Cross-Cultural Comparison of Organizational Media Evaluation and Choice

by Ronald E. Rice, John D'Ambra, and Elizabeth More

Managers working in four countries reported the richness of five media, equivocality of 11 situations, preferred media for each situation, and cultural values. The richness and equivocality measures were reliable and unidimensional. Face-to-face was ranked as most, and business memos least, rich. Only E-mail and telephone preferences were significantly correlated with richness. Media preferences for face-to-face and telephone for each situation were highly correlated with the situations' equivocality. Respondents from collectivist countries rated the telephone as less rich, and the business memo as richer, than did respondents from individualist countries.

Two current organizational communication concerns are new media and multiculturalism. The continued development, diffusion, and application of new organizational communication media are due to the convergence of computers, telecommunication networks, and the telephone, along with the digitization of text and voice (Rice, 1987, 1992). Consequently, one productive area of recent research concerns influences on, and evaluations of, use of new media. The rise of multicultural organizations is due to changing demographic patterns within countries, globalization of organizations across countries, and greater efforts to combat negative stereotypes within organizations (Cox, 1991; Fernandez, Carlson, Stepina, & Nicholson, 1997; Ives & Jarvenpaa, 1991; Trompenaars, 1994). When multicultural organizations adopt new media, their members may experience problems by trying to understand how to best use new media in the context of existing cultural norms for media use.

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This research has two goals. First, it attempts to assess rigorously the psychometric and predictive components of media richness theory, as suggested by Rice (1993). Second, it attempts to determine whether perceptions of media richness, and preferences for media for situations that vary in equivocality, differ across cultural values in organizational settings, as hypothesized by Webster and Trevino (1995).

New Organizational Media and Media Richness Theory

Potentially significant aspects of new computer-mediated communication (CMC) systems include the ability to overcome constraints of time and place, to retrieve and search for associated material, to reprocess and merge different content, and to support many-to-many communication flows (Rice, 1987). However, debate continues as to how suitable or effective new media, such as electronic mail and voice mail, are for various communication activities, as compared to traditional media such as face-to-face or telephone.

Media richness theory (MRT) is frequently applied to this question of choice and effectiveness (Daft & Lengel, 1984, 1986; Trevino, Lengel, & Daft, 1987). MRT proposes that communication media differ in the extent to which they can (a) overcome various communication constraints of time, location, permanence, distribution, and distance; (b) transmit the social, symbolic, and nonverbal cues of human communication; and (c) convey equivocal information.

MRT suggests that communication is necessary to reduce two fundamental situation requirements: uncertainty and equivocality (Daft & Macintosh, 1981). Uncertainty is the lack of potentially available knowledge about an analyzable task or procedure. Uncertainty can be potentially reduced by more information, if only the information can be found, perhaps through a lean computer database. Equivocality is the lack of shared understanding about some situation that requires learning and sense making. Equivocality cannot be reduced by seeking out specific, available information. One must make sense of the situation, perhaps through rich, iterative, negotiated discourse with other actors (Daft & Weick, 1984).

Use of any communication channel involves both costs and information-processing capacities. Therefore, a medium that is not well matched to these requirements will degrade communication performance. Research has shown some, though weak, support for this essential proposition. For example, Lind and Zmud's (1991) study of communication between information systems and noninformation systems personnel showed how matches between situation and communication channel affected technological innovation in the firm's business activities. Daft, Lengel, and Trevino (1987) found that a sample of managers in one organization who reported that they would choose media that were better matched to the equivocality of workplace incidents had slightly higher performance ratings than did another sample of managers who would make less well-matched choices.

A 4-item scale of general task equivocality had been developed and assessed (Withey, Daft, & Cooper, 1983). However, the initial empirical study (Daft et al., 1987) did not use this scale to measure the equivocality of situations that managers would assess when choosing media. They first asked 11 managers to identify critical incidents in their ongoing work. This generated 220 incidents, which were then categorized into 60 generic situations. The researchers then provided a written explanation of equivocality to a panel of 30 judges and asked them to rate each situation's equivocality (from 1 to 5) on a single item. Russ, Daft, and Lengel (1990) used these same incidents, but reworded them to represent, first, the sender's point of view, and then, the receiver's point of view, and expanded the media to include 10 choices. Trevino et al. (1987) categorized 355 manager-generated communication incidents into 18 common workplace situations, which were then rated on a single-item equivocality measure by a panel of judges. The authors found that face-to-face communication was ranked by 100 managers as more likely to be chosen for communication situations involving ambiguity than were telephone and written and electronic mail. Electronic mail was more likely to be chosen for situations involving situational constraints. Markus (1994) allowed her sample of nearly 500 managers to rank each medium for the same 18 situations and found similar correspondence between empirical rankings of media and theoretically expected rankings. Similarly, other studies have provided respondents with short, written definitions of task equivocality and media richness, and then asked the respondents to choose a value on a single-item scale for each situation or medium (Schmitz & Fulk, 1991).

Of these studies, however, only Webster and Trevino (1995) reported the dimensionality or the reliability of the equivocality and media richness measures, so it is difficult to assess the underlying validity and reliability of the inherent measures, and by implication, the results. Both the generally overstated strengths of prior results and unstated assumptions underlying that research have received considerable critique (Rice et al., 1992). Indeed, studies finding considerable differences between benefits from, reasons for choosing, applications of, and problems with, E-mail and voice mail seriously challenge the simple unidimensionality of media richness often used to place CMC at the lower end of media choice (Markus, 1994; Markus, Bikson, El-Shinnawy, & Soe, 1992; Reinsch & Beswick, 1990; Rice & Danowski, 1993; Rice & Shook, 1990a, 1990b; Trevino & Webster, 1992).

Further, not one of these studies has considered perceptions of situations and media across national cultures (although other studies noted below have done so). Thus, we cannot yet assess the extent to which media richness theory, and its theoretical and practical implications, are relevant to organizations that are becoming increasingly multicultural and are increasingly using new media.

National Differences in Organizational Values

As Harris and Moran (1991) argued, "because the microculture is a reflection of the macroculture, it stands to reason that the location of an organization will be affected by the culture of the community that surrounds it" (p. 149). Hofstede (1980, 1982, 1990, 1991) has been the primary proponent and developer of measures of national cultures and organizational values (see also Hofstede, Neuijen,

Ohayu, & Sanders, 1990; for a consideration of cultural issues in global organizations, see Trompenaars, 1994). Hofstede's work has generated considerable research in the area (e.g., Fernandez et al., 1997; Sondergaard, 1994).

By cultures, Hofstede meant something like individual and organizational values in different nations, not organizational climates or myths. Values are acquired early in youth, initially through one's nation and family, and then through one's schooling and occupation (Hofstede et al., 1990). No particular level of cultural values is better or worse than others, although it may be associated with norms or behaviors inappropriate in other cultures. For example, Hofstede (1991) noted the negatives of both ends of the individualism–collectivism dimension: the selfishness of individualism and the tyranny of collectivity. Although there has been some criticism of Hofstede's work, there is generally widespread support for it (Ronen & Schenkar, 1985) and its alliance with the emphasis on ideational culture theory favored by cross-cultural psychologists and anthropologists (Rohner, 1984).

Hofstede's analyses and resulting cultural values dimensions are based on responses from 116,000 respondents working in the Hermes corporation (IBM) in 40 countries, through surveys in 20 languages since 1967 (see, e.g., Hofstede, 1991). The four general cultural values are: individualism–collectivism, uncertainty avoidance, power distance, and masculinity–feminism; we discuss only the first.

Individualism–Collectivism

Hofstede (1991) explained that

> individualism pertains to societies in which the ties between individuals are loose; everyone is expected to look after himself or herself and his or her immediate family. Collectivism . . . pertains to societies in which people from birth onwards are integrated into strong, cohesive ingroups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty. (p. 51)

Individualists sample their social environment through privately referenced information, whereas collectivists base "their self-understanding on the reactions of important others around them" and place great value in interpersonal responsiveness (Earley, 1994, p. 89). Collectivists will more likely be "sensitive to the demands of their social context and more responsive to the assumed needs of others. They will avoid displaying and expressing emotions that disrupt harmony, such as anger" (Bochner, 1994, p. 274).

Erez and Earley (1993) argued that "the individualistic versus collectivistic orientation of a society has profound implications for how individuals work" (p. 75). For example, in a study of group cooperation, Cox, Lobel, and McLeod (1991) found that people from individualist cultural traditions made fewer cooperative responses before group discussions and made the most competitively oriented responses, whether their groups received feedback or not. Hofstede (1980) concluded that organizational members in individualist cultures place greater emphasis on "pure moral involvement" compared to "social involvement," consider individual decisions to be better than group decisions, display more modern time-use

patterns, and emphasize universal rather than in-group/out-group standards (pp. 218, 230–231). So, for instance, whereas individualists may be less likely to cooperate via group-decision support systems, in general, collectivists may be even less likely to cooperate with out-group members via such new media. Indeed, Earley (1993) found that collectivists' performances were lower than individualists' performances when working alone, or working in an out-group, compared to working with an in-group. Collectivism's emphasis on tradition may also limit the extent of new technology transfer (Hofstede, 1980, p. 218), such as implementing and using new computer-based communication media.

Singelis and Brown (1995) reviewed research and argued that individualism versus collectivism is a basic distinction among cultures. They proposed and tested a model that states that "culture affects the development of an individual's psychological makeup [such as independent versus interdependent self-construal], which, in turn, affects communication behavior" (p. 355). Independent self-construal, fostered by individualist cultures, should emphasize "being direct in communication" and individual factors, while underemphasizing more general contexts and the thoughts, feelings, or actions of others.

Individualism and collectivism also are related to concepts of low-context and high-context cultures (Gudykunst & Kim, 1992; Hall, 1976). In high-context cultures, most of the content of messages is embedded in the communicative context rather than the denotative content, nonverbal cues, relational cues, group membership, or indirect messages. Meaning is often internalized, creating a greater responsibility for the receiver to intuit the appropriate interpretation. Erez and Earley (1993) described collectivism as emphasizing more personal, oral, and two-way communication, with longer, more frequent, and bottom-up meetings to clarify decisions and coordinate activities. Members of high-context cultures may try to avoid conflict through increased vagueness, rather than by increased explicit communication. Olaniran (1993) argued that U.S. individualism is clearly associated with a low-context culture. Individual creativity and efficiency is valued and rewarded, but this leads to guarding of information and authoritative control over information flow, such as through formal and vertical paper channels.

Thus, communicators with greater interdependent self-construal, likely belonging to collectivist cultures, should place greater emphasis on high-context communication, attribution of meaning to the context, and receiver orientation. Singelis and Brown (1995) found that interdependent self-construal was significantly associated with collectivist cultures, and increased emphasis on high-context communication and context attribution. However, it had no influence on receiver orientation. Independent self-construal, slightly more associated with individualist cultures, did not influence any of these communication behaviors.

These differences imply that people from collectivist cultures prefer richer media, and possibly interpret situations as being more equivocal, unless the situations place the responsibility for interpretation on the receiver (e.g., when the receiver is a subordinate). People from collectivist cultures might prefer synchronous media more, because of their greater emphasis on traditional uses of time, and their increased valuation of accessing and evaluating the contexts underlying communication.

Grouping countries along cultural values dimensions. Hofstede (1980) reported nearly identical Individualism Index (II) scores for Australia and the U.S., and for Hong Kong and Singapore (see Table 1). Singelis and Brown (1995) also grouped Australia and the United States as individualist, and Hong Kong and Singapore as collectivist. Gudykunst and Kim's (1992) and Hall's (1976) low–high context distinction also grouped the U.S. with Australia, and Hong Kong with Singapore. Thus, there is convergent theoretical validity in grouping these four countries into two sets of similar cultural value orientations (individualistic or low context, and collectivist or high context).

Relationships of Cultural Value Dimensions to Media Use and Evaluation

There is some precedent for analyzing relations between organizational cultural dimensions and media. Straub (1994) used the four cultural dimensions to try to explain the differential pattern of adoption of E-mail and facsimile (fax) by approximately 200 Japanese and 700 U.S. knowledge workers. Analyzing their evaluations of 10 media across 18 scenarios, he found no significant differences in perceptions of the social presence of face-to-face communication or the telephone, but higher perceptions of social presence of E-mail by U.S. respondents and of facsimile by Japanese respondents. Straub related this result to facsimile's wider adoption in Japan, and the utility of fax in transmitting the visual symbols of the Japanese language. However, Marold, Larsen, and Kosaka (1996) found no significant differences in attitudes toward CMC between a matched set of physicians from the U.S. and Japan.

Smith, Peterson, and Wang (1996) asked managers in China, the U.S., and Great Britain to rate the effectiveness of five sources (i.e., own experience and skills, superior's opinions, subordinates' opinions, formal rules and procedures, and opinions of people at one's own level) for handling nine managerial situations (ranging from ordinary events with few implications for those outside the work unit, to unusual events). They also measured role ambiguity and grouped the respondents into individualist (U.S. and Great Britain) and collectivist (China) cultures. When individualist managers relied more on their own experience and training (especially when they avoided involving one's coworkers), they believed the events were well handled. However, those with higher role ambiguity tended to rely more on superiors and feel the events were not handled as well. Collectivist managers still evaluated events more positively when they relied on their own experience (though significantly lower than did individualists), but referral to superiors was not associated with role ambiguity, and collectivists relied more on rules and procedures than did the Western managers.

Milberg, Burke, Smith, and Kallman (1995), analyzing responses from more than 700 information systems professionals in nine countries, found significant differences across the countries with respect to overall level of information concerns. However, these were not related to the countries' cultural dimensions. These prior studies, then, have found some influence of individualist–collectivist cultural differences on source and media use and evaluation, but also have emphasized the role of situational and national factors.

Overall Model and Hypotheses

The constructs motivating this research include national cultural values of the organization (i.e., individualism–collectivism), media richness, equivocality of situations, and media preference. The interaction (or fit) of media richness and equivocality of situations influences media preference. Cultural differences (primarily, the individualism–collectivism distinction) may either directly influence both perceived media richness and perceived equivocality of situations, or moderate the relation among richness, equivocality, and preferences, or both. This simplified model is, of course, not intended to represent the full range of factors influencing media choice (both "rational" and "social"; see Sitkin, Sutcliffe, & Barrios-Choplin, 1992; Webster & Trevino, 1995), or of various outcomes from more or less appropriate media choices, such as communication effectiveness. Specific hypotheses follow from this model.

H1: Media will be ranked on the basis of richness in this decreasing order: face-to-face, telephone, voice mail, electronic mail, and written memos.

H2: Richer media will be preferred for more equivocal situations.

H3: Organizational members in individualist cultures will rate situations as less equivocal than members of collectivist cultures.

H4: Organizational members in individualist cultures will rate memos, E-mail, and V-mail as richer, and face-to-face interaction as less rich, than will members in collectivist cultures.

H5: Organizational members in individualist cultures will choose memos, E-mail, and V-mail more frequently than members in collectivist cultures for equivocal situations.

H6: The association between media richness and equivocality of situations will be higher for organizational members in collectivist cultures.

H7: The association between media preference and equivocality of situations will be higher for organizational members in collectivist cultures.

Method

Prior Development of Situations

The equivocality of situation and media richness measures used in this study were derived from a pilot study involving 44 managers within one division of a multiregional insurance corporation (D'Ambra & Rice, 1994). Focus groups discussed (a) critical situations related to key areas of responsibility, (b) communication components of those critical situations, and (c) all media potentially used for those situations. The resulting 192 managerial communication incidents were categorized into 16 types of common, critical situations involving communication,

and the use of 10 different media. These 16 situations were validated by a subsample of 10 of the managers. Then the equivocality of each of these 16 situations was rated (1 to 5) on one item by a panel of eight judges, all faculty members of the university information systems department (similar to Fulk's 1993 procedure). Principal components analysis of the 16 situations showed that 11 of the situations had high loadings on a single-situation dimension. These 11 situations also had satisfactory equivocality ratings from the eight judges. Although some of the managers and judges were Asian, there was no attempt in the pilot study to generate situations specific to each of the four countries studied in the full sample. Therefore, the 16 initial, and 11 final, situations may not necessarily be strictly comparable or equally salient to managers from all four countries.

Current Sample

As Hofstede suggested, we sought professional homogeneity while aiming for diversity across the salient cultural value. The participants were taking courses (at an international MBA program in Hong Kong, Singapore, and Sydney; an MA program in human resource management in Hong Kong; a management information systems program in Sydney; and an MA program in communication and information studies in the northeastern U.S.) to complement their professional careers. The sample also included a small number of managers at a small nationwide organization in Australia. All but a few were middle-level or line managers, and all had been working for an average of 10.6 years (*M* age = 33.3 years). Thus, this was a diverse sample of managers who, in most cases, were taking a graduate course. We provided the questionnaire to 561 people; 401 responded (71.5%).

Measures

Table 1 provides frequencies and descriptive statistics for demographic, organizational, media usage, and cultural value measures. *Cultural values* were computed according to a specific formula using constituent items operationalized by Hofstede (1980, 1982). The items measured (a) organizational topics, such as authority at work, nervousness at work, disagreement with superiors, estimates of how long one will work for the organization, and managerial orientation toward decision making; and (b) importance of work and living conditions, such as job security, earnings, cooperation, time for personal life, stress, working conditions, living location, and occupational advancement.

Some have argued that these cultural values might better be assessed and analyzed as individual traits. Fernandez et al. (1997) did collect and analyze individual-level measures of cultural values. However, their categorization of the four countries included in our study as individualist or collectivist was the same as Hofstede's (1991). Earley (1994) concluded from his own study that "the differences between the cultural and individual levels were neither consistent nor strong, suggesting that the dual assessment of individualism–collectivism tapped parallel constructs" (p. 114). In addition, Singelis and Brown (1995) concluded that measures of subjective culture, such as Hofstede's, can be used to represent cultural variations and, thus, to categorize groups. In their cross-cultural analysis of personal information privacy concerns, Milberg et al. (1995) agreed.

Table 1. Frequencies and Descriptive Statistics of Demographic, Media Use, and Cultural Dimension Variables

Variable	*N*	Percent		*N*	Percent
Education			Position		
Some high school	4	1.0%	Senior executive	22	5.7%
High school	13	3.3	Middle manager	104	27.0
Some university	76	19.2	Line manager	92	23.9
University degree	103	26.1	Professional	74	19.2
Some master's	137	34.7	Technical	41	10.6
Master's degree	58	14.7	Administrative	39	10.1
Some PhD	2	0.5	Clerical	13	3.4
PhD degree	2	0.5			
Gender					
Male	229	57.7%	Female	168	42.3%

Variable	*M*	*SD*	*N*
Age (in years)	33.3	7.0	389
Years worked full time	10.6	7.1	340
# meetings/day	7.9	7.4	335
# memos sent/day	2.4	3.0	228
# memos received/day	4.3	7.1	326
# phone calls attempted/day	11.0	8.4	333
# phone calls received/day	11.4	8.9	331
Ever used E-mail (1 = no, 2 = yes)	1.8	.4	344
# messages sent/week[a]	23.1	39.8	223
# messages received/week[a]	46.4	80.2	217
Months used[a]	38.8	42.8	197
Availability[a] (1 = no, 5 = readily)	4.2	1.3	260
Ever used V-mail (1 = no, 2 = yes)	1.5	.5	336
# messages sent/week[a]	11.8	18.4	123
# messages received/week[a]	14.2	16.3	121
Months used[a]	28.8	27.3	114
Availability[a] (1 = no, 5 = readily)	3.7	1.7	148

Cultural Value	Separate				Combined	
Dimension[b]	AUS	US	HK	SING	AU/US	HK/SI
Individualism	64.7	72.6	35.0	51.3	66.9	41.5
	90[c]	91	25	20		
Uncertainty	27.0	32.4	38.5	15.4	28.5	29.3
Avoidance	51	46	29	8		
Power	62.5	61.7	65.5	67.6	62.3	66.5
Distance	36	40	68	74		
N	201	66	80	54	267	134

Note. [a]Values for E-mail or V-mail are for users only. [b]Cultural values are country-level, not individual-level, measures; see text. [c]These are survey scores from Hofstede's 1980 study.

Moreover, given Hofstede's (1980, 1982) computational formulae, neither the Uncertainty Avoidance (UA) nor Masculinity Index (MI) dimensions can be computed for individuals separately from some national or other grouping. Further, grouping individuals on the basis of individual scores could place respondents with different subsets of other individuals for each of the dimensions.[1] So the present analyses used Hofstede's approach of testing for differences across groups of countries with similar cultural value scores.[2]

The resulting cultural indexes reflect the expected difference among the two sets of countries on the individualism–collectivism dimension (*M* II's = 66.9 for Australia (AU)-United States (U.S.) and 41.5 for Hong Kong (HK)-Singapore (SING). However, the scores did not show much difference across UA and Power Distance (PD). Due to this lack of difference, we did not analyze the other three cultural value dimensions (or a recently suggested fifth dimension, *Confucian dynamism*; see Hofstede, Neuijen, Ohayu, & Sanders, 1990).[3]

Task equivocality was measured by responses to the following introduction and three questions for each of 11 situations (see Table 2), using the standardized, unidimensional equivocality of situation scale developed and assessed by Withey, Daft, and Cooper (1983):

> For each of these situations, to what extent do you agree with the 3 statements? (the particular situation here): (a) There is more than one satisfactory solution for the problem. (b) The information can be interpreted in several ways and can lead to different but acceptable solutions. (c) The information used to make the decisions can mean different things to different people.

Values ranged from 1 = *a very great extent* to 5 = *a very little extent.*

Media richness was measured by responses to the following introduction and four questions for each of five media, tapping the primary aspects of media richness proposed by Daft and colleagues (1983), but only operationalized and assessed by Trevino and Webster (1995):

> Concerning EACH of the following 5 communication channels (face-to-face, business memo, electronic mail, voice mail, regular telephone)—regardless of how much you actually use them—please indicate the extent to which you feel that it allows participants to do each of 4 communication processes. (a) If communicators are unclear about something or do not understand it, (the medium) allows them to ask questions and obtain answers as they arise. (b) (the medium) allows communicators to add meaning to what they want to say

[1] We did, however, compute personal Individualism scores (PI) using Hofstede's formula. Cross-tabulations showed that country-level Individualism is not completely isomorphic with personal-level Individualism. However, using personal-level data tended to wash out any of the small differences that did exist. These results are available from the author.

[2] Therefore there is no standard deviation associated with that particular country's or group's score.

[3] For a brief definition and possible media implications of each dimension, and reviews of empirical rejections of the fifth dimension, see Yeh and Lawrence (1995), or contact the first author.

Table 2. Mean Equivocality of Situation: Descriptive Statistics, 3-Item Principal Components Variance Explained and Reliabilities, and Means by Individualism–Collectivism

Situation	Equivocality of Each Situation Across Four Countries *M*	*SD*	%Var	Alpha	AU/US (Ind) *M*	HK/SI (Coll) *M*
Greater Equivocality						
You wish to organize political support of your department colleagues for an idea that you have.	3.54	0.92	.77	.85	3.5	3.7
You need to discuss a problem in your department with your superior.	3.54	0.85	.71	.79	3.5	3.7*
You want to advise a superior on the progress of a project at your department.	3.47	0.75	.59	.64	3.4	3.5
You need clarification from a superior on a critical issue affecting your department.	3.31	0.89	.74	.82	3.3	3.4
You wish to request funding for a nonroutine expense in your department.	3.18	0.91	.76	.84	3.2	3.1
You need to respond to an urgent request by a superior for some performance statistics on your department.	3.15	0.94	.74	.82	3.1	3.2
You wish to organize a salary review with a subordinate.	3.14	0.83	.67	.74	3.1	3.3
You wish to clarify a procedural matter with your subordinates.	3.12	0.89	.73	.82	3.1	3.1
You need to respond to a question by a superior concerning a variation in a budgeted-vs-actual expenses report.	3.07	0.87	.71	.79	3.0	3.0
You need to reply to a colleague's inquiry on your budget-vs.-actual expenses.	2.99	0.87	.64	.71	3.0	3.1
You want to schedule a department meeting for two weeks from today.	2.68	1.04	.69	.76	2.7	2.6
Lower Equivocality						
11-situation equivocality mean scale	3.21	0.50	.50	.78		

Note. Each principal components analysis (for each situation) identified only one dimension for the 3-item equivocality scale. *$p < .01$ for *t*-test of difference in equivocality of equivocality, across respondents from individualist and collectivist countries.

> by using as many cues (body language, voice, tone, etc.) as possible. (c) (the medium) allows communicators to be flexible with the way words are used in order to increase understanding. (d) If communicators feel very strongly about something (positively or negatively), (the medium) allows them to show their feelings.

Values ranged from 1 = *a very great extent* to 5 = *a very little extent* (reversed for analysis, so that higher values indicate greater media richness).

Media usage was measured by asking respondents, for E-mail and for V-mail, whether they had ever used the medium, how many messages they sent and received per week, the number of months they had used the medium, and the medium's accessibility. As noted in the relevant tables, responses about electronic mail and voice mail were analyzed only from those who indicated ever having used them. Traditional media usage was measured by asking for the number of meetings per day, the number of memos sent or received per day, and the number of telephone calls attempted or received per day.

Media preference was generated by the following introduction, and measured by respondents' rankings of media preference for each of the 11 situations, and the overall mean across situations:

> To accomplish each of the following 11 situations, which communication channel would you likely choose first (1), second (2) and third (3)? The choices are face-to-face communication (with one or several people), a business memo, electronic mail (not facsimile), voice mail (not a telephone answering machine, but a voice mail system where you have an account, voice mailbox, and can send and reply to voice messages), or a regular telephone (without voice mail features or account). Under your 3 preferred communication channels, please write "1," "2" or "3," indicating the order in which you would choose those three media. Leave the other two blank.

The responses were recoded as follows: 3 if ranked first, 2 if it ranked second, 1 if ranked third, and missing if not chosen, so that the higher the number the more likely the medium was to be selected.

Results

Equivocality of Situation, Media Richness, and Media Preferences

Equivocality of situation: Reliability and dimensionality. Table 2 shows the average equivocality for each of the 11 situations. The three situations judged to be the most equivocal were (a) organize political support of your departmental colleagues for an idea that you have, (b) discuss a problem in your department with your superior, and (c) advise a superior on the progress of a project at your department. The three situations judged to be the least equivocal were (a) respond to a question by a superior concerning a variation in a budgeted-vs.-actual expenses report, (b) need to reply to a colleague's inquiry on your budget-vs.-actual expenses, and (c) want to schedule a department meeting for 2 weeks from today.

The alpha reliability for each 3-item equivocality mean scale was generally satisfactory, with an average alpha reliability of .79 across the 11 situations. Each 3-item scale was unidimensional, with the single factors explaining an average of 70% of the variance. Principal components analysis of the 11 equivocality of situation means resulted in two dimensions. A two-component solution included the four most equivocal situations on the first dimension (accounting for 33% of variance), and the six least equivocal situations on the second dimension of the variance (17%). However, because of parsimony in analyses and reporting, because the reliability of the 11-mean equivocality scale was .78 (compared to .78 and .69 for each of the two mean scales), and because the first principal component accounted for about twice the variance of the second principal component, we used the single mean of the 11 equivocality of situation means for a measure of *overall* equivocality of situation. This approach is similar to that of Rice (1993), whose reliability and dimensionality results justified the more parsimonious approach. Thus, some results using the single scale slightly understate results for the set of high-equivocality situations.

Table 3. Media Richness Ratings, Scale Reliabilities, Principal Components Variance Explained, and Average Media Preference Rankings,for Five Organizational Media

	Media Users Only				
Richness of Medium	Face-to-Face	Business Memo	Electronic Mail	Voice Mail	Regular Phone
M	4.48	2.27	2.48	2.77	3.83
SD	0.51	0.70	0.72	0.78	0.65
N	361	360	264	151	364
4-item scale reliability	.69	.63	.70	.73	.80
Principal component variance explained	.52	.48	.52	.59	.63
Media Preference					
M	2.01	1.08	1.28	.44	1.24
SD	.50	.60	.60	.40	.56
N	401	401	236	151	401

Note. Each principal components analysis (for each medium) identified only one dimension for the 4-item richness scale.

Media richness: Reliability and dimensionality. Table 3 shows the means and reliabilities of the media richness scales. As found in prior studies, face-to-face interaction was rated as having the highest media richness, followed by telephone, V-mail, E-mail, and business memo. The reliabilities for these scales also were generally satisfactory, with an average of .71 (Webster & Trevino, 1995, found somewhat higher reliabilities for their measures). Each set of four richness items for each medium constituted a single principal component, explaining an average of 55% of the variance.

Media preference across situations. Table 3 also shows the mean preference ranking for each medium across the 11 situations. Rankings show face-to-face interaction first, followed by E-mail, telephone, business memo, and V-mail. Is media richness or preference associated with media usage? Table 4 shows that all 11 rankings were significantly higher for E-mail users compared to nonusers, and

Table 4. Average Media Preference Rankings for 11 Situations with Varying Equivocality, Overall,and by Individualism–Collectivism

Richness of Medium		Media Users Only: Face-to-Face	Business Memo	Electronic Mail	Voice Mail	Regular Phone
Greater Equivocality						
You wish to organize political support of your department colleagues for an idea that you have.	A	2.51	.77	.97**	.48*	1.37
	I	2.4	.8	1.0	.4	1.4
	C	2.6*	.7	.9	.6	1.4
You need to discuss a problem in your department with your superior.		2.90	.55	.70**	.42**	1.48
		2.9	.4	.7	.5	1.5
		3.0***	.8***	.7	.3	1.4
You want to advise a superior on the progress of a project at your department.		2.43	1.23	1.25**	.23	.95
		2.3	1.2	1.3	.2	.9
		2.7***	1.3	1.1*	.2	1.0
You need clarification from a superior on a critical issue affecting your department.		2.56	.79	.88**	.35	1.41
		2.5	.7	.9	.4	1.5
		2.7**	1.0***	.9	.2**	1.3**
You wish to request funding for a nonroutine expense in your department.		1.60	1.93	1.39**	.21	.83
		1.6	1.9	1.4	.2	.8
		1.7	2.1	1.4	.2	.8
You need to respond to an urgent request by a superior for some performance statistics on your department.		1.82	.72	1.27*	.48	1.56
		1.7	.7	1.3	.5	1.6
		2.1***	.9	1.2	.5	1.5
You wish to organize a salary review with a subordinate.		2.44	.74	.92**	.47*	1.38
		2.3	.6	.9	.5	1.5
		2.6**	1.0***	.9	.5	1.2**
You wish to clarify a procedural matter with your subordinates.		2.24	.94	1.21**	.46*	1.27
		2.1	.9	1.3	.5	1.2
		2.4*	1.0	1.0	.5	1.4
You need to respond to a question by a superior concerning a variation in a budget-vs-actual expenses report.		1.81	1.31	1.34**	.40**	1.18
		1.7	1.2	1.4	.4	1.2
		2.0**	1.5*	1.3	.3	1.1
You need to reply to a colleague's inquiry on your budget-vs-actual expenses.		1.37	1.32	1.66**	.40	1.32
		1.2	1.3	1.7	.4	1.4
		1.6***	1.4	1.7	.4	1.2
You want to schedule a department meeting for 2 weeks from today.		.42	1.62	2.35**	.99**	.88
		.4	1.5	2.4	1.0	.8
		.5	1.8**	2.3	1.0	1.0
Lower Equivocality						

Note. First row for each situation (A) provides overall means across all four cultures. Second row (I) provides means from respondents from individualist cultures (AU/US). Third row (C) provides means from respondents from collectivist cultures (HK/SING). E-mail and V-mail values are for users only. First row means (A, for all four cultures) show 1-tailed significance of *t*-test between preferences of those who never used, and those who ever used, E-mail (N = 79, 265) or V-mail (N = 185, 151), respectively. N = 401 for the other three media. Second and third row means (I, C) show significance of *t*-test of difference in those two rows' means (i.e., between Individualist and Collectivist preference rankings for medium for that situation). * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5. Correlations of Mean Medium Preferences with Richness at Individual Level and Equivocality at 11-Situation Level

Medium	Correlation of Mean Medium Preference and Medium Richness: Individual AU/US	Collective HK/SI	Overall	Correlation of Mean Medium Preference and Mean Equivocality: Individual AU/US	Collective HK/SI	Overall
N	246	122	368	11	11	11
Face-to-face	.03	.10	.06	.86*	.91**	.89**
Business memo	.03	.23	.07	-.42	-.67	-.54
Regular telephone	.11	.18	.20**	-.75*	-.87**	-.82*
N	170	82	252			
E-mail	.16	.29*	.20**	-.65	-.49	-.62
N	82	40	122			
V-mail	.32*	-.15	.18	.27	.40	.35

Note. Values for E-mail and V-mail are for Users only. * $p < .05$. ** $p < .01$.

6 of them were significantly higher for V-mail users compared to nonusers. That is, those with experience with a new medium were more likely to choose it for situations with varying equivocality than those without that experience (Hiltz & Turoff, 1982; Rice & Case, 1983).

The influence of usage per se on richness was weak (V-mail richness with V-mail messages per day, face richness with meetings per day, and memo richness with number of memos per day was weak), with no correlation greater than r = .20. This result is not due to people having access to one of these new media, but simply preferring not to ever use it (presumably because of perceived low richness). As Table 1 shows, the mean availability for those who had never used the respective medium was low (1.5, 1.2). Indeed, only 6.5% of those who had never used E-mail reported that E-mail was available "readily" or "with slight inconvenience." For V-mail, the figure was 3.9%. Earlier, Rice (1993) showed that usage was weakly associated with perceptions of the social presence of new media, but not at all with perceptions of more traditional media. Thus, either people have already developed their perceptions of media before current use measures, or such perceptions are relatively independent of use.

Media preference by situation. Table 4 shows media preference rankings for each situation. As equivocality of situation decreased, face-to-face ranking generally decreased, business memo ranking increased, E-mail ranking increased, V-mail ranking increased slightly, and the telephone ranking decreased slightly. The results are generally as expected by media richness theory.

Correlations

Relationships of media preference with overall equivocality of situation. Table 5 lists correlations of the 11 mean equivocality of situation scores with the 11 me-

dium preferences, for each medium, across all countries. As situations were more equivocal, people preferred to use face-to-face interaction more ($r = .89$, $p < .01$), and preferred to use the telephone less ($r = -.82$, $p < .05$).

Correlations of media preference and media richness. Correlation of average media richness with average preference ranking aggregated over all the 11 situations of that medium were weak, across all countries. E-mail and telephone (both $r = .20$, $p < .01$) were the strongest correlates.

Cross-Cultural Comparisons

With an understanding of the psychometric characteristics of the measures, and their levels and relationships across the entire sample, we looked for direct or moderating cross-cultural differences.

Direct influence: Mean differences in equivocality of situation, richness, and preference. Table 2 includes the average equivocality value for each of the 11 situations, by individualist and collectivist respondents. Essentially, there were no differences, except that individualists considered discussing a problem in their department with their supervisor somewhat less equivocal.

Table 6 shows the averages for media richness and media preferences for respondents working in individualist cultures as compared to collectivist cultures. Individualists rated the business memo as significantly less rich, and the telephone as significantly more rich, compared to collectivists. Individualists preferred both face-to-face interaction and the business memo less, compared to collectivists.

Might differing perceptions of preference and richness (for business memo and telephone, across countries) be explained by differences in organizational position (here, from senior manager to clerical worker) because of different task requirements and arenas for socialization about how to evaluate and use media (Rice & Shook, 1990a)? We found no significant differences in richness or preference across position for face-to-face interaction, E-mail, or V-mail. The remaining differences were weak and inconsistent, although they suggest that the nature of one's work or positional socialization may slightly influence perceptions of media richness and utility.

Table 4 shows the average medium preference for each situation, by individualist and collectivist respondents. For 9 of the 11 situations, collectivists preferred face-to-face interaction more than did individualists. For five of the situations, collectivists preferred the business memo. There was only one difference for E-mail, and one difference for V-mail, where individualist users preferred it more than did collectivists. For two situations, individualists also preferred the telephone. So the face-to-face medium seemed to provide the clearest distinction between people who differ on the Individualism dimension. Note that there were essentially no differences in preference for the two new media, E-mail and V-mail.

Moderating influence: Correlational differences. We may assess the extent to which national cultural differences play a moderating, rather than a direct, role, by inspecting the correlations (a) between the richness of each medium and that medium's mean preference ranking (averaged over all situations), (b) between the equivocality of the 11 situations and preferences for specific media for those situations, and (c) for the individualist and the collectivist countries. Table 5 shows the results.

Table 6. Means and Difference Tests of Media Richness and Media Preference, Across all 11 Situations, by Country Where Working and by Individualism–Collectivism

	Country Where Working					Individ.	Collect.	
Medium	AU	US	HK	SI	F/R^2	AU/US	HK/SI	F/R^2
				Media Richness				
Face-to-face	4.5	4.5	4.5	4.5	.1	4.5	4.5	.01
N	198	66	80	53	.00	264	133	.00
Bus. memo	2.2[a]	2.2[a]	2.6[b]	2.4[b]	6.3**	2.2	2.5	17.6**
N	197	66	80	53	.05	263	133	.04
E-mail	2.4	2.6	2.5	2.3	1.1	2.5	2.5	.23
N	112	61	26	36	.02	173	91	.00
V-mail	2.8	2.9	2.8	2.6	.8	2.8	2.7	1.4
N	58	41	29	23	.02	99	52	.01
Telephone	3.9[a]	4.0[a]	3.6[b]	3.6[b]	7.8**	3.9	3.6	22.1**
N	201	66	80	53	.06	267	133	.05
				Media Preferences				
Face-to-face	1.9[a]	1.9[a]	2.1[b]	2.2[b]	8.2***	1.9	2.2	24.6***
N	201	66	80	54	.06	267	134	.06
Bus. memo	1.0[a]	1.2[b]	1.3[b]	1.0[ac]	8.3***	1.0	1.2	11.0***
N	194	65	76	51	.06	267	134	.03
E-mail	1.9	1.9	1.8	1.8	1.2	1.9	1.8	1.5
N	111	60	50	32	.01	171	82	.01
V-mail	1.3	1.3	1.4	1.5	1.3	1.3	1.4	3.1
N	52	30	22	18	.03	82	40	.03
Telephone	1.3[a]	1.1[a]	1.2[ca]	1.3	5.0**	1.3	1.2	.7
N	201	66	80	54	.04	267	134	.00

Note. E-mail and V-mail values are for users only. F/R^2 columns list the *F*-ratio and the variance explained of either the ANOVA or the *t*-test of differences across the four-countries, or across cultural groupings. [a, b, c]: Country means with different superscripts differ significantly at $p < .05$ via the Duncan multiple-range test. *$p < .05$. **$p < .01$. ***$p < .001$.

Few of the individual-level correlations of richness and preference (aggregated over all situations) were significant. This implies little moderating influence of cultural context on the (generally nonexistent) media richness and media preference relationship. The two exceptions were (a) a stronger correlation between E-mail richness and E-mail preference by more collectivist respondents ($r = .29$, $p < .05$, compared to $r = .16$ for individualist respondents); and (b) a stronger correlation between V-mail richness and V-mail preference by more individualist V-mail users ($r = .32$, $p < .05$, compared to $r = -.15$ for collectivist respondents).

Although the overall situation-level correlations were strong, and significant for face-to-face interaction and telephone (even with an *N* of only 11 situations),

there was not much evidence for a moderating effect of individualism–collectivism. The only noticeable difference in correlations was for the telephone, where individualist preferences correlated with the situations' equivocality means (r = -.75, $p < .05$) as did collectivist preferences (r = -.87, $p < .01$). Thus, we can infer that individualists were slightly less likely to prefer the telephone for less equivocal situations. This corresponded with their different perceptions of the richness of the telephone (see Table 6).

Discussion

Summary of Results

Scale assessment. The 4-item operationalization of media richness and the 3-item operationalization of equivocality of situation both achieved generally satisfactory reliability and unidimensionality.

However, situations in general are not necessarily unidimensional indicators of a single underlying dimension of equivocality of situations. Here, we detected two possible subdimensions of organizational equivocality: vertical (authority—apparently the more encompassing of the two), and horizontal (departmental and coworker) boundaries. Others have recently reconceptualized the Individualism and Power Distance dimensions into Vertical Collectivism (emphasizing acceptance of hierarchy and difference) and Horizontal Collectivism (continuity of membership and similarity of one's self to others is salient; Smith, Peterson, & Wang, 1996; Triandis, 1995). Zmud, Lind, and Young (1990) identified that, for similar communication situations, different communication media were chosen by senior management depending upon the direction of the communication, also implying a vertical component of equivocality of situations. Rice and Shook (1990a) suggested that, as an individual moved from one job position to another, or across organizations, different patterns of media choice might be relevant, implying both vertical and horizontal sources of equivocality.

Media richness and preference. Generally, the overall media richness rankings support prior measures and assertions. Factors such as organizational position or media usage may have slight influences on these measures. However, there were few significant correlations between the media richness rankings and media preferences.

The only significant (though weak) correlation between average media preferences and overall equivocality of the 11 situations involved the business memo. Perhaps because this media genre has become so formalized and oriented toward detail (Yates & Orlikowski, 1992), it is easiest to assess its fit with the equivocality of situations. However, when media preferences were correlated with the equivocality of the separate situations, the correlations were quite strong and in the predicted directions. So, one implication here is that media richness theory does not do so well at the individual level, or with respect to a generalized context of situations, because of considerable individual dispositions, situational and symbolic constraints, and localized social influence.

These results tend to reinforce the growing awareness that, in spite of the strong heuristic value of media richness theory, the evidence often is quite weak and sometimes contradictory, especially for new media (see, e.g., Rice et al., 1992). Many elaborations have been suggested, of course, such as situational constraints, symbolic uses and values, initiator–receiver distinctions, sequences of media use, effects of time and experience, and social information-processing. However, the precise boundary conditions of media richness theory still are unclear. Possible factors identified in this study include the flexibility and adaptability of new media, the level of analysis, and vertical versus horizontal equivocality of situations.

Influence of cultural values. This study did not find a moderating influence of organizational cultural values, except for the collectivists' heightened avoidance of the telephone for more equivocal situations. There were some instances of a direct effect, however. Individualist respondents rated the business memo lower and the telephone higher in richness. Collectivist respondents preferred the telephone more than did individualists. So, although there was some evidence of some cultural differences in perceptions of media, it was not strong or consistent. Perhaps, as reviewed earlier, intervening psychological processes are the means by which general cultural differences would be associated with differences in media richness and media preference (Singelis & Brown, 1995).

Qualifications

We analyzed data from small, intentionally homogenous samples from only four countries. The respondents may have reflected dominant occupations in these four nations, but clearly did not represent all organizational members in these or other nations. However, the respondents came from many different organizations, removing possible organization-specific biases, and from two groups of countries that differ on the Individualism Index.

Using the same language in the surveys may create measurement error because of problems of varying interpretation (Taybe, 1994). However, the respondents could all speak, read, and write English, even when it was their second or third language. Also, there were no noticeable differences between responses from the individualist and collectivist countries in factor loadings, variance explained, or reliabilities of any scales.

Some posit a general homogenization inherent in corporate culture. However, Erez and Earley (1993), Hofstede (1990), Shackleton and Ali (1990), and Taybe (1994) provided evidence and research reviews showing that, overall, management in different cultures generally maintains those cultural differences. We tested for this possible effect by reanalyzing the means and correlations across the individualist and collectivist groupings, using only those respondents who were both born and worked in the same grouping (AU-U.S. or HK-SING). We found few noticeable differences.

The supposedly pervasive IBM culture in Hofstede's studies might swamp any country-specific cultural differences. However, his respondents were globally dispersed and citizens of those countries. Further, it would seem that a homogeniz-

ing culture associated with a single organization (IBM) would suppress remaining cultural differences (Hofstede, 1990, p. 104).

Some have critiqued the potential reification of Hofstede's (1991) four primary value dimensions into salient differences across, and pervasive similarities within, all cultures (Huo & Randall, 1991). Yet, there is considerable empirical evidence to soften these critiques. Bochner (1994) found that topics concerning private or individual issues were of less salience to collectivists. The Chinese Culture Connection (1987) created a 40-item cultural value survey written in Chinese, based upon themes identified by Chinese social scientists and philosophers and administered it to university students in 22 countries. The resulting four dimensions correlated highly with three of Hofstede's value dimensions, and their clustering of countries also grouped Australia with the U.S., and Hong Kong with Singapore. Indeed, Sondergaard's (1994) review of over 60 replications of Hofstede's measures found that they "largely confirmed" his results. Still, we accept Taybe's (1994) and Hofstede's (1990) conclusion that most cross-cultural organizational surveys can, at best, only identify relative positions and not absolute cultural differences.

The discrepant sample sizes for the individualist group and the collectivist group may bias the results. However, the standard deviations for the personal-level individualism score for the AU-U.S. and HK-SING groupings were nearly identical (64.5 vs. 64.8). We reanalyzed the richness and preferences means, and the correlations, by weighting the AU-U.S. cases by .66 and the HK-SING cases by 1.33, and found no noticeable differences in the results across the two groupings.

This study considers only intracultural, rather than cross-cultural, use of media (Adler & Graham, 1989). Cross-cultural communication might be especially difficult for members from cultures that have differing media richness perceptions or media preferences, such as organizational members from the U.S. and Hong Kong interacting through the telephone or business memo. This would be especially problematic if the interactions involve at least one collectivist culture, where the importance of in-group membership and harmony would increase the distrust of the other culture's members, especially in mediated communication with fewer mitigating social cues and contexts. However, Ryan's (1993) online survey of 100 frequent E-mail users from 24 countries found that, although 40% noticed some differences in how they interacted online with people from other cultures, 75% indicated that the cultural identity of the other participants was of minimal or no importance. The primary distinction was due to the medium, as 95% reported differences in CMC compared to face-to-face interaction.

Finally, many factors other than cultural values do or should influence evaluation and use of new organizational media, including literacy rates, political ideology, primary language and symbol representation, technological environment (Baeza-Yates, Fuller, Pino, & Goodman, 1995; Danowitz, Nassef, & Goodman, 1995; Huo & Randall, 1991; Sorge & Warner, 1986), and even average daytime temperature and a country's latitude (Hofstede, 1980; van de Vilert & van Yperen, 1996).

Conclusion

As many have argued, media use is highly situational, often constrained by access, norms, costs, experience, and symbolic value (e.g., Rice, 1987). The new media are particularly troublesome for propositions based on traditional communication channel capabilities and habits. Other factors, such as a critical mass of users, symbolic cues, communicators' locations, and social influence also seem to play a role (Rice, 1987; Schmitz & Fulk, 1991; Webster & Trevino, 1995). This contextuality does not necessarily mean, however, that media perceptions are completely socially constructed. That is, the ranking of media on a richness continuum does seem to be perceived relatively similarly across a wide range of situations (including, here, cultural values), suggesting that media are perceived to exhibit generally enduring characteristics. It is difficult, of course, to determine the extent to which those characteristics inhere in the medium because of technical aspects and capabilities, or are formed partially through social influence but quickly become quite stable and institutionalized (Rice, 1993; Webster & Trevino, 1995). However, the proposed influence of media richness and equivocality of situation on media preference at the individual level seems to be overwhelmed by how media are actually used and the context in which they are used. Note the paradox, however. Media richness theory, as a contingency theory, was developed precisely to take into account contextual factors in the form of equivocality of situations. Clearly this theory has correctly identified some aspects of the problem, but has underspecified the nature of communication context.

In sum, we have (a) expanded the boundaries for testing media richness theory, (b) provided a means to determine the validity and reliability of its underlying constructs, (c) found additional support for the notion of ranking media and for matching media choice with equivocality of situation. However, we have not found support for (a) much of a relationship among richness, equivocality, and preference, except at the situation level of analysis, (b) many differences in any of these across four countries or two different sets of cultural values, or (c) any conclusive support for either a purely rational or a purely social model of media preference (in accord with Rice et al., 1992, and Webster & Trevino, 1995) *if* culture is conceptualized as a source of social influence. Perhaps this and ongoing research will increase our understanding of organizational communication, new media, and the intersection between increasingly mediated and multicultural organizations.

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