

Ten Red Balloons: Virtual Teams and Online Communities

A Test of Media Synchronicity Theory

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ABSTRACT

As organisations become more globalised rising time and cost constraints force them to increasingly make use of virtual teams. As a result of the continuous expansion of such teams in the workplace research and theories into their performance become ever more important. This study investigates the validity of one such theory, Media Synchronicity Theory, in predicting the performance of virtual teams in completing complex tasks, specifically teams whose members belong to an online community. There is currently little empirical evidence to support Media Synchronicity Theory, especially when related to virtual teams. This study provides such evidence and shows support for the theory in predicting behaviour that leads to efficient task performance amongst a virtual team. The results also find contradictory evidence towards Media Synchronicity Theory, suggesting that some aspects of the theory do not hold for teams more experienced with computer mediated communication – such as teams from online communities. The results suggest a need for more empirical evidence of Media Synchronicity Theory to help corroborate the results. Future research is also suggested into the impact online community membership can have on achieving better task performance.

Introduction

As we move further into the 21st century, organisations are becoming increasingly more globalised, with expansions and acquisitions spreading their workforces all over the world. With a need to get tasks completed ever faster, the increasing pressures of the market and global recession driving down spending, there is a rising need for effective virtual team work (Grinter et al. 1999). Research into supporting such virtual teams - and computer mediated communication (CMC) - is therefore becoming increasingly important, especially in relation to teams performing complex tasks.

A key element in the successful performance of virtual teams is the effective utilisation of communication media. Purely virtual teams survive without the aid of face to face interaction and are reliant completely on technology such as instant messaging (IM), video chat and email. Much of this technology is asynchronous in nature (defined as technology which introduces delays between the sending of a communication and its being received (Markus 1994), and as such is regarded in some of the literature as being low in 'richness', and therefore deficient to 'richer' media, in accordance with the

popular Media Richness Theory (MRT) (Daft and Lengel 1983; 1986).

MRT has been widely used in a variety of studies over the past 20 years, many of which have discovered contradictory evidence and as a result MRT has been the recipient of much criticism (Markus 1994). In an effort to find a better explanation of optimal performance in CMC, Dennis and Valacich (1999; 2008) proposed the Media Synchronicity Theory (MST). MST posits that effective communication relies not on the 'richness' of the media but rather the suitability of that media to the communication processes required to complete a given task.

For virtual teams, who have an ever larger variety of communication media at their disposal, MST is especially important. Choosing the correct media, or combination of media, can mean the difference between the success and failure of a project, but MST is lacking in empirical support, especially in the context of purely virtual teams. As a result, this study will investigate the validity of Media Synchronicity Theory in explaining the performance of a virtual team engaged in a complex task, specifically a virtual team comprised of members of an online community.

It is the overall aim of the study to not only gain much needed empirical evidence for MST, but also

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to provide insights into the behaviour and characteristics of members of online communities as they perform complex tasks.

Background

Virtual Teams

A single definition of a virtual team (VT) is difficult to find in the literature, but it shall be defined here as: a group consisting of members who are brought together to complete a task and interact only via CMC. Most often characterised as being geographically, temporally and culturally diverse (Bosch-Sijtsema 2007). It should be noted that while it is agreed that virtual teams can use face to face interaction on occasion, this should be done sparingly (Curseu et al. 2008; Jarvenpaa and Leidner 1999), and that the definition does not include hybrid teams (those who use both face to face and CMC).

Research is increasingly showing smaller differences between the performance of VTs and co-situated teams. Some older studies, such as those by Walther (1995) and (McGrath and Hollingshead 1993), show that the differences between face to face and virtual teams disappear over time, as they gain more experience with the media and develop strategies for better group performance (Lira et al. 2006). In their recent study Naik and Kim (2010) found evidence that virtual teams performed effectively when there was a more socio-emotional dimension to team interaction, especially when this interaction provided knowledge that aided in the completion of a task. This relates to Orr's (1996) study that showed the importance of so called "water-cooler moments", where individuals share "war stories" of their experiences performing tasks (in this case repairing photocopiers), which not only increases the working knowledge of other team members, but also promotes team bonding through increased socio emotional interaction. Work by Handy (1995) has also showed the importance of team bonding and shared social understanding in increasing the performance of teams. For virtual teams, who can never meet in person, such social interaction can be difficult. However, help may be at hand in the form of social networking sites (SNS) and online communities, where individuals can interact outside of a work setting to increase team bonding and performance, whilst still communicating virtually.

Very little research has been performed into the performance of virtual teams composed purely of members of online communities. This study will endeavour to fill some of this gap in the research by investigating of the validity of Media Synchronicity Theory among teams from virtual communities.

Origins & Development of MST

Media Synchronicity Theory has its origins in the Media Richness Theory (MRT) first proposed by Daft and Lengel (1983; 1986). MRT states that media exist in different levels of 'richness' (see Figure 1). Richness is defined as the "ability of information to change understanding within a time interval" (Daft and Lengel 1986:560) and the theory posits that media choice should be determined by matching the technology to the task. Ultimately the ideal situation would match a tasks required needs to a medium's richness, resulting in optimal task performance.

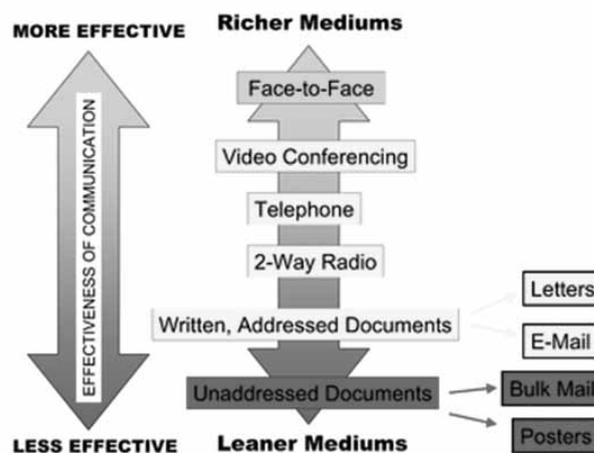


Figure 1: Levels of media richness. Source: Wikipedia

MRT has been the subject of many studies since its creation (Naik & Kim, 2010) and as a result has been adapted several times (McGrath & Hollingshead, 1993), but despite this research into MRT has continued to produce inconsistent results. Studies such as those by Markus (1994), Yates & Orlikowski (1992), (DeLuca, 2003), (Kock, 2001) and (Lee, 1994) have highlighted many flaws in MRT. It would seem that the attitudes towards media choice are not in fact based on actual richness, but rather on the perceived richness of the media. Dennis & Valacich (1999) go further than stating contradictions and propose that a majority of the research hasn't found support for MRT at all. They posit this is because performance is not contingent on matching media richness to task and propose MRT should be abandoned and replaced by more appropriate theory.

Media Synchronicity Theory

Media Synchronicity Theory (MST) is Dennis and Valacich's (1999) response to the many contradictory studies into; figure 2 shows an outline of the theory as described by Dennis et al. (2008).

Synchronicity

MST's focus is on the capability of media to support synchronicity. It states that optimal performance oc-

curs when the synchronicity of a medium matches the synchronicity that a communication process requires. Media Synchronicity is defined as “the extent to which the capabilities of a communication medium enable individuals to achieve synchronicity”. Synchronicity in MST is therefore defined as “a state in which individuals are working together at the same time with a common focus” (Dennis et al. 2008:581).

Task

The central theory of MST is that effective communication does not arise from the matching of the capabilities of a media to the overall task, but rather by matching it to the processes needed to complete a task. Thus MST separates task into two communication processes, *conveyance* and *convergence* (Dennis & Valacich 1999), it is posited that by examining the processes on these levels we will get a clearer understanding of the effect of media on task performance.

Conveyance: “The transmission of a diversity of new information as much new, relevant information as needed to enable the receiver to create and revise a mental model of the situation” (Dennis et al. 2008:580) Individuals engaged in conveyance will undertake significant information processing activities and therefore will require time to adequately

process the information and make sense of it. (Dennis et al. 2008)

Convergence: Involves the gaining of a shared understanding about the information that has been processed by an individual - not the raw data. The aim is to develop a shared meaning by discussing participants’ interpretations of the information. This requires not only the formation of a common understanding, but also a situation where it is mutually agreed that this understanding has been reached (Dennis et al. 2008).

A majority of tasks require both conveyance and convergence processes, whatever levels of uncertainty or equivocality those tasks might possess. Without sufficient conveyance it is easy for individuals to reach conclusions that are incorrect, similarly without adequate convergence individuals cannot move forward with their task because they will not have formed a shared understanding.

Synchronicity and Communication Processes

A key concept of MST is linking communication processes with the correct levels of media synchronicity. Convergence and conveyance communication processes will each have different needs for information processing and transmission, due to the differences

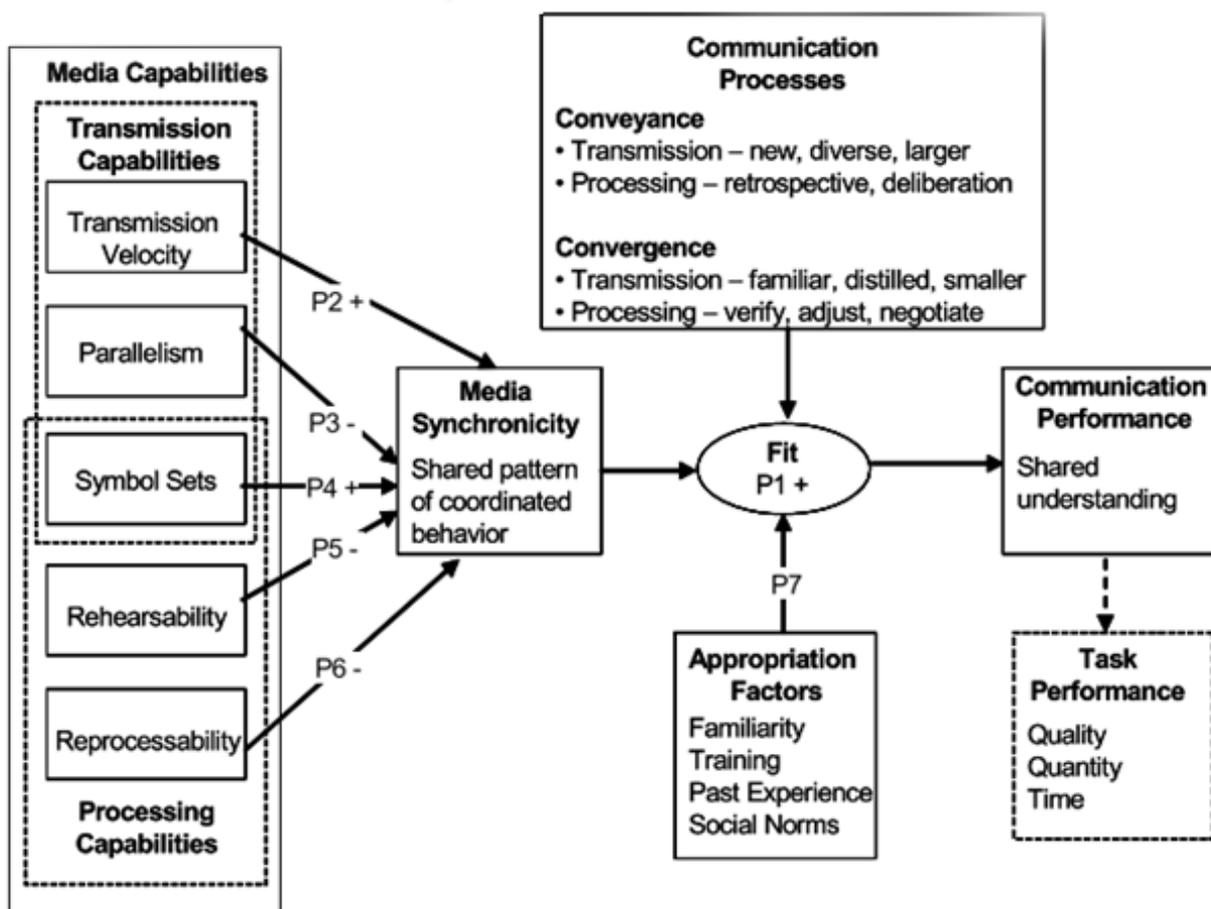


Figure 2: from Dennis, Fuller and Valacich (2008:582)

between them, and thus there will also be different needs for synchronicity (Dennis et al. 2008).

High synchronicity encourages greater levels of interaction and an increase in shared focus among individuals, resulting in a shared pattern of coordinated behaviour (Dennis, Fuller and Valacich 2008). High synchronicity is also associated with faster message transmissions, quickly modifiable messages and immediacy of feedback (Dennis et al. 2008).

Lower synchronicity allows individuals an increased time between message transmissions to process the content and develop meaning; it also allows individuals time to consider other issues like the context of the situation (Dennis et al. 2008).

Conveyance processes will benefit from lower media synchronicity. This is because the processes involved in conveyance the transmission and interpretation of data do not require multiple individuals to work together at the same time. Low synchronicity also benefits the receipt of complex messages, as they will require more time to assess and interpret than simple messages.

For convergence processes higher levels of synchronicity will lead to improved performance. High synchronicity will support the negotiation and conciliation required for sense making strategies, leading to the more effective formation of shared understanding. As convergence will require less deliberation on new information, the encoding and decoding of information should be faster, given the shared mental models of involved individuals. For convergence processes the ability to verify the existence of a shared understanding is important and will require media of higher synchronicity, as will the ability to understand other individual's interpretations of information (but not the information itself) (Dennis and Valacich 1999).

Media Capabilities

As an addition to the original MST Dennis et al (2008) added the concept of media capabilities. These are described as "*potential structures provided by a medium which influence the manner in which individuals can transmit and process information*" (emphasis in original) (Dennis et al. 2008:583). MST hypothesises 5 media capabilities that can affect the synchronicity of a medium (Dennis et al. 2008) (also shown in figure 2):

(H1) Transmission Velocity: the speed at which a medium is capable of delivering a message to the intended recipient(s).

Increased transmission velocity leads to high syn-

chronicity due to the improved shared focus which results from more rapid feedback.

(H2) Parallelism: the capacity of a medium to allow for multiple messages to be transmitted simultaneously.

Parallelism reduces shared focus and as a result lowers a mediums ability to support synchronicity.

(H3) Symbol Sets: the number of ways in which a medium can encode the information that is communicated

Using more natural symbol sets, and sets appropriate to the message content, will improve synchronicity.

(H4) Rehearseability: the ability of a medium to allow an individual to edit or refine a message before it is sent.

Rehearseability will reduce shared focus and therefore lower synchronicity.

(H5) Reprocessability: the ability of a medium to allow a message to be re examined or reprocessed.

Reprocessability will lower shared focus and in turn will negatively impact synchronicity.

Overall MST shows that using a single media to complete a task may not be the best choice, and that using a combination of several differing media for different communication processes is most beneficial (Dennis et al. 2008).

Research Methodology & Design

Following an interpretive approach (Orlikowski and Baroudi 1991) this research investigates the validity of Media Synchronicity Theory when applied to a case study of a purely virtual team comprised of members of an online community.

Participants

The participants in the study were all members of an online community that originated from the subscribers of the 'Vlogbrothers' YouTube channel that began broadcasting in 2006. This community, whose members refer to themselves as 'Nerdfighters', quickly grew from commenters and video responders into a large community. At the time of the study, there were around 30,000 members on the Ning and the Vlogbrothers channel had over 134,000 subscribers.

There were 14 participants who made up the virtual team in this study; all were members of the Nerd-

fighters community. All participants were from an assortment of cultural, social and ethnic backgrounds from varying nationalities - although a majority of members were from the United States. The participants had never worked together as a group before and a majority had never met, the rest had mostly fleeting interactions through social networks. Although some members of the team had physically met before the task, the vast majority had not and there is a significant enough cultural and geographical dispersal to see the group as a reasonable example of a virtual team.

DARPA Network Challenge

The competition in which the team in this study participated was the DARPA Network Challenge (DNC). DARPA described the DNC as “a social network mobilization experiment to identify distributed mobilization strategies and demonstrate how quickly a challenging geolocation problem could be solved by crowd sourcing” (DARPA 2010).

The aim of the DNC was to locate ten 8-foot red balloons that were placed in various locations around the United States. The balloons were simultaneously launched at 10am EST and stayed afloat for 6 hours, the winner would be the first team to report the geo-coordinates of all ten balloons back to DARPA; they would then win the prize of \$40,000. For full details of the DNC please consult the DARPA Project Report (DARPA 2010).

Case Study

In this case study the Nerdfighters team attempted to use their vast social network to garner information about the balloon locations. In the first instance the Vlogbrothers channel posted a video on December 3rd which asked for participants to assist in finding the balloon locations by tweeting, emailing or calling a Google Voice number and leaving a voicemail. From this video a network of around 2000 active participants (who supplied telephone contact details and email addresses) was formed all, agreeing to help find and verify balloon locations. At the centre of the Nerdfighters effort was the core Nerdfighters virtual team who acted as a sort of “war room” garnering information from community members and other sources in an attempt to find balloon locations using a variety of media.

Data Collection Methods

Data was collected in this study in two ways. First, transcripts of group conversations were acquired from two of the mediums that were used by the team. Secondly a number of semi structured interviews were conducted with the virtual team mem-

bers to gather further empirical data to support the observations made using the transcripts.

The main purpose of the interviews was to discover specifically what media choices were made by the different groups members, the reasons behind these choices and their opinions on different aspects of CMC that MST says will impact on synchronicity. Questions were also asked in relation to group trust and conflict although these have a limited impact on this particular study.

Results

Participants were observed using transcripts of their conversations and a series of semi-structured interviews. There was no face-to-face contact with any participants at any time during the project and research was performed through electronic media.

Observations from Transcripts

The transcripts of the Skype chat and Google Wave (use of which is discussed below) are logged by default and are therefore available for review and to add to the information available about the team’s performance.

Media Choice

The team had a number of media at its disposal during the challenge and decided to communicate using Skype for IM and Google Wave for storing finalised information such as the location of balloons and known fake locations.

A Google Account ‘DARPAnerd’ was also created. This was linked to Gmail and Google Voice so that people could email and leave voice mail messages that the team would regularly check throughout the day.

In addition certain team members spent much of the day checking Twitter feeds for keywords to try and garner information. The group members also checked several websites that had been setup by other teams where locations were being posted and could be publicly seen. A website that broadcast the live feeds of a network of traffic cameras spread across the US was also used in an attempt to verify locations.

Voice calls were occasionally necessary, mostly to dispatch people to check and confirm balloon locations, and in one case to call the Tecumseh State Correctional Institute in Nebraska to see if a balloon was visible in the field overlooked by their watch tower (which it was not). In sum the team predominantly used only two synchronous communication media,

Skype and Google Wave; with voice calls occasionally used. All other communication media, the list of emails, the Gmail & GVoice accounts, traffic cameras, Twitter, text messages and information posted on other websites were asynchronous.

Hunting Method

The hunt began at 10am EST, immediately team members began searching for clues to the whereabouts of balloons using the various media at their disposal.

The general pattern of information gathering by team members had them search for leads via the various asynchronous media, where they determined if a lead was miscommunication based on a variety of information including reliability of source and evidence presented. If they judged the lead to be viable or if they couldn't be sure of whether a lead was fake, they would present it to the team in the Skype chat where a quick discussion usually found the lead to either be fake – based upon information gathered by other users – or it was determined as a possible lead and a community member would be dispatched to verify it. In most cases, a decision on the viability of a lead took only a few minutes.

Once a lead was found and confirmed it was then placed into the Google Wave to stop duplication of efforts by team members (there were occasions throughout the day when it was necessary for people to leave their computers for a time). The Wave was also used to store the locations of known fake balloons, beyond this the Wave was not used at all during the competition as it was disliked by team members who commented on the fact that it was slow and prone to crashing.

During the challenge, there were bouts of heavy message exchange involving multiple conversation streams being created in the same Skype chat room simultaneously. Usually these conversations would each involve two or three team members discussing a specific lead and often other members would chime in with opinions or information they had gathered to add to a conversation, usually delineating which conversation they were entering by referring to an established participant of the conversation by name.

Communication in the Skype chat was fairly constant in the 6 hours the balloons were up with messages being sent at an average rate of one every 10 seconds, increasing significantly when a viable balloon location is found.

Outcome

DARPA announced the end of the competition at

around 8.30pm EST. The official winner was a team from MIT who managed to locate all 10 balloons in 8 hours and 52 minutes. At that point the Nerdfighters team had successfully reported the geolocations of 7 balloons, which allowed them to finish 9th (although only 4 teams got more than 7 locations) out of 58 serious contenders (DARPA 2010).

Observations from Interviews

Following the project a series of semi-structured interviews were conducted with team members to help better establish the events of the competition and the reasons behind their actions on the day.

Team members indicated that their reasons for choosing Skype as the overall 'operations centre' for the Nerdfighters effort was mostly to do with their familiarity with the application and their knowledge of its capabilities. They found it suitable for large group chats and all team members had used Skype in that capacity before.

Participants also indicated that they, at the very least, coped well with the multiple conversation streams that tended to occur in the Skype chat. Several team members indicated that they had experience of keeping track of multiple conversations without difficulty. None of the team members indicated they were unhappy or had difficulty coping with multiple conversations taking place at the same time, although one did mention that:

"...if there [are] more intellectual conversations I'll take nothing from it."

With respect to the other aspects of the chat, users indicated that they were able to interpret the use of emoticons and abbreviations by other team members fairly easily, one member noting:

"...emoticons are sometimes necessary to convey a specific emotion that is had [sic] to determine over the internet, like sarcasm."

Although there was evidence of mixed use of emoticons, no user indicated their use had negative results.

Participants also indicated they highly valued the ability to review messages before they sent them and also to view the chat logs to aid in their understanding. This is especially true of the non-native English speakers who tended to regularly edit their messages before sending them. One participant, who had recently been made partially blind, felt this ability was particularly useful to them as they were prone to making mistakes whilst typing.

Participants also indicated they mostly reviewed longer more impersonal messages and that in informal situations they tended to not use this ability. Users indicated that reviewing statements did slow the flow of a conversation, usually to a degree not readably noticeable to other participants. However, they also state that they viewed the capability of editing messages to be highly beneficial to conversation flow overall.

Lastly participants were asked about how they used the chat logging abilities of Skype. Participants indicated they valued the ability to refer back to previous statements in much the same way as the valued the ability to edit messages, they believed it reduced the chances of miscommunication and transmission of redundant statements.

Analysis and Discussion

The first two main hypotheses of MST are that conveyance requires low media synchronicity and convergence high media synchronicity. Evidence from the study supports these hypotheses.

Firstly, the team used media with low media synchronicity to perform convergence tasks fitting with the predictions of MST. Usually these media were asynchronous, with the exception of the limited voice calls which were made. The calls were used mostly after a convergence process to act on the teams understanding about a particular lead, then individuals would call a contact to confirm balloon sightings or get details regarding false leads and then bring that information back to the group – a conveyance processes. But again the use of voice calls in this capacity fits the prediction of MST that the use synchronous media does not guarantee synchronicity (Dennis and Valacich 1999). Overall the use of media with low synchronicity was highly successful in helping individuals form ideas from the raw data they were gathering and at no point was media of high synchronicity used for the purpose of conveyance.

For convergence processes the study shows that media of high synchronicity were used by the participants of the study. Of the three synchronous media available to the team (Skype, Wave and voice calls) only Skype was used for convergence, although Wave was originally going to also be used for this purpose as well. However it was decided early on, due to most team members dislike of the application, that it wouldn't be used due to the flaws in its design, which often made it behave in an asynchronous fashion. The team instead chose to use a Skype chat as an 'operations centre' where they would discuss information brought to them by various participants and form a shared understanding around

whether or not a lead was genuine and should be investigated, or whether it was false. They placed confirmed locations into the Wave to show that it had been found, thus re-purposing the media for use as a mechanism for conveyance because it could not adequately support group discussion. This fits well with the predictions of MST, not only because media of high synchronicity were used for convergence but also because when a media that was intended to be used for convergence (and thought of by the group as being synchronous) proved to be of low synchronicity it was repurposed. The observations about which media the team used for conveyance and convergence processes support MST by showing that effective task performance was achieved following the hypotheses of the theory.

Dennis et al.'s (2008) additions to MST state that certain media capabilities can have an effect on the synchronicity of a medium, the results show some interesting evidence in relation to MST hypotheses in this area.

(H1) - Transmission velocity increases synchronicity.

While the study cannot provide much evidence to support this statement there is a complete absence of evidence refuting it. The team uses Skype for their convergence processes and this media has an extremely high transmission velocity. The study does show that messages were transmitted at a fairly constant rate during the task, increasing rapidly when the team was trying to gain a shared understanding about a possible balloon location. This evidence does therefore lend some support to this aspect of MST, but it is by no means conclusive.

(H2) - Parallelism reduces shared focus and lowers synchronicity.

Participants agreed that parallelism had little impact upon the ability to reach a shared focus. In fact, evidence from the transcript shows that by having multiple conversation streams the team was able to work on more than one piece of evidence at a time. This is an effective argument in favour of parallelism, but only to a point, as noted by some team members eventually multiple conversation streams become too much and can make it difficult to work out what is going on. The evidence therefore suggests that MST's prediction of a parallelism having a negative impact on synchronicity is not correct in some circumstances and there are cases where it can aid in increasing synchronicity.

(H3) - Using symbol sets to aid in understanding increases media synchronicity.

The results from the study confirm this prediction, as many users felt that symbol sets, such as emoticons, were very useful in aiding to a conversation by conveying emotions that can sometimes be unclear in text form. Thus they help to increase synchronicity by reducing the encode/decoding time in message exchange.

(H5) - Rehearseability and reprocessability will negatively impact synchronicity by lowering shared focus.

The research does not support this prediction. Interviews showed that while participants tended to agree that rehearseability and reprocessability did reduce the rate of message transmission to a limited degree, this was greatly offset by the positive effects. Participants viewed the ability to edit messages and refer to older messages as very useful tools. Editing was valued highly, especially by foreign language speakers and those with disabilities, as it allowed participants to correct simple mistakes. These findings fit previous work by Walther (1996) who suggests that rehearseability allows for better structured statements. Thus, as the participants have stated, rehearsed statements reduce miscommunications that would heavily impact the conversation flow, slowing down the ability of the group to reach shared understanding. These findings directly oppose the predictions of the impact of media capability as stated in MST.

The study indicated much support for MST especially in predicting how media choice effects task performance for different communication processes, however the study does show that for this virtual team some of the assumptions about media capabilities which are predicted by MST do not hold. Why this is, is not clear however it is reasonable to posit that this could well be the result of the origins of the team, namely the fact that they're all members of an online community. As members of an online community participants extensively use mediated communication tools in their personal (and, indeed, in some cases professional) lives and this may make them able to experience parallelism, rehearseability and reprocessability without negative effects on synchronicity.

If we assume that one balloon location can stand as one 'task' of this challenge, then in using media of high synchronicity for convergence processes and media of low synchronicity for conveyance processes the team managed to effectively complete 8 out of the 10 tasks within a 10 ½ hour period. In successfully completing tasks using a variety of communication media for differing communication processes with different levels of synchronicity, the actions of the team fit and support the main predictions of

MST. This is shown again in the high relative performance of team, finishing 9th out of the 58 challengers in the competition, which is considered a favourable outcome overall.

Conclusion

Implications for Future Research

This study concentrates on only a single environment in which MST can be implemented. Future studies into MST need to investigate the theory in other environments to increase the amount of empirical evidence available so that a fair conclusion can be drawn on the theory.

The results of this study also show the importance of investigating the impact that online communities have on virtual teams, specifically what aspects of the online community improve the task performance of the team. As the evidence from this study has shown, the reactions of the virtual team to some media capabilities are not as expected and further research is needed into why this occurred – and indeed if the claims are true. It would also be of benefit to conduct a similar study to this one with multiple participants from multiple online communities and compare the results from these teams to determine if the results of this study were anomalous.

Limitations

The major limitation of this study was that only one team was the subject of the investigation. This did not allow for comparisons to be drawn or for the possibility of anomalous results to be discounted. Unfortunately access to the details of the other team's participation in the study could not be gained. Although there is a report published by the winning team (Pickard et al. 2010) this concentrated on the method of creating a network of contacts and not on the core strategy for collecting information and completing the task. It is possible that some information that could be of use to aiding this study is held by DARPA, but is unlikely that they will release this information.

Summary

The analysis of this study contributes well to the research on MST, virtual teams, online communities and the general body of information systems research. The study also answers the call for more research into Media Synchronicity Theory, especially in its modified form (Dennis et al. 2008), and finds support for its core elements. MST itself services to fill a gap in the research by explaining the success of teams that use asynchronous media to successful complete complex tasks in direct contradiction to

MRT and Social Presence Theory (Short et al. 1976; Daft and Lengel 1983; 1986).

However, some of the predictions of MST do not fit with the results of the study. Namely, predictions as to the effect of media capabilities on the levels of synchronicity were largely contradicted by the results of the study. Whilst evidence agreed with the prediction that transmission velocity and correct use of symbol sets would increase media synchronicity, in line with MST, they also show that parallelism, rehearseability and reprocessability do not lower media synchronicity, although they don't necessarily increase it either.

The reasons behind the contractions are not clear, however it is reasonable to assume that, given the success of other studies in supporting these aspects of MST (DeLuca and Valacich 2005; Hassell and Limayem 2010), that this could be a result of the virtual team in the study being made up of members of an online community. We can reasonably posit that the experience that members had using CMC on a regular basis as part of this online community, and beyond it, had an affect as to make them eliminate negative effects of parallelism, rehearseability and reprocessability. Of course it is also possible that these findings are not related at all to the participants' backgrounds but are, in fact, due to failures in MST at predicting the impact of media capabilities; more research on this will need to be conducted.

Overall this study finds evidence supporting the core of MST and, despite finding contradictory evidence, concludes that it is a suitable theory for providing insight into how the media choice of teams can enhance their ability to carry out complex tasks.

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