

## **STRESS IN VIRTUAL TEAM VS FACE-TO-FACE TEAM: IS WORKING IN VIRTUAL TEAM MORE STRESSFUL THAN FACE-TO-FACE TEAM?**

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### **ABSTRACT**

This paper compares stress in Virtual Team (VT) and face-to-face team (F2FT) based on challenge-hindrane stress theoretical framework. The VT's characteristics are discussed. We propose VT is generally more stressful (both for challenge and hindrance) than F2FT. Meanwhile, social supports which are believed to be able to reduce stress, is more prominent in F2FT than in VT.

**Keywords: Challenge, hindrance, social support, virtual team, face-to-face team.**

## INTRODUCTION

Supported by rapid advancement of Information Technology, working in a team virtually has become more critical for many organizations (Lurey & Raisinghani, 2001). Although Virtual Team (VT) possesses various advantages, it is not without any problems. One social factor which is very essential yet rarely discussed in team literatures is about stress.

Researchers have wide and divergent opinions concerning stress (Staal, 2004). For instance, conceptualizations of stress in the literatures are varied, depending on how we treat the stress, whether as positive or negative. Cavanaugh (2000) posited that not all stress bad. Their study was successfully distinguishing two kinds of stresses, positive stress defined as challenge, and negative stress defined as hindrance. Positive stress can result in a competitive edge and force positive change (Marino, 1997), while negative stress causes the opposite result. Type of stressors is closely associated with challenge or hindrance.

Meanwhile, there are distinct differences between VT and Face-to-Face team (F2FT). The critical differences can be seen from the three characteristics of VT, namely: geographical dispersion, use of technology, and cultural differences. There are some literatures discussed about stress in the physical team, yet little is known whether the stress factor would have the same or different effect in VT and F2FT. Drawing from the stress as challenge and hindrance, the main objective of this study is to compare stress in VT and F2FT by applying double construct stress as it was developed by Cavanaugh (2000). The research question of this study is: Is VT more stressful than F2FT? Propositions will be elaborated to answer the research question.

In addition, social supports have also played important role to buffer the stress. Amongst social supports pertinent in VTs is team cohesion. The relationship factor such as cohesion is prominent in many stress social supports related studies, yet there are not many studies discuss social support to reduce stress in virtual environment. This study will also compare the social support in VT and F2FT.

## THEORETICAL FRAMEWORK

### **Virtual Team (VT) versus Face-to-Face Team (F2FT)**

Unlike traditional F2FT, VTs rely on ICT to work, collaborate, exchange information to accomplish particular tasks. What makes them virtual is because they work primarily using Information Communication Technology (ICT) and do not have a common physical space that they meet in any frequency (Poole & Zhang, 2005). VT let people to communicate, interact, working together in a specific team across border (Bergiel, Bergiel, & Balsmeier, 2008).

The definition of VT according to Lipnack and Stamps is as followed: “a group of people who work interdependently with a shared purpose across space, time, and organizational boundaries using technology” (Lipnack & Stamps, 2000). Derived from the definition, we conclude the three crucial characteristic of VT that relatively distinguished virtual from F2FT team, they are the geographical dispersion (including time dispersion), using of technology, and more diverse than F2FT (Culturally, backgrounds, skills, etc.).

Members of F2FT definitely can meet each other in close physical proximity; there is no geographical and time separation when they work together. F2FT team can also use ICT for doing its work, to communicate, or sharing the information needed to complete the tasks. However, the level of ICT used may not as frequent as in VT. Meanwhile, diversity in F2FT may not be as diverse as in VT. F2F team may not be so diverse team due to the difficulties finding such team member existing within organizations, unless the tasks really requires them to be so diverse. VT diversity is higher because its team member may comprise from different country or organizations.

### **Stress as Double Constructs**

It has been a general assumption that stress is referred negatively by degrading performance (Driskell & Salas, 1999). Nevertheless, stress researchers also argued that stress is not always negative (bad), implying that there is a positive (good) stress which can improve performance. Perceived stress can be recognized through a self-reported stress and it can be associated with positive and negative outcome. In Cavanaugh (2000) study, they distinguished two types of stress, positive stress referred as challenge and negative stress as hindrance.

Challenge stressor is defined as “work-related demands or circumstances that, although potentially stressful, have associated potential gains for individuals”. Meanwhile, hindrance stressor is defined as “work-related demands or circumstances that tend to constrain or interfere with an individual’s work achievement and that do not tend to be associated with potential gains for the individual” (Cavanaugh et al., 2000).

The distinction of challenge and hindrance should be based on type of demand rather than level of demand (Selye, 1982). In other words, there are some type of stressors will determine challenge, while other type of stressors will determine hindrance. For instance, stressors appraised as challenge may include workload, job/role demands, job complexity, job scope, high responsibility, and time pressures (Cavanaugh et al., 2000; Lazarus & Folkman, 1984; Lepine, Podsakoff, & Lepine, 2005; McCauley, Ruderman, Ohlott, & Morrow, 1994). Challenging job demands or work circumstances produce productive positive feeling, though it may be stressful.

Meanwhile, stressors (stimuli that place demands on individuals) are appraised as hindrances such as resource inadequacy, role ambiguity, role and interpersonal conflict, role dissensus, role overload, role interference, role strain, role clarity, supervisor-related stress, hassles, red tape, organizational politics, and concerns about job security (Cavanaugh et al., 2000; Lazarus & Folkman, 1984; Lepine et al., 2005). While stress literature which incorporates the challenge-hindrance framework had been focused on the individual level, a study by Pearsall (2009) extended the framework from individual to team level by including the coping strategy and achieved the same results.

## **PROPOSITIONS**

### **Challenge Stress Effect**

We argue that VT experiences higher challenge stressor than F2FT due to its characteristics. Three stressors that have been regarded as challenge stressors are Time constraint, Task loading, and Task complexities. In this section, we will compare the three challenge stressors in VT and F2FT.

Time limitation is one stressor that can cause stress (Staal, 2004). Time stressor is considered a challenge or positive stress that can improve both performance and satisfaction (Cavanaugh et al., 2000; Lepine et al., 2005). The shorter time constraint, the more stress since team may perceive that they may have limited time to finish their task. Team member may be forced to exert their dormant knowledge, efforts, and abilities to cope with the tasks.

Tasks level or job overload can also cause challenge or positive stress (Cavanaugh et al., 2000; Lepine et al., 2005). With so many jobs to do, team may perceive the tasks as challenging. The team may divide the jobs and put more efforts necessary in order to comply with tasks' goals, no matter how many or difficult the tasks are. Meanwhile, task complexity refers to how complex the tasks are. Task complexity can also be regarded as challenge since the team may feel more challenging to finish complex rather than simple tasks.

Unlike F2FT, one salient characteristic of VT is that they work in geographical dispersion where each team member is separated physically in long distance, allowing them to work virtually round the clock, possibly 24 hours to fulfill the time constraint. In a similar case, extreme different time zone (e.g. USA and Taiwan) may cause VT member to work in longer time period or more flexible working hours to finish the tasks.

In one side, there may be a problem in dealing with synchronous meeting, when all of the team members in USA and Taiwan must be online at the same time. However, the team can arrange the most suitable designated time to meet online synchronously. Meanwhile, they should focus on the tasks that can be done in asynchronous way. It will become more challenging when the VT has to finish the tasks under time constraint (time limitation). Due to the different time zone, if there is a problem, the VT may need to wait for other members who are located in other end of the world to respond.

Task overload and complexity can also be stressful. They have to figure it out how to work virtually against the time and space to finish the abundant and complex tasks. VT can be more stressful to do such tasks. While in F2FT, each team member could work in the same time zone, in one office space which is in very close physical proximity. F2FT team has the biggest advantage during the meeting since each team member is located in the same space and time. The problem may be overcome right away - no need to wait other team members to respond.

Time constraint, tasks overload, and task complexity can be dealt together in the same time and space. Unlike F2FT, VT "physically" cannot see whether their team member is really working or what exactly they are doing, they are even not even sure whether others pay attention to their messages (Paul, Samarah, Seetharaman, & Mykytyn, 2005). VT members are not only lacking of shared physical settings, but also invisible to each other depending on what kind of ICT used (Finholt & Sproull, 1990). Meanwhile, F2F team can see clearly what their team members are doing.

The extensive use of Information Communication Technology (ICT) such as advance collaboration tools, e-mail, video conferencing, messengers could help the VT to deal with the tasks as long as they can use it efficiently and effectively. Communication is indeed very crucial to coordinate and work. Unfortunately, it has to and only has to be done through ICT. Although communication is very critical to VT performance (Iacono & Weisband, 1997), the

dispersion of the team members often make them difficult to communicate personally and directly (Bergiel *et al.*, 2008).

Communication challenge is the most prominent since the way of team members to communicate is completely different than F2FT. The traditional social mechanism is lost or distorted. The existence of facial expressions, vocal cues, and gestured are altered. Although social presence can deal with it in virtual media, it may not entirely the same as in traditional settings. Hence, potential for misunderstanding in VTs is extraordinary (Bergiel *et al.*, 2008) than F2F. Moreover, the use of ICT as the only way to collaborate in VT leads to Computer efficacy issues since not all team members have the same efficacy in using the ICT (Kayworth & Leidner, 2002).

Recall that all of the communication has to be done within ICT, whether written or oral, it is highly probably VT will encounter more communication problem. As the less time require to finish the project, more tasks to do, and more complex the tasks are, the more various problems in using ICT and communication may tend to occur. When the thing goes wrong, for example, Internet connection problem, efficacy issues, misunderstanding due to miscommunication within team member, it will definitely hamper the VT to finish the tasks in all three challenge stress conditions.

Besides, when the tasks are more complex, more extensive communication is indispensable for VT. All of this has to be done virtually. Meanwhile, F2F team may or may not use ICT as extensive as VT to do its tasks. Since F2F can meet each other in the same time when they are working in the tasks, F2F can communicate directly without the use of ICT where they can freely expressed the “full” communication (with verbal, non-verbal, para-verbal cues) to other team members.

Culture and diversity is one characteristic inherent in VT. They are purposely formed to exploit diversities which are not existed within the organization. VT which is rich in culture and diversities have been regarded as the strong point of VT. In diversity, each team member has their own areas of competence that were uniquely his or her own (Majchrzak, Malhotra, Stamps, & Lipnack, 2004). However, diversity also requires greater communication skill because different culture, background, expertise or skills may cause misunderstanding or biases. In spite of using the same language, say the English, various disciplines may have dissimilar languages in which team members with different disciplines may not understand each other (Majchrzak *et al.*, 2004).

It is agreed, the team that works on complex tasks will be more effective when the team is composed of diverse team members (Jehn, Northcraft, & Neale, 1999; Pelled, Eisenhardt, & Xin, 1999; Shaw, 1976). Likewise, when VT deal with complex tasks, such situation will induce the challenge stressor where each diverse VT members can provide a wide range of different viewpoints based on their particular diversities (e.g. experiences, skills, culture, etc.) for the team benefits (Boone, van Olffen, Witteloostuijn, & De Brabander, 2004; Jehn *et al.*, 1999).

Even though F2FT may have diversities, its diversity generally may be lower than VT. How to deal with this “high” level of diversity can become a benefit as well as an unprecedented challenge for VT. Besides, integrating those diverse viewpoints among diverse team members is also another issue that needs to be taken care of.

Geographical dispersion, extensive use of Information Communication Technology and Culture diversity will cause challenge stressors more prominent in VT. The more time constraint, tasks load, and task complexities, the more challenges that VT has to face. Due to VT characteristics, we further argue that such challenges may not lead to more positive effect (better performance) as compared to F2FT. Based on the argument, we come to this following proposition:

**Proposition 1:** *Challenge stressor caused by Time constraint, Task overload, and Tasks complexity is more prominent in VT than F2F team.*

**Proposition 2:** *Even though challenge stressors mentioned in Proposition 1 are more prominent in VT, due to VT characteristics, it may not necessarily lead to better VT performance as compared to F2FT performance (e.g. communication problem).*

### **Hindrance Stress Effect**

One of example given as the hindrance or negative stress is resource inadequacy which is represented by team size. We assume the team size should be relevant with the task load, time limitation, and task complexities. In other words, the tasks will be adjusted to how many people who will be in the team to do particular tasks. Huge or very complicated tasks should not be done only by a team which consists of two or three members.

We argue both VT and F2FT should have adequate resource in order to perform their job. Regardless the team is geographically dispersed, using ICT to collaborate, and culturally different, the adequacy of team members is still very crucial. Lack of team members both in virtual and F2FT will induce hindrance since the team will not have enough people's power, assistance, knowledge, or supports from their team members to do the particular tasks. When the resource is not enough, the team performance will not be effective, thus the performance will be degraded, no matter in virtual or F2FT.

Role task clarity is given as one example of hindrance or negative stress. VT works in different geographical space and time. The only communication and collaboration among team members is done only through Information Communication Technology. They can "meet" online, yet they cannot meet in physical world. Asynchronous work time is also a problem since the VT may not work at the same time. VTs may also consist of diverse team members with different cultures, backgrounds, and skills.

Given these characteristics, the role tasks and responsibility has to be clearly assigned to each VT member, otherwise serious confusion will occur within the VT. Specifically, the question such as who is doing what and responsible for what tasks can be justified at the very beginning of VT formation. That is, although team member cannot meet each other, they already know exactly what their roles and responsibilities are. The team will be able to finish the tasks without too much stress. Asynchronous work can also run well if each VT member knows their tasks and do the tasks exactly based on their roles and responsibilities.

Research has shown that the VT is relied on their knowledge coordination to perform the tasks (Kanawattanachai & Yoo, 2007). Generally, through the use of ICT in virtual environment, VT will develop the Transactive Memory System (TMS) over time to locate the experts, task-knowledge coordination, and cognition based trust existing within VT (Kanawattanachai & Yoo, 2007). Besides TMS has become essential to perform task

effectively, the power of TMS can also exploit the power of diversity within the VT. Different experts or skills can be identified, thus clear role and responsibility is assigned to that particular team members. Using TMS, VT member can be more familiar with their own role and responsibility and also with others. Other research also shows, when doing the team selection for VT, the team member will take the most importance on the tasks skills due to the lack of physical proximity and visibility (D'Souza & Colarelli, 2010). It means, the VT is more tasks oriented than F2FT.

Based on the arguments above, we come to conclusion that VT should be given a crystal clear objectives and job roles in the beginning of the task due to its characteristics. Lack of role task clarity will definitely make the VT suffer. The VT will experience negative stress since they may get confused on how they should finish their task or fulfill the objective required by the tasks. In the virtual environment, unclear and vague job roles as well as responsibility may cause very significant obstacles as some job or role overlaps. Meanwhile, in F2FT, unclear, vague role task can be dealt easier and simpler than VT because the team is always met face to face. Through regular F2F meetings, various problems in job roles and responsibility can be solved and clarified. Based on our argument, we propose:

**Proposition 3:** *Hindrance stressor caused by the team size has the same effect both for VT and F2F team*

**Proposition 4:** *Hindrance stressor caused by role tasks clarity is more prominent in VT than F2F team and it would hamper VT severely.*

### **Social Supports**

Social supports are identical with the social relationships among people which can reduce the stress effect both for the Virtual and F2F team. Thus, when team member get stressed, social supports can buffer the stress effect by building social aggregation where each team member can function and build the relationships (Cohen & Wills, 1985; Durkhem, 1951).

Source of social supports can come from many people such as co-workers, supervisors, family and friends, other people at work, and miscellaneous. In this context, the source of social support comes directly from the team member itself. Developing team cohesion is a problem in VT. Indeed, it is very difficult to interact with anonymous individual; this leads to weaker the relational ties and less team identification. Cohesion is an important factor in VTs (Salisbury, Carte, & Chidambaram, 2006) and it has been viewed as an important determinant of team performance (Beal, Cohen, Burke, & McLendon, 2003).

In VT, cohesion is considered as social supports which can buffer the stress effect. Without cohesion, the team can experience more stress. In hindrance stressful environments (negative stressors – smaller team size, unclear role-tasks), cohesion is likely to decrease the hindrance stress. By having a good relationship among VT members, unclear role-task and inadequate team member resources may be overcome.

However, social support in VT may be different than FT2T. The virtual interaction and relationship in virtual world is different than the physical interaction (D'Souza & Colarelli, 2010). Accordingly, in VT the interaction as well as the relationship process has to be within virtual environment. It is only in F2FT, direct physical interaction and relationship can be happening. As consequence, social supports such as love, empathy, care, and others are “real”.

On the contrary, the use of ICT in virtual environment will make some elements of interactions such as visual cues, emotion, verbal, gesture, para-verbal are altered and relatively missing (Warkentin, Sayeed, & Hightower, 1997).

Communication is also less efficient in VT, making the relational links among team members weaker. VT member will also experience greater difficulties with socio-emotional process in developing the cohesion such as relationship building and trust (D'Souza & Colarelli, 2010; Hightower & Sayeed, 1996; Powell, Piccoli, & Ives, 2004; Warkentin et al., 1997). Generally, people are less likely to be satisfied working in VT than F2FT due to its virtual environment. Team member may feel lack of social support and experience more stressed while work virtually. Hence, we declare our last proposition.

*Proposition 5: Social Support to reduce stress is more prominent in F2FT than VT*

## CONCLUSION

This paper compares the virtual and F2F team under stress condition. Virtual and F2FT are indeed different in its characteristics. Among many characteristics, this study used three characteristics that we believe as the most crucial to distinguish VT from F2FT. They are geographical and time dispersion, the reliance on ICT, and diversity. We use challenge-hindrane stress framework as our definition of stress.

Challenge is the stress situation where it can produce positive outcome. It refers to the positive stress. Meanwhile, Hindrance is the stress where it can induce negative outcome. It refers to negative stress. According to literatures, the stressor of challenge and hindrance is based not on the level of stress, but is based on the type of the stress. Some type of stress such as time constraint, tasks load, and complexity are referred as challenge; while team size and role clarity are referred as hindrance. When we compare the characteristics of both teams and then place them under challenge and hindrance stress situation, we conclude that except for the team size, VT is more stressful than F2FT due to its characteristics for both for challenge and hindrance. Besides that, due to its virtual environment which altered the way of team to communicate and interact, VT has less social support to reduce stress than F2F team.

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