Selective Pressures on the Once and Future Contents of Ethnic Stereotypes: Effects of the Communicability of Traits

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It is hypothesized that traits that are most likely to be the subject of social discourse (i.e., most *communicable*) are most likely to persist in ethnic stereotypes over time and that this effect is moderated by the extent to which an ethnic group is the subject of social discourse. Study 1 yielded communicability ratings of 76 traits. Study 2 tested the relation between a trait's communicability and its presence in stereotypes of 4 Canadian ethnic groups. Study 3 tested the relation between a trait's communicability and its persistence over time in stereotypes of 8 American ethnic groups. Results supported the hypotheses. A communication-based analysis of stereotypes appears helpful in predicting persistence and change in the contents of stereotypes of real groups in the real world.

Why do stereotypes of specific ethnic groups have the specific contents that they do, and what processes account for persistence and change in these stereotypes over time?

There was a time when these sorts of content questions were central to the psychological study of stereotypes. Prototypic examples are offered by the famous Princeton trilogy (Gilbert, 1951; Katz & Braly, 1933; Karlins, Coffman, & Walters, 1969), which surveyed the specific trait contents of Americans' stereotypes of various ethnic groups and offered speculations about the causes of changes in these contents over time. These studies were merely descriptive, and so were the speculations, focusing less on psychological processes than on historical events (e.g., the effects of World War II or the U.S. civil rights movement). Some of these historical speculations were surely accurate, but they were limited in their conceptual implications. They were neither generalizable nor predictive and implied no theory of underlying psychological processes. For these and other reasons (Brigham, 1971), this descriptive approach to the study of stereotypes could not provide satisfying psychological answers to questions of stereotype content. Nor could this descriptive approach satisfactorily address process-oriented questions, so it was eclipsed by the more cognitive approach that has governed most psychological inquiries into stereotypes over the past several decades.

This cognitive approach has proven highly generative and successful in identifying all sorts of processes that underlie stereotype formation and change (Fiske, 1998; Hamilton, Stroessner, & Driscoll, 1994; Stephen, 1985). Although these lines of inquiry have rarely focused explicitly on stereotype content, many cognitive processes have content implications, nonetheless. We know, for instance, that individuals are typically motivated to arrive at stereotypes that are diagnostic of real group differences (Ford & Stangor, 1992; McCauley, 1995) and to maintain stereotypes that reflect positively on in-groups and/or negatively on out-groups (Brewer, 1979; Greenberg, Solomon, & Pyszczynski, 1997; Tajfel & Turner, 1986). We know, too, that the contents of stereotypes are influenced by various sorts of biases in attention to, encoding of, and recall for information about groups and group members (Fiedler, 1991; Hamilton, Dugan, & Trolier, 1985; Schaller & O'Brien, 1992). But even with the wealth of information provided by these and other lines of inquiry, our ability to predict the contents of stereotypes is limited to some rather broad conclusions (e.g., all else being equal, stereotypes of ethnic minority groups are likely to be evaluatively negative in tone). These sorts of conclusions are only marginally helpful in predicting the specific contents of specific stereotypes of specific groups and in predicting changes over time in these specific stereotypes. Indeed, as Schneider (1996) noted, "content issues are not easily addressed with the social cognition perspective" (p. 424).

And so, despite decades of psychological research on stereotypes, questions about the contents of stereotypes remain largely unanswered. This is a serious gap in our understanding of stereotypes. A stereotype constitutes a social problem because it has specific contents that have specific consequences (Schaller & Conway, 2001). For one to most fully predict the cognitive, behavioral, and sociological consequences of stereotypes, it helps to

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be able to predict the contents of those stereotypes. The studies reported in this article are designed to aid these predictive goals. They address questions about why stereotypes have the specific contents that they do at any given point in time and why these stereotypes change in specific ways over time. Hypotheses bearing on these questions are deduced from a consideration of the cultural consequences of interpersonal communication processes.

Conceptual Background

Stereotypes as Cultural Structures

This approach focuses not on the contents of specific individuals' beliefs about groups but on the contents of culturally shared stereotypes. This is a subtle but important distinction. To be amenable to psychological analysis, a stereotype must be defined at an individual level (e.g., as a set of beliefs that an individual holds about a group). However, just as stereotypes matter because of their specific contents, they matter most when the same stereotypical beliefs are shared by many individuals. Therefore, it is sensible to describe a stereotype also at a cultural level—as that set of (individually held) stereotypical beliefs that are most commonly held by the individuals within a population (see, e.g., Katz & Braly, 1933).

A focus on the contents of culturally shared beliefs has important implications for the study of persistence and change in stereotypes over time. In this context, stereotype change does not refer to changes in the knowledge structures of individuals—a process that has received some careful attention (e.g., Rothbart & John, 1993). Instead, it refers to changes across different populations of individuals occupying the same cultural space.

Traits as Units of Analysis

Most psychological research on stereotypes treats individual people as units of analysis. The typical study on stereotype persistence addresses the question, "What variables describing individuals influence the extent to which those individuals maintain a particular stereotypical belief?" The approach here focuses instead on traits as units of analysis. It addresses the question, "What characteristics of traits influence the extent to which those traits remain part of a cultural stereotype of a group?"

Although normatively unusual, this "trait's eye view" of stereotypes is not without precedent. There is a small literature on the characteristics of personality traits and implications of those characteristics on the perception of groups. Evaluative favorability is one characteristic of traits with important implications for the contents of stereotypes. Unfavorable traits are more likely than favorable ones to emerge in the stereotypes of ethnic minority groups, and this effect is especially so for groups that are less populous and more foreign (Mullen, Rozell, & Johnson, 2000). Trait favorability can also predict changes in stereotypes over time. For instance, there is some evidence that especially unfavorable traits have been less persistent than have favorable ones in stereotypes of African Americans (e.g., Karlins et al., 1969; but see Devine & Elliot, 1995). In addition to favorability, several studies have examined the abstractness or breadth of meaning implied by traits that show up in stereotypes of in-groups and out-groups (Hamilton, Gibbons, Stroessner, & Sherman, 1992; Maass, Montalcini, & Biciotti, 1998). Compared with positive stereotypic traits of out-groups, for instance, negative stereotypic traits of out-groups are characterized by greater abstractness and breadth. Other research has examined the extent to which different traits are implicated inferentially by behaviors. Rothbart and Park (1986) obtained measures of the ease of imagining behaviors relevant to the trait, the frequencies of behaviors relevant to the trait, and the extent to which those traits are easily confirmed or disconfirmed once they are believed to describe a person. Building on this work, Maass et al. (1998) found that individuals perceive that it is especially easy to confirm those stereotypic traits of out-groups that are negative in valence and relatively easy to confirm those stereotypic traits of in-groups that are positive. Maass et al. (1998) also obtained evidence indicating that, compared with historically younger stereotypes (e.g., stereotypes of career women), stereotypes of older vintage (e.g., stereotypes of Jews) contain traits that are more linguistically abstract. These results suggest that certain features of traits may not only predict the contents of stereotypes at a point in time but also predict changes in those contents across time.

More generally, these results reveal that the trait contents of stereotypes can be predicted not only by variables describing groups about whom stereotypes are formed and by variables describing people who form those stereotypes but also by variables describing traits themselves. This implication is rich in promise but has not yet been explored in much depth. Previous results pertain primarily to the contents of stereotypes at a particular slice of time but do not address in depth questions about changes in those contents over time. Previous results pertain to just a few of the many stereotypes that exist and to just a few of the many characteristics of traits that may predict the contents of stereotypes.

The Communicability of Traits

Some characteristics of traits, such as confirmability, affect the contents of stereotypes because these characteristics bear on specific cognitive processes through which individuals form and maintain impressions of groups. These individual-level inference processes are not the only processes that contribute to stereotypes. Another important set of processes pertains to the interpersonal dynamics of communication and social influence.

A wealth of research on social influence reveals that one's attitudes, opinions, and beliefs are informed by the attitudes, opinions, and beliefs communicated to one by others. The mere act of communication, even in the absence of persuasive intent, serves as a powerful engine of social influence that contributes to the emergence and persistence of consensually shared beliefs (Latané, 1996; Schaller, 2001; Sherif, 1936)—including the emergence and persistence of stereotypes (Haslam, 1997; Ruscher, 1998, 2001; Stangor, Sechrist, & Jost, 2001). Does communication have implications for stereotype content? Yes. Communication processes may influence stereotype content if there is a general tendency for people to converse a lot about certain potentially stereotypic traits of groups and to not converse so much about others.

There are many reasons why individuals might be inclined to converse about certain traits more than other traits. Some of these reasons may pertain simply to linguistic matters. Some trait words are short and easy to pronounce, whereas others are longer and require more effort to incorporate into speech. Some traits may be

communicated equally well through the use of multiple synonyms, whereas others may require one to find just the right word to express them. Other reasons may be based on deeper psychological motives and goals. People are generally motivated to convey useful and pertinent information in their conversations with other people (Grice, 1975), and information about some traits may be judged as generally useful, whereas information about other traits may be judged less useful. Also, because the contents of speech influence impressions of speakers, individuals may be motivated by impression-management goals to engage in some selective self-censorship—to talk a lot about certain traits possessed by others and less so about other traits (Schaller & Conway, 1999). For these and other reasons, potentially stereotypic traits differ in the extent to which they are likely to be expressed in interpersonal discourse—they differ in *communicability*.

One might observe these differences in communicability at a sociological level of analysis by assessing the frequency with which trait words occur in the collective discourse of a culture (e.g., through content analyses of written records). Accordingly, in the present investigation, we consider the frequency of trait word use in the written lexicon as one possible indicator of trait communicability. But word frequency is a rather crude indicator of communicability (lots of different words and phrases may be used to refer to the same personality trait; certain words refer to traits of people as well as to characteristics of nonsocial objects). Moreover, the collective contents of written records may not accurately represent the trait-relevant information that individuals convey to each other when describing others in everyday conversation. Therefore, the communicability of traits is perhaps more profitably measured at a psychological level of analysis, through a focus on the communicative intentions and actions of individuals. At this level of analysis, a trait's communicability is, in a sense, its gossip worthiness: the inclination that individuals have to discuss the trait—and information bearing on the trait—when engaging in discourse about other people. In the studies reported here, a measure of this psychological inclination serves as our primary indicator of a trait's communicability.

The conceptual focus here is on the consequences of trait communicability—specifically, consequences on the contents of stereotypes. The primary hypothesis is simple: As a result of the social influence that attends acts of interpersonal discourse, those traits that are most communicable are also most likely to become and remain part of the popular stereotypes of ethnic groups (provided that those groups are also prominent in interpersonal discourse). In a sense, traits are like viruses: Those that are more highly communicable are more likely to infect the stereotypic beliefs of a population and are less likely to be gotten rid of.

Schaller and Conway (1999) tested this hypothesis experimentally. In three studies, participants were presented with information about the characteristics of members of two different target groups. This information was designed to reveal that two different personality traits were equally diagnostic of group membership—and so, on purely objective grounds, should have been equally likely to become part of participants' emerging stereotypes. These participants also communicated with each other about their emerging impressions of the target groups, so there was an opportunity for unintended social influence. In addition, each study included a manipulation designed to lead participants—either directly or indirectly—to communicate more about one of the diagnostic traits than about the other. In a sense, the manipulation created a temporary difference in the communicability of those two traits. Results revealed that when a trait was temporarily more communicable, it was more likely to become part of participants' stereotypes.

Schaller and Conway's (1999) results also indicated that this effect depended in large part on the actual act of interpersonal communication. If individuals did not attempt to communicate about the groups or if attempted communication was disrupted, the effect of the communicability manipulation was weakened. This result underscores an important limiting condition on the hypothesized consequences of communication processes on stereotype content: Any effect of trait communicability on the contents of shared stereotypes requires that the stereotype pertain to a group that is actually talked about. In real life, for a variety of reasons, some ethnic groups figure more prominently in conversations than others do. (Population size, cultural clout, and visual salience are three of many probable influences on the likelihood that an ethnic group is talked about by others.) Regardless of these reasons, the effect of trait communicability on the contents of a stereotype should be moderated by the *conversational prominence* of the target group: Trait communicability may have an especially pronounced effect on stereotypes of groups that are especially likely to be the subject of interpersonal discourse but may have weak or nonexistent effects on stereotypes of less conversationally prominent groups.

The results reported by Schaller and Conway (1999) support the basic hypothesis that the communicability of a trait has an impact on its likelihood of becoming stereotypic. However, the broader implications of the results are unclear. Each of Schaller and Conway's (1999) studies focused on just two traits, and the communicability of these traits was artificially manipulated. Each study also focused on stereotypes of artificial groups that participants had never previously encountered. Although these tightly controlled experimental methods allowed causal conclusions to be drawn, they constrain the extent to which the results can be generalized to the much broader lexicon of traits or to stereotypic perceptions of real groups. It remains to be seen whether naturally occurring differences in trait communicability predict the contents of stereotypes pertaining to real ethnic groups in the real world. And it remains to be seen whether, in stereotypes of real groups, the effect is truly moderated by differences in the naturally occurring conversational prominence of those groups.

Purposes of the Present Investigation

The primary purpose of these studies is to test several hypotheses concerning the relation between the communicability of traits and the contents of ethnic group stereotypes. These hypotheses pertain not only to the communicability–stereotypicality relation itself but also to predictable limits on the effect.

Two hypotheses apply to the contents of stereotypes measured at any particular slice of time. First, given a set of potentially stereotypic traits, the communicability of a trait is expected to correlate positively with its tendency to be part of the stereotype of a group. More communicable traits are more likely to be stereotypic. Second, this communicability–stereotypicality relation is expected to be moderated by the prominence of the target group in interpersonal discourse. The relation should be especially pro-

nounced for stereotypes of groups that figure prominently in interpersonal discourse but should be weaker for stereotypes of groups that are less likely to be the subject of discourse.

Two parallel hypotheses apply to persistence and change in the contents of stereotypes over time. First, given any set of traits that actually are stereotypic at a particular point in time, the communicability of a trait is expected to correlate positively with its tendency to persist in the stereotype over time. More communicable traits are more likely to persist. Second, this communicability–persistence relation is expected to be moderated by the conversational prominence of the stereotyped group.

In addition to testing hypotheses concerning the communicability of traits, these studies also include methods that allowed tests of other, conceptually distinct hypotheses about the effects of other trait variables on the contents of stereotypes.

Overview of the Studies

Study 1 is a descriptive study designed to obtain a psychologically meaningful measure of the communicabilities of different traits. This study serves as a necessary first step toward the testing of the conceptually derived hypotheses.

Study 2 examines the contemporary contents of several Western Canadian ethnic group stereotypes. The results test the hypothesized positive relation between a trait's communicability and its stereotypicality and also test the hypothesis that this communicability–stereotypicality relation is moderated by the conversational prominence of the target group. We consider several different indicators of conversational prominence, including objective measures of population size (more populous ethnic groups are probably more likely to be talked about) as well as individuals' subjective reports of the frequency with which they talk about different ethnic groups.

Study 3 examines persistence and change in the contents of stereotypes over time and includes two sets of analyses on two partially overlapping data sets. We present these two sets of analyses separately as Studies 3a and 3b. Study 3a focuses specifically on stereotypes of African Americans, and its results test the hypothesized positive relation between a trait's communicability and its persistence in the stereotype over time. Study 3b examines persistence and change in stereotypes of a variety of American ethnic groups differing on conversational prominence. Its results test the hypothesis that the effects of trait communicability on stereotype persistence are moderated by the conversational prominence of the target group.

Study 1: Measurement of the Communicability of Traits

The primary objective of Study 1 is to obtain empirically derived communicability values for a set of traits that are potentially stereotypic. The study also investigates the correlation of communicability with other characteristics of traits that may be relevant to stereotype content.

Method

Participants were 33 students at the University of British Columbia who participated voluntarily for extra credit in undergraduate classes. These participants were provided with a three-page questionnaire. Each page presented an identical list of 76 traits; these pages differed in the instructions indicating the dimension along which participants were to rate each of these traits.

Two of these pages solicited ratings designed to assess directly the communicability of these 76 traits. On one page, participants were asked to address the question, "Suppose you met a person who had this trait, and now you're talking to others about this person; how likely is it that you'll tell these others that this person has this trait?" Responses were offered in the form of ratings on a scale of 1 to 10, with endpoints labeled *extremely unlikely* and *extremely likely;* higher values indicate greater likelihood. On the other page, participants addressed the question, "In general, considering all the various traits of people that you talk about when you talk to others, how common is it to find yourself talking about this trait (or behaviours relevant to this trait)?" Ratings were made on a scale of 1 to 10, with endpoints labeled *extremely uncommon* and *extremely common;* higher values indicate greater commonness.

On a separate page of the questionnaire, participants addressed a question designed to assess a psychological consideration that may influence the communicability of a trait: "Suppose you're talking to others about a particular person you know, and you told these others that this particular person has this particular trait; how interesting do you think they would find this information?" Ratings were made on a scale of 1 to 10, with endpoints labeled *extremely uninteresting* and *extremely interesting;* higher values indicate greater perceived interest.

The list of 76 traits included all 63 traits that Katz and Braly (1933), Gilbert (1951), or Karlins et al. (1969) found to be stereotypic of at least one of the ethnic stereotypes they examined. The additional 13 traits on the list were those found to be stereotypic of African Americans in two other investigations (Devine & Elliot, 1995; Dovidio & Gaertner, 1986). Thus, each of these 76 traits had a proven track record of being actually stereotypic of one or more North American ethnic groups at one or more points in recent history.

Results

On the basis of the 33 participants' responses, we computed average ratings of likelihood, commonness, and interestingness for each of the 76 traits. We computed the correlations between these average ratings, treating trait as the unit of analysis. The results reveal that the two ratings (likelihood, commonness) designed to assess communicability were exceptionally highly correlated ($r = .86$, $p < .001$). This result suggests that these two ratings tapped into the same construct—the behavioral tendency for trait-relevant information to be communicated from one individual to another. Therefore, for each trait, we averaged the likelihood and commonness ratings to form a composite communicability index (Cronbach's $\alpha = .92$). The 76 traits and their scores on this communicability index are listed in the Appendix.

The average interestingness rating was strongly correlated with communicability ($r = .64$, $p < .001$). The interestingness rating appears to reflect a related but conceptually distinct construct, perhaps best characterized as a psychological concern that has obvious relevance to communicative acts.

Drawing on previously published data, we examined the extent to which the communicability index correlated with objective measures of the estimated frequency with which the specific trait words are used in written American English. Francis, Kucera, and Mackie (1982) provided three word frequency indices derived from multiple samples across multiple genres of written American English produced in the early 1960s. The three word frequency indices are (a) the total frequency of occurrence across all writing samples collected by Francis et al., (b) the number of different writing samples in which the word appeared, and (c) the number of

different writing genres in which the word appeared. Francis et al. (1982) provided these measures for 58 of the 76 trait words in our sample and for close synonyms of an additional 7 trait words. On this set of 65 traits, the correlations between our communicability index and the three word frequency measures varied between .11 and .32. Because the three word frequency measures were themselves highly correlated, we computed a composite word frequency index by computing the mean of the three (standardized) word frequency measures. The correlation between our communicability index and this composite word frequency index was $r = .21$ ($p = .100$).

Seventy-one of these 76 traits were included in research by Rothbart and Park (1986), in which they obtained favorability ratings as well as ratings bearing on the frequency, confirmability, and disconfirmability of traits. On this subset of traits, correlations were computed between communicability and the trait characteristics reported by Rothbart and Park (1986).

The results reveal virtually no correlation between communicability and favorability ($r = .07$, $p = .558$). Two other characteristics—the number of instances required to confirm a trait and the number of instances required to disconfirm a trait—were highly negatively correlated ($r = -.64$, $p < .001$), so we created a two-item composite index after first reverse scoring the disconfirmability item (Cronbach's $\alpha = .78$). This *confirmability index* reflects the relative tendency for a trait to be more confirmable than disconfirmable. The correlation between the communicability and confirmability indices was negligible ($r = -.10$, $p = .423$). There were five other characteristics of traits measured by Rothbart and Park (1986): ease of imagining behaviors that would confirm the trait, ease of imagining instances that would disconfirm the trait, frequency of occasions that would allow for behaviors confirming the trait, frequency of occasions that would allow for behaviors disconfirming the trait, and frequency of observing the trait in the general population. These five variables were positively correlated among themselves (correlations varied between .20 and .67) and were each positively correlated with the communicability index. Therefore, we averaged these five values to form a composite index that reflects the overall frequency with which individual actors display obvious trait-related behavior (Cronbach's $\alpha = .77$). The correlation between the communicability index and this *behavioral frequency index* was $r = .47$ ($p < .001$).

A subset of 50 of these traits had been rated for breadth of meaning in previous research (Hampson, Goldberg, & John, 1987). Analyses on these 50 traits revealed little correlation between communicability and breadth ($r = .12$, $p = .424$). (Breadth correlated positively with confirmability, $r = .36$, $p = .011$, but not with behavioral frequency, $r = .00$).

Discussion

Traits differ in their rated communicability, and this communicability is correlated with other characteristics of traits. One characteristic is the perceived interestingness of information implied by the trait. This is fairly obvious and is implied both by common sense and by academic analyses of social discourse (e.g., Grice, 1975). A trait's communicability is also correlated with the frequency with which people display trait-relevant information. There are several reasons why this relation may exist. One reason is that people report their perceptions; people talk about what they observe in others but are less likely to comment on those things that are perceptually invisible. Another reason is that individuals converse about those things that they believe to be functionally relevant, and rarely occurring behaviors are less functionally relevant than are those that have a higher likelihood of transpiring.

This correlation between communicability and behavioral frequency has certain inferential implications, given the conceptual purposes of the following studies. We know already that, as a consequence of cognitive biases associated with frequency, behavioral frequency can influence stereotype formation in multiple ways (Fiedler, 1991; Hamilton et al., 1985; Rothbart, 1981). It is therefore conceivable that different effects of behavioral frequency could either mask relations between communicability and stereotypicality or lead to spurious communicability–stereotypicality correlations. To be most informative, studies on the predictive effects of communicability must take into account shared variance with behavioral frequency.

On the other hand, a trait's communicability does not appear to be meaningfully correlated with its favorability, its breadth of meaning, or its ease of being confirmed or disconfirmed. Any findings bearing on the predictive effects of communicability cannot easily be attributed to effects of these variables. Nevertheless, the independent effects of these other variables on stereotypicality may be interesting in their own right.

Finally, the communicability index had only a modest positive correlation with an objective measure of the frequency with which the trait word appears in written language samples. This is perhaps a bit surprising, given that the actual frequency of trait word usage must be, to some extent, a causal consequent of subjective intentions to communicate trait-relevant information to others. The modest correlation makes sense, however, when one considers the imperfect relation between traits and the words that refer to them. Trait-relevant information can be conveyed with many words other than these specific trait words themselves (cf. Semin & Fiedler, 1988, 1991), and many trait words refer to nonsocial objects as well as to people (e.g., machinery can be sophisticated, sensitive, and quiet; neckties can be loud and dirty). Moreover, the word frequency norms of Francis et al. (1982) are crude indicators of the contents of informal social discourse, as they were derived solely from samples of published writings and excluded dialogue almost entirely.

Study 2: Contemporary Stereotypes of Groups Varying in Conversational Prominence

Are traits that are more communicable also more likely to be part of the stereotypes of ethnic groups? If so, does this effect differ depending on the conversational prominence of these ethnic groups? To address these questions, we designed Study 2 to obtain indicators of the extent to which each of the 76 potentially stereotypic traits actually are stereotypic of four specific ethnic groups. Indicators of the conversational prominence of each group were also obtained. It was therefore possible to test the hypothesized relation between a trait's communicability and its tendency to be stereotypic of an ethnic group and also to test the hypothesis that this relation is moderated by the group's conversational prominence.

Study 2 also examines the extent to which additional trait characteristics predict the stereotype content of the four ethnic groups. In particular, we examine the predictive effects of trait favorability, breadth of meaning, and the inference-relevant trait characteristics measured by Rothbart and Park (1986).

Method

Participant samples were drawn from the multiethnic undergraduate population at the University of British Columbia. (No ethnic group represented a majority of participants; Chinese was the most common ethnic background across samples, indicated by 40 of the 97 participants.) The decision was made to focus on four ethnic groups that had a strong cultural presence in the local geographical region but, because of their different local population sizes, seemed likely to differ in conversational prominence: First Nations peoples (aboriginal tribespeoples), East Indians (people from India), Chinese, and White Canadians (of European ancestry).

We obtained several indicators of conversational prominence of ethnic groups, including subjective ratings offered by participant samples and indirect objective indicators.

For one of the subjective rating measures, 34 students at the University of British Columbia participated in exchange for extra credit in undergraduate courses. They were given a short questionnaire on which, for each question, they were asked to consider times when they talked about the entire group as a whole as well as specific individuals within that group. Each question on the questionnaire began with the words, "How often do you, your friends, or your family talk about . . ." and then specified a particular ethnic group. Among the ethnic groups for which responses were taken were the four target groups of focal interest. Ratings were offered on a 1–9 scale with endpoints labeled *not often at all* and *very often.* A separate rating measure was obtained from a separate sample of 23 students at the University of British Columbia (also participating for extra credit). These students responded to a nearly identical questionnaire that differed only in the instructions that accompanied it. These instructions directed participants to consider only those times when the group was explicitly identified (e.g., when discussing individuals within a group, they should exclude those times when the individual was not explicitly identified by his or her ethnic category membership). Thus, the first rating allows group membership to be implied in conversation, whereas the second rating pertains only to explicit identification of group membership.

In addition to these subjective rating measures of conversational prominence, an indirect objective measure was also recorded: the actual size of the ethnic population within the local geographical region, according to the 1996 census performed by Statistics Canada. Two different estimates were obtained from Statistics Canada's World Wide Web site, pertaining to (a) population within the city of Vancouver and (b) population within the broader Vancouver metropolitan area.

Measures of the stereotypicality of traits were obtained from a separate sample of 40 students at the University of British Columbia who participated for extra credit. They were told that we were interested in culturally shared beliefs about groups and were asked to complete questionnaires assessing stereotypes of local groups. In keeping with procedures used in other recent research assessing socially sensitive stereotypes (e.g., Devine & Elliot, 1995), both verbal and written instructions emphasized that the purpose was not to assess participants' own opinions and beliefs but instead to assess what they perceived the shared cultural stereotype of each group to be (whether they agreed with it or not). Participants completed stereotype measures for the four different target groups. For each of these four groups, participants completed two different stereotype measures.

A trait rating measure for each target group listed the 76 traits rated in Study 1. Participants were asked to rate the degree to which each trait makes up the local cultural stereotype of that group. Ratings were made on a 0–10 scale, with higher values indicating greater stereotypicality. For each target group, each trait's mean rating (computed across participants) constituted the trait's *stereotypicality rating.*

After completing the trait rating task for each target group, participants were asked to "write five traits or adjectives that you think are most central or most important to the local cultural stereotype." They were told that they could draw on the list of 76 words they had just rated or could supply additional words that they thought were appropriate. We compiled these trait listing responses so as to obtain values indicating the percentage of participants who listed each trait in their personal top five list for each of the four target groups. Responses were counted as separate words unless they shared the same etymological root (e.g., *outgoing* and *friendly* were scored as separate trait concepts, whereas *traditional* and *tradition-loving* were scored as indicating the same trait concept). As a consequence, for each target group and for each of the 76 traits, a value was computed indicating the percentage of participants who perceived the trait to be among the five most centrally stereotypical traits. This value offered a *consensus estimate* indicator of stereotypicality.

We examined several predictors of stereotypicality. The predictor of primary conceptual interest is communicability, measured by the two-item index described in Study 1. Communicability scores were available for all 76 potentially stereotypic traits. (As an alternative, indirect measure of communicability, we also examined the composite *word frequency index* derived from Francis et al., 1982. This predictor was available on 65 traits.) Three additional predictors were available for 71 of the 76 traits and were derived from results reported by Rothbart and Park (1986): favorability (single item), behavioral frequency (composite of five items, described in Study 1), and confirmability (composite of two items, described in Study 1). In addition, an index indicating breadth of meaning (from Hampson et al., 1987) was available for 50 of the traits. In weighing the effects of these different trait characteristics, we considered not only the extent to which each independently correlated with a trait's stereotypicality but also the extent to which any observed correlation resulted from correlations with other predictors.

Results

We make a prefatory note about statistical hypothesis testing: The conceptual hypotheses about the effects of communicability on stereotypicality are explicitly directional. Consequently, the logic of directional hypothesis testing was used in the inferential statistical analyses performed on the results testing these conceptual hypotheses. We report p values associated with one-tailed tests of the statistical null hypothesis in all cases in which the descriptive results are consistent with the conceptual hypotheses. For all other inferential analyses (either those on results that are inconsistent with hypotheses or those on results that do not directly test explicitly stated hypotheses), the reported p values are those associated with nondirectional, two-tailed tests of statistical null hypotheses.

Table 1 presents means on the variables used as indicators of conversational prominence. The results indicate clear differences between the four ethnic target groups; the rank ordering of these groups is almost identical on the different indicators. White Canadians appeared to be the most conversationally prominent, and First Nations peoples the least, with Chinese and East Indians in between. These results have implications for hypothesis testing. According to the logic underlying the communicability hypotheses, any relation between communicability and stereotypicality should be strongest on stereotypes of White Canadians, weaker for stereotypes of Chinese and East Indians, and weakest of all for stereotypes of First Nations peoples.

Table 1
Study 2: Conversational Prominence of Four Contemporary Canadian Ethnic Groups and Correlations Between Each Trait's Communicability Score and its Presence in Stereotypes of Each Group

	Indicators of conversational prominence				Correlation of communicability with stereotypicality rating		Correlation of communicability with consensus estimate	
	Population		Subjective ratings					
Ethnic group	City	Metro	Implied	Explicit	*r*	*p*	*r*	*p*
White Canadian	269,540	1,218,195	6.26	5.43	.46	<.001[a]	.34	.002[a]
Chinese	139,860	279,035	5.53	6.48	.15	.097[a]	.14	.118[a]
East Indian	26,040	120,140	4.38	4.74	.20	.039[a]	.12	.161[a]
First Nations	10,960	31,140	3.00	3.09	−.04	.730[b]	−.11	.356[b]

[a] One-tailed test of null hypothesis. [b] Two-tailed test of null hypothesis.

Do the results bear out these expectations? Table 1 also presents the relevant correlations between communicability and the two measures of stereotypicality for each of the four ethnic groups. (The two measures of stereotypicality were themselves highly correlated for each of the target groups; correlations varied between .74 and .79). Both measures reveal the same pattern: a moderately positive correlation in perceptions of White Canadians, weaker positive correlations in perceptions of Chinese and East Indians, and a very weak negative correlation in perceptions of First Nations peoples. If one calculates metacorrelations between these communicability–stereotypicality correlation coefficients and each of the indicators of conversational prominence (the target group is the unit of analysis for these computations), the resulting values are all strongly positive; correlations vary between .56 and .95 (mean $r = .83$). Of course, $n = 4$ for these computations, so the results of inferential statistics demand that these positive correlations should be interpreted with caution (*p*s vary between .023 and .22, one-tailed).[1]

The magnitudes of the predicted positive correlations are somewhat more substantial on the stereotypicality rating measure than on the consensus estimate measure, indicating that the latter is a less sensitive measure of stereotypicality (cf. Brigham, 1971; Rothbart & John, 1993). Nevertheless, it is interesting to use this consensus measure to define a population of traits as stereotypical for each of the four ethnic groups, according the sort of criterion used in previous descriptive research on stereotype contents (e.g., Katz & Braly, 1933). Thus, for each target group, we identified those traits that showed up in at least 10% of participants' top five lists for each group[2] and compared the mean communicability of each set of stereotypic traits with the mean communicability of the larger set of traits that were nonstereotypic. Results are summarized in Table 2. (Because nonstereotypic traits outnumbered stereotypic traits, these tabled *t*-test results controlled for biases due to covariations between sample sizes and variances.) The mean communicability of stereotypic traits exceeded the communicability of nonstereotypic traits for the three most conversationally prominent groups but not for First Nations peoples. Moreover, the rank ordering of the four groups on the size of this effect covaries perfectly with their rank ordering on three of the four indicators of conversational prominence. Note, however, that only for the most conversationally prominent group can the alternative explanation offered by the statistical null hypothesis be dismissed with great confidence.

In contrast to the interpretable effects of the communicability index, word frequency (on the basis of the results of Francis et al., 1982) did not meaningfully predict the contents of contemporary ethnic stereotypes. For none of the four ethnic groups was there any substantial correlation between word frequency and stereotypicality, and the value of these correlations did not covary predictably with the target group's conversational prominence. (The correlations were as follows: White Canadians, $r = -.11$; Chinese, $r = .11$; East Indian, $r = .13$; First Nations, $r = .16$; all *p*s $> .200$).

Additional analyses reveal that some of the other predictor variables also predicted a trait's stereotypicality and that they did so differently for different ethnic groups. Table 3 presents correlations revealing the effects of these other predictor variables on the stereotypicality rating (virtually identical patterns of results emerged on the consensus estimate indicator of stereotypicality).

Correlations between breadth of meaning and stereotypicality were insubstantial for each of the four target groups. As breadth was also largely uncorrelated with communicability (Study 1), it is not considered further.

[1] These effects were largely unaffected by the ethnic background of the participants who produced the stereotypicality ratings. The correlation between a trait's communicability and its presence in the stereotype of White Canadians was strongly positive regardless of whether stereotypicality was rated by White ($r = .47$) or non-White participants ($r = .41$). Similarly, there were essentially no in-group/out-group differences in the relation between a trait's communicability and its presence in the stereotype of Chinese (correlations were .15 and .15, respectively) or its presence in the stereotype of East Indians (correlations were .20 and .18, respectively). No such comparison was possible for the stereotype of First Nations peoples.

[2] The number of traits meeting this criterion varied between 13 and 15 for each group. Following are the five most commonly indicated stereotypical traits for each group: White Canadian: *athletic, individualistic, pleasure-loving, straightforward, sportsmanlike;* Chinese: *ambitious, loyal to family ties, intelligent, efficient, conservative;* East Indian: *very religious, tradition-loving, aggressive, loyal to family ties, physically dirty;* First Nations: *poor, physically dirty, lazy, tradition-loving, superstitious.*

Table 2
Study 2: Mean Communicability Scores of Traits Stereotypic and Nonstereotypic of Each Target Group

Trait and statistic	White Canadian	Chinese	East Indian	First Nations
Stereotypic traits	5.81	5.61	5.55	5.12
Nonstereotypic traits	5.14	5.18	5.19	5.29
Mean difference	0.65	0.43	0.36	−0.17
p (*t* test on difference)	.009[a]	.102[a]	.166[a]	.607[b]

[a] One-tailed test of null hypothesis. [b] Two-tailed test of null hypothesis.

Neither favorability nor confirmability had a consistently positive or negative relation with stereotypicality. Favorability correlated positively with a trait's tendency to be stereotypic of White Canadians and Chinese but negatively with its tendency to be stereotypic of East Indians and First Nations peoples. The same pattern was observed, albeit more weakly, in the confirmability–stereotypicality correlations. However, these predictive effects of confirmability largely disappeared when we controlled for favorability (only the effect on stereotypes of Chinese remained; partial $r = .23$). These results imply that the apparent effects of confirmability were mostly spurious, resulting from substantial shared variance between favorability and confirmability (Rothbart & Park, 1986). The effects of favorability appear more substantive. (However, because favorability was essentially uncorrelated with communicability—see results from Study 1—it cannot account for observed relations between communicability and stereotypicality.)

Behavioral frequency (which did correlate with communicability; see Study 1) showed a pattern of correlations with stereotypicality that was very similar to the pattern of communicability–stereotypicality correlations. We conducted additional partial correlation analyses to examine the independent effects of communicability and behavioral frequency while controlling for other predictors. In one set of analyses, we computed partial correlations between behavioral frequency and stereotypicality while controlling for favorability and communicability. The relations between behavioral frequency and stereotypicality were substantially disrupted when we controlled for these other predictors: White Canadians, $r = .06$; Chinese, $r = .10$, East Indians, $r = .11$; First Nations, $r = .06$. Although there remained a general tendency for frequency–stereotypicality correlations to be positive, the magnitudes of these relations were close to zero and did not covary with the prominence of the groups. In the other set of analyses, we computed partial correlations between communicability and stereotypicality while controlling for favorability and behavioral frequency. These results reveal a pattern of communicability–stereotypicality partial correlations similar to the pattern of zero-order correlations: White Canadians, $r = .42$; Chinese, $r = .08$, East Indians, $r = .16$; First Nations, $r = -.04$. Only on stereotypes of Chinese did the partial correlation differ nontrivially from the zero-order correlations between communicability and stereotypicality.

Discussion

The results examine the ability of several different characteristics of traits to predict the contents of contemporary stereotypes of four different ethnic groups. Some of these trait characteristics have been examined in previous research. Favorable traits were especially likely to be stereotypical of more populous ethnic groups, and unfavorable traits were more likely to be stereotypical of smaller groups. These results are consistent with other empirical results revealing that the affective valence of ethnic stereotypes is a function of the population size of the ethnic group (Mullen et al., 2000). These results may also reflect the fact that participants themselves were primarily from the two most populous ethnic groups. Similar effects were found for the confirmability of traits, but closer examination revealed that these effects were due to shared variance with favorability. Some effects of behavioral frequency on stereotypicality emerged, but closer examination revealed these effects, too, to be largely spurious. Those effects (and noneffects) are all of ancillary interest, however. The primary purpose of this work is to test hypotheses about communicability.

In a sense, these results present four different tests of the hypothesized positive relationship between a trait's communicability and its tendency to be stereotypic of an ethnic group. The inferential implications of these four tests differ depending on whether they are each examined in isolation or considered together.

If examined in isolation, the results reveal one case in which we can confidently conclude that a trait's communicability correlates with its stereotypicality. This is the case of the cultural stereotype of White Canadians. In two other cases (stereotypes of Chinese and of East Indians), the correlations between communicability

Table 3
Study 2: Correlations Between Additional Characteristics of Each Trait and its Presence in Stereotypes of Each Target Group

	Trait characteristics' correlation with stereotypicality rating							
	Breadth of meaning		Favorability		Confirmability		Behavioral frequency	
Ethnic group	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*
White Canadian	.13	.374	.47	<.001	.21	.081	.39	.001
Chinese	.03	.831	.30	.011	.36	.002	.24	.047
East Indian	−.07	.637	−.33	.005	−.19	.105	.08	.534
First Nations	−.08	.562	−.44	<.001	−.36	.002	−.11	.361

Note. All tabled *p* values result from two-tailed tests of null hypothesis.

and stereotypicality were positive, but these positive correlations were of modest magnitude, and each alone might plausibly have resulted from chance. In the fourth case (stereotypes of First Nations peoples), the correlation was not even positive. In descriptive terms, three of these four tests support the hypothesis. In inferential terms, one of the four compels real confidence.

If the different tests are considered in concert, however, the inferential implications are more promising. Although the absolute magnitudes of the four communicability–stereotypicality relations were not strong on average, the relative magnitudes of these four effects follow closely the relative magnitudes that were predicted on the basis of the communicability analysis. These results reveal that the communicability–stereotypicality relation was, as hypothesized, moderated by the conversational prominence of the stereotyped group. The case in which there was no positive effect of trait communicability is exactly the case in which this effect was predicted to be weakest. The case in which the observed correlation was strongest was exactly the case in which it was predicted to be strongest. Indeed, as predicted, the size of the correlation covaried substantially with the conversational prominence of the group. Although the small number of ethnic groups considered in this analysis demands that one must exercise caution in drawing conclusions about this moderating effect, the overall pattern of results is consistent with the conceptual hypotheses.

Of course, these results are correlational in nature and so cannot eliminate alternative causal models of the relation between communicability and stereotypicality. Some of these alternative explanations, and evidence bearing on them, are discussed in the General Discussion.

Study 3a: Persistence and Change in Stereotypes of African Americans

Just as trait communicability may predict the contents of some ethnic stereotypes at any one slice of time, so, too, communicability might predict the persistence and change of stereotypes over time. This possibility is addressed by Study 3a, which focuses on cultural stereotypes of African Americans in the United States in the 1900s.

This focus is driven by two practical considerations. First, the population of African Americans in the United States during the 1900s was substantial and had considerable cultural impact. This suggests a high level of conversational prominence, so the results provide an unambiguous test of the hypothesis. Second, empirical results from previous studies are available that describe the contents of stereotypes of African Americans at different slices of time within the 1900s. These data provide multiple opportunities to test the hypothesis. This is important because the number of traits considered stereotypic of African Americans at any particular time period is fairly small, so support from any single test of the hypothesis is of limited inferential value. The hypothesis can only be considered to be validated with confidence if similar supportive effects are found consistently for different stereotypes measured at different time periods. (If communicability predicts persistence from, e.g., the 1930s to the 1950s, it is difficult to rule out the alternative explanation that the effect is simply a fluke specific to events of that particular time period or the particular population of traits stereotypic in the 1930s. However, if the same result occurs when we consider different time periods at which different traits were stereotypic, the plausibility of this alternative explanation is reduced considerably.)

Method

Devine and Elliot (1995) summarized the results of five different investigations that used similar methods to survey the contents of stereotypes of African Americans. These studies were conducted at five different time periods: early 1930s (Katz & Braly, 1933), early 1950s (Gilbert, 1951), late 1960s (Karlins et al., 1969), early 1980s (Dovidio & Gaertner, 1986), and early 1990s (Devine & Elliot, 1995). The participants in all five studies were students at American universities (three of these studies were conducted at Princeton University). In all studies, each participant was presented with a task designed to elicit the five traits that were considered to be most central to the stereotype of African Americans. Summing across these individual responses, each set of researchers compiled a list of traits that were judged to be central to the cultural stereotype of African Americans at that particular point in time, along with a value indicating just how central each trait was to the stereotype (the percentage of participants who indicated the trait in their personal top five list).

Decision rules governing what to report and what not to report were inconsistent across these studies. Katz and Braly (1933) reported data on the 12 most stereotypic traits. Gilbert (1951) reported data on just the 9 most stereotypic traits. Karlins et al. (1969) reported data on the 10 most stereotypic traits, along with data on the specific traits reported by the two earlier studies. Dovidio and Gaertner (1986) reported data on the 11 most stereotypic traits, along with data on the specific traits reported by the earlier studies. Devine and Elliot (1995) reported data on the 9 most stereotypic traits, along with data on the specific traits reported by the earlier studies.

These five sets of results provide four different points in time that can be considered Time 1 (a time at which the contents of the African American stereotype is defined) and four different points in time that can be considered Time 2 (a time at which one can judge the extent to which a trait that was stereotypic at Time 1 has persisted in the stereotype over time).

Within the context of these data, we defined a trait as being part of a population of traits that defines the cultural stereotype at Time 1 if at least 10% of respondents indicated that the trait was in their personal top five. This is obviously an arbitrary means of defining the population of stereotypic traits, but some inevitably arbitrary decision rule must be used to distinguish between those traits that are and are not part of the cultural stereotype. The 10% rule approximates the decision rules used by the authors of the five studies from which these data were gathered. Given this rule, our analyses focus on the persistence over time of the following Time 1 traits: 12 traits that were stereotypic in the 1930s, 9 traits that were stereotypic in the 1950s, 11 traits that were stereotypic in the 1960s, and 13 traits that were stereotypic in the 1980s.

For each Time 1–Time 2 analysis, we computed indices indicating the extent to which each trait persisted in the stereotype from Time 1 to Time 2. We did this by subtracting the Time 1 stereotypicality value (the percentage of participants at Time 1 who indicated the trait in their personal top five list) from the Time 2 stereotypicality value. (E.g., in the analysis examining persistence from the 1930s to the 1950s, we computed the persistence score for each trait by subtracting its stereotypicality value in the 1930s from its stereotypicality value in the 1950s. Because 84% of participants in the 1930s included *superstitious* in their top five list, compared with 41% in the 1950s, *superstitious* had a persistence score of −43 for this particular analysis, and because *musical* had stereotypicality values of 26% and 33% in the 1930s and 1950s, respectively, its persistence score for this analysis was 7.) More positive values indicate greater persistence; more strongly negative values indicate less persistence.

Given the four different choices for Time 1 (1930, 1950s, 1960s, 1980s) and the four different choices for Time 2 (1950s, 1960s, 1980s, 1990s), we computed 10 different sets of persistence scores. Four of these sets of

scores indicated persistence across one generation (e.g., 1930s to 1950s), three indicated persistence across two generations (e.g., 1930s to 1960s), two indicated persistence across three generations (e.g., 1930s to 1980s), and one set of scores indicated persistence across four generations (1930s to 1990s).

Most of these persistence scores are negative. Not only is this a result of changes in the contents of the cultural stereotypes over time, it is also an inevitable result of a regression artifact that is itself an inevitable result of measurement error in each of the survey studies. But there was considerable variability in these persistence scores. The key question is whether this variability was predictable: Were traits described by specific trait characteristics also more likely to persist in stereotypes of African Americans?

As in Study 2, the predictor of primary conceptual interest was communicability, as measured by the two-item index described in Study 1. (We also examined the predictive effects of the composite word frequency index derived from Francis et al., 1982.) Of ancillary interest were the three additional predictors derived from results of Rothbart and Park (1986): favorability (single item), behavioral frequency (composite of five items, described in the results of Study 1), and confirmability (composite of two items, described in the results of Study 1).

Table 4
Study 3a: Partial Correlations Between Stereotypical Trait's Communicability Score and its Persistence in Stereotypes of African Americans Across Selected Spans of the 20th Century

Stereotype measured (Time 1)	Persistence measured (Time 2)	Partial correlation between communicability and stereotype persistence
1930s	1950s	.25
1930s	1960s	.14
1930s	1980s	.38
1930s	1990s	.54
1950s	1960s	.13
1950s	1980s	.58
1950s	1990s	.62
1960s	1980s	.51
1960s	1990s	.36
1980s	1990s	.13

Note. Tabled correlation coefficients are first-order partial correlations, controlling for each trait's stereotypicality at Time 1.

Results

As in preceding studies, Study 3a treats trait as the primary unit of analysis. Unlike Study 2, these traits do not represent a sample of potentially stereotypic traits. They represent populations of traits defined as stereotypic at specific time periods, so it is misleading to apply inferential statistics to each communicability–persistence correlation independently. Of course, these specific time periods represent simply a sample of the possible time periods at which stereotypes and stereotype persistence could have been measured, so inferential statistics are applied to the sample of communicability–persistence correlations that test the central hypothesis.

For each Time 1–Time 2 comparison, the correlation between communicability and persistence indicates the extent to which a trait's communicability predicted its persistence in the stereotype across that period of time. These correlations reveal a fairly consistent pattern. Nine of the 10 tests of the hypothesis resulted, as hypothesized, in positive correlations (mean $r = .18$). It seems likely that some of the variance in persistence scores was due to differential tendencies to be affected by a regression artifact (there was surely some measurement error when the researchers assessed the contents of stereotypes, so higher scores at Time 1 are more likely than modest scores to regress toward the mean at Time 2). Consistent with this logic, each of the 10 separate analyses revealed strong negative correlations between stereotypicality values at Time 1 and persistence to Time 2. Therefore, we computed partial correlations between communicability and persistence, controlling for Time 1 stereotypicality values. Because this analytic strategy controls for variability resulting from the regression artifact, these 10 partial correlations offer more sensitive tests of the hypothesis than do the zero-order correlations. These partial correlations are presented in Table 4. All 10 partial correlations are positive (mean partial $r = .36$).

What is the likelihood that this consistent pattern of positive correlations would have emerged if the actual relationship between communicability and persistence was nonpositive? A sign test based on the binomial distribution indicates that $p = .002$. That p value is artificially low because there is some nonindependence between the 10 tests of the hypothesis (e.g., persistence from the 1930s to the 1960s is partially dependent on persistence from the 1930s to the 1950s). Four of these tests are truly independent (e.g., persistence from the 1930s to the 1950s is independent of persistence from the 1950s to the 1960s). A sign test pertaining to just these four tests reveals that the chances are unlikely that all four would have yielded positive correlations if the statistical null hypothesis was true ($p = .063$). Given that the dependencies among the 10 different tests of the hypothesis are nonperfect, the true p bearing on the statistical null hypothesis lies between .002 and .063.

Although the results are entirely consistent with the conceptual hypotheses, one limitation of these methods lies in the fact that the trait communicability index was generated many years after the time periods in which persistence was measured. An ideal measure would more directly reflect communicability in the mid-1900s. In the absence of such an ideal measure, we examined the predictive effects of the word frequency composite on the basis of Francis et al.'s (1982) analyses of written American English generated from 1961 to 1964 (see Studies 1 and 2). Although this word frequency index is a less-than-ideal indicator of the contents of social discourse, it reflects norms of the mid-1900s—and so offers some crude indication of a trait's likelihood of being communicated (at least in writing) at that time. Consistent with this notion, the predictive effects of the word frequency index on stereotype persistence largely parallel the predictive effects of our communicability index. Partial correlations with persistence (when stereotypicality at Time 1 was controlled) were positive in 9 of the 10 tests of the hypothesis (mean partial $r = .31$).[3]

Do the results supporting the hypothesis reflect unique predictive effects of the communicability of traits? To address this

[3] Additional analyses examined the predictive effects of communicability on stereotype persistence while partialing out word frequency in addition to Time 1 stereotypicality. Results indicated that positive correlations still emerged on all 10 tests of the hypothesis (mean $r = .28$). On the other hand, word frequency was a less impressive predictor of stereotype persistence when communicability was also partialed out: Only 7 of these 10 correlations were positive (mean $r = .16$).

question, we considered the effects of the other predictor variables: favorability, confirmability, and behavioral frequency.

In comparison with the consistently positive effects of communicability on persistence, the effects of trait favorability were inconsistent across the 10 different Time 1–Time 2 analyses. In half the analyses, favorability was positively correlated with persistence, but in the other five analyses—including all four of those for which the 1990s served as Time 2—the correlations were negative. These effects are consistent with suspicions that some of the apparent changes in stereotypes reflect increasing reluctance to report negative beliefs (Devine & Elliot, 1995) but that when procedures are taken to eliminate those reporting biases (as Devine and Elliot did when assessing stereotypes in the 1990s), negative traits may generally be more persistent than positive ones. Because favorability and communicability were themselves not strongly related, the effects of favorability on persistence cannot account for the positive communicability–persistence relations. Indeed, when favorability scores were controlled (along with stereotypicality at Time 1) in partial correlation analyses, relations between communicability and persistence remained positive in all 10 tests of the hypothesis (mean partial $r = .47$).

Analyses on the confirmability of traits reveal no consistent pattern of relations between confirmability and persistence. Partial correlation analyses controlling for Time 1 stereotypicality values result in four positive and six negative partial correlations (mean partial $r = .01$).

Behavioral frequency had a generally positive relation with persistence. When we controlled for Time 1 stereotypicality values, the partial correlation was positive in 8 of 10 tests (mean partial $r = .21$). Because behavioral frequency and communicability were themselves positively correlated, it is informative to consider the effects of each variable on persistence when we controlled for the other. When we controlled for trait communicability (in addition to Time 1 stereotypicality), the positive correlations between behavioral frequency and persistence largely disappeared (6 of 10 partial correlations were positive; mean partial $r = .03$). On the other hand, when we controlled for behavioral frequency (in addition to Time 1 stereotypicality), the predicted positive correlation between communicability and persistence still emerged on 9 out of 10 tests of the hypothesis (mean partial $r = .33$).

Discussion

This study provides 10 separate tests of the hypothesis that a trait's communicability predicts its persistence in a stereotype over time. Each test suffers from obvious measurement constraints, including small populations of focal traits and measures of persistence that were crude and dependent on data that were surely beset with nontrivial measurement error. It is easy to imagine that, even under conditions in which the hypothesis is true, the results could be inconsistent across the 10 tests and the magnitude of the observed communicability–persistence relations could be modest. Given these constraints, the results are remarkably robust. All 10 tests of the hypothesis reveal the same essential positive relation between communicability and persistence, and some of these positive correlations were strikingly strong. It is particularly noteworthy that the positive effect of a trait's communicability on its persistence in the stereotype remained strong even when we controlled for other characteristics of traits that often predict stereotypicality. Overall, these results support the central hypothesis.

Although one must be very cautious in interpreting results based on just a few comparisons, it is intriguing that the positive relation between communicability and persistence was more pronounced when greater periods of time elapsed between Time 1 and Time 2. If we treat the 1930s as Time 1, we see that communicability more powerfully predicted persistence across three and four generations than it did across one or two generations. Similarly, if we treat the 1950s as Time 1, communicability predicted persistence better across two or three generations than it did across one generation. This pattern of results is consistent with a logical implication of a communication-driven process for stereotype transmission: The effects of communication should be compounded (and so show up more strongly) as more opportunities for communication-based selection occur.

These results are both descriptively interesting and conceptually consistent with communication-based approaches to the prediction of stereotype content, but there are strict limits on the generality of the conclusions that can be drawn from this study. We can say with some certainty that trait communicability correlated positively with persistence and change in the contents of stereotypes of African Americans in the United States across much of the last century, but these results cannot be generalized beyond the specific target group specified in these data. Our next analysis examines more closely the extent to which communicability can and cannot predict the persistence and change of cultural stereotypes of different ethnic populations.

Study 3b: Persistence in Stereotypes of Groups Varying in Conversational Prominence

It is possible that the effects observed in Study 3a are specific to stereotypes of African Americans. After all, African Americans constitute a historically, culturally, and sociopolitically unique ethnic group within the United States. However, if the relation between trait communicability and persistence in stereotypes really does reflect the operation of selection pressures underlying the emergence and change of cultural beliefs, then this effect should be found in stereotypes of other groups as well. It should not be found in all other groups, of course. The effect of communicability on the persistence and change of stereotypes is likely to be limited to stereotypes of groups that people actually talk about—groups that are conversationally prominent. Stereotypes of less prominent groups are less likely to be influenced by these communication processes.

Study 3b explores the generality of the communicability–persistence effect—and tests the hypothesized limits—by examining changes in cultural stereotypes of different ethnic minority groups in the United States during a period from the 1930s to the 1960s. The stereotype content data were reported in three of the descriptive studies that served as a basis for Study 3a (Gilbert, 1951; Karlins et al., 1969; Katz & Braly, 1933). These three studies all used Princeton University students as participants and used virtually identical methods to assess the content of stereotypes of African Americans and other ethnic groups. Thus, following the same procedures as in Study 3a, we could compute several values indicating the persistence of a trait over time in

stereotypes of groups that almost certainly varied in conversational prominence.

To estimate the conversational prominence of each group, we obtained measures of each group's population size and the number of relevant ethnophaulisms (e.g., racial slurs, nicknames, euphemisms) in the lexicon of American slang.

Method

Katz and Braly (1933) reported the 12 most stereotypic traits for nine ethnic minority groups, along with the percentage of participants who indicated these traits in their personal top five lists in the early 1930s. Gilbert (1951) reported the stereotypicality values of most but not all of these traits for the same groups in the early 1950s. In addition, Gilbert reported the stereotypicality of certain additional traits that seemed to be nontrivially stereotypical of each group. Karlins et al. (1969) reported the late-1960s stereotypicality of each of the stereotypical traits identified in those two prior studies. The results from all three studies were summarized by Karlins et al. (1969, pp. 4–5).

For each target group, these data offer us the opportunity to calculate three scores indicating the persistence of a trait in the group stereotype over time (persistence from the 1930s to the 1950s, from the 1930s to the 1960s, and from the 1950s to the 1960s). Within target groups, we calculated persistence scores for each trait by subtracting that trait's Time 1 stereotypicality value from its Time 2 value. For one of these groups—Turks—correlations between stereotypicality in the 1930s and persistence scores in the 1950s and 1960s were extraordinarily highly negative and near unity (correlations were −.98 and −.96). This statistical artifact renders these persistence scores useless for purposes of our analyses. Therefore, our analyses focus on the stereotype content data pertaining to the remaining eight ethnic minority groups. For each group, we calculated three different correlations testing the relationship between a trait's communicability and its persistence in the group stereotype.

We used two different (yet highly correlated) variables as crude estimates of the conversational prominence of each of the eight groups. One variable was the estimated mean population size of each group, on the basis of census information from 1880 through 1970. (Recall from Study 2 that population size covaried with contemporary students' ratings of the likelihood of communicating about members of a particular group.) The second variable was the number of ethnophaulisms describing each target group in the 1900s. The case can be made that the number of ethnophaulisms describing a particular minority group in a cultural lexicon reflects the functional and psychological impact of that group on members of the ethnic majority group (Allen, 1983; Mullen & Johnson, 1993) and so is an indicator of the likelihood that members of the majority group converse about that minority group. Estimates of population size and number of ethnophaulisms were taken from Allen (1983, p. 87–88).

Results

Table 5 lists the eight target groups, along with their estimated population size and the number of ethnophaulisms describing that group in the cultural lexicon. Of the eight groups, African Americans and Jews stood out as having especially large populations and as being described by the most ethnophaulisms. We have already seen (in the results of Study 3a) that trait communicability positively predicts persistence in the stereotype of African Americans. The hypotheses tested here imply that this positive relation should be found on stereotypes of Jews as well but should be weaker for less conversationally prominent groups. More generally, the communicability–persistence relation was expected to covary with the population size of the target group.

Table 5
Study 3b: Conversational Prominence of Eight American Ethnic Groups and Partial Correlations Between Each Stereotypical Trait's Communicability Score and its Persistence in Stereotypes of Each Group

	Indicators of conversational prominence		Correlations between communicability and stereotype persistence across time		
Ethnic group	Population	Ethnophaulisms	1930s–1950s	1930s–1960s	1950s–1960s
Negroes	12,720,000	233	.25	.14	.13
Jews	3,058,000	64	.63	.46	.63
Germans	1,642,000	33	.23	−.08	−.43
Irish	1,050,000	55	.00	.05	.02
Italians	1,028,000	45	.12	−.01	−.27
English	692,000	20	.04	.25	.17
Japanese	200,000	16	.05	−.24	.01
Chinese	172,000	38	−.36	−.46	−.16

Note. Tabled correlation coefficients control for each trait's stereotypicality at Time 1. Ethnic group labels are those that were presented to participants to elicit descriptions of stereotype contents in the 1930s, 1950s, and 1960s.

Following the strategy used in Study 3a, we calculated partial correlation coefficients between trait communicability and persistence, controlling for the stereotypicality at Time 1. We computed three such partial correlations for each of the eight target groups. These coefficients are summarized in Table 5.

As these numbers reveal, the pattern of results obtained for African American stereotypes in Study 3a did not generalize to stereotypes of all ethnic groups. (In fact, for some groups, some of the correlations were quite clearly negative.) In addition, these numbers reveal that the communicability–persistence relation was not limited exclusively to stereotypes of African Americans. Indeed, the most striking set of positive correlations between trait communicability and stereotype persistence occurred in the stereotype of Jews. All three analyses on this target group resulted in strong communicability–persistence relations (mean partial r = .57). Thus, the two groups for which there was the strongest and most consistent relation are exactly those two groups that had the highest conversational prominence during the relevant period of time.

To more explicitly test the hypothesis that the communicability–persistence relation is moderated by the conversational prominence of groups, we computed metacorrelations between each of the indicators of prominence (population size, number of ethnophaulisms) and each of the three sets of communicability–persistence correlations. Each of these correlations was positive (correlations vary between .23 and .38; mean r = .29). This is consistent with the hypothesis that the effect of communicability on persistence is more positive among groups that are more likely to be talked about. Of course, each of these correlations is based on only eight target groups, so inferential statistics on these correlations argue that they be interpreted with great caution (ps vary between .178 and .290, one-tailed).

Because these correlations are based on small sample sizes, they are highly sensitive to extreme values. African Americans not only

were one of the few groups for which there was a positive communicability–persistence relation but also had extremely high scores on both measures of conversational prominence (*z* scores on both variables exceeded 2.5). Do the two conversational prominence variables moderate the communicability–persistence relation even when data pertaining to African American stereotypes are deleted from the analysis? Yes. In fact, the effects are even stronger. The six correlations estimating the moderating effect of conversational prominence on the communicability–persistence relation varied between .39 and .91 (mean $r = .58$; *p*s vary between .003 and .197, one-tailed).[4]

Discussion

These methods examine stereotype persistence across only one or two generations and so cannot provide the best lens through which to observe the predicted effect of communicability. Nevertheless, the results reveal that the effect found in Study 3a was not limited to stereotypes of African Americans but occurred also in stereotypes of Jews. On the other hand, no clear or consistent positive relation between communicability and stereotype persistence occurred in stereotypes of less conversationally prominent ethnic groups.

For some of these other ethnic groups, there emerged negative correlations between communicability and persistence. The interpretation of these negative correlations is not immediately clear. We could construct post hoc explanations by drawing on conceptually independent psychological processes that may influence the stereotypes of rarely encountered groups (e.g., Hamilton et al., 1985), but it is probably premature to do so. Each of the correlations was based on only a small number of data points, so their values are highly volatile; it might be unwise to interpret these negative correlations in the absence of a guiding theory.

And even though there is a guiding theoretical logic consistent with the overall pattern of empirical results, one needs to exercise interpretational caution more generally when drawing conclusions from the results of Study 3b. The stereotypes considered here were populated by only a handful of traits each. Stereotypes of only eight groups were examined. There were only three tests of the communicability–persistence relation for each group. These small numbers mean that results of inferential statistical analyses are inevitably underwhelming. It is perhaps best to view the results of Study 3b as simply descriptive. These results are consistent with conceptual hypotheses, but alternative explanations can still be entertained as well.

General Discussion

The results of Study 1 yield communicability values for 76 traits that have proven to be stereotypic of one or more North American ethnic groups in the past and so could be considered to be potentially stereotypic again. In Study 2, a survey of the contents of contemporary stereotypes of four Canadian ethnic groups reveals that, for the most populous and conversationally prominent ethnic group, those traits that were more communicable tended to be more stereotypic. However, this effect was weaker or nonexistent in stereotypes of less conversationally prominent groups. Study 3 reveals essentially the same predictive consequences of a trait's communicability on its persistence over time in stereotypes of American ethnic groups. In stereotypes of the most populous and prominent target groups (African Americans and Jews), more communicable traits tended to persist, whereas less communicable traits tended to drop out of the stereotype. This effect was weaker or nonexistent in the stereotypes of less prominent ethnic groups. In both Study 2 and Study 3, the effect of a trait's communicability on its stereotypicality was linearly related to the conversational prominence of the target group.

These results are consistent with the four hypotheses identified at the outset. However, the nature of the methods and results demand that some conclusions can be drawn with more certainty than others. What can be concluded with confidence is this: For the groups most likely to be talked about, there was a real relationship between communicability and stereotypicality at a particular slice in time and between communicability and stereotype persistence over time. We must be less confident in drawing conclusions about the existence—or lack of existence—of this effect in stereotypes of less conversationally prominent groups. Therefore, we must also be less confident in drawing conclusions about the moderating effect of prominence.

The Causal Relation Between Communicability and Stereotypicality

We must also proceed cautiously in drawing conclusions about the causal processes underlying the observed effects. These results are correlational and so cannot rule out the possibility that the observed effects of communicability are spurious, resulting from shared variance with other variables that more directly influence stereotypicality. Some of the most plausible potential confounds (e.g., behavioral frequency, favorability) were measured and ruled out as alternative explanations. But other unmeasured characteristics of traits might also be correlated with communicability and with stereotypicality. For instance, it is likely that changes in ethnic stereotypes are based in part on changes in the actual behavioral characteristics (or circumstances) of ethnic groups. Might more communicable traits reflect characteristics of groups that actually change less readily than do other characteristics? The present results cannot address this question and so cannot comment on alternative explanations based on stipulated correlations between the communicability of traits and changes in the real

[4] We conducted additional analyses to investigate whether this pattern of results was simply an artifact due to differing amounts of stereotype change over time. (If stereotypes about other ethnic groups changed substantially less than did stereotypes of African Americans and Jews, the lack of consistent communicability–persistence correlations for those groups might be attributable to constraints on variability.) To estimate magnitudes of stereotype change, we transformed each persistence score into an absolute value and computed the mean of these absolute values for each ethnic group within each Time 1–Time 2 analysis. These means revealed that stereotypes of African Americans did undergo greater changes than did stereotypes of any other ethnic group. However, the same was not true for stereotypes of Jews. Stereotypes of Japanese and Germans changed as much as or more than stereotypes of Jews. Yet, as Table 6 shows, persistence and change in stereotypes of Japanese and Germans were not consistently predicted by trait communicability. It seems that a statistical artifact based on differing magnitudes of stereotype change cannot fully account for the finding that conversational prominence moderated the communicability–persistence relation.

characteristics of ethnic groups. The correlational nature of these methods also forces us to consider alternative causal paths that may directly link communicability and stereotypicality. The observed positive correlations are consistent with the hypothesis that communicability causes stereotypicality, but they do not rule out the possibility that stereotypicality causes communicability. Perhaps people choose to talk about those traits that they first perceive as especially stereotypic of ethnic groups, and perhaps they converse especially about those traits that they perceive as stereotypic of the most populous and prominent groups. The present results alone cannot rule out this alternative causal explanation.

These results are not alone, however. Experimental results also support the hypothesis that communicability has a causal effect on stereotypicality (Schaller & Conway, 1999); these results are not easily explained by alternative causal hypotheses. The complete body of evidence to which the present results contribute seems most coherently explained by the specific hypothesis that a trait's communicability does have a causal influence on its stereotypicality.

Just as these previous experimental results help address inferential issues raised by the present results, these present results address questions of generalizability and ecological validity that attended those experimental findings. The predictive effects of communicability found in carefully controlled experimental settings also appear to occur on actual stereotypes of meaningful ethnic groups in the real world—at least on the stereotypes of conversationally prominent ethnic groups. Therefore, the present results inferentially complement previous experimental research and improve our confidence that researchers can predict the specific contents of group stereotypes in part by considering the communicability of potentially stereotypic traits.

The Prediction and Nonprediction of Stereotypes

Inquiry into the communicability of potentially stereotypic traits offers a unique means of addressing old-fashioned questions of stereotype content with a contemporary social–psychological analysis. Pursuing this line of inquiry may allow social scientists to more fully explain and predict the specific contents of stereotypes of real groups. An analysis of communicability cannot do this alone, of course. There is nothing in the present data that helps us understand why *superstitious* was so stereotypical of African Americans in the 1930s; an explanation of that fact requires one to consider additional psychological processes, cultural phenomena, and historical events. But the communicability analysis is helpful in explaining why *superstitious* dropped out of the stereotype, whereas other traits persisted. This sort of analysis can therefore complement the sorts of sociological and historical explanations that used to accompany descriptions of the contents of stereotypes present and changes from stereotypes past (e.g., Gilbert, 1951; Karlins et al., 1969). And it does so in a way that may help to predict the contents of stereotypes in the future as well.

This type of analysis not only offers clues to the sorts of traits that are likely to be stereotypic and to remain stereotypic for a while, it also offers guidelines indicating when those clues are truly predictive and when they are not. Specifically, this analysis suggests that the communicability of traits is a valuable predictor of stereotype content when those stereotypes pertain to groups that people actually talk about a lot but is of limited predictive utility when those stereotypes pertain to less conversationally prominent groups. At a pragmatic level, it is useful to know that this limit on the power of prediction is itself predictable.

The Psychological Causes and Cultural Consequences of Communicability

If we accept the conclusion that a trait's communicability exerts consequences on the contents of stereotypes, it begs an important question: Why are some traits more communicable than others? The results reported here provide little in the way of answers to that question, although they do offer up a few tips. More communicable traits are those that occur more commonly in the population and are associated with more frequent behaviors. More communicable traits are those that people think others will find more interesting. These influences on communicability are pretty obvious. More interesting clues to the causes of communicability may be revealed in deeper analyses of communication processes, such as those that consider the prescriptive norms of interpersonal communication and the psychology underlying those norms (e.g., Grice, 1975; McCann & Higgins, 1992). For instance, it seems reasonable to speculate that trait information that is simpler to understand and articulate is likely to be more communicable than is trait information that requires greater cognitive and/or linguistic complexity.

We may generate additional insights into the psychological processes underlying the communicability of traits by returning again to the virus metaphor and considering the communicability of social information more generally (cf. Gladwell, 2000; Sperber, 1990). The communicability of a virus is not merely a feature of the virus itself; it depends substantially on features and actions of its hosts. It is for this reason that a particular virus may be highly communicable among pigs but not among pigeons or may be communicable among the sexually active but not among the celibate. The same holds for the communicability of stereotypic beliefs and other forms of social knowledge. The communicability of any belief depends on the ability and willingness of individuals to transmit that information to others. Many psychological variables, both chronic and temporary, may influence ability and willingness to transmit information. An important subset of these variables pertains to the goals that individuals seek to fulfill, so individuals' goal-fulfillment strategies may have unintended consequences on the contents of socially shared beliefs (Schaller, 2001). Schaller and Conway's (1999) finding that impression-management goals indirectly influenced the contents of stereotypes offers just one example. Many other individual-level goals exert predictable influences on decisions about discourse and so may also influence the communicability of beliefs. Evolutionary analyses of human behavior suggest that goals pertaining to self-protection and sexual procreation influence many aspects of social cognition (Kenrick, 1994; Krebs & Denton, 1997). These goals surely influence discourse decisions as well. Trait information that seems most relevant to these fundamental evolutionary goals may be more likely to be talked about.

The virus metaphor reminds us, too, that successful communication of a belief depends not only on the attempted transmission of social information but also on successful reception of that information. Beliefs can be considered to be truly communicated—to be spread from one individual to another—only when that

second individual incorporates that belief into his or her existing knowledge structures. In the present investigation, we define communicability narrowly within the context of attempted information transmission; it is undoubtedly useful to consider a broader definition that encompasses reception processes as well. Empirical investigations in other domains of inquiry have revealed a number of characteristics of beliefs that affect the extent to which those beliefs, once transmitted, are incorporated into others' knowledge structures. The extent to which a belief is bizarre, magical, or counterintuitive affects its likelihood of being successfully retained in memory, and this has interesting implications for predicting the emergence and persistence of religious beliefs (Barrett & Nyhof, 2001; Norenzayan & Atran, in press). Beliefs also vary in the extent to which they are genetically heritable, and this, too, has implications for interpersonal influence processes (Tesser, 1993). Consequently, the heritability of a belief may influence the extent to which it is socially contagious. If we are to enhance our ability to predict why specific stereotypes, religions, and other beliefs become popular and remain that way—whereas others do not—it will be useful to plumb this epidemiological metaphor more deeply.

The intellectual utility of this metaphor is that it forces one to consider information as well as individuals as units of analysis. By doing so—by considering the characteristics of individuals' minds in conjunction with the characteristics of the many bits of information that potentially infect those minds—we may arrive at a more complete understanding of human cognition and behavior. We may also begin to better appreciate how individuals' thoughts and actions ultimately influence the socially shared knowledge structures that define human cultures.

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Appendix

Study 1: Communicability Scores for 76 Potentially Stereotypic Traits

Trait	Score	Trait	Score	Trait	Score
intelligent	7.85	criminal	5.85	suave	4.67
athletic	7.15	individualistic	5.84	superstitious	4.50
sensitive	6.97	very religious	5.82	shrewd	4.47
quick-tempered	6.80	boastful	5.77	sly	4.44
talkative	6.79	musical	5.79	loyal to family ties	4.34
stubborn	6.78	happy-go-lucky	5.65	treacherous	4.32
unreliable	6.78	neat	5.52	progressive	4.26
quiet	6.73	sportsmanlike	5.50	extremely nationalistic	4.21
cruel	6.58	courteous	5.46	industrious	4.18
witty	6.58	ignorant	5.45	conventional	4.16
honest	6.57	revengeful	5.43	tradition-loving	4.05
arrogant	6.53	naive	5.35	low in intelligence	3.91
deceitful	6.52	humorless	5.29	ostentatious	3.60
artistic	6.49	conservative	5.24	meditative	3.58
ambitious	6.44	practical	5.24	gregarious	3.56
aggressive	6.41	passionate	5.20	alert	3.55
argumentative	6.40	pleasure-loving	5.20	methodical	3.55
loud	6.38	efficient	5.12	slovenly	3.51
lazy	6.27	jovial	5.12	pugnacious	3.50
sophisticated	6.27	physically dirty	5.06	stolid	3.30
hostile	6.26	materialistic	5.03	mercenary	3.17
straightforward	6.20	stupid	4.87	grasping	3.11
reserved	6.14	sensual	4.83	rhythmic	3.05
imaginative	6.11	imitative	4.81	poor	2.76
persistent	6.08	impulsive	4.75		
quarrelsome	5.97	scientifically-minded	4.71		

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