliance on verbal communication in examining social influence, there are several reasons to believe that nonverbal communication can exert a direct influence on the beliefs and values of a people.

We described two pathways (affect-laden and trait-laden) through which nonverbal communication may exert a social influence — via affect-laden responses to things and via displays of personal characteristics. We argued that these pathways are likely to operate extremely

efficiently and perhaps non-consciously. Several complicating factors were described as well, including nonverbal status cues, the fact that perceivers are also encoders, interactions between the two pathways, and the role of verbal communication in nonverbal influence.

In general, we hope that this article helps to spur research on nonverbal influence. Thousands of studies already attest to the importance of verbal communication in social influence — given the prevalence and history of nonverbal communication we believe that experimentalists have made an egregious error in ignoring nonverbal influence. Specifically, nonverbal influence may account for many of the beliefs shared within any given culture such that no amount of research on verbal influence will be able to account for culturally-shared beliefs. Only by considering both verbal and nonverbal influence will a true cultural science emerge.

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