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Communication and Shared Reality: Implications for the Psychological Foundations of Culture

Ivy Yee-Man LAU
Singapore Management University, ivylau@smu.edu.sg

Chi-Yue CHIU
University of Hong Kong

Sau-Lai LEE
University of Hong Kong

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COMMUNICATION AND SHARED REALITY: IMPLICATIONS FOR THE PSYCHOLOGICAL FOUNDATIONS OF CULTURE

Ivy Y-M. Lau, Chi-yue Chiu, and Sau-lai Lee
University of Hong Kong

In view of the recent development of macro-level theories concerning the spatial and temporal distribution of social representations, this paper presents a conceptualization of the evolution of shared beliefs from individual interactions, focusing on the role of communication. Drawing on the existing research literature and our own research findings on communication and cognition, we argue that the reciprocal relationship between shared reality and communication enables the development of systems of social representations at an individual level. Specifically, when formulating and comprehending messages, communicative partners draw on what they estimate to be shared knowledge among them. In addition, while communicating, communicative partners also strive to form shared representations of the topic of communication, which may overshadow pre-existing nonlinguistic representations. Moreover, contextual factors that influence communication also affect the development of shared reality. Based on these findings, we discuss how the communicative process drives the differential propagation of certain social representations, and how the psychological consequences brought about by the interplay of the context and process of communication form the psychological basis for the development and changes of social representations.

Recent cross-cultural research has revealed deep cultural variations in basic psychological processes such as attention (Chavajay & Rogoff, 1999), categorization (Atran & Medin, 1997), thinking style (Nisbett, Peng, Choi, & Norenzayan, 2001; Peng & Nisbett, 1999), attribution (Menon, Morris, Chiu, & Hong, 1999; Morris & Peng, 1994), self-construal (Heine, Lehman, Markus, & Kitayama, 1999), self-regulatory focus (Lee, Aaker, & Gardner, 2000), prediction of future life events

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Address correspondence to Department of Psychology, University of Hong Kong, Pokfulam Road, Hong Kong; E-mail: ilau@hkusua.hku.hk,cychiu@hkusua.hku.hk,or slleeh@hkusua.hku.hk.

(Oishi, Wyer, & Colcombe, 2000), and motivational orientation (Iyengar & Lepper, 1999). These cultural differences are often explained in terms of cultural variations in shared lay beliefs about the self (Markus & Kitayama, 1991), personal attributes (Chiu, Hong, & Dweck, 1997; Chiu, Dweck, Tong, & Fu, 1997), human agency (Hernandez & Iyengar, this issue; Hong, Ip, & Chiu, this issue; Menon et al., 1999; Morris & Fu, this issue), and the natural world (Atran, 1998). One core assumption behind this kind of explanation is that shared beliefs in a culture unify the cognitive and motivational processes in the culture and create different systems of meaning attributions across cultures. In this connection, research has revealed the dynamic processes underlying the activation of such shared beliefs, as well as the cognitive consequences of cultural belief activation (Chiu, Morris, Hong, & Menon, 2000; Hong, Morris, Chiu, & Benet-Martinez, 2000).

Surprisingly, with a few exceptions (Chiu, Krauss, & Lee, 1999; Hardin & Higgins, 1996; Kashima, 2000b; Latane & L' Herrou, 1996), relatively little attention has been given to how shared beliefs in a culture evolve in human interactions. In this paper, drawing on the existing research literature and our own research findings on communication and cognition, we describe the reciprocal relationship between shared reality and communication, which, as we argue in the next section, has important implications for understanding the psychological foundations of culture.

First, we describe the role of shared reality in successful communication. For successful communication to take place, the speaker and the listener have to attribute similar meanings to the topic of conversation. We then explain how communicators establish a shared representation of the topic of conversation in the communication process. Next, we review our recent research on the cognitive consequences of referential communication. Evidence from this research suggests that communication could lead to internalization of shared representations. Finally, we discuss how explicating the interface between communication and shared reality can enhance our understanding of culture as a dynamic system of shared meanings.

In short, unlike most analyses of culture and cognition which focus on differences and similarities in some basic social cognitive processes, the objective of the present paper is to delineate the implications of the interface between communication and shared reality in order to reach a more thorough understanding of the psychological foundations of culture.

COMMUNICATION AND SHARED REPRESENTATIONS

According to *Webster's Ninth New Collegiate Dictionary* (1987), culture is "the integrated pattern of human knowledge, belief, and behavior that depends upon man's capacity for learning and transmitting knowledge

to succeeding generations; [it is] the customary beliefs, social norms, and material traits of a racial, religious, or social group" (p. 314). This definition highlights the intertwining of culture and human cognition. Central to culture are socially shared knowledge and beliefs; in other words, social representations. Some cognitive anthropologists believe that to be culturally influential, a social representation has to be "widely and durably distributed in a social group" (Sperber, 1996, p. 49). Why are some representations widely and durably distributed and some are not? One possible explanation suggested by Sperber (1996) has to do with interpersonal communication. According to him, "those representations which are repeatedly communicated and minimally transformed in the process will end up belonging to the culture" (p. 83, italics in original). He contends that to explain cultural beliefs, one has to understand how these beliefs "are cognized by individuals and how they are communicated within a group" (p. 97). Thus, a crucial part of understanding the psychological foundation of culture is to fully appreciate the contribution of communication in macro-level phenomena, such as the distribution and evolution of social representations, and in micro-level phenomena, such as the building of shared reality between individuals.

DISTRIBUTION OF SOCIAL REPRESENTATIONS

Dynamic social impact theory (Latané, 1996) postulates that the complex system of social representations we refer to as culture develops through a sequence of self-organization: clustering, correlation, consolidation, and continuing diversity. The sequence comes about because we influence and are influenced by proximal people we communicate with in our social world (e.g., people in the same office or neighborhood). These people vary in their individual ability to influence others. As we discuss and interact with our neighbors and others in close physical distance, those who are more convincing can usually persuade more people to agree with them. Thus, sets of beliefs, values, and practices become spatially differentiated (or clustered). Consequently, different beliefs, values, or practices become strongly associated (or correlated), even without any necessary logical or semantic connections among them. As the process of social influence continues, there is a tendency for beliefs, values, and practices to reduce in diversity (or consolidate). Although consolidation could ultimately result in complete amalgamation, clustering protects minorities from majority influence, thus ensuring continuing diversity.

The group phenomena predicted by dynamic social impact theory have been borne out in both in-vivo and computer simulation studies. In a series of computer-mediated human communication games using the electronic mailing system, Latané and his colleagues (Huguet, Latané, & Bourgeois, 1995; Latané & Bourgeois, 1996; Latané & L'Herrou, 1996) ob-

served the development of majority and minority representations. Typically, participants in these studies were organized into groups of 24. Each person was informed of the majority opinions and allowed to communicate with only a fixed number of individuals, thus forming communication groups (approximating physical constraints in real life). Over a number of electronic sessions, opinions began to become more alike among communicating participants (clustering). In addition, previously uncorrelated issues were correlated within communication groups toward the end of the study. Furthermore, as participants were exposed to others (the majority's) opinions over the course of the study, the diversity of opinions were reduced. However, at the end of the studies, even with incentives to agree with the opinions of the majority, there still remained pockets of different opinions, probably because the minority group had overestimated the popularity of their opinion as a result of clustering (Latané, 1996).

In a different context, the results of a 3-year longitudinal study of political socialization of commerce and social sciences students by Guimond and Palmer (1996) illustrated the origin of subcultures. It was reported that, over time, commerce students became less likely than social sciences students to attribute poverty and unemployment to systemic factors (clustering). Furthermore, beliefs about different causes of poverty that were unrelated in the first year became related in the third year (correlation). Toward the end of their studies, students developed social representations that were more structured and typical of their counterparts in their respective academic areas.

EVOLUTION OF REPRESENTATIONS

Culture as a complex system of meanings is continuously being produced and maintained through the dynamic production and reproduction of meanings in everyday social interactions (Lyon & Kashima, this issue; Kashima, 2000a). Kashima and his colleagues (Kashima, 1999, 2000a, 2000b; Kashima & Kerekesh, 1994; Kashima, Woolcock, & King, 1998; Lyons & Kashima, this issue) have examined the formation, maintenance, and change of social representations over time. Their findings have lent insights into the evolution of representations.

In several studies of serial reproduction of stories which contained both stereotype consistent and inconsistent information (Kashima, 2000a; Lyons & Kashima, this issue), information that was inconsistent with cultural stereotypes was retained proportionately more than consistent information at the beginning of the chain. As the chain of reproductions continued, inconsistent information began to drop off drastically, leaving the consistent information to dominate the last reproductions. Thus, the stereotypes were maintained through the chain

of reproductions. One explanation for the collective reproduction of stereotypic information focuses on interpersonal communication. Unavoidably some information is lost in the process of reproduction. In order to present a coherent narrative to the next person, the communicators may prefer to include information that they believe the audience will understand and accept. Stereotypic information, which presumably is widely shared in the culture, has advantages over stereotype inconsistent information, and hence more likely to be kept in the narrative. The results point to the significant contribution of interpersonal communication to the maintenance of cultural stereotypes.

Although cultural stereotypes tend to be collectively maintained while being reproduced, they are also subjected to change when important new information and facts surface. Kashima and his colleagues (Kashima, 1999, 2000a, 2000b; Kashima & Kerekesh, 1994; Kashima et al., 1998) propose the Tensor Product Model (TPM) to approximate the change process in social representations over time. The team of researchers postulates that representations of a social group are based on episodic interactions with and/or communication concerning the group. Once constructed, a representation is stored in memory. When a new episode occurs or new information is communicated, a new representation will be constructed and superimposed on the pre-existing representation. To the extent that differences in the relevant dimensions occur, the representation in question is changed. As a series of related episodes or communications occurs over time, the representation slowly evolves. The TPM can satisfactorily explain the primacy and recency effects on group impression formation, and how stereotype changes after inconsistent information is encountered (Kashima, Woolcock, & Kashima, 2000).

Research on the dynamic social impact theory, collective reproduction of cultural stereotypes, and TPM has offered a general view of communication and culture. The dynamic social impact theory explains the spatial distribution of social representations. Studies of collective reproduction of stereotype illustrate how cultural representations are maintained through serial reproductions of a message, and the TPM explicates how cultural representations change through communication. All three lines of research grant a special place to communication in the overall development of culture. It is through communication that clustering, correlation, consolidation, and continued diversity can occur. Interpersonal communication contributes significantly to the reproduction and evolution of culture. Informative as it is, however, this area of research does not directly address processes at a micro, individual level.

In the next two sections, we seek to explicate some of the micro processes involved in the intricate relationships between communication, shared representations, and culture. As noted, for a representation to be culturally influential, it has to be "widely and durably distributed in a

social group" (Sperber, 1996, p. 49). A widely distributed representation is a highly shareable representation, whereas a durably distributed representation requires internalization of the representation so that it will be reliably reproduced across time and situations.

CONSTRUCTION OF SHARED REPRESENTATIONS IN COMMUNICATION

Bruner (1990) submits that, "(b)y virtue of participation in culture, meaning is rendered public and shared. Our culturally adapted way of life depends upon shared meanings and shared concepts and depends as well upon shared modes of discourse for negotiating differences in meaning and interpretation" (pp. 12-13, emphasis). Accordingly, by following a set of rules governing interpersonal communication, people inadvertently modify their private, idiosyncratic conception of a state of affairs and reach a common understanding of that situation. As noted, these shared representations constitute the contents of a culture.

Research has shown that two rules of communication are necessary for the construction of shared representations in interpersonal communication. First, communicators should have in mind the addressee's knowledge when they produce a message. Second, communicators should collaborate to establish mutually acceptable representations of a specific situation. The first rule assumes that people may have some prior knowledge of what their addressee knows and does not know before they engage in communication, and that they should use this knowledge to produce an initial message for their communication partner. The second principle assumes that communicators are prepared to make use of the addressee's feedback to adjust their initial assumptions of the addressee's knowledge and subsequently modify their message for the addressee (Clark & Wilkes-Gibbs, 1986; Fussell & Krauss, 1992; Isaacs & Clark, 1987; Krauss & Fussell, 1991; 1996; Wilkes-Gibbs & Clark, 1992).

COMMON GROUND AND ESTIMATION OF SOCIAL DISTRIBUTION OF KNOWLEDGE

Consistent with the first rule, research has shown that in producing a communicative message, speakers make assumptions about the common knowledge between themselves and the listener, and restrict themselves to words or expressions mutually known by both parties (Clark & Marshall, 1981; Clark & Murphy, 1982; Clark, Schreuder, & Buttrick, 1983). The intricacy of message formulation can be gleaned from such mundane acts as giving someone directions to a destination. To tell someone the location of the psychology department on campus, there are different kinds of message one can formulate. Among other things,

one can just point in the general direction of the destination, name the various landmarks on the way, or describe the number and direction of turns to make and the approximate distance to travel. What is the basis for our decision of which kind of direction to give? A logical approach is to estimate which kind of direction is comprehensible to the audience. In other words, the direction has to contain information known to both the speaker and the audience. Indeed, a common ground of knowledge has been found to be essential for successful communication (Clark & Wilkes-Gibbs, 1986; Fussell & Krauss, 1991; Isaacs & Clark, 1987; Schober, 1998; Wilkes-Gibbs & Clark, 1992). But what is the basis for establishing a common ground?

A first step in establishing a common ground is to estimate what the communicative partner may or may not know. People are highly accurate in their estimation of relative distribution of knowledge. For example, the estimated proportions of people who would know some public figures (e.g., Clint Eastwood, Ted Turner) and the actual proportions of people who knew them were highly correlated (r = .95; Fussell & Krauss, 1992, Experiment 1). In addition, participants' accuracy was not determined by their own knowledge of the target figures. Both participants who could correctly name the targets and those who could not gave quite an accurate estimation of the relative distribution of knowledge of the targets. In our own study (Lau, Chiu, & Hong, 2000, Experiment 1), participants, who were Hong Kong residents, were asked to estimate other Hong Kong residents' knowledge of specific landmarks in Hong Kong, Macau, and New York City, and to identify the landmarks themselves. Identification of landmarks provided a direct estimation of the proportion of people who knew the landmarks in question. In general, although participants tended to overestimate for the targets they themselves knew, they were generally sensitive to the relative distribution of knowledge of the landmarks. Their estimation of the percentage of people who could identify the landmarks correlated very highly with the actual percentage of people who could correctly identify the landmarks (r = .94).

AUDIENCE DESIGN IN MESSAGE PRODUCTION

People utilize the estimated social distribution of knowledge when they formulate a message for their communication partner (Lau & Chiu, 1999). In one experiment (Lau et al., 2000, Experiment 2), we showed participants, all Hong Kong residents, pictures of 30 specific landmarks in Hong Kong, Macau, or New York City. The participants described each landmark, so that another Hong Kong resident could identify from the description which of the landmarks was being referred to. It was expected that participants' descriptions of the landmarks would show considerations for the estimated knowledge of the audience. In particu-

lar, they would provide brief direction when the communicative partners shared knowledge of the landmarks and more detailed directions when there was no such common ground (see Kingsbury, 1968). Furthermore, a speaker describing the landmarks would be more likely to refer to the name of the landmark when the listener was familiar with the city than when her or she was not (see Isaacs & Clark, 1987). As expected, when the target stimuli were judged to have relatively low recognizability (in Experiment 1), speakers provided more information in their description and were less likely to mention the name of the stimuli. This result demonstrated a clear influence of knowledge estimation on message formulation.

Fussell and Krauss (1992) also found that participants' estimation of the proportion of people who could recognize a target object influenced their message formulation. In our study, the speakers did not receive feedback from the listener. In the Fussell and Krauss study, listener feedback was allowed. Fussell and Krauss showed that the estimation of their partner's knowledge of the target exerted the most influence on the speaker's first referential message to their partner, in which more identifying information was included with the name of the target when its estimated identifiability was low. The correlation between judged identifiability of the objects and message length was -.66.

Just as there are many different ways to communicate one's thoughts, there are many different ways to interpret an utterance. Consider this sentence: The working class is the pillar of our country. It could be interpreted as stating the value of the working class or a euphemism for the exploitation of the working people. The resulting representation would be very different for the two interpretations. What guides people's interpretation of utterances?

Assuming that both addressers and addressees strive to establish a common ground for communication, the parties work with the mutual expectation that each party will cooperate so that the addressees can understand the addressers appropriately (the Gricean cooperative principle of communication). The addressers' best bet is to present an utterance that most people would interpret in a similar way.[1] Therefore, one kind of information that receivers could use to aid interpretation is to estimate how most people would interpret the same utterance in the

1. It is possible that under some circumstances, addressers intend for addressees to make idiosyncratic interpretations of their utterances, especially when the two parties are communicating something private in the public using privileged information (Ng, 1996). For example, John may want to meet Betty in a cafe at a certain time but does not want Larry, who is also present, to know. In that case, John may make an utterance that intends Betty to make an interpretation that Larry would not. However, such instances are more of an exception rather than the rule of everyday communication.

same context. Similar to knowledge estimation, it is an estimation of the social distribution of information; in the case of consensual information, it is an estimation of interpretation instead of knowledge.

Yeung (2000) investigated the role of consensual information in people's interpretation of the directness of utterances. An utterance is considered as a direct speech act if its literal meaning is the same as what the speaker intends to communicate; an utterance is considered as indirect when the speaker means more, or less, than what is said. In interpreting whether an utterance is a direct or an indirect speech act, consensual information may be very useful.

In the study, Yeung provided participants with lists of utterances and the context (in the form of scenarios) within which to interpret them. Participants judged whether each of the utterances was a direct or an indirect speech act, rated the extent of directness or indirectness, and estimated the overall proportion of participants who would judge an utterance as direct or indirect. Participants were accurate in estimating the overall percentage of participants who would judge an utterance as direct or indirect.[2] More importantly, participants' knowledge of the distribution of directness judgment was reflected in their directness judgment decision time and directness ratings-the higher the actual and estimated consensus in directness (indirectness) judgment, the shorter the directness (indirectness) decision time and the higher the directness (indirectness) ratings. The pattern of results suggested that people do consider consensual knowledge in interpreting utterances. To begin with, people are quite accurate in estimating how most people would interpret an utterance. When their own judgments agree with what they estimate most people would judge, they spend less time to come to a decision and are more confident in their judgment. On the other hand, when their own judgments are different from what they estimate most people would judge, they spend a little more time to think about their decisions.

In short, the evidence reveals that both the speakers and the listeners have the social distribution of information in mind when they construct or decode messages.

ESTABLISHMENT OF SHARED REPRESENTATION IN COMMUNICATION

The foregoing analysis suggests that communicators rely on the estimation of shared knowledge to tailor at least the first message for their partners. In normal conversations, communication partners successively take each other's perspective when formulating and comprehending exchanged utterances. When direct interaction is possible, such as when communication partners are interacting face to face, knowledge coordination is a joint responsibility. A typical referential communicative se-

quence begins with a referring expression, followed by feedback from the listener, which can be used by the speaker to repair the expression. After one or several rounds of such expression presentation and repair, in most cases, the conversational partners arrive at a mutually acceptable referring expression for the target and communication is deemed successful (Clark & Wilkes-Gibbs, 1986).

In a referential communication experiment, Wilkes-Gibbs and Kim (1991) provided a good illustration of how shared representations are formed during communication. In this experiment, participants were presented with a set of ambiguous graphic designs that could be referred to by one of two alternate expressions (e.g., "Viking ship" vs. "person swimming"). One person in a dyad was induced to encode the drawings using one set of expressions, while another person used a different set of expressions. When the dyad communicated the figures in a referential communication task, they gradually developed a set of mutually acceptable expressions for these figures.

IMPLICATIONS FOR UNDERSTANDING CULTURAL PROCESSES

The findings reviewed above suggest that in communication, participants strive to establish a shared reality. In doing so, they estimate the extent of shareability of social knowledge in their community. The evidence suggests that people are remarkably accurate in making such estimations. In addition, when communicators produce a message for their addressee, they draw on this knowledge. Speakers assume their addressee is more willing to accept a widely shared representation than a less widely shared one, and thus tend to use brief messages to communicate it. Listeners also take into account the social distribution of representations when they decode the meaning of a message. They are more ready to accept a widely shared interpretation of the message than a relatively idiosyncratic one. The foregoing analysis suggests that within a community, widely shared knowledge is likely to be used in message construction. Similarly, interpretations that are popular in the community are also relatively likely to be used to guide message comprehension.

Thus far, our analysis has been restricted to the interface between communication and the social distribution of specific knowledge about the topic of conversation. The analysis can be easily extended to other kinds of social representations (such as beliefs, attitudes, and norms). For example, conventional ideas and consensually validated beliefs in a community are likely to be widely shared; frequent activation of such ideas and beliefs in communication has turned them into some of the most readily available cognitive tools for social interactions in the culture.

Conventional ideas and beliefs are supported by public representa-

tions (e.g., social institutions; see Morris, Menon, & Ames, in press; Sperber, 1996). One important public representation of culture is language. Research dating back to Benjamin Whorf (1956) has suggested that differences in linguistic forms across languages may reflect deep differences in shared worldviews in the relevant linguistic communities (Lau, Lee, & Chiu, in press). Because people in a cultural group are frequently exposed to public representations, the contents of linguistic and other public representations are frequently activated and chronically accessible (Hong et al., 2000).

An illustration of the cultural supporting role of language is the case of pronoun drop and the set of cultural beliefs of "individualism." Kashima and Kashima (1998) contend that the linguistic system of pronoun encodes conceptions of the person and others. According to them, the use of pronouns (e.g., "I," 'you" in English) sustains attention on the referent of the pronoun, bringing the person out from the conversational background. Thus, the tolerance for a pronoun drop is suggestive of the psychological differentiation between the speaker and the speech context. In some languages (e.g., English), the use of a pronoun is grammatically obligatory. In other languages (e.g., Spanish), the subject pronoun can be dropped because the referent can be recovered from the verb inflections. There are some languages (e.g., Chinese) in which the subject pronoun can be dropped even though there is neither verb inflection nor the subject-verb agreement rule. The grammatical obligatory use of the first-person pronoun maximally distinguishes the speaker's self. Similarly, the obligatory use of the second-person pronoun maximally distinguishes the addressee(s). The omission of either one or both of the two classes of pronouns de-emphasizes the salience of their corresponding referent(s). In a study of 76 countries, there was a strong negative correlation (r = -.64) between a country's emphasis on individualism and the grammatical tolerance for pronoun drop in the dominant language in the country (Kashima & Kashima, 1998).

Given that one major use of language is communication, communicators in cultures emphasizing individualism are, likely to be obligated by the language they use to consistently distinguish the person from the context. Thus, the shared beliefs of individualism encoded in the language are activated whenever members of these cultures use language to communicate their thoughts.

The interpersonal nature of communication reinforces the shareability of social representations. Interpersonal communication is a social process whereby communicators get to know and influence the mind of their communication partner. This social process is directly relevant to the diffusion of social representations. Furthermore, the communicative process contributes to the chronic accessibility of shared knowledge even when it is not encoded in linguistic structures. Every time people in

a culture produce a message for another member of the same culture, they spontaneously activate the knowledge that presumably is shared in the culture. This cognitive process should help to increase the ease with which shared representations can be accessed.

Our analysis echoes and expands a similar analysis of the cultural processes initiated by Sperber (1996), who sought to explain culture by describing the means by which cognitive presentations are spread from one individual to another.

> The diffusion of a folktale and that of a military skill, for instance, involves different cognitive abilities, different motivations, and different environmental factors . . . potentially pertinent psychological factors include the ease with which a particular representation can be memorized, the existence of background knowledge . . . and a motivation to communicate the content of the representation. (p. 83-84)

Sperber also contended that interpersonal communication may transform private idiosyncratic representations of a state of affairs into shared representations. As shown in the Wilkes-Gibbs and Kim (1991) experiment, speakers sometimes over-estimate the shareability of their idiosyncratic representation of a particular state of affairs and hence produce a message that is not interpretable within the shared background knowledge. Under these circumstances, the communicators would spontaneously engage in a dialogic process to reach consensus on a mutually acceptable representation of the state of affairs (Krauss & Fussell, 1996). In short, "through communication, the private cognitions of individuals can be made and directed toward a shared representation of the referent" (Krauss & Chiu, 1998, p. 53).

COGNITIVE CONSEQUENCES OF COMMUNICATION

As noted, when people negotiate meanings of a specific situation in interpersonal communication, shared representations of that state of affairs emerge. Moreover, the conversationalist would become cognitively committed to a shared interpretation of reality (Rommetveit, 1984). In this section, we review evidence that shows how the shared representations of a situation created in communication could overshadow other forms of representation of the same state of affairs and become the communicator's "habitual" way of representing the reality.

EFFECT OF LANGUAGE USE

Krauss, Chiu, and their associates (Chiu, Krauss, & Lau, 1998; Chiu et al., 1999; Krauss & Chiu, 1998) proposed that using language may evoke in-

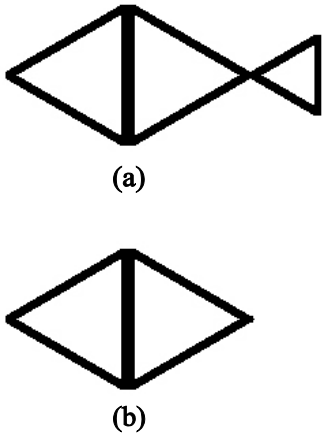

FIGURE 1. An Example of the Drawings Used in the Lee and Chiu Experiments.
Note. (a) One of the stimulus drawings. (b) A constituent part used in the recognition task.

ternal representations, and that such internal representations can influence subsequent cognitions.

When the same state of affairs has been encoded in both verbal and visual representational formats, and if the state of affairs is not readily describable, then the representations in different formats would most likely contain different information. Under such circumstances, competition may occur between the two forms of representations. In a series of experiments conducted by Schooler and his associates (Schooler & Engstler-Schooler, 1990; Fallshore & Schooler, 1995), participants who verbalized a description of a face they had seen were less able later to recognize that face compared with participants who had seen the face and visualized it, or who had simply seen the face and then performed a distractor task. It has been suggested that featural information of faces is easier to verbalize than configural information (Fallshore & Schooler, 1995). Thus it is possible that describing a face evokes a relatively feature-based representation, whereas perceptually processing the same face creates a representation that is relatively configurally-based. According to Schooler's recoding interference hypothesis, under such circumstances, the verbal representation may compete with or "overshadow" the visual representation when the state of affairs is later recalled.

As suggested by the verbal overshadowing hypothesis, how a state of affairs is described can affect how it will be represented in memory. In a recent study (Lee & Chiu, 2001), participants were presented a set of outline drawings one at a time. Figure 1(a) shows one of the drawings used

in the experiment. In the Figural Description Condition, participants described what each of the outline drawings looked like (e.g., "It looks like a fish"). Participants in the Literal Description Condition saw the same drawings but described the constituent parts of the drawings (e.g., "It has in it a triangle and a parallelogram"). Participants in different experimental conditions were given the same amount of time to process the stimuli. After all participants had carried out a 10-minute distractor task, they were given a recognition task. On each trial, a geometric figure (Figure 1(b)) was shown and the participants decided whether the geometric figure was a constituent part of one of the outline drawings they had previously seen. Participants in the Figural Description Condition made significantly more errors than did those in the Literal Description Condition. One interpretation of this finding is that the use of figural labels to describe a drawing evoked linguistic representation, which contained relatively little featural information of the drawings.[3] Such representations overshadowed the perceptual representation of the drawings and hence interfered with the recognition of the featural properties of the original stimuli.

In another experiment, participants were randomly assigned to one of three experimental conditions. Participants performed an encoding and a judgment task. In the encoding task, participants in the Figural Description Condition used figural labels to describe the drawings, whereas those in the Literal Description Condition described the constituent parts of the drawings. Finally, in the Control Condition, participants viewed the drawings but did not describe them. On each trial in the judgment task, participants were shown a drawing and either a figural or literal description. They were asked to judge as quickly as possible whether the description matched the drawing. When the description matched the drawing, compared to the participants in the Control condition, participants in the Figural Condition needed more (less) time to make an affirmative response when the description was a literal

3. Previous research has also found that encoding a visual stimulus in terms of figural labels creates cognitive biases, whereas describing the stimulus in terms of its constituent parts does not (Higgins, 1981). This finding suggests that there are boundary conditions for the cognitive effects of language use described above. Some representations are less affected by our choice of linguistic expression.

It is still unclear at which information processing stage featural information in the figural representations is lost. It is possible that participants in the Figural Description Condition did not pay much attention to the featural properties when they encoded the stimuli. It is also possible that featural information was discarded after the figural representations had been constructed. Finally, as Higgins (1981) posits, literal representations contain mostly prepositional knowledge, which can easily accommodate specific featural information. However, figural representations often assume the form of prototypes, and specific featural information may be distorted to fit the prototypes.

(figural) description. The effects of literal description on reaction times were not significant. Again, the use of figural labels to describe an object could evoke mental representations that could interfere with the recognition of the featural properties in the visual representation.

The recoding interference hypothesis also applies to different representations of the same encoding format. Use of synonyms and semantically related words render multiple verbal representations of the same state of affairs possible. There are some expressions that can be used interchangeably without significant representational implications. For example, by describing a city center as full of "ramshackle" versus "dilapidated" buildings, the resulting representations of the city center would differ very little. However, referring to the same person as a "woman" versus "lady" would probably lead to different internal representations (see Lakoff, 1973; Tong, Chiu, & Fu, 2001). In the Wilkes-Gibbs and Kim (1991) experiment described above, participants were tested for their memory of the referents after a delay. The results showed that regardless of how they labeled the referents initially, their subsequent memories were biased in the direction of the label they used to communicate about the referents in the communication task.

As noted, our analysis can be easily extended from representations of factual knowledge to other kinds of social representations, such as attitudes and opinions. In the course of communication, people may shift their message and speech styles to become more similar to or different from those of their conversation partner, depending on whether they want to associate or dissociate with the conversation partner (see Krauss & Chiu, 1998). In a series of experiments, Higgins and his colleagues (Higgins, McCann, & Fondacaro, 1982; see also Higgins & McCann, 1984; Higgins & Rholes, 1978; McCann, Higgins, & Fondacaro, 1991) found that variations in the linguistic representation of a state of affairs that derive from the speaker's communicative goals may also affect the way the speaker remembers and thinks about that state of affairs. In these experiments, participants read about the behavior of a person ("Donald") which included some behavior that could be characterized either positively or negatively (e.g., independent vs. aloof; persistent vs. stubborn). Next, they were told to convey their impression of Donald to a partner, who had met Donald and had formed either a favorable or unfavorable impression of him. As expected, participants characterized Donald's ambiguous traits more positively in messages intended for someone whose impression of him was favorable, and more negatively in messages intended for someone whose impression of him was unfavorable. More importantly, participants' subsequent recall of the behavioral description of Donald tended to be biased in the direction of their previous messages.

To conclude, the linguistic representation evoked in a specific communication context may bias subsequent representation in the direction of the linguistic representation.

IMPLICATIONS FOR UNDERSTANDING CULTURAL PROCESSES

As noted, for a social representation to be culturally influential, it has to be durably distributed in a social group (Sperber, 1996). A primary function of communication is to construct a shared meaning on the topic among the communication partners (Higgins, 1992; Hardin & Higgins, 1996; Moscovici, 1988; Schegloff, 1991). The evidence reviewed in this section shows that the shared meanings established in communication can outlast the immediate interaction context and be deployed in subsequent social interactions. If, as the evidence shows, people who have participated in communication are more cognitively committed to the shared representations which emerged during communication, communication could help to consolidate conventional or consensually validated ideas and beliefs in a culture. The TPM also assumes that representations created in new episodic interactions with group members could overshadow existing representations. We submit that overshadowing occurs because a linguistic representation of the shared reality is evoked in communication. Like us, Higgins (1992) also believes that the achievement of a shared reality with the audience about the issue of conversation is necessary for verbal overshadowing effects of cognition to occur; "messages that do not achieve, or even prevent, a shared reality about a target person would not subsequently impact on communicators' memory and impressions of the target person, or at least would impact to a lesser degree" (p. 118).

CONCLUSION

We have tried to explicate the detailed social cognitive processes that are implicated in the establishment, maintenance, and transformation of shared representations. Many theorists believe that communication is central to the understanding of these processes, which in turn account for the formation of culture (e.g., Bruner, 1990; Sperber, 1996). Although some recent models (e.g., dynamic social impact theory, the TPM) have furnished these broad ideas with more specific descriptions of how shared representations emerge in social interactions, they do not address the specific social cognitive processes involved. To reiterate Sperber's (1996) assertion, to explain culture we need to specify how shared ideas and beliefs "are cognized by individuals and communicated within a group." In this paper, we draw on the relevant literatures

to provide a working model of these processes, which is summarized in Figure 2.

This model depicts how culture and its constituent shared representations evolve through social communication. To begin with, communication takes place within the context of a cultural background, which includes the historical, immediate, and projected physical and linguistic environment assumed to be commonly known to members of a culture. As communicative acts are goal-directed behaviors, culturally salient communicative intentions (e.g., self-enhancement, group harmony) may guide the pattern of language use within a cultural group. The shared communication context constrains the production and comprehension of communicative messages, and serves as the backdrop for the construction and evolution of social representations in communication.

Within this communication context, individuals engaging in social communication strive to establish a shared reality. To achieve that end, the communicators evoke a common ground of knowledge to guide message production and comprehension. Part of this knowledge is shared by the dyad only, and part of it is shared more widely in the linguistic community. In using the latter kind of knowledge, communicators estimate the extent of shareability of social knowledge in their community. This process ensures that widely shared knowledge is frequently used in message construction across individuals. Frequent activation of shared knowledge in turn increases the ease with which this knowledge can be accessed in subsequent interactions. Similarly, interpretations that are popular in the community are often used to guide message comprehension. Hence, there is a greater chance for widely shared representations than for other representations to be maintained in a culture.

In the communicative process, when a communicator produces an idiosyncratic message, the interaction partner will provide feedback (or back channel responses) to guide message repair (Krauss & Weinheimer, 1966). In short, the dyad will work together to arrive at mutually acceptable representations in the communicative process. This analysis implies that widely accepted representations are minimally transformed and idiosyncratic representations are likely to be modified in communication. According to Sperber (1996), representations that are "repeatedly communicated and minimally transformed in the process will end up belonging to the culture" (p. 83, emphasis).

During the communication process, ideas and beliefs are transmitted. If the shared reality that emerges from communication is consistent with the communicators' original representations, which are likely to be framed in terms of culturally shared representations, the original representations are reinforced both in the minds of the individual communi-

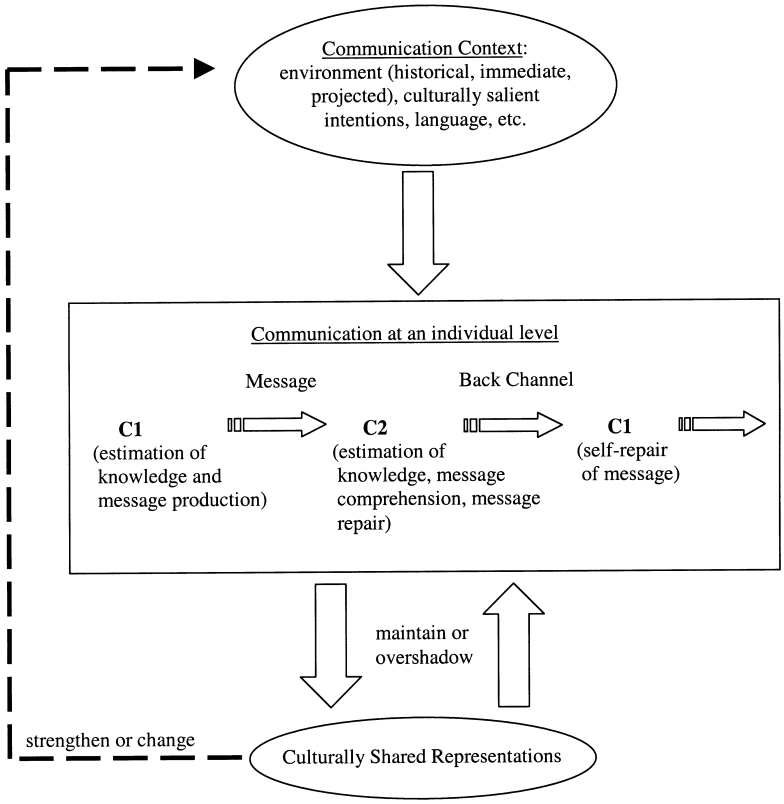

FIGURE 2. Communication and Shared Representations—A Working Model.

cators and in the culture. When there are discrepancies between the initial representations and the newly established shared representations, the new representations may overshadow the original ones, leading to internalization of new representations. The new representations, if activated frequently enough in other communications in the culture, may be incorporated into the culture. With increasingly frequent cultural contacts (e.g., tourism, migration), individuals will meet people from many different cultures. In transcultural communication, communicators may not have enough common background knowledge. Hence, there is an immediate need to negotiate meanings and establish mutually acceptable representations in communication. Again, the newly established shared representations may later be incorporated into the culture and lead to cultural changes.

At the beginning of this paper, we alluded to the fascinating research on cross-cultural variations in human cognitions and motivation. This research has revealed deep cultural differences in some basic psychological processes. A major problem with this research is that it tends to focus on describing static cross-cultural differences without explaining how these differences emerge. We contend that culture should be viewed as a dynamic meaning system, and its members help to construct it when they communicate and negotiate the meanings of their experiences. Hopefully, this approach to understanding the social psychological foundation of culture could help to answer the question of why some shared ideas become entrenched in a culture while others are eroded after repeated social interactions.

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2. Participants' directness judgment estimation, however, was biased somewhat in the direction of their own belief, indicating the presence of false consensus bias, as in the case of knowledge judgment.