

## Media Choice for Intra-School Communication: The Role of Environment, User, and Medium

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The influence of media richness, media attentional load, social influence and users' prior experience with media on selection of media to transmit different messages to peers within an educational organization was tested. Media were discriminated by all potential variables. Support was found for the role of prior experience and social influence in media choice. The influence of media richness was small and there was no impact of media attentional load. The results are discussed in relation to theories of media choice and some implications were raised.

**Keywords:** Media choice, educational organization, computer-mediated communication, media richness, prior experience, social influence

A variety of communication media are now available within organizations, allowing members to select different media to accomplish different tasks. This selection may be based on organizational norms (Fulk, 1993; Kraut *et al.*, 1998; Turner *et al.*, 2006), perceived appropriateness of a medium to a message (e.g., Daft & Lengel 1984, 1986, Daft *et al.*, 1987), the goals of the communicator (Sheer & Chen, 2004), and various individual characteristics (Fulk *et al.*, 1987; Markus, 1987; Reinsch *et al.*, 1990; Rice, 1992). In the current study, we explored teachers' media choice, a population that received relatively little research attention in the field of media choice (see e.g., Caspi & Gorsky, 2005). We tested the relations between the medium chosen and different goals and messages, and tried to find a single factor that explains the most substantial part of the variance of media choice.

The theoretical framework for this study was four theories that try to explain media choice. None of these theories was formulated in the context of an educational organization. Nonetheless, they all can be easily applied to such context. It is also noted that a large body of research has been devoted to managerial media choice. In this study we studied all members of the educational organization, regardless of their position. Yet, the assumptions and predictions of these four theories are not confined to managerial level.

### Media Richness Theory

Media Richness theory originated in Social Presence theory (Short *et al.*, 1976); it differentiates media according to the amount of social cues they can transmit. Media Richness theory ranks media by their richness, which is determined by four criteria: (1) the capability of a medium to provide immediate feedback, (2) the transmission of verbal and non-verbal communication cues, such as physical presence, body gestures, or intonation, (3) the capability of a medium to provide a sense of personalization, and (4) the use of natural language, mainly to convey accurate meaning. The more criteria present, the more the medium ranked as "rich". Face-to-face communication is the richest medium, and asynchronous textual communication is the leanest.

Daft and Lengel (1984, 1986) postulated that the main goal of message transactions within organizations is to reduce uncertainty and equivocality. Exchange of accurate, relevant and sufficient amounts of data may reduce uncertainty, while clear and explicit data may reduce equivocality. Since media differ in the amount of uncertainty or equivocality reduction they afford, Daft and Lengel maintained that to achieve efficient communication, a message and a medium should be fitted. Equivocal or complex messages should be transmitted via a rich medium, while unequivocal or simple messages may be delivered by a lean medium. The task-medium fit hypothesis was supported in dozens of studies (see Donabedian, 2006 for review), but was criticized for its unidimensionality (e.g., D'Ambrá *et al.*, 1998; Carlson & Zmud, 1999). The theory assumed a rational decision whose main goal is to achieve efficiency, and ignore other aspects of organizational behavior. Additionally, the theory was supported mainly in hypothetical media choice studies, in which managers were asked to select an appropriate medium for different scenarios, but received less support in laboratory control tests (Dennis & Kinney, 1998; Memmcke *et al.*, 2000). Changes in the availability of communication media also challenge the Media Richness theory, since the choice may not be based merely on the best fit between a medium and a task, but rather on fitting multiple channels (a repertoire of media) to a task (Schachaf & Hara, 2007). Such fits may be less rational.

The following three theories present alternatives to the task-medium fit hypothesis. The first (Cognitive Model) suggests that a rich medium may be less efficient than a leaner one, the second (Social Influence Theory) takes into account organizational culture, and the third (Experience Account) focuses on the user's experience with a medium.

### Cognitive Model

Media Richness theory assumes that media vary in their ability to influence a receiver's understanding. However, understanding that is achieved in our cognitive system is not dependent only on external factors like message characteristics and the capabilities of a medium, but also on internal processes. Robert and Dennis (2005) suggested that attention and motivation may play an important role in gaining understanding of a message that is delivered through different media. Media differ in the amount of information they transmit. Large amounts of information require the receivers to narrow their attention, in order to focus on the task, and to understand the message. Otherwise, they perform poorly. Paradoxically, richer media transmit relatively large amount of information, which may be needed to achieve better understanding and at the same time may become a distraction. Robert and Dennis suggested that motivation may moderate this distraction.

The main prediction of the cognitive model is that utilizing a rich medium may reduce the understanding of an equivocal and complicated message. Robert and Dennis did not explicitly predict that people will choose a lean medium for transmitting an equivocal message. Rather, they recommended doing so in order to increase efficiency. Yet, assuming that people may learn from their own experience, it is possible that after a learning stage, they will choose an appropriate medium to transmit a specific message. In that sense, the cognitive model shares a similar assumption with media richness theory, namely that task and medium must fit. Nonetheless they hold opposite predictions.

### Social Influence Theory

Fulk (1993) suggested that when an individual is affiliated with an organization, an experience of attraction to the group may emerge. Consequently, by processes of conformity, the individual adopts and adheres to the organization's norms and social attitudes. Studies found that members of organizations use communication technologies more if other members do so (Rice *et al.*, 1990; Fulk, 1993; Kraut *et al.*, 1998; Turner *et al.*, 2006) and their attitudes toward technology use converge with their perceptions of the attitudes of other members in the organization (Fulk, 1993; Treviño *et al.*, 2000; Caspi & Gorsky, 2005).

Several studies presented reconciliations between the rational model of task-medium fit proposed by Media Richness theory and Social Influence theory. Webster and Treviño (1995) suggested that the two models are complementary, that is - decisions are based on the rational fit between a medium and a message *as well as* the social influence. They noted that the superiority of rational-based or social-based decision is determined by the medium novelty. For "traditional" media rational factors are more important, while for newer media social influence is more important. Timmerman (2002) proposed that states of mindedness or mindfulness moderate the impact of rational choice and social influence. In general, when organization members behave without thinking about their action (mindedness) they will select media according to social norms. But sometimes organization members intentionally choose a specific medium (mindfulness), a process that is influenced by a rational fit between a medium and a message. Donabedian (2006) suggested a two-dimensional model, in which media choice depends on the interaction between decisional ambiguity and the benefit from group coordination. If decisional ambiguity is low, people are affected by rational optimization processes, which may take a form of individual choice (if the benefit from group coordination is low) or of group choice (if the benefit from group coordination is high). If decisional ambiguity is high, people are affected by social influence processes, which may take the form of an individual idiosyncratic choice (when the benefit from group coordination is low) or of coordination norms (i.e., behaviors that emerge strictly from the need to synchronize behavior, when the benefit from group coordination is high).

All three suggested reconciliations predict that variables associated with media features and variables related to social climate interactively determine media choice. The interaction is determined by either the medium (novelty, Webster & Treviño, 1995), the user (mental state, Timmerman, 2002), or the task (Donabedian, 2006).

### Experience Account

One major factor that may determine media choice is individual differences. Of the potential differences between organization members, past experience with a medium received substantial research attention (Walther & Burgoon, 1992; Fulk *et al.*, 1995; King & Xia, 1997; D'Urso & Rains, 2008). Significant experience with a medium may impact the choice to utilize this medium more than other considerations (be they rational or social) (King & Xia, 1997; Caspi & Gorsky, 2005; Blau & Barak, 2009). The individual's skills and comfort in using a medium also affect his or her perceptions of that medium (Carlson & Zmud, 1999). In addition, intensive use

with a medium may alter the perception of the level of richness it affords (Foulger, 1990; Lee 1994). Under such circumstances, what may seem to be a rational fit between a medium and a message may seem irrelevant for experienced users.

Caspi and Gorsky (2005) tested in a single study Media Richness theory, Social Influence theory and the Experience account, and found that skills in using a medium (i.e., experience) accounted for most of the media choice variability (but see Treviño *et al.*, 2000 for opposite results). They found support for Social Influence theory, but only weak support for Media Richness theory.

It is noted that other theories that explained media choice also exist (e.g., Media Synchronicity - Dennis *et al.*, 2008; Media Symbolism - Treviño *et al.*, 1987; Media Naturalness - Koek, 2005) but they were not tested in the current study.

### SUMMARY AND HYPOTHESES

We presented four theoretical alternatives for media choice. Two postulate a rational choice, based on a fit between medium and task - Media Richness theory and the Cognitive model. Media Richness theory main prediction is that the efficient medium for an equivocal message is the richer one. The Cognitive model predicts that high level of richness may result in large attentional load. We therefore predicted:

H1: Media richness positively correlates with attentional load.

H2a: Media richness positively correlates with message equivocality. People prefer rich medium to transact high equivocal message, and a lean medium for unequivocal message.

H2b. Given the prediction of the Cognitive model, an opposite prediction is set: People may deselect rich medium to transact high equivocal message, assuming they acknowledge the detrimental impact of rich medium for ambiguous messages.

An alternative to the rational models suggests that social factors affect media choice. Several lines of reconciliations between these two alternatives were presented. In the current study we test only Webster and Treviño (1995) traditional-new media distinction, and raised the following hypotheses:

H3a: Social influence positively correlates with media choice.

H3b: Social influence does not distinguish between different levels of message equivocality.

H4: For traditional media social influence will be smaller than for new media.

Users' experience with a medium may alter the perception of this medium. A lean medium may be perceived as rich as or even richer than a rich medium.

H5a: Experience with a medium positively correlates with media choice.

H5b: Experience may account for most of the media choice variability.

## METHOD

### Participants

Staff members at a three rural Israeli secondary schools (grade 7 – 12) answered the questionnaire. Schools are designated "School 1", "School 2", and "School 3" in Table 1. The schools belong to the same geographical region, were under the same type of governmental supervision, similar in terms of size (about 90 employees), gender distribution (i.e., have predominantly female employees), and organizational structure.

### Instruments and Procedure

A Web-based questionnaire was distributed via the school intranet to the staff members. The first part of the questionnaire asked for the demographic details we reported above. The second part of the questionnaire measured our independent and dependent variables, reported below.

**Table 1**  
Participants Demography

	School 1 N=59 (%)	School 2 N=59 (%)	School 3 N=63 (%)	Total N=181	%
<b>Gender</b>					
Female	42 (71.2)	46 (78.0)	48 (76.2)	136	75.1
Male	17 (28.8)	13 (22.0)	15 (23.8)	45	24.9
<b>Seniority</b>					
1-5 years	1 (1.7)	5 (8.5)	9 (14.3)	15	8.3
6-10 years	8 (13.6)	5 (8.5)	8 (12.7)	21	11.6
11-15 years	41 (69.5)	5 (8.5)	15 (23.8)	61	33.7
16 years and more	9 (15.3)	44 (74.6)	31 (49.2)	84	46.4
<b>Job extent</b>					
Less than half time	2 (3.4)	5 (8.5)	2 (3.2)	9	5.0
Half time-full time	35 (59.3)	41 (69.5)	40 (63.5)	116	64.1
More than full time	22 (37.3)	13 (22.0)	21 (33.3)	46	25.4
<b>Number of classes/groups taught</b>					
1-5 classes	30 (50.9)	42 (71.2)	40 (63.5)	112	61.9
6-10 classes	27 (45.8)	14 (23.7)	23 (36.5)	64	35.4
11 classes and more	2 (3.4)	3 (5.1)	0 (0.0)	5	2.8
<b>School position</b>					
Teacher	36 (61.0)	34 (57.6)	44 (69.8)	114	63.0
Subject-matter coordinator	12 (20.3)	18 (30.5)	13 (20.6)	43	23.8
Principal	10 (16.9)	3 (5.1)	2 (3.2)	15	8.3
Other	1 (1.7)	0 (0.0)	4 (6.3)	5	2.8

### Independent variables

*Media:* Four communication media for interaction with colleagues were tested: face-to-face, telephone, e-mails sent through the school Intranet, and cellular phone text messaging (SMS – Short Message Service).

*Skill:* Staff member were asked "How skilled are you in transacting messages with each of the media?" The five-point Likert scale ranged from "very unskilled" to "very skilled".

*Frequency of use:* For each of the media, participants were asked: "To what extent do you use this medium?" Response options were: almost each day or at least four times a week, twice or three times a week, once a week or less.

*Type of message:* Message type was manipulated on two dimensions: simple-complex and equivocal-unequivocal. Table 2 presents the six messages and their respective position on each of dimension. The simple-equivocal as well as the complex-unequivocal combinations appeared twice, since we wanted to capture a difference between personal and public communication. Four separate confirmatory factor analyses reveal good fit of the data to this two-dimension categorization. Three indices are reported in Table 3 (and in further similar tests below):  $\chi^2/\text{degrees of freedom}$  ( $\chi^2/df$ ) that should be small and non significant, Comparative Fit Index (CFI) should approach 1.00, and Root Mean Square Error of Approximation (RMSEA) should approach zero.

**Table 2**  
Classification of Messages

Message	Complexity	Equivocality
1. School policy regarding students' behavior	complex	equivocal
2. Explanations regarding using the Internet to compute grades	complex	unequivocal
3. Teaching subject-matter	complex	equivocal
4. Changing meeting date or hour	simple	unequivocal
5. Consultation regarding staff's trip	simple	equivocal
6. Personal message (e.g., greeting, mourning)	simple	unequivocal

**Table 3**  
Confirmatory Factor Analyses of Message Classification

Media	$\chi^2/df$	CFI	RMSEA
Face-to-face	1.26	.99	.04
Telephone	1.17	.99	.03
E-mail	3.01	.98	.10
SMS	0.68	1.0	.00

*Social influence:* One item was used to measure social influence. Staff members were asked to estimate their colleagues' attitudes concerning the effectiveness of each of the four media for transacting messages to other staff members. The five-point scale ranged from "very ineffective" to "very effective".

*Media richness:* Four items were used to measure perceived media richness. Staff members were asked to what extent media (1) provide immediate feedback, (2) convey verbal and non-verbal information, (3) provide personal communication with colleagues and (4) enable coherent continuity. The five-point scales ranged from "not at all" to "very much". Caspi and Gorky (2005) reported a Cronbach's alpha of .83 for this scale.

*Media attentional load:* One item tested the perceived attentional load attributed to each medium. The question was "to what extent do you feel the need to be highly attentive in order to follow the conversation while communicating via each of the media?" The five-point scales ranged from "not at all" to "very much".

#### Dependent variables

*Convenience:* For each of the media, participants were asked: "To what extent do you feel comfortable transacting messages with colleagues?" Convenience was scored on a five-point scale ranging from "very inconvenient" to "very convenient".

*Organizational usage:* For each of the media, participants were asked: "To what extent do you use each of the media to transmit messages to your colleagues?" Response options were: almost each day or at least four times a week, twice or three times a week, once a week or less.

*Media appropriateness:* Participants were asked to assume that all media types are equally available to all other school members. Six types of messages were presented (see Table 2), and participants determined the appropriateness of each medium to transmit each message on a five-point Likert scale ranged from "very inappropriate" to "very appropriate".

## RESULTS

### Discriminant analysis

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 measure ANOVAs with media as a within-subject factor. Frequency of use and organizational usage were tested by Friedman's test. A significant media effect was found for each of the variables. ANOVA results are presented in Table 4. 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. Note that effect sizes (partial eta-squares) largely differed between variables.

**Table 4**  
Discriminant Analysis: Independent and Dependent Variables

Measure	F*	df	Effect Size (partial $\eta^2$ )
Skill	47.96	3,534	.21
Social influence	135.72	3,528	.44
Media richness	311.41	3,531	.64
Media attentional load	28.97	3,528	.14
Convenience	91.83	3,528	.34
Media appropriateness			
1. school policy regarding students' behavior	211.75	3,525	.55
2. explanations regarding using the Intranet to compute grades	236.05	3,528	.54
3. teaching subject-matter	361.31	3,522	.73
4. changing meeting date or hour	28.92	3,525	.14
5. consulting regarding staff's trip	273.00	3,519	.61
6. personal message (e.g., greeting, mourning)	87.14	3,528	.33

Note: \*  $p < .001$

Skill distinguished between all media pairs ( $p < .001$  at the Least Significant Difference  $t$ -test), except for face-to-face and telephone that did not significantly differ. SMS scored lowest on the skill scale (Mean: 3.84, SD: 1.29), face-to-face and telephone scored highest (Means: 4.65 and 4.60, SDs: 0.58 and 0.59, respectively), and e-mail scored in between (Mean: 4.34, SD: 0.92).

Frequency of use also discriminated between the four media,  $\chi^2(3) = 181.14$ ,  $p < .001$ . Wilcoxon's signed ranks tests revealed significant difference between all pairs ( $p < .001$ ), except for the difference between telephone and e-mail that was not significant. Frequency of use percentages for the four media is presented in Figure 1.

Social influence also discriminated between media. The post-hoc tests revealed that SMS scored significantly less (Mean: 2.71, SD: 1.23) than telephone (Mean: 3.93, SD: 1.09), which scored less than e-mail (Mean: 4.17, SD: 0.96). The highest score was achieved for face-to-face communication (Mean: 4.59, SD: 0.65), all  $p$ 's  $< .001$  at the Least Significant Difference  $t$ -test.

We further tested the interaction between school and social influence. Some differences are expected between different cohorts if social influence is indeed determined by the immediate social peers. The interaction was significant,  $F(6,522) = 3.06$ ,  $p < .01$ , partial  $\eta^2 = .03$ . As Figure 2 clarifies, differences between schools are more pronounced in e-mail and telephone.

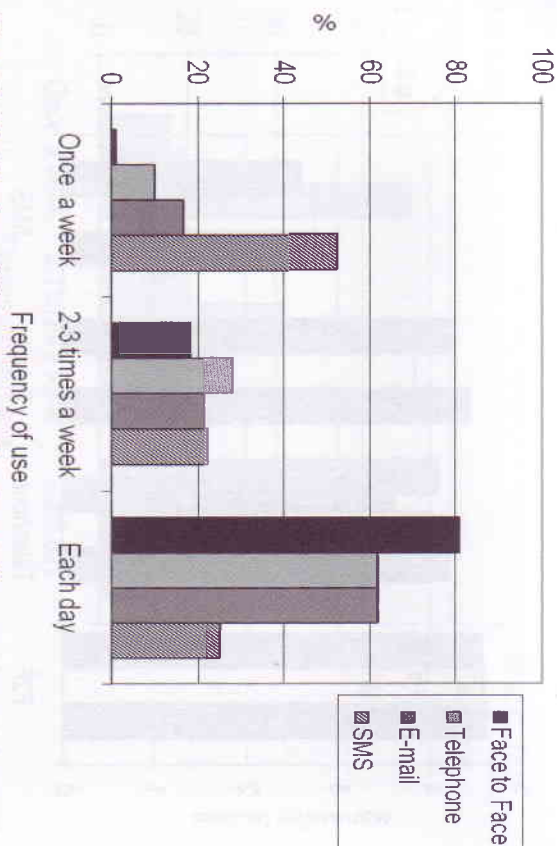


Figure 1. Distribution of frequency of using the media.

Media Richness distinguished between all media pairs ( $p < .001$  at the Least Significant Difference  $t$ -test). The highest richness was attributed to face-to-face (Mean: 4.82, SD: 0.34), followed by telephone (Mean: 4.03, SD: 0.75), e-mail (Mean: 3.43, SD: 0.84), and SMS (Mean: 2.70, SD: 0.92), an order that is predicted by Media Richness Theory.

Discrimination between media was found also in terms of their attentional load (all  $p$ 's  $< .01$  at the Least Significant Difference  $t$ -test). Face-to-face consumes more attentional resources (Mean: 4.01, SD: 1.28) to maintain communication than telephone (Mean: 3.69, SD: 1.29), which consumes more attention than e-mail (Mean: 3.38, SD: 1.13) that is followed by SMS (Mean: 2.97, SD: 1.33).

Convenience, our first dependent variables, significantly discriminated between all media (all  $p$ 's  $< .01$  at the Least Significant Difference  $t$ -test). The most convenient medium was face-to-face (Mean: 4.69, SD: 0.63), followed by e-mail (Mean: 4.37, SD: 0.88), telephone (Mean: 4.29, SD: 0.83), and SMS (Mean: 3.29, SD: 1.40).

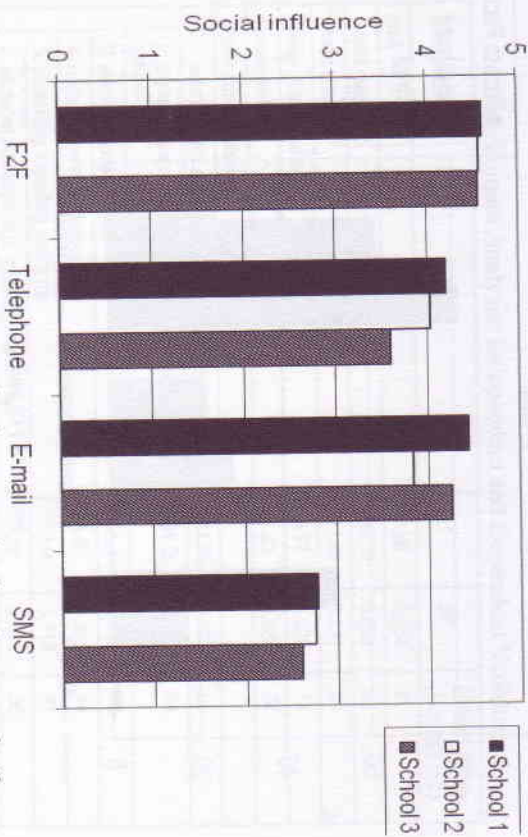


Figure 2. Social influence: Interaction between school and communication media. F2F = face-to-face.

Organizational usage, a second dependent variable, also discriminated between the four media,  $\chi^2(3) = 260.00, p < .001$ . Wilcoxon's signed ranks tests revealed a significant difference between all pairs ( $p < .001$ ), except for the difference between telephone and e-mail that was not significant. Percentages of usage of the media for communicating with school colleagues are presented in Figure 3.

Six items tested media appropriateness, and all significantly discriminated between media. However, the differences were affected by the content of the message that was tested. Results of the pairwise comparisons for the six items are presented in Tables 5 and 6. Taken together, face-to-face is perceived to be the most appropriate medium regardless of message type. SMS, the leanest medium, is perceived to be the most inappropriate medium. Opposing the Media Richness prediction, email is perceived to be more appropriate than telephone for communication (except for "consultation regarding staff's trip": a complex-equivocal message).

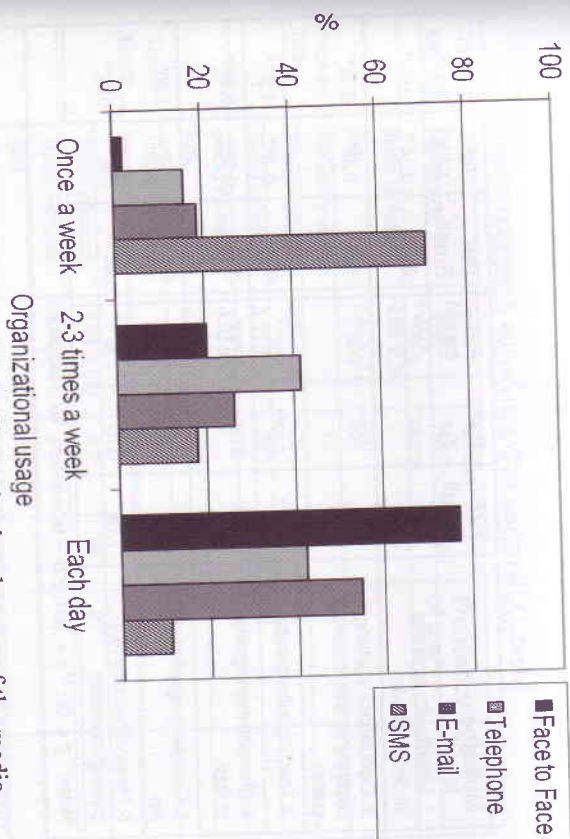


Figure 3. Distribution of frequency of organizational usage of the media.

Table 5  
Means (and SD) of Media Appropriateness

Message	F2F	Tel	E-mail	SMS
1. School policy regarding students' behavior	4.55 (0.88)	3.14 (1.37)	4.01 (0.99)	2.00 (1.12)
2. Explanations regarding using the Intranet to compute grades	4.08 (1.23)	2.56 (1.21)	4.07 (1.08)	1.76 (0.97)
3. Teaching subject-matter	4.81 (0.53)	2.25 (1.23)	3.02 (1.23)	1.45 (0.69)
4. Changing meeting date or hour	4.11 (1.090)	4.09 (1.010)	4.34 (0.95)	3.37 (1.42)
5. Consulting regarding staff's trip	4.70 (0.72)	3.73 (1.08)	3.87 (0.98)	1.97 (1.07)
6. Personal message (e.g., greeting, mourning)	4.82 (0.47)	4.13 (1.04)	3.69 (1.27)	3.27 (1.32)

Notes: F2F – face-to-face, Tel – telephone.

**Table 6**  
Mean Differences Between Media Appropriateness

Message	F2F- Email	F2F- Tel	F2F- SMS	Tel- Email	Tel- SMS	Email- SMS
1. School policy regarding students' behavior	0.54**	1.41**	2.55**	-0.87**	1.14**	2.01**
2. Explanations regarding using the Intranet to compile grades	0.01	1.52**	2.32**	-1.51**	0.80**	2.32**
3. Teaching subject-matter	1.79**	2.57**	3.36**	-0.78**	0.79**	1.57**
4. Changing meeting date or hour	-0.23*	0.02	0.74**	-0.25*	0.72**	0.97**
5. Consulting regarding staff's trip	0.83*	0.97*	2.73*	-0.14	1.76**	1.90*
6. Personal message (e.g., greeting, mourning)	1.13**	0.70**	1.55**	0.44**	0.86**	0.42**

Notes: \*  $p < .05$ ; \*\*  $p < .001$ ; F2F – face-to-face; Tel – telephone.

### Correlations between predictors of media choice

Before testing the hypotheses, it is important to know what the relations between the predictors are. For each medium we correlated skill, social influence, media richness, media attentional load, and frequency of use. These correlations are presented in Table 7. Media richness correlated positively with all other variables in all media (except for skill and frequency of face-to-face communication). Attentional load correlated positively with media richness in the non face-to-face communication media. Social influence correlated positively with the other variables in all media (except attentional load). These findings question Webster and Treviño's (1995) reconciliation, since there was no difference between "traditional" (face-to-face, telephone) and newer (Intranet e-mail, SMS) media (H4). Attentional load correlated positively with media richness in the non face-to-face communication media, thus supporting Robert and Dennis's (2005) prediction (H1).

**Table 7**  
Correlations Between Media Richness, Skill, Frequency of Use, Social Influence, and Media Attentional Load

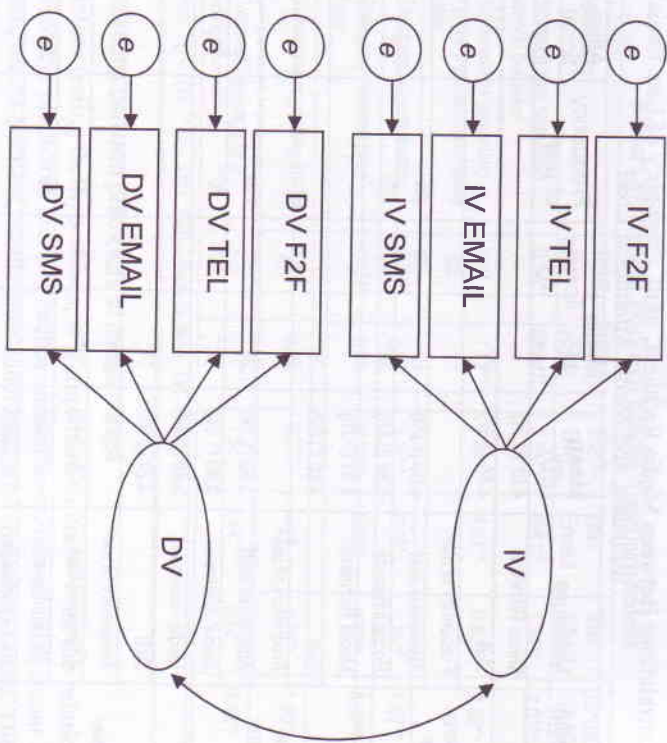
Media	Measure	Mean (SD)	Media Richness	Skill	Frequency of use <sup>a</sup>	Attentional load
Face-to-face	Media Richness	4.82 (0.34)	.17*	.02	.08	
	Skill	4.65 (0.57)	.11			
	Frequency of use <sup>a</sup>	-	.12	-.09		
	Attentional load	4.01 (1.29)	.39**	.13	.09	-.01
	Social Influence	4.59 (0.65)	.26**	.14		
	Media Richness	4.03 (0.75)	.15*	.25**		
Telephone	Media Richness	4.60 (0.59)	.20**	.01	.05	.06
	Skill	4.34 (0.92)	.33**	.33**		
	Frequency of use <sup>a</sup>	-	.35**	.33**		
	Attentional load	3.68 (1.29)	.47**	.18*	.30**	.05
	Social Influence	3.93 (1.08)	.15*	.25**		
	Media Richness	3.44 (0.84)	.20**	.25**		
Email	Media Richness	4.34 (0.92)	.15*	.25**		
	Skill	4.34 (0.92)	.20**	.25**		
	Frequency of use <sup>a</sup>	-	.33**	.33**		
	Attentional load	3.39 (1.13)	.35**	.33**		
	Social Influence	4.17 (0.86)	.33**	.33**		
	Media Richness	2.70 (0.92)	.18*	.18*		.24**
SMS	Media Richness	2.70 (0.92)	.18*	.18*		.24**
	Skill	3.84 (1.29)	.25**	.25**		
	Frequency of use <sup>a</sup>	-	.36**	.36**		
	Attentional load	2.97 (1.32)	.46**	.46**		
	Social Influence	2.71 (1.23)	.04	.04		.18*
	Media Richness	2.71 (1.23)	.04	.04		.18*

Notes: <sup>a</sup> Spearman's correlation; \*  $p \leq .05$ ; \*\*  $p \leq .001$

### Predictors of media choice

To test what predicts media choice, we ran several separate Structural Equation Models (SEM). We have three dependent variables – reported convenience of use, organizational usage of media, and media appropriateness. The third dependent variable was measured by the six messages that had different levels of complexity and equivocality. In the first step, we tested each model for each independent variable (i.e., media richness, skill, frequency of use, attentional load, and social influence). Figure 4 presents the model tested. In the second stage, we ran a single model that tested for the contribution of all the independent variables found significant at the first stage, to the dependent variable.





**Figure 4.** Structural Equation Model: General model tested.  
 Notes: IV = independent variable, DV = dependent variable, F2F = face-to-face; correlations between error variance are not displayed.

**Convenience of use**

Table 8 presents the indices of data-to-model fit for each SEM, and the estimated correlation between each of the predictors and convenience of use. Only attentional load did not correlate with convenience of use.

**Table 8**  
 Correlations Between Convenience of Use, Media Richness, Skill, Frequency of Use, Attentional Load and Social Influence

Measure	$\chi^2/df$	CFI	RMSEA	Estimated correlation
Media richness	2.19**	.90	.08	.49
Skill	1.76*	.97	.07	.69
Frequency of use	1.80*	.95	.07	.39
Attentional load	3.08***	.87	.11	-.03
Social influence	3.23***	.83	.11	.30

Notes: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Four independent variables were used to predict convenience of use: media richness, skill, frequency of use, and social influence. Indices of data-to-model fit were  $\chi^2/df = 1.74$  ( $p < .001$ ), CFI = .91, and RMSEA = .06, indicating satisfying fit, given the size of the sample. Skill correlated highly with convenience (estimated correlation was .60) whereas other variables did not (estimated correlations were .13, .07 and .02 for media richness, frequency of use, and social influence, respectively). Thus, experience determines media choice for the first dependent variable, supporting H5a and H5b.

**Organizational usage of media**

Table 9 presents the indices of data-to-model fit for each SEM, and the estimated correlation between each of the predictors and convenience of use. Skill and attentional load did not correlate with media usage in organizational settings.

**Table 9**  
 Correlations Between Organizational Usage, Media Richness, Skill, Frequency of General Use, Attentional Load and Social Influence

Measure	$\chi^2/df$	CFI	RMSEA	Estimated correlation
Media richness	1.50	.94	.05	.27
Skill	2.89***	.90	.10	.09
Frequency of use	1.46	.98	.05	.60
Attentional load	3.26***	.85	.11	.09
Social influence	1.68*	.93	.06	.29

Notes: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Three independent variables were used to predict convenience of use: media richness, frequency of use, and social influence. Indices of data-to-model fit were  $\chi^2/df = 1.99$  ( $p < .001$ ), CFI = .89, and RMSEA = .07, indicating satisfying fit, given the size of the sample. Frequency of use correlated highly with organizational usage (estimated correlation was .55) whereas other variables did not (estimated correlations were .03 for both media richness and social influence). As in the previous dependent variable, H5a and H5b were supported.

**Media appropriateness**

Table 10 summarizes the analysis of media appropriateness. Meaningful estimated correlations were found for media richness (the more complex or unequivocal the messages, the richer the media needed), and for social influence (the more complex, unequivocal or unequivocal the messages, the higher

the influence of colleagues to use specific medium). A single estimated correlation was also found between frequency of use and unequivocal messages, meaning that the more frequent one uses a medium the more appropriate that medium becomes to convey unequivocal messages).

**Table 10**  
Correlations between Media Appropriateness, Media richness, Skill, Frequency of General Use, Attentional Load and Social Influence

	$\chi^2/df$	CFI	RMSEA	Estimated correlations			
				Simple messages	Complex messages	Equivocal messages	Unequivocal messages
Media richness	1.91*	.84	.07	.16	.36	.07	.50
Skill	1.87*	.85	.07	.10	-.08	-.03	-.08
Frequency of use	1.93*	.82	.07	-.07	.09	.13	.28
Attentional load	2.00*	.82	.08	-.03	.00	-.01	-.01
Social influence	1.92*	.83	.07	-.02	.23	.33	.39

Notes: \*  $p < .001$

Given the above analysis, we used media richness and social influence to predict media appropriateness. Indices of data-to-model fit were  $\chi^2/df = 1.96$  ( $p < .001$ ), CFI = .82, and RMSEA = .07. The SEM yielded four meaningful estimated correlations. Social influence correlated with complex messages, equivocal messages and unequivocal messages (estimated correlations of .21, .26 and .29, respectively), and media richness correlated with simple messages (estimated correlation of .25).

### Summary of the results

As **H1** predicted, media richness positively correlated with attentional load (see Table 7). **H2a** was only partially supported since media richness positively correlated with message complexity, but not with message equivocality. **H2b** was not supported: there was no preference for conveying equivocal messages through rich communication medium. **H3a** was fully supported: social influence positively correlated with all three variables that operationalized media choice in organization (convenience, usage, and ap-

propriateness). However, contrary to **H3b**, there was a correlation between social influence and message equivocality. **H4** was partially supported: social influence for SMS (new media) was the smallest, while it was highest for face to face communication (traditional media); at the same time, e-mail (new media) scored higher than telephone (traditional media). Experience with media positively correlated with media choice, supporting **H5a**, but it accounted for most of the variance only for organizational usage of the media, hence partially supported **H5b**.

### DISCUSSION

This study focused on media choice made by teachers that use Intranet for different purposes. We tested four theoretical frameworks that drew different hypotheses regarding media choice. We start by discussing the findings of the current study in relation to the research hypotheses, and then deal with unexpected findings.

It was predicted that media richness positively correlates with attentional load. This prediction was supported by our data. For all non face to face communication, positive correlations were found. Additionally, media rank order of both variables was similar: Face to face was perceived as both the richest and the most attentional demanding medium, while SMS was perceived as both the leanest and the least attentional demanding medium. However, the medium's attentional load did not correlate with media choice, meaning that selecting a medium for a specific purpose, does not take into account the possible limitations that characterize it.

In accord with Media Richness theory we hypothesized that school staff prefer a rich medium to transmit highly equivocal messages, and a lean medium for unequivocal messages. This hypothesis was not supported. For all messages, the highest preference was for face-to-face communication and the least preference was for SMS. E-mail and telephone were in between, not necessarily according to the order predicted by Media Richness theory. These results also contradicted the opposite prediction made by the Cognitive model. This model predicted that teachers refrain from using a rich medium to transmit high equivocal messages. Therefore, the main conclusion is that a rational fit between a message and a medium is not necessarily considered by the school staff who participated in the current study. It is noted that media richness significantly correlated with all our measures of media choice (convenience, usage, and appropriateness), supporting to some extent the task-medium fit hypothesis.

Another perspective is to consider perception of richness as a dynamic rather than a static feature of a medium (Foulger, 1990; Carlson & Zmud, 1999; Lee, 1994). D'Urso and Rains (2008) found that experience with

channel, topic, partner, and social influence are all significant predictors of richness perceptions (see also: Timmerman & Madhavapeddi, 2008). In that sense, richness is not merely a predefined attribute of a medium, but also a result of subjective experiences. Adopting this channel expansion view, the significant influence of experience with different media becomes clear. Moreover, a task-medium fit cannot be predicted easily according to objective attributes of a medium. Our data is in line with this suggestion.

Our data join previous results that found other variables that account for media choice and questioned the rationality of media choice. First, it was found that experience, either in terms of reported skill or in terms of frequency of use, significantly correlated with media choice. This finding is consistent with previous studies that pointed to the relationship between experience and media choice (King & Xia, 1997; Caspi & Gorsky, 2005; Blau & Barak, 2009). Second, in the same vein with previous results (Fulk, 1993; Treviño et al., 2000; Caspi & Gorsky, 2005), we found that social influence also appeared to predict media choice. Social influence was related in this study to all three forms of media choice in an organization—perceived convenience of use, frequency of organizational usage, and appropriateness for communication. Third, it seems that media choice may be influenced by organizational culture. As a part of Intranet implementation, school principals encourage teachers to exchange information with colleagues through the online system (Blau & Hameiri, 2010). This may explain our findings that frequency of organizational e-mail usage, as part of the relatively new Intranet system, was higher compared to “traditional” and widely used medium such as telephone.

Which of the reconciliations between rational and social choice suggested in previous studies may explain our results? First, we may rule-out Webster and Treviño’s (1995) reconciliation because they argued that the superiority of rational-based or social-based decision is determined by the novelty of the medium. We found that rational factors did not play a more critical role for “traditional” media, nor that social influence was more important for the newer media. Second, we can not discard Timmerman’s (2002) proposal of a users’ mental state (mindfulness vs. mindfulness) as a moderator of the influence of rational and social choice. We did not measure users’ mindfulness and mindfulness. The third reconciliation, suggested by Donabedian (2006) was also not tested directly, because we did not manipulate decisional ambiguity, but only message complexity and equivocality, which are not identical to decisional ambiguity.

### Limitations of the current study

We will relate to three limitations in the current study. First, we examined hypothetical rather than actual choice. As shown in some previous studies (e.g., Dennis & Kinney, 1998; Mennecke et al., 2000) actual choice may be dictated by different rules formulated in hypothetical choice studies. Second, and in the same vein with the first limitation, our data came from a common source. Podaskoff, Mackenzie, Lee and Podaskoff (2003) claimed that measurement error, which stemmed from relying on a common source, threatens the validity of the conclusions about the relationships between measures. However, for perceived richness and perceived attentional load the data fit both the theories and previous results of prior studies. In addition, social influence is a perception, and should be tested using the self-report method we adopted. We thus believe that common source does not severely bias our conclusions. Third, our results capture media choice at a specific point in time, about a year after the implementation of the Intranet system. The duration of an implementation changes behavior patterns of teachers using this online system (Blau & Hameiri, 2010).

### Implications

Efficient communication within organizations influences their functioning and determines their success. Teachers, as in many other labor sectors, communicate formally and informally on a large spectrum of issues. Some of these issues are simple, others are complex, part of them unequivocal while others are less so. Our data suggest that rational decisions alone do not govern teachers’ media choice, but that social and individual factors are also involved. While implementing new communication tools in an organization, these irrational factors appear to play a major role, leading to the failure or success of the implementation process.

It is suggested that empowering early adopters of technology may spread over and thus generate a social climate that help the implementation process. By gaining experience with new tools, users may perceive these tools as suitable for intra-organization communication, being rich enough to transmit complex and equivocal messages, thus allowing fast and perhaps efficient communication. Since educational institutes slowly but firmly evolve into more information technologies based organizations, it seems that appropriate training programs may help implement communication systems by making the tools an integral part of daily communication within the organization.

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## Exploring the Design, Development and Use of Websites through Accessibility and Usability Studies

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In this paper, data obtained from a university website accessibility and usability validation process are analyzed and used to demonstrate how the design process can affect the online experience for users with disabilities. Interviews, observations, and use data (e.g. where users clicked on a page or what path taken through a site) were collected. Findings indicate that using automated validation tools does not necessarily ensure complete accessibility. Students with low vision found many of the pages hard to use even though automated validation did not indicate issues for visual disabilities. While the pages were accessible for blind users, low vision students who did not use specialized software had access problems. Findings from this study are used to present principles for web designers interested in creating and testing usable and accessible websites.

According to federal data (U.S. Government Accountability Office, 2009), students with disabilities represented nearly 11% of all postsecondary students in 2008, a number that has almost tripled over the past 20 years (Steele & Wolanin, 2004). According to the 2000 U.S. Census, almost 50 million people (about 19% of all Americans over age 5) reported having a disability. By the year 2000, among children and youth under age 21, the percentage receiving federally mandated education services for students with disabilities had risen to 13%, or 6 million students. Students with learning disabilities (LD) constitute the largest single group, ranging (in various studies) from 46% to 61% of all students with disabilities. The percentage of students with disabilities who complete high school increased from 61% in 1986 to 78% in 2001. These students increasingly graduate with standard diplomas and are academically qualified to participate in higher education.