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# Solidarity in Decision Making: An Empirical Investigation into Media Richness Via IT Promoting Convergence in Group Decision Making

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## **ABSTRACT:**

Organizations search for effective ways working groups or teams can communicate. With the proliferation of computer mediated technology and the increasing channel richness provided by technology, organizations, as a result of technology, have reduced face-to-face meetings. This research focuses of the importance of media richness and the cohesion a group experiences by looking at eighty-seven 5-person teams. The assigned groups were provided with the options of utilizing MSN NetMeeting, Email, or Face-to-Face options as a means of communication needs. Data collected regarded cohesion, the perceived usefulness of the communication media selected, frequency of communication, performance outcomes, and general demographics.

Results demonstrate first that media type (richness), and frequency of communication does affect the cohesion of a work group, and second that technology driven communication does not enhance cohesion. Organizations eager to include IT to enhance communication within groups may find a loss in group/team cohesion and resulting performance.

**KEY WORDS:** Communication, media, cohesion, potency, group dynamics, performance, technology use.

## **INTRODUCTION**

Group solidarity in decision making is not only difficult to achieve, but has far reaching implications into the potential outcomes a group may produce. There always seems to be more than one option in a decision making situation. One example of decision making is to do something or to do nothing. However, in the decision to “do something,” organizations may be faced with dozens, if not hundreds, of possible “do something” options. This process can be a simple method in which a set of communication rules are followed; or this process of complexities and problematic discussions between individuals. The outcomes of these decisions could be destabilizing to the organization, through the loss of group cohesion, or strategically advantageous, if successful solutions are reached. In either case, the organizations must consider group dynamics, the utilization of information technology, and the way these technologies are used by organizations to facilitate these group dynamics.

Consideration in the literature regarding strategic alignment and information technology has been a well covered topic. Also covered extensively in the literature is organizational change, resulting from IT implementation. IT implementation that aligns strategically and meets the long term organizational goals may provide results affecting an organizations structure and communication processes. With this change in communication structure, a group’s ability to perform may be affected. This paper looks at the use of groups, the cohesion of these groups at formation, the use of technology used for communication, the affect of technology communication on cohesion, and the resulting impact on performance. Lastly, through a literature review of technology acceptance, cohesion, and media richness theory, I develop a set of hypotheses and then test these hypotheses, using a sample from a midwest university.

## **LITERATURE REVIEW**

Individuals rarely have access, or adequate recall capabilities, for all the relevant information needed to make a decision (Simon 1960). Therefore, one way organizations attempt promote better decisions is by grouping individuals and relying on the group to interact and be effective in decision making (Hackman, 1974). While this trend to group individuals into work teams has been used for many years in industry and education, the proliferation of computers into the work place in the past

15-25 years has brought about a surge of research into technology use and acceptance in the workplace (Davis 1989). Much of the research has focused on how this technology can be used to help individuals work more effectively and to make better decisions. Unfortunately, a meta-analysis by Dennis (2001), which summarized research on group decision support systems (GDSS), found that there are also a lack of efficiency and typically worse decisions made by individuals when in a group environment.

Media Richness Theory (Dennis, 1999) posits that communication, whether high or low in channel richness, is necessary to information transference. Additionally suggested by Dennis, is that the higher the media richness a mode of communication can attain, the more adequate the transference of information. Media richness is an ingredient needed between communicating individuals to develop an atmosphere of team learning, to make effective decisions, and to have positive outcomes (Dennis 1999). This media rich communication is only one possible variable in the effective decision making process. The loss of face-to-face (FTF) human interaction, while implementing a GDSS or computer-mediated communication technology (CMC) (Douglas 2001), may play part in the group cohesion (Veeraraghavan 1996), and ultimately, the groups' effectiveness/performance (Lester, 2002).

Not only does group/team literature abound throughout the academic fields, but the practitioner based publications are inundated with articles regarding how to effectively use groups. Whether the research is focused on business, education, psychology, human resources, sociology, communication, or computer usage, the effectiveness of all group decision making seems to hinge on the communication between the members. Effectiveness of communication generally relies on specific attributes. When individuals maintain diverging view points or are heterogeneous in cultural background, age, experience, gender, preference to time pressure, social loafing, procrastination, optimism/pessimism, outcome interdependence, or the use of transitive memory (Dennis 1998, Barfield 2003, Fenwick 2001, Gefen 1997, Durham et al 2000, Karau 1993, Tuckman 1991, Dember 1989, Scheier 1986, Shea 1987, Lewis 2003), the communication type and its perceived usefulness may account for the cohesion within a group, as well as the quality of the group's decisions/actions (Dennis 1998, Treadwell 2001, Campion 1993). In this research, the use of communication technology via computer (email/ IM) will be considered as modern and the nonuse of technology (Face to Face) as traditional.

Davis (1973) suggests that the performance of a group is a function of the quality of the group discussions indicating that communication type is an important variable, even in technology based communication. In this research, the use of communication technology via computer (email / chat) will be considered facilitated and the nonuse of technology (Face to Face) will be considered traditional.

## **Cohesion**

While communication research has traditionally addressed how to send and receive messages between two corresponding individuals or groups, the dynamics of the communication process, the impact of various media constraints, the possible time constraints/pressures (Durham, 2000), and task demand complexities (Thibaut, 1950), an important variable that may be impacted by communication type, or structure, is cohesion. There are many definitions for cohesion as found by example in Frank (1997) and Langfred (1998). They define cohesion as an individual's feeling of belongingness to a group or how much members of a group like each other. After reviewing many definitions found in literature, we have developed a definition for cohesion as "members' beliefs that they are accepted, liked, secure, and belong to the collective decision making body of the group."

During this review of literature, a reoccurring concept was noted: stronger cohesion between group members has an effect on the functioning of a group in communication (Wech 1998) and can eliminate negative aspects such as social loafing (Karau 1997, 1998). Conflict due to clashing of personality traits, discussed later, may also play a part in the cohesion of a group (Berry & Willingham 1997). Instruments that measure cohesion can be found throughout most of the research paradigms. The selected instrument for this study was developed by Treadwell et al (2001) and suggested that the Group Cohesion Scale Revisited (GCS-R) would effectively identify a group's level of alignment with group norms. The scale contains twenty-five items and has a cronbach's alpha = .82. Hence, the following hypotheses are developed.

- (1a):** Initial cohesion determines the media a group uses for communication
- (1b):** Initial cohesion leads to stronger cohesion in group members over time

## **Media Type & Richness**

For the purposes of this study, media type will be considered in terms of traditional and facilitated. For traditional, we define communication as face-to-face meeting in a non-IT supported setting. For facilitated, we define communication as the use of computers to send email messages or use of an instant message system such as MS Net Meeting. Before embarking on

further definitions, it is important to define the elements of each of the predefined concepts of communication in terms currently used in the DSS literature. These elements are “same time/same place (STSP),” “same time/different place (STDP),” “different time/same place (DTSP),” and “different time/different place (DTDP)” See Figure 1

**FIGURE 1**

	Same Place	Different Place
Same Time	STSP	STDP
Different Time	DTSP	DTDP

Only same-time/same-place facilitates traditional face-to-face communication (Panko and Kinney 1995), While the other three (STDP, DTSP, DTDP) all require the use of computer technology. Following the rich media research in face-to-face communication, face-to-face levels of media richness provide verbal, nonverbal, written and drawn conclusions, and when used in conjunction with each other, they provide rich task and social information to the receiver about the sender. In contrast, all other types of media used for communication have less ability to transmit such amounts of information (Dennis and Kinney 1998).

Dennis (1997-98, 1998, 1999) further studied the field of information systems by looking at the importance of media richness. In his work, drawing from Daft (1986), Dennis proposed a theory of media richness. Media richness theory posits that a performance of a task will be improved when the task needs are matched by the medium’s ability to convey information. For communication over a medium to be useful, the individual receiving the message must understand the intended meaning from the sender, and both the sender and the receiver must agree that the message was understood (Clark 1986). Interestingly, researchers have typically examined the choice of media, rather than the outcomes associated with the use of media. Dennis (1998) suggested that the use of richer, rather than leaner, media, for equivocal tasks, could improve actual performance. Could it be that groups using technology as a primary means of communication could experience lower richness, poorer communication streams, delayed feedback, and potentially lower levels in cohesion as well as performance? From literature, questions created for this research were adopted from the Technology Acceptance Model (Davis, 1986), Social Cognitive Theory (Compeau, et al 1999), and Time Pressure (Durham, et al 2000) and regarded the media’s ease of use, the perceived usefulness of the media used for communication, and how the group reacted to time pressure. Hence, the following hypotheses are developed.

- (2a): Email used for communication will not significantly affect the cohesion a group experiences
- (2b): Net Meeting used for communication will not significantly affect the cohesion a group experiences
- (2c): In-Person meetings used for communication will significantly affect the cohesion a group experiences
- (2d): The time a group spends together will positively affect the cohesion a group experiences

### Frequency of Communication

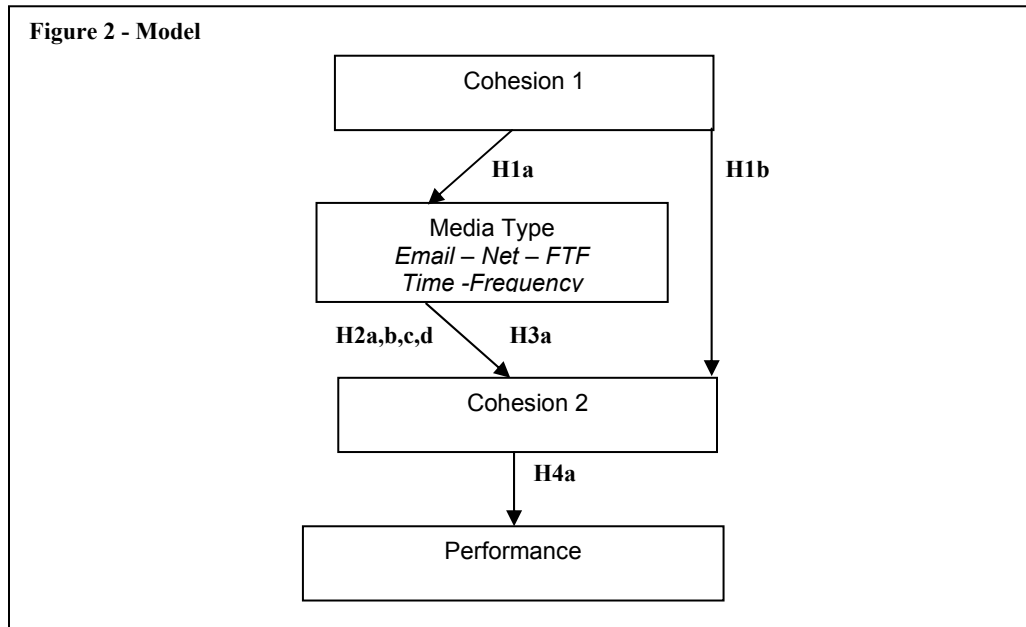
Lester (2002) posited that groups communicate and that the internal processes of group communication and cooperation could lead to better outcomes (performance). Other studies regarding communication, specifically in GDSS research, have looked at communication patterns (Lam 1997), communication technologies (Cohen 1991) and proximity of groups members using technology (Townsend 1998). Other studies have provided theories such as Bandura’s (1977) verbal persuasion as a determinate of efficacy, that high levels of communication and cooperation confirm group processes and have a positive effect in group performance (Lester 2002). However, these studies have looked at individuals or groups in terms of task performance, technology use, and proximity or richness of communication. While these aspects are viable to the current study, we are addressing the additional variable of frequency of communication as that which will affect the cohesion of a group. Hence, the following hypothesis is developed:

- (3a): The frequency a group spends together will significantly affect the cohesion a group experiences

### Potency / Performance

The end result desired by organizations that use groups is the effectiveness of the group decisions in terms of performance. Whether the decisions are arrived at through the use of computer technologies (Townsend 1998), or through face-to-face communication (Dennis 1997, Irmer 2000), organizations and groups seek greater performance and resulting satisfaction (Olaniran, 1996). Performance as described in the literature is the effective outcome of a group's efforts. Lester (2002) postulates that the more effective internal processes that happen within a group, the better they will perform. A group's performance may be linked to media type, communication frequency, personal attributes of group members, group optimism, and/or cohesion. Hence, the following hypothesis is developed:

(4a): Groups that have higher cohesion perform better than non-cohesive groups



## PROCEDURES

Four hundred and fifteen undergraduate students enrolled in management courses at a large midwest university participated in the study for partial course credit. Students were informed that after course credit was assigned, all identifying data would be removed, and the data used for the research would not be linked to them personally. The average age of the participants was 22; respondents indicated that, on average, they had worked in six group projects. 59% of the participating students were male and demographic ethnicity was representative of the current United States population (US census, 2002).

The students were assigned alphabetically into four and five person groups. No effort was made to produce homogeneous groups. Groups were informed of the contact options available to them as: Verbal = face to face meeting, MS Met Meeting = live on-line meeting, and Email = delayed exchange of information. Groups discussed the options of communication and experienced three in-class ice breaker exercises, over the course of a week (modeled to be procedurally the same as the cases they would do later). Media selected for communication by groups are shown in Figure 2. Each group assigned a group leader to facilitate communication and assignment delivery, and contact information was exchanged. Each group was provided the same three published case studies, regarding well known and documented events in recent history (Stillman, 2000). Group members were to read the case and answer pertinent questions and then discuss the case with the other group members using one of the three contact options. As a group, each question was discussed, and a group answer was formulated as the best group answer. All group members were to receive the same grade as assigned for the group.

The cases submitted by the groups were graded by two different teaching assistants. Of the 261 submitted cases for grading, only five groups experienced a variance in the assigned score, by the two graders, of greater than 5%. In these particular cases, the head instructor re-evaluated the case and assigned a grade, which was typically near the median of the two previously assigned grades. The results of the surveys were entered into SPSS by the same teaching assistants and cross checked for accuracy. Of the original 415 students placed into groups, attrition (drops) accounted for missing data of 21 persons (5%). No group had less than 4 members throughout the research project.

**TABLE 2 – Group use of media**

	<b>Selected</b>	<b>Not Selected</b>	<b>Total N=87</b>
<b>EMAIL</b>	75	12	87
<b>NET MEETING</b>	19	66	87
<b>IN PERSON</b>	87	0	87

**MEASURES**

Groups were measured at the beginning and end of the semester using multiple scales. Additionally, demographics were collected to identify any differences in groups more heterogeneous or homogeneous in particular attributes of nationality, gender, age, or experience.

**METHOD & FINDINGS**

Initially, reliability statistics were run for the scales to confirm acceptability of the measures. As seen in Table 3, all scales provide acceptable Cronbach's Alpha scores.

**TABLE 3 – Scales**

<b>Name of Scale</b>	<b>Coefficients</b>	<b>Alpha</b>	<b>Standardized</b>
Cohesion Scale #1	25 Items	.8914	.9004
Cohesion Scale #2	25 Items	.8755	.8854
Email media	8 Items	.8278	.8075
Net Meeting media	9 Items	.7575	.7766
FTF media	8 Items	.8121	.8199
Time together	8 Items	.8369	.8414

Linear regression analysis was performed to establish causality at the group level for each of the constructs within the model. During the development stage, groups were surveyed regarding initial cohesion. Groups were surveyed a second time for cohesion at the adjourning stage. As the independent variable, cohesion was found to be significant at the .01 level in relation to FTF ( $R^2=.096$ ), adjourning cohesion ( $R^2=.276$ ), and significant at the .05 level for Time together ( $R^2=.070$ ). Consideration should be given for the lack of significance and the zero correlations found in Email ( $R^2=.000$ ), and Net Meeting on path 2 ( $R^2=.000$ ). It seems that initially cohesive groups choose to meet FTF, rather than using Email or Net Meeting. It seems that the cohesion of a group inversely affects the selection of technology for communication.

When considering the cohesion reported at the adjourning stage of development, the linear regressions for cohesion (table 4) seems to show the only media leading to a better group cohesion is FTF (Sig=.000  $R^2=.127$ ). The time together in FTF communication is also significant to the cohesion of groups (sig.000  $R^2=.144$ ). Interestingly, these findings follow most of the cohesion literature regarding stages of group development. Groups over time going through the stages of development did report a greater level of cohesion. Additionally, the technology based communications did not show any significance leading to cohesion. In fact, the use of technology based communication via email provided a sig. =.554 adj.  $R^2 = .000$  for adjourning cohesion. While it is important to note that null amount of variance is not significant, it is present in the results and should be considered for further investigation.

**a Predictors: (Constant), Cohesion (initial) N=87**

Model /Path	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.094	.009	.000	.6328	.009	.755	1	85	.387	1.834
2	.013	.000	.000	.2459	.000	.014	1	85	.906	2.218
3	.310	.096	.085	.3907	.096	9.017	1	85	.004	2.119
4	.265	.070	.059	.3811	.070	6.400	1	85	.013	2.396
5	.533	.284	.276	.1869	.284	33.717	1	85	.000	1.999

1 Dependent Variable: Email  
 2 Dependent Variable: Net Meeting  
 3 Dependent Variable: FTF  
 4 Dependent Variable: Time Together  
 5 Dependent Variable: Cohesion (adjourning)

1 Predictor Variable (constant): Email  
 2 Predictor Variable (constant): Net Meeting  
 3 Predictor Variable (constant): FTF  
 4 Predictor Variable (constant): Time Together  
 5 Predictor Variable (constant): Cohesion (initial)

Model /Path	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.064	.004	.000	.2204	.004	.352	1	85	.554	2.280
2	.155	.024	.013	.2182	.024	2.095	1	85	.151	2.229
3	.370	.137	.127	.2052	.137	13.479	1	85	.000	2.034
4	.393	.154	.144	.2031	.154	15.495	1	85	.000	2.109
5	.533	.284	.276	.1869	.284	33.717	1	85	.000	1.999

Dependent: Cohesion (adjourning)

TABLE 4 - Model/Path Summaries -Cohesion (adjourning) N=87

With the results showing communication via computer mediated media as not significantly affecting cohesion, and FTF traditional communication significantly affecting adjourning cohesion, a regression was performed to identify the relationship between cohesion and performance. As seen in table 5, performance is significantly affected by a group's cohesion level (sig.=002 R2=.092). Therefore, with a linear relation, groups with greater cohesion performed better.

Model /Path	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.321	.103	.092	14.0139	.103	9.743	1	85	.002	1.725

Predictors: (Constant), Cohesion (adjourning)  
 Dependent Variable: PERFORMANCE

TABLE 5 – Model/Path summary - Performance

**DISCUSSION**

This study developed a conceptual model based upon media richness, communication types for group dynamics, and cohesion. As expected, communication between group members that use rich media will support greater cohesion potential between group members. Interestingly, the findings of this research provide support that email communication (DTDP) provides the least amount of media richness and has little impact on cohesion. Net Meeting/Chat (STDP) provides some additional richness and support for leading to additional cohesion for the group. However, the media rich environment of the FTF meetings (STSP) provide the most cohesion development for groups.

**FIGURE 3**

	Same Place	Different Place
Same Time	STSP Face-To-Face Best Cohesion Development	STDP Net Meeting/Chat Some Cohesion Development
Different Time	DTSP Email Very-little Cohesion Development	DTDP Email Very-little Cohesion Development

The more FTF time the groups spend communicating, the more cohesion they will experience. While this seems self evident, organizations continue to invest in IT so that groups can communicate via technology (Fagan, 2003). This research has found support that cohesion is directly related to the performance of a group, and that the use of technology for communication in groups does not significantly support cohesion. Following the classic syllogism “If A leads to B, and B leads to C, then A leads to C,” this research supports the idea that media type/richness does affect performance in group projects. As displayed in table 7, all of the research questions were supported.

Hypotheses	Results
(1a): Initial cohesion determines the media a group uses for communication	Supported
(1b): Initial cohesion leads to stronger cohesion in group members over time	Supported
(2a): Email used for communication will not significantly affects the cohesion a group experiences	Supported
(2b): Net Meeting used for communication will not significantly affect the cohesion a group experiences	Supported
(2c): In-Person meetings used for communication will significantly affect the cohesion a group experiences	Supported
(2d): The time a group spends together will positively affect the cohesion a group experiences	Supported
(3a): The frequency a group spends together will significantly affect the cohesion a group experiences	Supported
(3b): The cohesion a group experiences will significantly affect the frequency a group spends together	Supported
(4a): Groups that have better cohesion perform better than non-cohesive groups	Supported

**TABLE 7** – Results of hypotheses

**CONCLUSIONS**

While the implications of this study are interesting for both academics and practitioners, the limitations of the study are obvious. This study used college students and a controlled environment in which potential consequence to poor performance was minimal. The study only looked at three types of media and did not control what media would be selected by groups. Some may consider this lack of control a draw back; however, the results of frequency use and media selection provide insight regarding technology diffusion of the media. This study only looked at communication mediums and did not control of covariates such as personality type. Additional research extensions to this study therefore include cohesion levels modified by agreeableness, optimism, leader optimism, transactive memory, social loafing, and the traits of procrastination leading to the use of certain media types.

Overall, this research provides a better understanding of group dynamics and the importance of communication, how that communication helps or hinders group cohesion, and overall performance outcomes. Particularly, this study provides results supporting that “media with higher richness positively influences cohesion and potentially develops greater performance for groups.” Therefore, it seems to be important that GDSS developers create a richer media platform in which group members are able to identify the dynamics of a group session and provide richer feedback in a timely manner.

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## APPENDIX A – INSTRUMENTS/ SCALES USED

**COHESION #1 & #2**

**1 = Strongly Disagree    2 = Disagree    3 = Agree    4 = Strongly Agree**

- 
- \_\_\_\_\_ 1. Group members are accepting of variations in each other's culture, customs, habits, and traditions.  
 \_\_\_\_\_ 2. There are positive relationships among the group members.  
 \_\_\_\_\_ 3. There is a feeling of unity and togetherness among group members.  
 \_\_\_\_\_ 4. Group members usually feel free to share information.  
 \_\_\_\_\_ 5. Problem solving processes would be disrupted if one or two members are absent.  
 \_\_\_\_\_ 6. The group members feel comfortable in expressing disagreements in the group.  
 \_\_\_\_\_ 7. Problem solving in this group is truly a group effort.  
 \_\_\_\_\_ 8. Group members influence one another.  
 \_\_\_\_\_ 9. I dislike going this group's meetings.  
 \_\_\_\_\_ 10. The group members seem to be aware of the group's unspoken rules.  
 \_\_\_\_\_ 11. Discussions appear to be unrelated to the concerns of the group members.  
 \_\_\_\_\_ 12. Most group members contribute to decision making in this group.  
 \_\_\_\_\_ 13. Group members are receptive to feedback and criticism.  
 \_\_\_\_\_ 14. Despite group tensions, members tend to stick together.  
 \_\_\_\_\_ 15. It appears that the individual and group goals are inconsistent.  
 \_\_\_\_\_ 16. An unhealthy competitive attitude appears to be present among group members.  
 \_\_\_\_\_ 17. Group members usually feel free to share their opinions.  
 \_\_\_\_\_ 18. Minimal attempts are made to include quieter members of this group.  
 \_\_\_\_\_ 19. Group members respect the agreement of confidentiality.  
 \_\_\_\_\_ 20. People would be concerned when a group member is absent from the groups members.  
 \_\_\_\_\_ 21. Group members would not like to postpone group meetings.  
 \_\_\_\_\_ 22. Many members engage in "back-biting" in this group.  
 \_\_\_\_\_ 23. Group members usually feel free to share their feelings.  
 \_\_\_\_\_ 24. If a group with the same goals is formed, I would prefer to shift to that group.  
 \_\_\_\_\_ 25. I feel vulnerable in this group.

**SELF REPORTED CONTACT COUNTS**

How many times did you email your group for each case

Valuejet-Case 1 \_\_\_\_\_ Waco-Case 2 \_\_\_\_\_ Centralia-Case 3 \_\_\_\_\_

*Added together and categorically classified:*

*1= 0 to 3 contacts*

*2= 4 to 6 contacts*

*3= 7 to 9 contacts*

*4=10-12 contacts*

*5= greater than 13 contacts*

How many times did you IM/Chat with group members

Valuejet-Case 1 \_\_\_\_\_ Waco-Case 2 \_\_\_\_\_ Centralia-Case 3 \_\_\_\_\_

*Added together and categorically classified:*

*1= 0 to 3 contacts*

*2= 4 to 6 contacts*

*3= 7 to 9 contacts*

*4=10-12 contacts*

*5= greater than 13 contacts*

How many times did you meet in person with your group

Valuejet-Case 1 \_\_\_\_\_ Waco-Case 2 \_\_\_\_\_ Centralia-Case 3 \_\_\_\_\_

*Added together and categorically classified:*

*1= 0 to 3 contacts*

*2= 4 to 6 contacts*

*3= 7 to 9 contacts*

*4=10-12 contacts*

5= greater than 13 contacts

How long did you meet (in total) in person with your group for each case

Valuejet-Case 1 \_\_\_\_\_ Waco-Case 2 \_\_\_\_\_ Centralia-Case 3 \_\_\_\_\_

Added together and categorically classified:

1= 0 to 45 minutes

2= 46 to 90 minutes

3= 91 to 135 minutes

4= 136 to 180 minutes

5= greater than 180 minutes

### MEDIA CONSTRUCTS

#### EMAIL

- \_\_\_\_\_ Email made me feel like the group accomplished
- \_\_\_\_\_ The use of email helped the group communicate
- \_\_\_\_\_ I prefer email for group communication
- \_\_\_\_\_ The use of email for group work was easy
- \_\_\_\_\_ The group did not respond to email in a timely manner \*
- \_\_\_\_\_ Without email our group would have not done well
- \_\_\_\_\_ When pressured for time the group relied on Email
- \_\_\_\_\_ RESEARCHER SUPPLIED CATEGORICAL REPORT OF EMAIL CONTACT (1-5)

#### NET MEETING

- \_\_\_\_\_ Instant Messaging/Chat is easy to use
- \_\_\_\_\_ Instant Messaging/Chat helped the group
- \_\_\_\_\_ Instant Messaging/Chat made me feel like the group accomplished
- \_\_\_\_\_ I prefer the use Instant Messaging/Chat
- \_\_\_\_\_ The group did use Instant Messaging/Chat in a timely manner
- \_\_\_\_\_ Instant Messaging/Chat is the best choice for group work
- \_\_\_\_\_ Without Instant Messaging/Chat our group would have not done well
- \_\_\_\_\_ Given to do this project over the group would choose to use Instant Messaging/Chat
- \_\_\_\_\_ RESEARCHER SUPPLIED CATEGORICAL REPORT OF Instant Messaging/Chat CONTACT (1-5)

#### FTF MEDIA

- \_\_\_\_\_ Meeting together in person was good for the group
- \_\_\_\_\_ Meeting together in person was easy to do
- \_\_\_\_\_ I prefer to get together in person with the group
- \_\_\_\_\_ Meeting together in person DID NOT help the group accomplish\*
- \_\_\_\_\_ The group used time well when together in person
- \_\_\_\_\_ Meeting together in person is the best choice for group work
- \_\_\_\_\_ Group work is easier to do when done in person
- \_\_\_\_\_ RESEARCHER SUPPLIED CATEGORICAL REPORT OF MEETING FTF (1-5)

#### TIME TOGETHER

- \_\_\_\_\_ Time together in person was good for the group
- \_\_\_\_\_ Time together in person was easy to do
- \_\_\_\_\_ I prefer spending time together in person with the group
- \_\_\_\_\_ Time together DID NOT help the group accomplish \*
- \_\_\_\_\_ The group used time well when together in person
- \_\_\_\_\_ the more time together in person is the better it is for the group
- \_\_\_\_\_ Group work is easier when we spend time together
- \_\_\_\_\_ RESEARCHER SUPPLIED CATEGORICAL REPORT OF FTF TIME TOGETHER (1-5)

\* reversed scored