Instructional Media Choice:
Factors Affecting the Preferences of Distance
Education Coordinators

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This article examines the impact of several variables on media choice among 51 distance education course coordinators at the Open University of Israel. Hypotheses were drawn from Media Richness Theory (Daft & Lengel, 1984), Social Influence Theory (Fulk, 1993), Media Symbolism (Trevino, Lengel & Daft, 1987), and Experience Account (King & Xia, 1997), along with research questions about the influence of additional contextual variables. It was found that prior skill has a significant and meaningful impact on media choice and that both social influence and medium richness correlate with media choice. However, contrary to theoretical predictions, media richness and media symbolism did not correlate with perceived levels of equivocality in a message.

Modern communication technologies, especially cellular and computer mediated, provide important and useful alternatives for linking faculty and students at campus-based and distance universities. In traditional distance education programs, instructors and students have limited opportunity to meet personally and interpersonal communication is generally mediated, often through telephone and postal services. Over the past decade, the use of Internet-based technologies has increased, thereby enabling instructors and students to choose from a wide range of diverse and readily available communication media such as email, synchronous and asynchronous discussion groups, etc.

To date, the issue of media choice has been investigated mainly in business organizations, especially from the managerial point of view (Daft & Lengel, 1984, 1986; Daft, Lengel & Trevino, 1987; Rice, 1992; Steinfeild, 1986; Trevino, Lengel & Daft, 1987; Trevino, Webster & Stein, 2000). The question generally asked of managers was, "Given a specific message, what is the most appropriate medium for transacting that message?"

In the realm of education, pioneer work was carried out by Irmer and Bordia (2003) who investigated the multiple determinants underlying campus-based students' media preferences for consulting with teaching staff. They examined the effect of task equivocality, contextual variables and symbolic meanings attached to media choice. They found that students had "…a clear and distinct preference for in-person meetings to resolve their communication needs" (p. 56).

This article addresses similar issues, but from the course coordinator's point of view. In this study, course coordinators at the Open University of Israel were surveyed as to which media they would choose in order to transact a specific message type with students given the freedom to do so with no institutional restrictions. In doing so, the factors that influence course coordinators' choice of media are categorized and ranked according to importance. As in Irmer and Bordia's (2003) work, the issue of media choice is based on preference, rather than on actual media usage.

Media Choice - Theory and Research

Media Richness Theory (Daft & Lengel, 1984, 1986; Daft, Lengel & Trevino, 1987) attempts to describe the conditions under which a specific medium is chosen for communication. The theory assumes a rational selection process that matches media choice with levels of uncertainty and equivocality. Uncertainty refers to a state experienced by an individual when

information is insufficient or altogether absent (Garner, 1962); it may be reduced through the exchange of accurate, relevant and sufficient amounts of data through the use of appropriate media. Equivocality refers to ambiguity inherent within information itself (Daft & Lengel, 1986); it becomes manifest when communicators interact from different frames of reference. Equivocality may be reduced through the clarification and explication of data via appropriate media. The mere provision of data does not necessarily reduce equivocality.

Daft and Lengel (1984, 1986) and Daft, Lengel & Trevino (1987) proposed that media differ in the amount of "rich" information they can convey. Richness in this context is a function of four factors: the capability of a medium (1) to provide immediate feedback, (2) to transmit verbal and non-verbal communication cues, (3) to provide a sense of personalization and (4) to simulate natural language. Media were ranked along each of these factors from richest to leanest.

Research studies (Daft et al., 1987; Rice, 1992; Steinfeild, 1986; Trevino, Lengel & Daft, 1987) investigated and ranked communication media according to richness. Face-to-face communication was found to be the richest medium followed by telephone, email, written addressed documents and unaddressed documents. Face-to-face communication became the baseline for describing media richness thereby excluding advantages of other media from the criteria for analyzing the richness of a medium. For example, face-to-face communication affords *synchronous* feedback whereas asynchronous forums afford *asynchronous* feedback that might, in fact, be richer, more relevant, more accurate and more comprehensive than immediate feedback.

In summary, Media Richness Theory contends that effective communication reduces uncertainty levels by achieving a good match between media and the level of equivocality in a message. This central claim was supported in a large number of studies examining managers' hypothetical media choice (Fulk & Collins-Jarvis, 2001), but received less support, if any, in laboratory control tests (Dennis & Kinney, 1998; Mennecke, Valacich, & Wheeler 2000).

Other researchers found that additional factors, not just the reduction of equivocality and uncertainty, influence media choice. Social Influence Theory (Fulk, 1993) contends that factors such as group norms and peer attitudes also affect media selection and use. It was found that initial trials and subsequent use of new media were affected by the social "climate" in an organization (Fulk, 1993; Fulk & Boyd, 1991; Webster & Trevino, 1995) or in a society at large (Kraut, Rice, Cool & Fish, 1998).

Media Symbolism Theory (Trevino, Lengel & Daft, 1987) suggests that media choice is linked to symbolic meanings associated with different me-

dia, a claim in accord with McLuhan's (1964) often-cited assertion that "the medium is the message." According to this theory, a posted letter often expresses formality while a fax expresses urgency. Trevino, Webster and Stein (2000) reported that perceived media symbols were associated with attitudes toward traditional media (meetings, letters), but not toward newer media (email, fax).

Experience Account (King & Xia, 1997) contends that media choice is correlated with one's prior experience with media. Factors such as the individual's skill and comfort in using a medium affect his or her perceptions of that medium (Carlson & Zmud, 1999). Gaining more experience with a medium may revise the perception of that medium's appropriateness for certain tasks. Moreover, Foulger (1990) reported that experienced users rated some text-based media (like email and discussion groups) "as rich" or even "richer" than face-to-face conversation. Thus, a "richness" criterion, initially base-lined with face-to-face meetings, may no longer be an appropriate scale for media choice.

Furthermore, it is clear that prior experience with a medium begins with and depends upon an initial decision to adopt and to use an innovative technology. Making this initial decision is often an obstacle. In the realm of higher education, Novek (1999) reported that the most difficult barrier to effective technology integration is the resistance that some professors have to change. Some faculty members do not see any need to adopt "nontraditional" instructional methods based on innovative communication media. Indeed, they may see these methods as inferior, cost-saving substitutes primarily promoted by administrators (Allison & Scott, 1998).

Another barrier to technology adoption is the anxiety that sometimes accompanies the expectation of change. Novek (1999) found that some faculty members are too anxious even to try innovative media since they may fear their own incompetence and a subsequent loss of control. In addition, Steel and Hudson (2001) reported that some faculty members believe technology could be used to short-change students by replacing high levels of interaction and contact with much lower ones.

Another factor that influences media choice is the context in which the selection is made (Trevino et al., 1987; Trevino et al., 2000). It was shown that media choice is a function of the physical distance between communicators and of the number of messages they posted and read (Trevino et al., 2000). In academic settings, the number of recipients may vary from hundreds in basic courses learning at a distance to a very few that meet in weekly seminars. The number of messages may also vary accordingly from few to many.

In summary, it has been shown that media choice is multi-dimensional and influenced by (1) an individual's need to reduce uncertainty, (2) a medium's capability to reduce equivocality, (3) social influences, (4) symbolic meanings associated with media, (5) the user's prior experience, skill and comfort in using a medium and (6) contextual factors such as an individual's anxiety, the physical distance between communicators and the number of messages they posted and read.

Educational Technology Context

The relationship between pedagogy and educational technology is questionable and controversial. Clark (1994) argued that pedagogy is the key factor in learning effectiveness whereas technology is only a delivery medium. This claim is supported by many studies that found no significant difference in learning outcomes between traditional and technology-mediated instruction (Mielke, 1968; Russell, 1999). Kozma (1994), however, suggests an opposite notion, claiming that media and pedagogy are inseparable. Thus, selecting a medium mandates the use of specific pedagogical methods and vice versa.

Adopting terminology from media choice literature, choosing a medium is seen as a process of matching the attributes of a medium to *desired learning outcome*s. Such a process is only relevant if there is a strong relation between media and learning outcomes. However, in order to determine which medium will be used to achieve a certain outcome, pedagogical factors may not suffice. Other factors may include barriers to technology adoption like those presented above, institute policy, availability of technology, frequency of use and social climate.

In this research, distance education course coordinators were asked to choose among seven different media (including face-to-face meetings). All seven media have educational benefits, at least to some degree. Ingram, Hathorn and Evans (2000) presented educational applications of Chat, and recently Chen, Kinshuk, Ko and Lin (in press) confirmed its usefulness for instructing students and for consulting with them. Garrison and Anderson (2003), among others, listed the benefits of a website, especially asynchronous text-based conferencing. Educational advantages of email were summarized by Smith, Whiteley and Smith (1999). The usefulness of short message service (SMS) in the academic context was recently reported by Seppälä and Alamäki (2003). The pedagogical contributions of face-to-face meetings, telephone and post mail, used so commonly both in distance and traditional education systems, are widely known. These seven media may be

characterized as text or voice, synchronous or asynchronous and recorded or non-recorded (see Table 1). In turn, and in line with Kozma's notion, it is possible that the medium determines pedagogical methods.

Table 1
Typology of Media

Media	text / voice	synchronous / asynchronous	recorded / non-recorded
Face-to-face	voice	synchronous	non-recorded
Chat	text	synchronous	recorded
Website	text	asynchronous	recorded
Email	text	asynchronous	recorded
SMS	text	asynchronous	recorded
Telephone	voice	synchronous	non-recorded
Post	text	asynchronous	recorded

THE STUDY

Background

The Open University of Israel is a distance education university designed to offer academic studies to students throughout Israel. The university offers a home study system based on textbooks, tutors and study centers throughout the land. Enrollment for the academic year 2003-2004 was more than 38,000 students. University courses offer either regular bi-weekly or extended weekly tutorials. The classic text-tutor system was enriched in 1999 with the introduction of a Web-Based Instructional Environment (WBIE) wherein each course has its own website. These sites are intended to enrich students' learning opportunities and to increase interpersonal interaction, both instructor-student and student-student. Website use is optional, non-mandatory, so that equality among students is preserved. The WBIE does not replace textbooks or face-to-face instructor-led tutorials that are the pedagogical foundations of the Open University. The WBIE enables asynchronous instructor-student and student-student interactions as well as a synchronous forum for chat between and among all logged-on participants, including the instructor.

A course coordinator is responsible for academic and administrative planning as well as the implementation of all course activities. Some coordinators also serve as instructors. Students may consult with coordinators

concerning any question troubling them, be it academic or administrative. Due to university policy, all official communication is by post mail. However, also in accord with university policy for communicating with students, coordinators are accessible by telephone during specified hours, by personal meetings, by asynchronous communication via website and by email.

Research Questions and Hypotheses

Two research questions regarding the impact of two contextual variables on media choice were asked. What is the effect, if any, of

(Q1) the number of students per coordinator and
(Q2) whether or not the coordinator instructs students on a regular basis

on media choice when viewed in terms of "convenience of use" and "message equivocality"?

Four hypotheses were derived from the different theories presented above. In all four, the dependent variable is course coordinators' media choice viewed in terms of convenience of use and message equivocality.

(H1) Course coordinators' skill in using a communication medium correlates with their media choice (Experience Account).
(H2) Course coordinators' perceptions of students' and peers' attitudes toward media effectiveness correlate with their media choice (Social Influence).
(H3) Course coordinators' perceptions of media symbolism correlate with their media choice (Media Symbolism).
(H4) Course coordinators' perceptions of media richness correlate with their media choice (Media Richness).

METHODOLOGY

Population

Questionnaires were sent via email to 207 course coordinators at the Open University of Israel. Ten questionnaires (5%) were returned due to incorrect addresses. Fifty-one course coordinators (25%) completed and returned the questionnaire. A profile of the participants is presented in Table 2.

Table 2

A Profile of the Participants

	Number of participants (%)
Department	
Humanities	14 (27.5)
Social Science	24 (47.1)
Computer and Mathematics	6 (11.8)
Life and Natural Sciences	5 (9.8)
No Answer	2 (3.8)
Level of course	
Beginning	6 (11.8)
Regular	23 (45.2)
Advanced	15 (29.4)
MA	5 (9.8)
No Answer	2 (3.8)
Years as coordinator	
1	1 (2.1)
2	8 (15.7)
3	4 (7.8)
4	5 (9.8)
5	4 (7.8)
6	6 (11.8)
7	5 (9.8)
8	4 (7.8)
10-15	7 (13.8)
16-24	5 (9.8)
No answer	2 (3.8)
Number of courses per coordinator	
1	25 (49.0)
2	8 (15.7)
3	9 (17.6)
4	4 (7.8)
5	2 (3.9)
No Answer	3 (5.9)
Number of learning groups	
1-2	9 (17.7)
3-5	11 (21.5)
6-8	10 (19.6)
9-15	9 (17.7)
16-50	10 (19.6)
No answer	2 (3.8)
Number of learning groups that the coordinator instructs face-to-face	
0	9 (17.7)
1	17 (33.3)
2	10 (19.6)
3	9 (17.7)
4	3 (5.9)
6	1 (2.1)
No answer	2 (3.8)

Independent Variables

The Media

The communication media listed in Table 1 are those available at the Open University. Only Short Message Service (SMS) is not recognized officially by the university even though it is readily available.

Contextual Variables

These variables are associated with research questions Q1 and Q2: the number of students they coordinated (Q1); and the number of students they personally instructed (Q2). The variables associated with hypotheses H1 - H4 were measured on a five-point Likert scale.

Experience Account

(H1): Regarding skill, coordinators were asked: "How skilled are you in transacting messages with each of the media?" The five-point scale ranged from "very skilled" to "very unskilled."

Social Influence

(H2): Two items were used to measure social influence. First, coordinators were told to assume that all media are equally available to all students. They were then asked to estimate students' attitudes concerning the effectiveness of each of the seven media for transacting messages from coordinators. Second, they were asked to estimate peer attitudes concerning the effectiveness of each of the seven media for transacting messages with students. For both questions, the five-point scale ranged from "very effective" to "very ineffective." Spearman's rank order correlation and Cronbach's alpha were measured to determine the reliability between these two items. Both measures were high (Spearman's $r = 0.821$, $p < 0.05$, Cronbach's alpha $= 0.76$).

Media Symbolism

(H3): Four items were used to measure media symbolism. Coordinators were asked: Does this medium (1) "convey my desire to cooperate" (cooperation), (2) "transmit my sense of urgency regarding this message" (urgency), (3) "transmit my sense of low priority or non-importance regarding this

message" (priority) and (4) "convey that the message is formal or official" (formality). The five-point scales ranged from highly positive to highly negative. These four items were adopted from Trevino et al. (2000). Since we have no a-priory symbolism associated with each medium, a post-hoc analysis was carried out for each medium. In this analysis, the highest significant score was selected as the medium's symbol.

Medium Richness

(H4): Four items were used to measure perceived media richness. Coordinators were asked to what extent media (1) provide immediate feedback, (2) convey verbal and non-verbal information, (3) provide personal communication with students and (4) enable coherent continuity. The last item replaced the "simulate natural language" factor that appears in the original Media Richness Theory because in a pilot questionnaire participants could not differentiate between this item and the "conveying verbal and non-verbal information" item. The five-point scales ranged from high agreement to low. Reliability for perceived richness based on Cronbach's alpha was 0.83.

Dependent variables

The dependent variable "media choice" was operationalized as "convenience of use" and "message equivocality." First, for each of the media, instructors were asked: "To what extent do you feel comfortable transacting messages with students?" Convenience was scored on a five-point scale ranging from "very convenient" to "very inconvenient." Second, two messages, one with high equivocality and the other with low, were presented. Coordinators were asked to assume that all media are equally available. Their task was: "Assess the appropriateness of each of the media for transacting each of the messages." The low equivocal message was: "Notify students about a change in deadline for handing in an assignment". The high equivocal message was: "Clarify a complex theoretical issue for a given Study Unit." These message types are very similar to those defined by Irmer and Bordia (2003) and were found to be distinguishable.

METHOD

Procedure

A web-based questionnaire, created using NEMALA™ software, was distributed through the University's internal email list. A great deal of research has shown the equivalency of written and electronic testing (Barak & English, 2002). A week later, a reminder was sent to all recipients. Five days later, the survey was closed and data analysis began. Coordinators working only from home did not participate in the study thereby reducing the variability among participating coordinators since bandwidth differences were eliminated.

Data Analysis

The diversity of the collected data afforded various analytical approaches. Given the large number of variables and the potential for correlations between them, data were analyzed as follows. First, we tested whether media were distinguishable in terms of all the measured variables; second, hypotheses were tested; third, and last, a multiple regression was conducted in order to estimate the relative contribution of each variable to the hypothetical medium choice.

RESULTS

Descriptive statistics by medium are included in the Appendix. Results are reported in three sections: (1) Discriminating Between Media: Testing Internal Validity, (2) Hypothesis Testing and (3) Multiple Regression.

Discriminating Between Media: Testing Internal Validity

A prerequisite condition for the study is that media are distinguishable in terms of all the measured independent and dependent variables. This was tested for by several separate repeated ANOVA measures with media as within-subject factor. Since sphericity was violated, the Greenhouse-Geisser correction was used. A significant media effect was found for each of the variables. ANOVA results are presented in Table 3. In order to clarify these effects, pairwise comparisons between media are reported for each of the

variables tested. It was found that media are distinguishable in terms of each independent and dependent variable.

Table 3
Discriminating Between Media: ANOVA Tests

Measures	df (Greenhouse-Geisser)	F*
1. Skill	3.3, 160.7	80.99
2. Convenience	3.1, 140.5	71.16
3. Social Influence	6,258**	76.31
4. Symbolism		
4a. Cooperation	4,164.2	15.71
4b. Urgency	4.4, 175.5	10.32
4c. Priority	4.2, 170.1	5.537
4d. Formality	6,240**	30.89
5. Equivocality	4,160.7	19.83
6. Richness	4.1, 171.8	62.90

Notes: * $p < 0.0001$

** sphericity assumed.

Experience, viewed in terms of skill, distinguished between two media groups. Coordinators reported having significantly less skill in utilizing chat and SMS relative to all other media ($p<0.0001$). For the other media, generally high levels of skill were reported, thereby making them statistically indistinguishable.

Social influence also discriminated between media. Coordinators believed that students and colleagues perceived face-to-face meetings as the most effective medium relative to all other media (all p's < 0.001). The most ineffective media were again SMS and chat. These did not differ one from another, but scored significantly lower relative to all other media (all p's < 0.0001).

Each of the four categories related to media symbolism was tested separately. Cooperation was perceived as highest in face-to-face and telephone communications; these two media did not differ significantly. Urgency was perceived as highest in telephone and email; these two media did not differ significantly. Priority was not perceived as manifest in any of the media. The lowest level of priority was found in chat, although post mail and email

were not significantly far behind. Formality was perceived as highest in post mail. All other media ranked very low on this category.

This analysis focused on discriminating between media. It was found that these variables can indeed discriminate between the seven media chosen for this study. However, between-media discrimination, although necessary, is not sufficient. Results of within medium discrimination will be presented below.

Media richness, as expected, was highest in face-to-face communication (all p's < 0.005), followed by telephone (all p's < 0.0001). The leanest medium was SMS with the lowest significant score relative to all other media ($p < 0.05$) except for website and post mail that did not differ significantly.

Medium equivocality was found to be associated with chat more than with any other medium (all p's < 0.005). The most definitive media were post mail, website and telephone. It is noteworthy that face-to-face was perceived to convey a similar level of equivocality as email, telephone, website and SMS.

The dependent variables also discriminated between media. For *convenience of use*, it was found that coordinators reported that using chat and SMS are significantly less convenient relative to all other media ($p<0.0001$). For the other media, generally high levels of convenience were reported, thereby making them statistically indistinguishable.

For dealing with low message equivocality (a definitive message), a deadline change, the most appropriate media were email, website and post mail; these scored similarly, but higher than the other media (all p's < 0.05). The least appropriate medium was chat (all p's < 0.05, except for SMS $p = 0.06$). For high message equivocality, explaining a complex theoretical issue, face-to-face was found to be the most appropriate medium (all p's < 0.005), whereas SMS was the least appropriate (all p's < 0.0001).

Research Questions and Hypothesis Testing

Both research questions test the impact of a contextual variable on media choice seen in terms of "convenience of use" and "message equivocality."

The first question relates number of students per coordinator to media choice. Three categories were defined: small (up to 100 students), intermediate (101 to 300 students) and large (more than 300 students). It was found that number of students per coordinator had a significant effect on convenience of use, $F[\text{Greenhouse-Geisser } (3.2, 6.4)] = 2.451$, $p < 0.05$. No significant effect was found for message equivocality ($p > 0.08$).

In order to understand the influence of number of students on convenience of use, number of students was compared separately for each medium. This analysis, shown graphically in Figure 1, revealed that coordinators of small numbers of students felt that email and SMS were less convenient media to communicate with students relative to coordinators of intermediate and large groups [F(2,48) = 4.98, p < 0.05; F(2,45) = 9.97, p < 0.001, respectively]. It is noted that generally, email was perceived as a convenient medium (mean score: 4.76) whereas SMS was perceived as an inconvenient medium (mean score: 2.65). In other media, this factor had no significant effect.
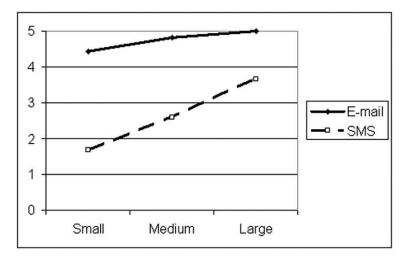

Figure 1. Perceived convenience for email and SMS by number of students per coordinator.

The second question relates actual face-to-face instructing by coordinators with their media choice. Nine coordinators did not instruct any students, eight instructed all of the students in their courses, and 34 instructed only some of the students. Convenience of use and message equivocality were the dependent variables. No effect was found for convenience of use.

A significant interaction between actual face-to-face instructing and message equivocality was found. For low equivocal (definitive) messages, F[Greenhouse-Geisser(9.5,185.5)] = 2.28, p < 0.05 was measured. The interaction emerged from a significant difference between the three groups of coordinators as to how they perceived the appropriateness of face-to-face

meetings [F(2,46) = 4.87, p < 0.05] for such messages. Coordinators who did not actually instruct students felt that face-to-face is an inappropriate medium for definitive messages, whereas coordinators that did meet students in tutorial sessions found this medium appropriate to an intermediate degree. The interaction between actual instruction and message equivocality was not significant for high equivocal messages. Table 4 presents the average score for the two types of messages by the seven media.

Table 4

Average Score of Appropriateness of Media by Types of Message and Actual Meeting

	Definitive message			Equivocal message		
	ALL	PART	NONE	ALL	PART	NONE
Face-to-face	3.60	3.90	1.86	4.40	4.97	5.00
Chat	2.80	2.07	2.57	3.40	2.72	2.13
Website	4.00	4.43	4.86	4.20	4.28	4.50
Email	4.40	4.47	4.86	3.80	3.41	3.13
SMS	3.40	2.97	3.71	2.80	1.48	1.25
Telephone	3.60	2.90	3.86	4.20	3.31	3.63
Post	4.20	4.17	3.57	3.80	3.21	3.50

Hypothesis H1 predicted that skill will be associated with media choice. Table 5 presents Spearman's rank order correlations between all variables. For convenience of use, a significant correlation (r = 0.929) was found. However, no correlation was found between skill and message equivocality.

Hypothesis H2 predicted a correlation between social influence and media choice. Significant correlations were found between social influence and convenience of use and between social influence and equivocal messages thereby fully supporting this hypothesis.

Hypothesis H3 predicted a correlation between media symbolism and media choice. As Table 5 shows, the four symbols associated with media symbolism were not significantly inter-correlated; that is, each of the symbols is indeed distinguishable.

Table 5
Rank Order Correlations Between Media

Measures	1	2	3	4a	4b	4c	4d	5	6	7a	7b
						Correlations					
1. Skill		0.929*	0.750*	0.679	0.393	0.607	0.321	0.286	0.821*	0.536	0.750
2. Convenience			0.893*	0.786*	0.464	0.821*	0.250	0.286	0.893*	0.429	0.893*
3. Social Influence				0.679	0.214	0.786*	0.357	0.464	0.714	0.321	0.929*
4. Symbolism											
4a. Coopera-tion					0.179	0.536	-0.286	-0.214	0.964*	-0.107	0.643
4b. Urgency						0.714	0.036	0.071	0.357	0.214	0.214
4c. Priority							0.179	0.286	0.643	0.286	0.786*
4d. Formality								0.964*	-0.143	0.821*	0.357
5. Equivocality									-0.107	0.679	0.393
6. Richness										0.107	0.714
7. Type of message											
7a. Definitive											0.500
7b. Equivocal											

Note: * p < 0.05

For each medium, the most prominent symbol was found. Within each medium, the symbol that scored highest or lowest was tested against the other three symbols using a paired-sample t-test. Table 6 summarizes the most prominent symbol for each medium. The predicted correlation between media symbolism and media choice (convenience of use and message equivocality) was not supported. The only significant correlation found was for chat; its symbol (cooperation) correlated with equivocal messages (see Appendix).

Table 6
Media Symbolism

Media	Most prominent symbol	Sig.
Face-to-face	Cooperation	0.0001
Chat	Cooperation	0.0001
Website	No prominent symbol	n.s.
Email	Informality	0.0001
SMS	Urgency	0.0001
Telephone	Informality	0.0001
Post	Formality	0.0001

Hypothesis H4 predicted a correlation between media richness and media choice. Support for this hypothesis emerged from a significant correlation between media richness and convenience of use; however, no correlations were found between media richness and message equivocality.

Multiple Regression

In order to estimate the partial contributions of all the variables that significantly correlated with convenience of use and message equivocality, a multiple regression was carried out.

The regression was significant for convenience of use, $F(4,6) = 130.53$, $p < 0.01$. However, only the beta coefficient for skill was significant, (Beta $= 0.83$, $p < 0.05$). A second analysis was done with all variables that significantly correlated with message equivocality. The regression was significant, $F(2,4) = 12.33$, $p < 0.05$, but no beta coefficients were significant (all p's > 0.1).

DISCUSSION

This research focused on media choice made by course coordinators at a distance education university. Two main findings emerged from the study: (1) skill in using a medium, as predicted by Experience Account (King and Xia, 1997), is by far the most important variable influencing media choice seen in terms of convenience of use and (2) no correlations were found between variables hypothesized by media choice theories and actual media choice for different levels of message equivocality. These findings are discussed in detail in the following sections.

Experience Account

Results of the multiple regression showed that skill in using a medium accounted for 83% of the total variability influencing media choice. This finding is clearly in accord with those made by King and Xia (1997). What is remarkable, however, is the magnitude of the variance explained by this factor. This is a clear and unequivocal statement of its importance. Of the seven media surveyed, some are highly utilized to communicate with students (face-to-face meeting, telephone, website, and post), while others are utilized to lesser degrees (email and chat) or not at all (SMS). Coordinators were less skilled with media common in non-academic settings such as synchronous forums (chats) and SMS. This lack of skill may account for the perceived lack of convenience associated with these media – media used sparingly or not at all by coordinators were perceived as less convenient for communicating with students.

Other Theories

In support of Fulk's (1993) Social Influence Theory, social climate as perceived by coordinators correlated with media choice viewed both in terms of convenience of use and equivocal messages. In the current research, it was found that coordinators believed that students and colleagues prefer face-to-face communication to any technologically mediated mode. In some prior research studies, it was found that when students had the opportunity to choose, they indeed preferred face-to-face communication to all other communication media. It was explained that students may resist the use of communication technology for several reasons. They may be inexpe-

rienced with using technology, particularly educational technology (Merisotis & Phipps, 1999); they perhaps believe that technology seems more likely to break down; and, most important, they may feel that mediated experience cannot fully replace the live classroom (Allen, Bourhis, Burrell & Mabry, 2002). It seems that coordinators, too, hold these notions and that such notions may amplify coordinators' own resistance to using educational technology communication media.

Despite the potential that chat and SMS have as instructional and communication tools for distance education students (Ingram, Hathorn & Evans, 2000; Seppälä & Alamäki, 2003), coordinators thought that students would not prefer these media even though students may use them extensively in non-academic settings. It is possible that while technology has become common in other domains, its utilization in educational systems is delayed until either it is demanded by students or made mandatory. As was shown, coordinators reported that they themselves are unskilled with chat and SMS, and this may be the reason they believe that students would not prefer this mode of communication.

A medium's richness, as perceived by coordinators, although correlated with convenience, did not correlate with the two levels of equivocality, contrary to Media Richness Theory. The main argument of Media Richness Theory is that media choice is determined by a goodness-of-fit between medium richness and message equivocality. The present results failed to support this argument – there was no preference for richer media over leaner media for different types of message equivocality. Indeed, face-to-face was found to be the most appropriate medium to communicate equivocal messages as the theory predicts. However, while the order of richness as perceived by participants in the current research was in agreement with theory' predictions, order of perceived appropriateness of medium for equivocal messages placed a leaner medium (website) ahead of richer media (telephone and chat). In addition, order of perceived appropriateness of medium for definitive messages did not fully mirror the theory's order of richness. Even if we assume that coordinators have a bias to place chat and SMS low in any list due to their inexperience with these media, the order of media for equivocal messages and the order of media for definitive messages are not in line with the theory's predictions. Table 7 presents the expected against observed order of media.

Table 7
Order of Media, Chat and SMS Excluded

	Definitive message		Equivocal message	
Perceived Richness	predicted	observed	predicted	observed
Face-to-face	Post	Email	Face-to-face	Face-to-face
Telephone	Website	Website	Telephone	Website
Email	Email	Post	Email	Telephone
Website	Telephone	Face-to-face	Website	Post
Post	Face-to-face	Telephone	Post	Email

Two possible explanations are broached: (1) it was found that other variables (skill) held a higher precedence than richness considerations and (2) the concepts of Media Richness Theory were conceptualized in an inappropriate context wherein the capabilities of new media differed to a significant degree (El-Shinnawy & Markus, 1997). As Carlson and Zmud (1999) claimed, experience may alter the perception of a medium and perhaps may change its perceived richness.

Medium symbolism and medium equivocality, as perceived by co-ordinators, did not correlate with media choice. Although symbolism discriminated between media, the results did not support Trevino et al.'s (1987) assertion that symbolism determines media choice. First, the two separate analyses conducted in order to attach a symbol to a medium did not fully converge. Exceptions were face-to-face meetings and post mail. The symbols ascribed to all other media were dependent upon the method of analysis. This finding is limited in scope since only four (out of seven potential) symbols were presented, without a-priori symbol-medium attributes. In addition, a medium may convey more than one prominent implicit message. For example, all four symbols were ascribed to website to an equal degree.

Contextual Variables

It was found that two contextual factors play a role in media choice. Number of students per coordinator affected convenience of use and actual face-to-face instruction influenced media choice only for low equivocal, definitive messages. Both findings are in line with Trevino et al.'s (2000) contextual constraint hypothesis that contends that media choice is affected by the number of recipients and the distance between them. Findings from

this study expand generality of Trevino et al.'s hypotheses from the business realm to the educational realm.

Implications for Distance Education

Students, instructors and administrators in distance education systems do not meet face-to-face frequently, if at all, and rely to a large extent on mediated communication. The present research showed some of the obstacles posed by this type of communication for the academic community. It highlighted the importance of acquiring new technological and communication skills in order to extend the opportunity to communicate with students, as well as the need to overcome social factors that tend to stay with ingrained communication methods. Distance educators must confront these challenges.

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Acknowledgements

APPENDIX

Table A1

Descriptive Statistics for Face-to-Face Meeting

Measures	Mean	S.D.	Correlations												
			1	2	3	4a	4b	4c	4d	5	6	7a	7b
1. Skill	4.90	0.31		0.175	-0.003	0.181	-0.213	-0.117	-0.026	-0.155	0.133	0.133	0.091
2. Convenience	4.86	0.50			-0.092	0.071	-0.078	-0.018	-0.055	0.177	-0.140	0.127	-0.081
3. Social Influence	4.78	0.07				0.235	0.283	-0.250	0.285	0.168	0.206	0.400*	0.537*
4. Symbolism													
4a. Cooperation	4.72	0.62					0.400*	-0.005	0.266	0.089	-0.101	0.105	-0.039
4b. Urgency	3.80	1.34						-0.058	0.154	0.086	0.127	0.042	-0.044
4c. Priority	4.22	1.15							0.161	-0.039	-0.103	0.042	0.004
4d. Formality	2.87	1.42								0.490*	-0.079	0.156	0.314*
5. Equivocality	3.72	1.33									-0.147	0.189	0.247
6. Richness	4.86	0.29										-0.014	0.209
7. Type of message													
7a. Definitive	3.45	1.69											0.316*
7b. Equivocal	4.90	0.37											

Note: * p < 0.05

Table A2

Descriptive Statistics for Chat

Measures	Mean	S.D.	Correlations										
			1	2	3	4a	4b	4c	4d	5	6	7a	7b
1. Skill	2.62	1.39		0.743*	0.021	-0.101	-0.108	-0.200	0.124	0.109	-0.238	0.100	0.079
2. Convenience	2.96	1.37			0.043	-0.059	0.165	-0.118	0.334*	0.305	0.017	0.192	0.291
3. Social Influence	2.61	0.14				-0.080	-0.102	-0.092	0.159	0.060	0.184	0.268	0.439*
4. Symbolism													
4a. Cooperation	4.38	1.01					0.277	0.061	-0.006	0.281	0.064	-0.071	0.310*
4b. Urgency	3.12	1.40						-0.150	0.425*	0.316*	0.378*	0.302	0.143
4c. Priority	3.21	1.41							-0.256	0.164	0.000	-0.114	0.137
4d. Formality	2.14	1.24								0.639*	0.312*	0.344*	0.238
5. Equivocality	2.62	1.21									0.251	0.090	0.259
6. Richness	3.36	0.93										-0.156	0.314*
7. Type of message													
7a. Definitive	2.18	1.17											0.229
7b. Equivocal	2.80	1.45											

Note: * p < 0.05

Table A3
Descriptive Statistics for Website

Measures	Mean	S.D.	Correlations										
			1	2	3	4a	4b	4c	4d	5	6	7a	7b
1. Skill	4.53	0.92		0.543*	0.588*	0.011	0.186	-0.146	0.210	0.012	0.157	0.461*	0.664*
2. Convenience	4.59	0.86			0.482*	0.134	0.311*	0.146	0.167	0.103	0.142	0.487*	0.598*
3. Social Influence	4.15	0.11				0.099	0.336*	-0.187	0.207	0.222	0.247	0.357*	0.634*
4. Symbolism													
4a. Cooperation	3.85	1.11					0.535*	-0.023	0.391*	0.320*	0.487*	0.219	0.109
4b. Urgency	3.74	1.27						-0.028	0.280	0.171	0.463*	0.316*	0.254
4c. Priority	4.11	1.06							-0.212	-0.065	0.164	0.185	0.011
4d. Formality	3.91	1.24								0.556*	0.336*	-0.032	0.061
5. Equivocality	4.20	0.96									0.343	-0.146	0.006
6. Richness	3.16	0.82										0.218	0.208
7. Type of message													
7a. Definitive	4.52	0.85											0.325*
7b. Equivocal	4.35	0.93											

Note: * p < 0.05

Table A4

Descriptive Statistics for Email

Measures	Mean	S.D.	1	2	3	4a	4b	4c	4d	5	6	7a	7b
								Correlations					
1. Skill	4.81	0.45		0.360*	0.093	-0.115	-0.020	0.136	-0.070	-0.071	-0.076	0.176	-0.123
2. Convenience	4.67	0.66			0.152	-0.083	0.006	-0.135	0.035	-0.102	0.110	0.066	0.051
3. Social Influence	3.83	0.12				0.204	0.152	-0.112	0.227	0.167	0.462*	0.380*	0.420*
4. Symbolism													
4a. Cooperation	4.11	0.95					0.349*	0.009	0.297*	0.440*	0.370*	0.108	0.123
4b. Urgency	4.41	1.00						0.017	0.010	0.301*	0.263	-0.006	0.048
4c. Priority	3.89	1.39							-0.228	-0.235	-0.011	-0.042	-0.093
4d. Formality	3.02	1.26								0.473*	0.359*	0.084	0.109
5. Equivocality	3.93	0.98									0.398*	0.124	0.161
6. Richness	3.88	0.64										0.149	0.253
7. Type of message													
7a. Definitive	4.53	0.75											0.571*
7b. Equivocal	3.49	1.16											

Note: * $p < 0.05$

Table A5

Descriptive Statistics for SMS

Measures	Mean	S.D.	Correlations										
			1	2	3	4a	4b	4c	4d	5	6	7a	7b
1. Skill	2.35	1.39		0.679*	0.107	0.093	0.370*	-0.080	0.254	0.465*	0.166	0.265	0.187
2. Convenience	2.50	1.44			0.400*	0.106	0.253	0.020	0.354*	0.410*	0.137	0.432*	0.267
3. Social Influence	2.27	0.14				0.130	0.001	-0.205	0.117	0.255	0.276	0.272	0.425*
4. Symbolism													
4a. Cooperation	3.19	1.58					0.208	-0.177	0.064	0.171	0.190	0.092	0.421*
4b. Urgency	4.24	1.27						-0.112	0.350*	0.371*	-0.049	0.304	0.174
4c. Priority	3.86	1.30							-0.051	0.168	-0.095	0.341*	-0.024
4d. Formality	2.60	1.27								0.417*	0.080	0.014	0.339*
5. Equivocality	3.10	1.22									0.232	0.465*	0.403*
6. Richness	2.91	0.87										0.087	0.190
7. Type of message													
7a. Definitive	3.09	1.64											0.275
7b. Equivocal	1.61	1.02											

Note: * p < 0.05

Table A6

Descriptive Statistics for Telephone

Measures	Mean	S.D.	1	2	3	4a	4b	4c	4d	5	6	7a	7b
									Correlations				
1. Skill	4.80	0.50											
2. Convenience	4.80	0.50	0.415*										
3. Social Influence			0.133	0.106									
4. Symbolism													
4a. Cooperation	4.70	0.76	-0.060	-0.117	-0.120								
4b. Urgency	4.74	0.57	0.030	-0.121	0.038	0.478*							
4c. Priority	4.35	1.18	0.202	0.349*	-0.100	0.047	0.301*						
4d. Formality	2.93	1.39	0.042	0.104	0.181	-0.125	-0.022	-0.135					
5. Equivocality	4.04	1.11	0.095	0.017	-0.014	0.016	0.192	-0.079	0.389*				
6. Richness	4.53	0.51	0.078	0.321*	0.266	-0.156	-0.116	0.024	0.222	-0.016			
7. Type of message													
7a. Definitive	3.11	1.72	0.129	0.077	0.193	0.342*	0.309*	0.053	0.201	-0.037	0.106		
7b. Equivocal	3.54	1.43	-0.048	-0.128	0.633*	0.091	0.063	-0.095	0.204	-0.116	0.145	0.385*	

Note: * $p < 0.05$

Table A7

Descriptive statistics for Post Mail

Measures	Mean	S.D.	1	2	3	4a	4b	4c	4d	5	6	7a	7b
								Correlations					
1. Skill	4.65	0.66		0.478*	0.478	0.169	0.112	-0.064	-0.091	0.244	0.273	-0.275	-0.051
2. Convenience	4.51	0.77			1.000	0.119	0.089	0.055	0.042	0.191	0.061	0.083	0.191
3. Social Influence	3.97	0.14				0.237	0.402*	-0.095	0.157	0.304*	0.385*	0.210	0.231
4. Symbolism													
4a. Cooperation	3.52	1.11					0.232	-0.027	0.143	0.104	0.396*	0.175	0.173
4b. Urgency	3.48	1.17						0.179	0.155	0.291*	0.445*	0.126	0.028
4c. Priority	3.70	1.24							-0.046	-0.083	0.140	-0.130	-0.026
4d. Formality	4.76	0.52								0.490*	-0.045	0.267	-0.054
5. Equivocality	4.46	0.78									0.271	0.016	0.005
6. Richness	3.00	0.91										0.012	0.290
7. Type of message													
7a. Definitive	4.16	1.28											0.369*
7b. Equivocal	3.47	1.28											

Note: * p < 0.05