DOES PERSONALITY MATTER TO GROUP JUDGMENT TASK PERFORMANCE AND APPROPRIATION OF COLLABORATIVE TECHNOLOGY UTILIZATION?

Yu Zhao,
University of Wisconsin–Milwaukee
Sheldon B Lubar School of Business,
Milwaukee, WI 53211
yuzhao@uwm.edu, (218) 393-2936

Keshavamurthy Ramamurthy,
University of Wisconsin–Milwaukee
Sheldon B Lubar School of Business,
Milwaukee, WI 53211
ramurthy@uwm.edu, (414) 229-5809

ABSTRACT

Both task-technology fit and user appropriation of technology have been noted to have significant effect on task performance. In a team context, it is through social appropriation of technology that the differences between misfit and fit teams quickly dissipate. However, previous research provides little guidance on the antecedences that influence the appropriation process. In this research, we investigate the relationship of the five-factor model (FFM) of personality-through the Fit-Appropriation Model (FAM)-to group task performance within different group support systems (GSS) configurations in the context of judgment tasks.

Keywords: Group Support Systems (GSS), Judgment Tasks, Personality, Fit-Appropriation Model (FAM)

INTRODUCTION

Information Systems (IS) research has concentrated on exploring the factors which influence task performance for many years. Task-Technology-Fit (TTF) theory indicates that a good fit between task and technology would result in better team performance than for those teams with poor fit (e.g., Zigurs & Buckland, 1998; Zigurs et al., 1999). Fit-Appropriation Model (FAM) (Dennis et al., 2001; Fuller & Dennis, 2009) further proposes that TTF is useful to predict performance initially, but that the influence of appropriation undertaken over time to keep team's task performance improving is more than that of Task-Technology-Fit. The TTF research stream guided by Goodhue and Thompson (1995) has proposed the Technology-to-Performance Chain (TPC) model, which draws insights from Theories of Fit (e.g. Vessey, 1991) and Theories of Attitudes and Behaviors (e.g. Bagozzi, 1982). In the TPC model, individual characteristics have been proposed to moderate the Task-Technology Fit, and are also predictors of individual

performance. However, the impact of individual characteristics has not been tested yet in TPC model or in the TTF model in the context of collaborative technology usage.

In conformity with the practice in Information systems (IS) research literature, individual differences have been conceptualized as user factors, such as personality, demographic, and situational variables which influence their beliefs and use of information technology (e.g. Agarwal & Prasad, 1999; Thatcher & Perrewe, 2002). Although other aspects of individual differences, such as cognitive style (e.g. Huber, 1983; Robey, 1983), personal innovativeness in IT, trait anxiety and negative affectivity (Thatcher & Perrewe, 2002) have been examined before in IS research literature, there is not much IS research relating to personality.

Fit-Appropriation Model (FAM) developed by Dennis, Wixom, and Vandenberg (2001) has been used to predict team performance, and further research by Fuller and Dennis (2009) highlights the fact that it is through social appropriation of technology that the differences between poor-fit and fit teams quickly dissipate. However, FAM provides little guidance on what triggers appropriation and how to explain the appropriation that is undertaken, so further investigation is needed. Given the fact that the context of personality has not been linked to team performance while using collaborative technology or to appropriation of technology, it is reasonable to investigate the influence of personality on team performance through FAM.

Devaraj, Easley, and Crant (2008) illustrate that the five-factor model (FFM) of personality is suitable for IS research, through which personality can be integrated into IS models. Further, in contemporary psychology, FFM is commonly accepted and validated, with a long history of extensions that have examined its effect on job performance (e. g., Barrick & Mount, 1991; Barrick et al., 2001; Barrick et al., 2002; Bono & Judge, 2004).

The purpose of this study is to look into the relationship of personality-through the FAM-to team performance within different GSS configurations. How appropriation relates to different personality factors over time would help us to obtain better understanding of the predictors of team performance. The rest of the paper is organized as follows. The paper begins with an overview of TTF and team performance, with a focus on judgment tasks which are different from decision tasks. It then proceeds to present a brief overview of the relevant literature on personality theory and the FFM. Hypotheses are developed based on the relationships between personality and group judgment tasks. Further, relevant research about appropriation is discussed. Subsequent sections focus on investigating the impact of personality on appropriation when performing group judgment tasks. After that, we describe a planned experiment design using both *fit* and *mis-fit* GSS configurations for performing judgment tasks. Following section is a brief presentation of how results will be analyzed. Finally, we briefly discuss potential implications of the research, as well as the strengths and weaknesses. Future directions are also discussed.

TASK-TECHNOLOGY FIT (TTF) AND TEAM PERFORMANCE

Judgment task vs. decision task

When extending the theory of TTF to the GSS context, Zigurs and Buckland (1998) conceptualized group tasks as "the behavioral requirements for accomplishing stated goals, via some process, using given information" (p. 316). In this study, we follow their definition and descriptions about the essential characteristics of task complexity. According to Campbell (1988), factors contributing to higher complexity are: multiple paths, multiple outcomes, conflicting interdependence, and the uncertainty or probabilistic linkages among paths and outcomes. Zigurs and Buckland (1998) group those tasks which share one or more of the complexity dimensions into five task categories: simple tasks, problem tasks, decision tasks, judgment tasks, and fuzzy tasks.

Most research which examines TTF theory, fit-appropriation model (FAM) and their applications has focused on decision making tasks (e.g., Dennis et al., 2001; Fuller & Dennis, 2009; Germonprez & Zigurs, 2009). This study concentrates on the understudied domain of judgment tasks. According to Campbell (1988), common emphasis in decision task is on choosing or discovering an outcome that optimally achieves multiple desired end-states. The complexity sources for decision tasks come from the number of desired outcomes to attain; uncertainty or probabilistic linkages; and perhaps conflicting interdependence among outcomes. For judgment tasks, the complexity source is from conflicting interdependence among pieces of information (Campbell, 1988).

Looking into the fundamental nature of both tasks, the differences are explicit. The essence of all decision making is the process to estimate the probability of each outcome, to determine value of each outcome, and to choose the course of action that maximizes the subjective expected value (Campbell, 1988; Schneider & Shanteau, 2003). For judgment tasks, task-performers pay attention to consider and integrate diverse sources of information, and emphasize on resolving the conflict and uncertainty in information associated with the task (Campbell. 1988; Schneider & Shanteau, 2003). Decision tasks share an overlap with intellective tasks, in that the performances of both tasks are measured by accuracy. Conversely, judgment tasks are different from intellective tasks, which involve solving problems that have correct answers. In this study, we follow the definition from Straus and McGrath (1994: p. 89), "Judgment tasks, which are located closer to the conflict-resolution end of the dimension, do not have correct answers; the group must seek consensus on a preferred alternative".

The performance measures of group judgment task diverge from that of group decision task. For group decision task, the team-level performance is usually measured by decision quality and task time. Decision quality is normally measured by the accuracy of selected outcomes (e.g. Fuller & Dennis, 2009; Straus & McGrath, 1994). However, for group judgment task, there is no objectively-ratable solution with right and wrong. Accordingly, the primary criteria normally used to evaluate group performance are task time and group consensus (e.g. Mennecke et al., 2000; Yoo & Alavi, 2001). According to Yoo and Alavi (2001), group consensus is measured by assessing each individual's outcome preference after the group has reached an agreement.

Specifically, team members are asked about their personal preferred outcomes immediately after each task. Group consensus is counted by the number of participants in the group whose decision preferences are the same with their group decision. For group judgment task, the number of participants in the group whose personal judgment preferences are the same with the group judgment would be counted as group consensus.

GSS configuration: communication support and information processing

Zigurs and Buckland (1998: p. 319) define GSS technology as, "a set of communication, structuring, and information processing tools that are designed to work together to support the accomplishment of group tasks". Communication support dimension has been characterized by technology that supports, enhances, or defines the capability of group members to communicate with each other; process structuring support refers to technology that can support, enhance, or define the processes by which groups interact; and information processing support includes methods to gather, share, aggregate, structure, or evaluate information.

Building on TTF prescription (as proposed in (Zigurs & Buckland, 1998)), the best group performance in judgment tasks should result when using a GSS configuration that emphasizes communication support and information processing. We believe that both communication and information processing supports are significant to the performance of group judgment tasks.

FIVE-FACTOR MODEL OF PERSONALITY

In contemporary psychology, the FFM or 'Big Five' has been the most popular categorization used to study the relationship between specific personality traits and performance. Referring back to the initial taxonomy of personality, McDougall (1932: p. 15) states that, "Personality may to advantage be broadly analyzed into five distinguishable but separate factors, namely intellect, character, temperament, disposition, and temper…" Subsequent research found that the five-factor model successfully matches with the data quite better than other taxonomies of personalities (Barrick & Mount, 1991).

The "Big Five" factors of personality, which were discovered and defined by several researchers (e.g. Borgatta, 1964; Norman, 1963; Smith, 1967), are considered as the five broad dimensions of personality used to describe human personality (Digman, 1990; Costa & McCrae, 1992; John, 1990; Goldberg, 1990). The big five personality dimensions classify individuals according to conscientiousness, openness to experience, extraversion, agreeableness, and neuroticism.

Hypothesized Relationships between Personality and Judgment Task Performance within GSS configurations

Multiple empirical studies have observed that personality is a stable set of constructs which determines peoples' differences in terms of cognition, beliefs and behaviors. Researchers in management and psychology area have extensively investigated the relationship between personality and job performance, and it is widely accepted that personality is a robust predictor of job and task performance. In the IS area, characteristics of personality have been treated as

direct antecedents as well as moderators in technology utilization theories, such as TAM (e.g. Devaraj et al., 2008). In this study, we propose that group task performance is linked to specific personality characteristics.

As indicated earlier, we focus on the effect of personality on group task performance in judgment tasks. The hypothesized impact of the big five personality traits on group task performance through technology utilization is analyzed below. Figure 1 indicates the hypothesized relationships between FFM and the group judgment task within GSS configuration.

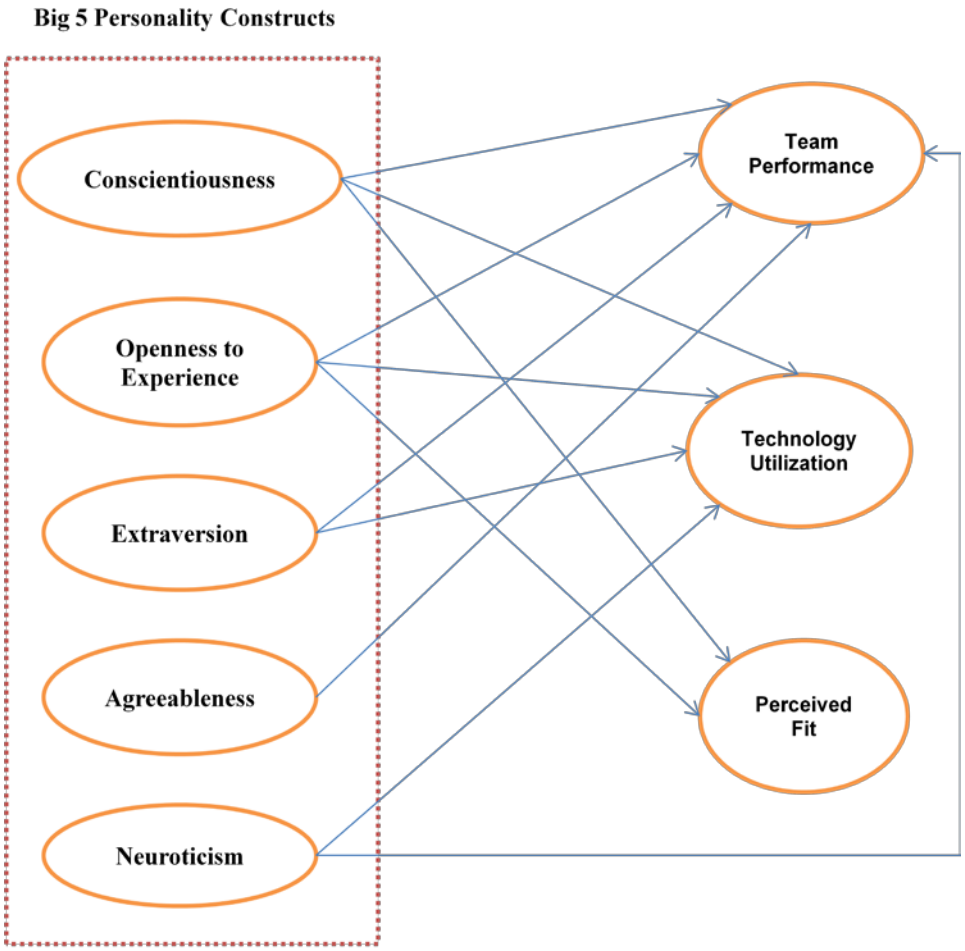

FIGURE 1. RESEARCH MODEL WITH FIT/MISFIT GSS CONFIGURATION

Conscientiousness: Conscientiousness is a fundamental individual difference variable that is significant to work performance (Barrick et al., 2001; Barrick & Mount, 1991). Compared to other traits in the FFM, its validity is the highest overall generalizing across all criteria of work outcomes (Barrick et al., 2001). The characteristics of conscientiousness are hard-work, achievement-orientation, and perseverance (Digman, 1990). Conscientious personalities are intrinsically motivated to work hard and strive to improve work performance (Devaraj et al., 2008). In view of the instinctive motivation for high achievement it is expected that people with

a high level of conscientiousness would be more likely to carefully think about user-technology relationships and then utilize technology in particular ways to improve work performance. Since people with high level of conscientiousness are careful, thorough, responsible, organized, and intentional (e.g. Botwin & Buss, 1989), they are expected to be generally well informed in recognizing and assessing the value of technology at their disposal. Thus, we argue that conscientious people are better able to perceive the fit/misfit features of GSS configurations.

HYPOTHESIS 1 (H1): Regardless of fit/misfit GSS configurations, people with high conscientiousness will be better able to perceive the fit/misfit features of the GSS configuration.

Based on such evaluation, people with a high level of conscientiousness are expected to be able to appropriately utilize the technology. Lin and Ong (2010) indicate that conscientiousness moderates the relationship between perceived usefulness of technology and intentions to use technology. In GSS configuration designed with fit, people with high conscientiousness will be better able to recognize the usefulness of this configuration and can therefore be expected to effectively utilize the technology in performing the judgment task. In GSS configuration designed with misfit, people with high conscientiousness will be better able to recognize the ineffectiveness of this configuration. Based on this perception, people with high conscientiousness are more likely to still find ways to maximally utilize the limited technology tools to perform judgment tasks.

For judgment tasks, participants need to integrate diverse sources of information, and focus on resolving the conflict and uncertainty in information associated with the task (Schneider & Shanteau, 2003). We contend that conscientious people are good at effectively and efficiently analyzing those conflicting piece of information, using necessary communication support tools in GSS to share information and to communicate with team members, and employing information processing support tools to evaluate/discuss preprocessed information.

HYPOTHESIS 2A (H2A): Given ‘fit’ GSS configuration, people with high conscientiousness will be better able to recognize the usefulness of this configuration and can therefore be expected to effectively utilize the technology in performing the judgment task.

HYPOTHESIS 2B (H2B): Given ‘misfit’ GSS configuration, people with high conscientiousness will be better able to recognize ineffectiveness of this configuration and can therefore be expected to find ways to effectively utilize the limited technology in performing the judgment task.

It is well accepted that conscientiousness has the strongest relationship with job performance, compared with the other four FFM personality dimensions. As noted by Barrick, Stewart, and Piotrowski (2002), conscientiousness is linked to job performance due to the accomplishment striving orientation. We contend that conscientious people will carefully judge and evaluate other team members’ opinion because of the intrinsic motivation for maximum performance. If most participants in the team are highly conscientious, the team will form a strong intention to succeed by performing well. In this study, we define high conscientious teams as those teams with most members who are high on conscientiousness. Conversely, low conscientious teams are defined as

teams where most members are low on conscientiousness. Because people with high conscientiousness will be better able to effectively utilize the technology for maximum performance, performance of high conscientious teams can therefore be expected to be better than low conscientious teams.

HYPOTHESIS 3 (H3): Regardless of fit/misfit GSS configurations, performance of high conscientious teams in performing the judgment task will be better than that of low conscientious teams.

Openness to Experience: People with high level of openness to experience are more likely to try something new (Devaraj et al., 2008). Openness to experience is associated with being "imaginative, cultured, curious, original, broad-minded, intelligent, and artistically sensitive" (Barrick & Mount, 1991: p. 5). Because people high on openness to experience are more sensitive, they are expected to be better able to perceive the fit/ misfit features of GSS configurations.

HYPOTHESIS 4 (H4): Regardless of fit/misfit GSS configurations, people with high openness to experience will be better able to perceive the fit/misfit features of the GSS configuration.

Devaraj et al. (2008) found that openness to experience is positively related to beliefs on the perceived usefulness of technology, which means that people high on openness to experience are more likely to hold positive beliefs toward utilizing technology. Given fit GSS configuration, participants will be provided with new technology that has not been commonly used in their everyday life, such as synchronous video conferencing platform with support tools in information aggregation, evaluation, and negotiation. Because people with greater openness to experience are more intellectually curious than their peers, they are more likely to utilize the novel technology when performing group task. In misfit GSS configuration, participants will be provided with technology that might have already been used in their everyday life, such as synchronous instant messaging. Without new technology features as stimuli, it is expected that people high on openness to experience are not likely to be intrinsically motivated to utilize the technology when performing group task.

HYPOTHESIS 5A (H5A): Given 'fit' GSS configuration, people with higher level of openness to experience will be intrinsically motivated to utilize the technology and, therefore, be expected to actively utilize the technology in performing the judgment task.

HYPOTHESIS 5B (H5B): Given 'misfit' GSS configuration, people with higher level of openness to experience will not be intrinsically motivated to utilize the technology and, therefore, be expected to utilize the technology in the same way as their opposite peers (i.e., lower level of openness) in performing the judgment task.

Because group judgment tasks require people to make their own judgment first, to discuss the preprocessed information about each individual's judgment, and finally to reach the group consensus, value change does exist in the process. Individuals with high level of openness to experience would like to seek out value change (McCrae & Costa, 1997). Conversely,

individuals with low level of openness to experience prefer stability and don't intend to embrace new ideas to work or to change their value. When performing group judgment tasks, people high on openness to experience would be more likely to consider others' opinions, and therefore be expected to reach mutual understanding more easily.

In our study, group consensus is one of the criteria to measure group judgment task performance. We expect that openness to experience would prompt group consensus in performing the group judgment task. In this study, we define high openness to experience teams as teams where most members are high on openness to experience. Conversely, low openness to experience team is defined as teams where most members are low in openness to experience. We contend that performance of high openness to experience teams in judgment task will be better than that of low openness to experience teams, when performance is measured by group consensus level.

HYPOTHESIS 6 (H6): Regardless of fit/misfit GSS configurations, openness to experience at team level is positively related to group judgment performance reflected as reaching consensus.

Extraversion: People with high level of extraversion are social, active, talkative, and outgoing; they also like to focus on establishing and maintaining good interpersonal relationships (Devaraj et al., 2008). According to the theory of reasoned action (TRA), extraversion is identified as one of the traits that influence beliefs about behavior (Ajzen & Fishbein, 1980). It is commonly agreed that extraversion impacts people's intention to communicate with each other. Also, it is through communication that team members change their positions and strategies. Extraverts prefer to express their thoughts more frequently than introverts. Extraverts are intrinsically motivated to voice an opinion and are willing to share information (Cullen & Morse, 2011). We expect that regardless of the fit/misfit GSS configuration, extroverted people would use communication support tools to share information more frequently, and will be more willing and able to clarify conflicting and uncertain information associated with the judgment task in the GSS environment. It is through communication that task-performers share explicit understandings, which also accelerates the process to arrive at group consensus.

In this study, we define high extraversion teams as those teams with most members who are extroverts. Conversely, low extraversion teams are defined as teams where most members are introverts. We contend that performance of high extraversion teams in performing the judgment task will be better than that of low extraversion teams, when performance is measured by group consensus level.

HYPOTHESIS 7 (H7): Regardless of fit/misfit GSS configurations, extraversion is positively related to communication support technology utilization in group judgment task.

HYPOTHESIS 8 (H8): Regardless of fit/misfit GSS configurations, extraversion at team level is positively related to group judgment performance in terms of group consensus.

Agreeableness: Agreeableness has been described as being courteous, flexible, trusting, good-natured, cooperative, forgiving, soft-hearted, and tolerant (Barrick & Mount, 1991). A meta-analysis (Barrick et al., 2001) found that agreeableness has significant predictive validity in jobs/

tasks involving considerable interpersonal interaction and teamwork, especially if helping and cooperating with others are necessary. Those who are high in agreeableness personality dimension are accommodating and cooperative when asked to use new technology (Devaraj et al., 2008). It is reasonable to expect that agreeable people would be more likely to cooperate with others, and they are more amenable to arrive at consensus.

In this study, we define high agreeableness teams as those teams with most members who are high on agreeableness. Conversely, low agreeableness teams are defined as teams where most members are low on agreeableness. We contend that performance of high agreeableness teams in performing judgment task will be better than that of low agreeableness teams, when performance is measured by group consensus level. Thus, we propose:

HYPOTHESIS 9 (H9): Regardless of fit/misfit GSS configurations, agreeableness at team level is positively related to group judgment performance in terms of group consensus.

Neuroticism: Neuroticism is described as being anxious, depressed, emotional, worried, and insecure (Barrick & Mount, 1991). One of the characteristics highlighted in the neuroticism personality dimension is poor emotional adjustability, in the form of stress, anxiety, and depression (Judge & Iles, 2002). In contrast, those who are low in neuroticism are well-adjusted, and prone to positive emotions and reactions to work-related stimuli (Devaraj et al., 2008).

Ajzen and Fishbein (1980) identify neuroticism as one of the personality traits influencing beliefs about behavior. Neuroticism was found to be negatively associated with perceived ease of use of social networking technology (Rosen & Kluemper, 2008) and with beliefs about perceived usefulness of technology (Devaraj et al., 2008). According to Technology Acceptance Model (Venkatesh et al., 2003), perceived usefulness and perceived ease of use determine people's intention to use technology with intention to use serving as a mediator of actual technology use. We propose that neuroticism is negatively associated with the GSS technology utilization in group judgment task.

HYPOTHESIS 10 (H10): Regardless of fit/misfit GSS configurations, neuroticism is negatively related to GSS utilization in group judgment task.

Because neuroticism is associated with poor emotional adjustability and value change does exist in group judgment tasks, people high on neuroticism would be expected to have more difficulties to adjust their emotion and behavior to change their value when performing the group judgment tasks. Moreover, neuroticism was found to be negatively associated with beliefs about perceived usefulness of technology (Devaraj et al., 2008), so participants high on neuroticism would be less likely to effectively utilize technology. Without effective technology support, it's hard for participants to explicitly express their opinion or to effectively understand others' opinions, and therefore group performance would be damaged.

In this study, we define high neuroticism teams as teams with most members who are high on neuroticism. Conversely, low neuroticism teams are defined as teams where most members are

low on neuroticism. We contend that performance of low neuroticism teams in performing judgment task will be better than that of high neuroticism teams. Thus, we propose:

HYPOTHESIS 11 (H11): Regardless of fit/misfit GSS configurations, neuroticism at team level is negatively related to group judgment performance.

Personality, appropriation and team performance

Many previous researchers have conceptualized appropriation, which is similar to user adaptation. Beaudry and Pinsonneault (2005) define user adaptation as the "cognitive and behavioral efforts exerted by users to manage specific consequences associated with a significant IT event that occurs in their work environment" (p. 496). They also embrace significant modifications made to an existing IT into one kind of "IT event" (p. 496). When developing the Coping Model of User Adaptation (CMUA), they don't differentiate adaptation and appropriation. Appropriation is defined by Poole and DeSanctis (1988) as "…concerns alterations brought by users to the technology while using it" (p. 9). They further depict appropriation as visible through individuals' behavior about what users say and what do they do (DeSanctis & Poole, 1994). Moreover, Orlikowski (1996) describes appropriation as "The continuous, progressive, and mutual adjustments, accommodations, and improvisations between the technology and the users." (p. 69).

Fuller and Dennis (2009) examine the impact of Task-Technology Fit and appropriation on team performance over time, and end with the conclusion that TTF influences appropriation at the beginning and appropriation affects TTF over time. Their research suggests that it is through social appropriation that the differences between poor-fit and fit teams quickly dissipate. These authors identify appropriation as "the team's selection and use of these structures, including how users select and use available technology, task, and other structures through their interactions and how users ascribe meaning to these structures" (p. 4).

Despite empirical evidence for the influence of Task-Technology Fit and appropriation to task performance, FAM provides little guidance of how personality, as an antecedent, could influence the appropriation process. Conscientiousness has been demonstrated to predict use of task-focused coping mechanisms (Matthews et al., 2006), and people with high level of openness to experience are more likely to try something new (Devaraj et al., 2008). Also, people high on neuroticism are not well-adjusted, and prone to negative emotions and reactions to work-related stimuli (Devaraj et al., 2008). We argue that, at team level, both conscientiousness and openness to experience are positively associated with appropriation in group judgment task, and that neuroticism is negatively associated with appropriation in group judgment task.

In this research as noted earlier, both fit and mis-fit GSS configuration profiles would be investigated. We intend using the same team on two occasions to perform different judgment tasks. Low communication support and low information processing support will be provided to teams with mis-fit GSS configuration profiles. After receiving feedback on the first task performance, it is expected that high conscientious teams would think over the strategies to cope

with the mis-fit GSS configurations and then work on it. And high openness to experience teams are more likely to consider new methods to effectively utilize the limited technologies. We also contend that after receiving team performance feedback, it will be difficult for high neuroticism teams to properly adjust their emotions in performing appropriations.

According to FAM, the performance gap between 'fit' and 'misfit' teams would disappear, after they have appropriated the technology over time. Also, there will be no difference between 'fit' teams and poor-fit teams in terms of perception of TTF. Figure 2 signifies the proposed relationships between FFM, appropriation, team performance and perceived fit at a team level.

HYPOTHESIS 12 (H12): Conscientiousness at team level is positively related to appropriation in group judgment tasks.

HYPOTHESIS 13 (H13): Openness to experience at team level is positively related to appropriation in group judgment tasks.

HYPOTHESIS 14 (H14): Neuroticism at team level is negatively related to appropriation in group judgment tasks.

HYPOTHESIS 15 (H15): After misfit teams have appropriated technology over time, there will be no difference between fit teams and misfit teams in terms of group performance on the judgment task.

HYPOTHESIS 16 (H16): After misfit teams have appropriated technology over time, there will be no difference between fit teams and misfit teams in terms of perceived fit between group judgment task and technology.

PROPOSED EXPERIMENT DESIGN

Study participants

Participants would be undergraduate students enrolled at a large public university in the Midwest region of the United States. Participation would be voluntary, and participants would be assured of confidentiality of their responses. Students will be offered an opportunity to receive extra credit to participate in the research. The expected number of participants would be more than 300. Initially, we will invite 1,000 students randomly selected in the university to take personality questionnaire survey. After collecting and analyzing the data, we would categorize each personality dimension to two groups: high and low. Depending on the data, we will use median or mean score to get a balance in categorizing the team personality.

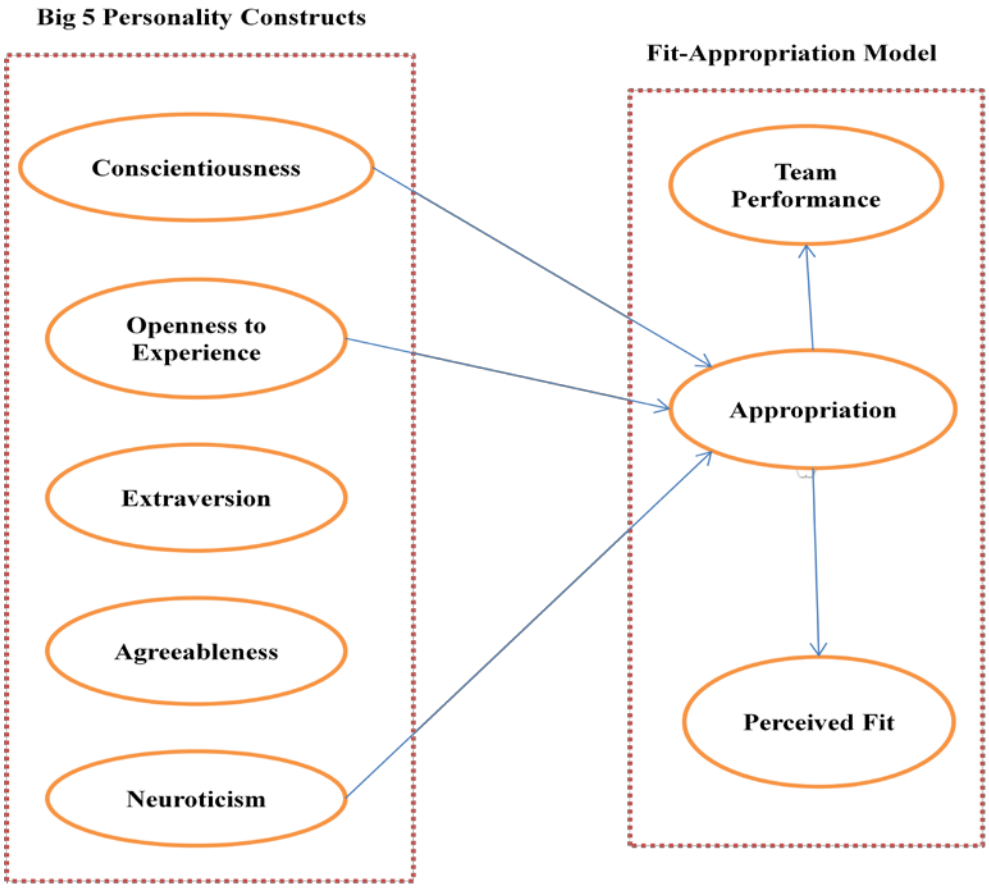

FIGURE 2. PROPOSED RELATIONSHIPS BETWEEN PERSONALITY AND FAM

Task

Two judgmental type tasks (T1 and T2) would be performed by each team. Each team would be composed of five members. One week before performing the first task, participants will complete the survey, noted above, which captures their personality and demographic variables. We will use two GSS configuration profiles: 'fit' TTF profile (high level of communication support + high level of information processing support) and 'misfit' TTF profile (low level of communication support + low level of information processing support) design for performing the two tasks. Each team will perform one judgment task, and after one week will be provided with the feedback on the first group task performance, when performing the second judgment task in the same fit/misfit GSS configuration profile. After each task, every participant will be asked to finish a survey which will be used to compile perceived TTF in terms of communication support and information processing support.

We plan to use the experiment design Mennecke et al.'s (2000) task mapping, the Legislative Dilemma, as a guide which requires teams to allocate $1.8 million among several competing

funding bills that were purported to be before the state legislature. The bills are representative of current and controversial social issues. In the first task, participants allocate the funding for sex education and contraceptive distribution in schools, appeal funding for special cases of death row inmates, and toxic waste cleanup. In the second task, bills include abortion subsidies for low income women, housing for the homeless, and job training for displaced workers. In both tasks, the governor of the state will not sign allocations below $500,000 and will fund one bill at $1 million. These constraints indicate that participants cannot simply split or average funding to each bill; instead, they have to think deeply based on their personal values, and then make judgments. After they make the initial financial allocation, they are required to communicate with their team members through the established GSS technical environment, and then to reach a final group judgment agreement.

The reason we chose this kind of task is that it involves information integration, evaluation, sharing and negotiation, which are all necessary procedures to perform a judgment task. Also, Mennecke et al.'s (2000) indicate that the task materials deal with various socially sensitive topics that are highly relevant and salient even for students as subjects (addressing the *realism aspect*), so the task is supposed to be highly involving and provide the subjects with significant intrinsic motivation.

In this study, possible ethical issues have been considered. The participants in the experiment will be voluntary, and there is no harm in conducting the tasks. Anonymity will be ensured in this study with participants being assigned unique numbers as their personal identity. The experiment design and materials will be sent to the Institutional Review Board (IRB) at the University for their review and approval.

GSS configurations-communication support technology and information processing tools

Communication Support: The research will employ high level of communication support – both video-conference and synchronous instant messaging; and low level of communication support – only synchronous instant messaging.

Information Processing: Group judgment tasks require information aggregation, evaluation, and negotiation. For information processing, there are a variety of GSS features that can support these three processes, such as pooling, voting schemes, social judgment analysis (SJA), etc. High level of information processing will carry all these features. Low level of information processing will carry only the features of information aggregation support (in the GSS configuration with low fit).

Independent variables

The five factors of personality and fit–misfit GSS configuration profiles are the independent variables. Self-reported personality will be measured through the International Personality Item Pool (IPIP) (Goldberg et al., 2006). We will use the scale with 50 items IPIP representation of the Goldberg (1992) markers for the big-five factor structure. Participants will answer the questions using a 5-point Likert-type scale ranging from *Very Inaccurate* to *Very Accurate*. To

measure the personality dimensions at team level, the composition of team members will be purposively selected by researchers in this study. For example, high conscientious teams will be composed of most team members who are high on conscientiousness. The cut off score for high versus low conscientiousness will be identified by scores in the noted pilot study that will be conducted prior to the actual assignments of student subjects to teams.

Fit GSS configuration profile will be reflected as high level of communication support and high level of information processing. Misfit TTF profile will be reflected by low level of communication support and low level of information processing. We will validate the GSS configuration profiles with a panel of experts in IS and GSS, in order to make sure that the given technologies are truly fit/misfit to the selected group judgment tasks.

Dependent variables

Perception of Task-Technology-Fit and technology utilization will be measured at the individual level. At the team level, a good group judgment task performance is indicated by short task time and high level of consensus.

Perceived Task-Technology-Fit would be captured via a self-reported survey after the tasks, which will measure both the perceived communication support and information processing support to the task that they perform. *Technology utilization and appropriation* will be analyzed through the user activities log in the GSS. Chudoba's (1999) coding scheme as used to analyze text and audio-video interactions in Fuller and Dennis's group decision task experiment (Fuller & Dennis, 2009) will be used by us.

The judgment task used in this research, as noted, does not have an objectively-ratable solution with right and wrong outcomes. Accordingly, following are the primary criteria to evaluate group performance:

1. *The amount of time spent in the task* would be the time in minutes that the team spends to reach agreement, which is from the moment when the communication support channels and information processing tools have been established and the first team member starts to state opinion until the team submits the group judgment result.
2. *Group consensus* would be measured as the number of participants in the group whose personal judgment preferences are not different from group judgment. Right after each task, participants will be asked about their personal preference, no matter what group judgment has been made.

Consensus change would be measured as the difference of group consensus between the first task and the second one. *Appropriation change* will be defined by using Chudoba's electronic process (EP) category.

Control variables

Every team will be provided with the same training and all necessary instructions before performing the two tasks. In this study, we will follow similar procedure as in previous research of Jain et al. (2006), who examined group decision tasks and collected data on control variables such as age, gender, aptitude, pre-experiment attitude, domain knowledge, and team-player orientation.

PROPOSED RESULTS ANALYSIS

We will perform two measures multivariate analysis of variance (MANOVA), one for group-level dependent variables (task time, group consensus) and one for individual-level dependent variables (perceived Task-Technology-Fit, technology utilization, and appropriation). The five factors of personality are the between-subjects factors. Hypotheses will be tested through using t-tests with an overall alpha level of 0.05. Medium effect size, α of 0.05, and sample size are input to calculate the power for tests. If the statistical power is higher than 0.8, power analysis would indicate that the likelihood of not rejecting the null hypothesis is low.

Analysis of covariance (ANCOVA) will be performed to test whether control variables have effect on the outcome variables after removing the variance their covariates account for (Keselman et al., 1998). If those covariates are not significant for the dependent variables, it will not be necessary to analyze them further in this study while performing MANOVA to test the posited hypotheses. If one or more covariates are significant for the dependent variables, further investigation will be done and necessary controls incorporated in MANOVA tests.

DISCUSSION

This research is expected to make two main contributions to the literature examining performance of groups using collaborative technologies. First, the study incorporates the effect of Five-Factor personality on team performance given fit/misfit GSS configurations. Specifically, we investigate the relationship between personality and technology perception, utilization, and appropriation. At team level, we define a "team–level personality", and indicate its association with group judgment task performance. Second, we focus on a group judgment task context, which has not been investigated much in previous literature. This study will enhance our understanding about the influence of personality on group judgment tasks using GSS technologies.

However, we also understand that there are some limitations. For example, this research only investigates the influence of personality on group judgment task performance without taking into consideration other individual differences, such as emotional intelligence and experience. Future research can attempt to investigate the combined effects of personality, emotional intelligence, and experience on group judgment task performance using collaborative technology. Also, we only chose one kind of mis-fit GSS configuration profile; further studies should also consider other mis-fit GSS configurations profiles, such as high communication support + low information processing, and low communication support + high information processing.

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