

12-31-2007

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## Recommended Citation

Scott, Christopher, "Channel and Recipient Characteristics: Effects on Communication Effectiveness and Performance" (2007).  
*AMCIS 2007 Proceedings*. Paper 377.  
<http://aisel.aisnet.org/amcis2007/377>

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# CHANNEL AND RECIPIENT CHARACTERISTICS: EFFECTS ON COMMUNICATION EFFECTIVENESS AND PERFORMANCE

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## **Abstract**

*This dissertation proposal abstract presents the motivation for the proposed research, the theoretical background for the proposed dissertation and a detailed description of the proposed research methodology. The research being carried out tests several elements of Media Synchronicity Theory, namely that the reprocessability and symbol variety of a medium will influence a recipient's ability to receive and act on the message received. In addition to media characteristics, this research examines characteristics of the message recipient and their effects on the recipient's ability to process the message and act on it. The research is being carried out with an experimental methodology, details of which are presented. Some elements of the methods have been performed, which are described.*

**Key Words:** Media Synchronicity Theory; communication performance; channel characteristics; recipient characteristics

## **Problem and Research Questions**

The purpose of this proposed dissertation is to examine channel and recipient characteristics and those characteristics' effects on communicators' ability to communicate effectively. With the increasing variety of communication media in organizations today—traditional forms such as telephone, written memo, face to face, and “new media” such as email, instant messaging, text messaging, and video conferencing—understanding the factors that influence communication effectiveness is still needed, particularly with a strong theoretical basis. Media richness theory was originally developed to indicate which media would be ideal given certain organizational conditions (Daft & Lengel, 1986), however, empirical tests of media richness theory have been equivocal (e.g., Burke & Chidambaram 1999; Dennis & Kinney 1998; Ngwenyama & Lee 1997). Alternatively, media synchronicity theory argues that human communication requires both conveyance of information (transmission), and convergence on a shared meaning (information processing), and provides a taxonomy of media characteristics that can impact a medium's ability to support conveyance and convergence (Dennis & Valacich, 1999). To begin a systematic research program to empirically test media synchronicity theory, this proposed dissertation will examine the following three research questions:

- RQ1: *Do individuals perceive a medium's characteristics consistent with media synchronicity's media capabilities?*
- RQ2: *How do various channel characteristics influence communication effectiveness from the recipient's perspective?*
- RQ3: *What recipient characteristics are important for effective communication?*
- RQ4: *How do channel and recipient characteristics interact to influence communication effectiveness?*

## Theoretical Base

### *Communication Theory*

Shannon and Weaver's (1949) theory of communication identifies the elements that may impact the communication across a network are (1) Channel characteristics, (2) Recipient characteristics, (3) Sender characteristics, (4) Context characteristics, and (5) Message characteristics, where a *sender* transmits a *message* within an organizational *context* over a communication *channel* to a *recipient*. With Shannon and Weaver's theory identifying the important elements of communication, this proposed dissertation intends to focus on characteristics of the channel and the recipient.

### *Channel and Recipient Characteristics*

Previous literature examining the transmission channel and its impact on the effectiveness of communication has suggested that "richer transmission channels ... [result] in greater success in knowledge transfer" (Kwan & Cheung, 2006). While the most recent communication/media theories (e.g., Carlson & Zmud, 1999; Dennis & Valacich, 1999) address the nature of the relationship between the communicators and the communicators' previous experiences with the topic and the organizational context, media synchronicity theory also provides five channel characteristics that can effect the communicators' abilities to convey information and to converge on a shared understanding of the information (Dennis & Valacich, 1999). These characteristics are (1) Immediacy of Feedback, (2) Symbol Variety, (3) Parallelism, (4) Reprocessability, and (5) Rehearsability (Dennis & Valacich, 1999). Among these five characteristics, *symbol variety* and *reprocessability* tend to affect the recipient's learning (Dennis and Valacich 1999). Thus, in examining the role of the channel, this research specifically focuses on these two characteristics.

In considering the recipient's ability to process information, Dennis and Valacich propose that the channel's symbol variety, "the number of ways in which information can be communicated" (1999, pg. 2), will have a positive influence on the recipient's ability to process the information. Furthermore, the channel's ability to support reprocessability, "the extent to which a message can be reexamined or processed again" (1999, pg. 3), will provide the necessary time to enhance the recipient's information processing ability. Therefore, the following hypotheses are presented:

H1: *The channel's symbol variety will have a positive relationship with communication effectiveness.*

H2: *The channel's reprocessability will have a positive relationship with communication effectiveness.*

In terms of recipient characteristics, the literature identifies several factors that may influence the effectiveness of communication. These include the recipient's motivation to learn and use the new information (Bures, Amundsen, & Abrami, 2002), and the recipient's absorptive capacity (Cohen & Levinthal, 1990). This literature suggests that motivation to learn and absorptive capacity both have positive relationships with communication effectiveness. Additionally, motivation to learn should moderate the relationships between the channel characteristics such that recipients with high motivation to learn may be able to overcome media that lack the necessary levels of symbol variety and reprocessability in order to effectively understand the message that was sent, and conversely, media with high levels of symbol variety and reprocessability will be able to convey the message to the recipient effectively, even for a recipient with low motivation to learn. Furthermore, characteristics of the channel should play a moderating role on the relationship between absorptive capacity and the effectiveness of the communication. For example, a channel that provides the recipient with high symbol variety and the ability to reprocess the knowledge/information will augment a recipient's low absorptive capacity, and increase their ability to apply their new knowledge. Thus, the following hypotheses are presented:

H3a: *A recipient's motivation to learn from the message will have a positive relationship with communication effectiveness.*

H3b: *A recipient's motivation to learn from the message will have a moderating effect on the relationship between reprocessability and communication effectiveness.*

H3c: *A recipient's motivation to learn the new knowledge will have a moderating effect on the relationship between symbol variety and communication effectiveness.*

H4a: *A recipient's absorptive capacity will have a positive relationship with communication effectiveness.*

H4b: *Reprocessability will have a moderating effect on the relationship between absorptive capacity and communication effectiveness.*

H4c: *Symbol variety will have a moderating effect on the relationship between absorptive capacity and communication effectiveness.*

## **Research Methodology**

The research for this dissertation is being carried out in two parallel phases. One phase consisted of development of an instrument to measure an individual's perceptions of a medium's characteristics. This was done by generating a large bank of items, and collecting data from an initial sample on all of the generated items. After assessing the reliability and factor structure of the items, appropriate items were retained, while those with insufficient factor loadings, high cross loadings, or those that would increase the scale's reliability to an acceptable level after removal were dropped. A second data collection collected data on the refined instrument. This second data collection of the first phase was used to replicate the factor structure that emerged during the first round of data collection. Additionally, convergent and discriminant validity analyses were carried out to ensure the validity of the instrument.

The second phase consists of two experiments. The first experiment has been carried out and its details are discussed below. The second experiment has been administered, but data have not been analyzed as yet.

Hypotheses were tested with an experiment where symbol sets and reprocessability were manipulated, absorptive capacity and motivation to learn were measured, and both perceptions of the extent of message understanding and an objective measure for actual performance based on the message were collected..

### ***Sample***

The sample consisted of 284 undergraduate students, 33.4% female and 66.6% male, enrolled in an introductory Management Information Systems course at a large Northwest University.

### ***Procedure***

Upon arriving at their regularly assigned course laboratory section, the participants took their seats at a computer terminal. After a short administrative presentation by the lab instructor related to the course, the researcher read a verbal instruction script to each section. The participants then reviewed, signed, and dated informed consent forms. After consenting to participate, the participants were then presented with an on-line tutorial on activity diagramming. After completing the tutorial, the participants were then given the narrative of a business case that they were to draw an activity diagram to represent. After completing their drawing, the participants then responded to an online survey to measure their perceptions of the tutorial and assess absorptive capacity and motivation to learn.

### ***Manipulations***

To manipulate symbol variety and reprocessability, four tutorial presentations were developed. Condition 1 consisted of high symbol variety and high reprocessability; condition 2 consisted of low symbol variety and high reprocessability; condition 3 consisted of high symbol variety and low reprocessability; and condition 4 consisted of low symbol variety and low reprocessability. The symbol variety condition presented the tutorial in a text only format. The high symbol variety condition presented the tutorial with the same text as the text only condition, but included images of the components of activity diagrams. See Figure 1 and Figure 2 for the symbol variety manipulations.

Reprocessability was manipulated by coding the tutorial. For the high reprocessability condition, the participants were able to keep the tutorial window open on the desktop as they performed the activity diagramming task. For the low reprocessability condition, the tutorial code was written to disable the browser's ability to go "Back" to the previous page. For both conditions, at the end of the tutorial they received explicit instructions on what to expect to ensure that those in the low reprocessability condition were aware of the nature of the task (see Figures 3 and 4).

Figure 1. High symbol variety condition

Activity Diagram Tutorial

**What is an activity diagram?**

In its basic form, an activity diagram is a simple and intuitive illustration of what happens in a business process workflow. Specifically, it shows activities, the sequence of activities, activities that can be done in parallel, and alternative sequences of activities, all using a modified type of box and arrow diagram.

You can use activity diagrams to visualize the processes of a business use case. A complete workflow description will have a basic flow, and one or several alternative flows.

**Activity**

The core symbol in an activity diagram is the activity state or activity. An activity is a state of doing something such as typing a letter, calling a friend, or ordering a product. As noted above, an activity diagram describes the sequence of activities while being able to represent activities that can be done simultaneously, and activities that occur after a decision is made.

The symbol used to denote an **activity** is a rectangle with a rounded left and rounded right side, with a verb phrase to denote the nature of the activity, such as "Place Order."

Place Order

As one progresses through the diagram, arrows show the flow of the process. So, after placing the order, the next step might be to Fill the order, so another activity titled "Fill Order" would be connected by an arrow from the "Place Order" activity above it.

Place Order

↓

Fill Order

**Parallel Activities**

If parallel processes can occur after an activity, a **Fork** is the symbol used to denote the split of the flow into two or more simultaneous processes. The symbol used to denote a Fork is a short, bold horizontal

Figure 2. Low symbol variety condition

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**Parallel Activities**

If parallel processes can occur after an activity, a Fork is the symbol used to denote the split of the flow into two or more simultaneous processes. The symbol used to denote a Fork is a short, bold horizontal line with an incoming arrow from the activity above it, and two (or more) outgoing arrows toward the subsequent activities or decisions. In our running example, if an order is placed, one flow may be to the "Fill Order" activity, while another may go to the "Send Invoice" activity, so the arrow leaving the "Place Order" activity would flow to the fork where it would split into two arrows, one for the "Fill Order" activity and one for the "Send Invoice" activity.

**Decision**

A decision, or Branch, may be required after an activity. The symbol for a branch is a diamond with the incoming arrow from the activity and outgoing arrows (called guarded transitions or Guards) to denote the possible decisions to be made.

Figure 3. High reprocessability condition

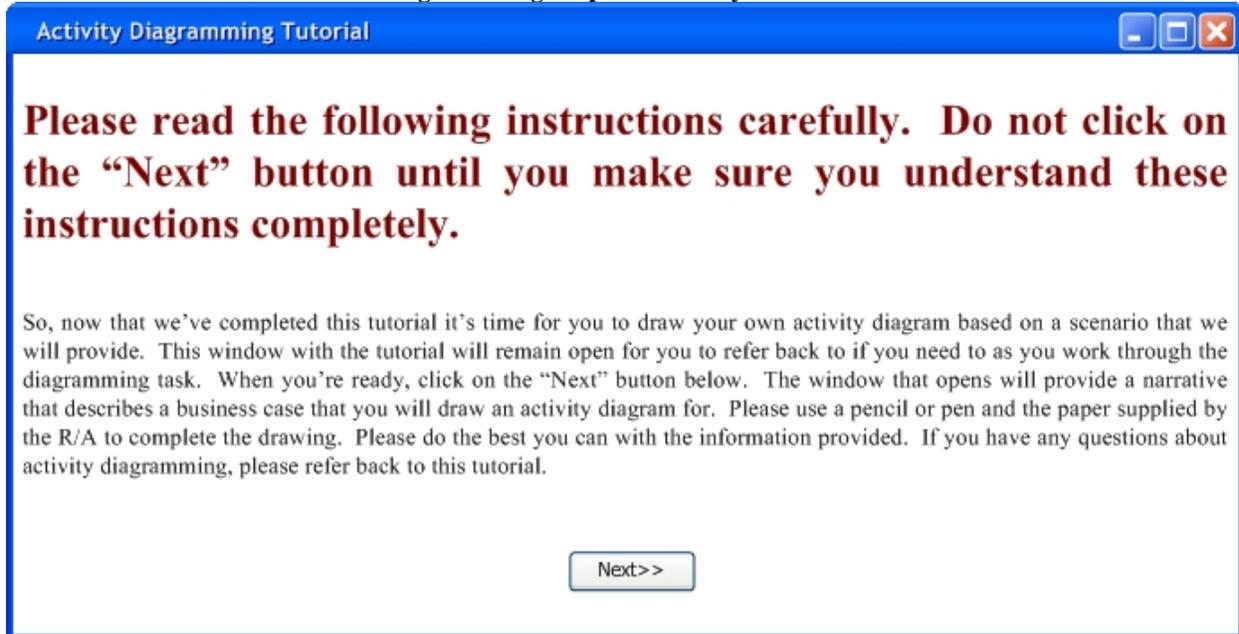
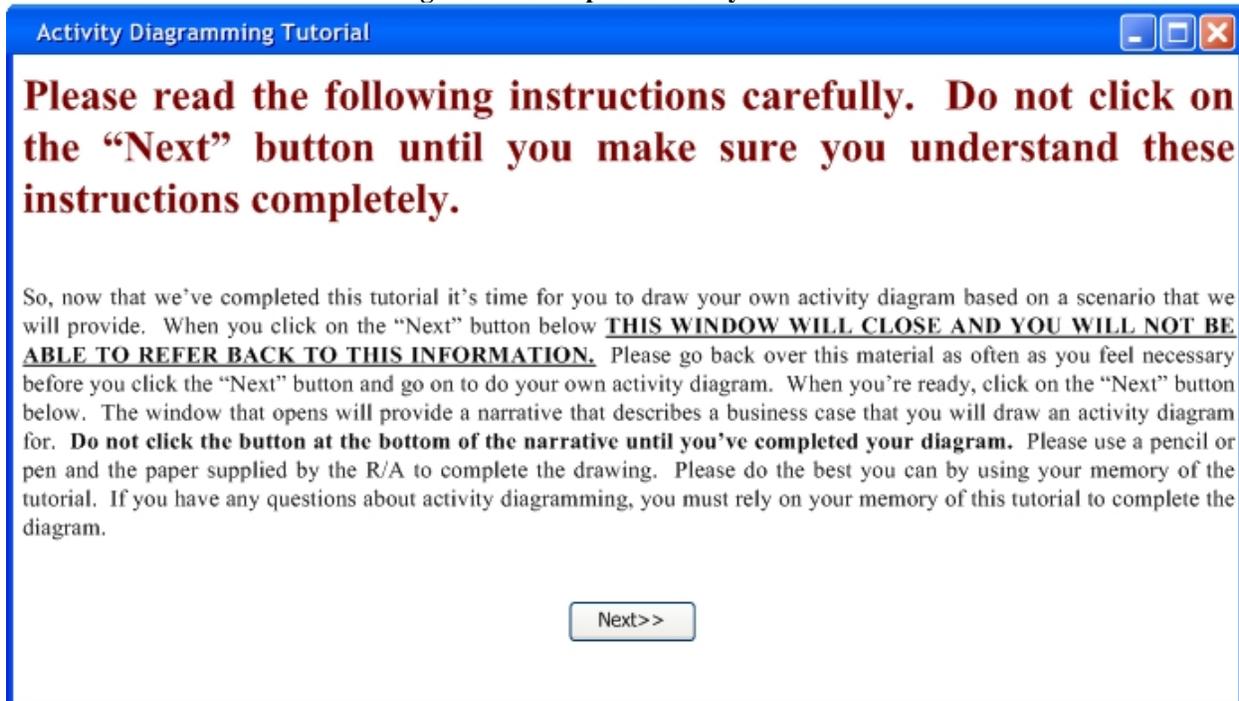


Figure 4. Low reprocessability condition



**Measures**

Motivation to learn has been operationalized in previous literature as a multidimensional construct with four subscales - (1) Subjective Competence, (2) Personal Relevance, (3) Task Attractiveness, (4) and Valuing Subject, or overall interest. (Bures et al., 2002). The four subscales were adapted from Bures et al.’s, (2002) motivation to learn scales. Absorptive capacity was assessed by adapting Szulanski et al.’s (1996) scale and with two subscales assessing the recipients’ diversity of knowledge and task related knowledge (Fichman and Kemerer, 1997) developed as part of this research.

Perceptions of the extent of communication effectiveness were measured with one item adapted from Sarker et al.'s (2005) extent of knowledge scale, three items adapted from Ko et al.'s (2005) extent of knowledge transferred scale, and three items developed as part of this research.

In addition to the self-reported measures, communication effectiveness was also measured by assessing participants' objective performance as reflected in the quality of the activity diagrams. Standard guidelines provided by prior researchers (e.g., Houston, Walker, Hutt, and Reingen 2001) were utilized to assess the quality of the solutions generated by each participant. Specifically, two independent raters (neither of which were associated with the research) rated each activity diagram. In assessing the quality (on a scale of 1 to 7), the raters provided scores on the following: a) completeness of the solution, b) correctness of the solution, and c) the overall quality. For the first 20 participants, the raters performed the coding jointly, to develop a common understanding of the coding procedure. The inter-rater reliability was found to be over .80, which is used as the established benchmark (Houston et al. 2001). The average of the two raters' ratings on each of the three dimensions was used as a measure of communication performance.

The second experiment was designed to replicate the first, but also incorporated a longitudinal component. That is, after completing the experiment as described above for the first experiment, participants returned 14 days later and completed another drawing based on a new business case. This was done to examine whether recipients' ability to retain information over time is affected by different levels of the channel characteristics. Currently, two independent raters are evaluating the quality of the second set of drawings following the procedure described above and data analysis will be carried out when those ratings are completed by the raters.

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