



## Personality and cognitive style as predictors of preference for working in virtual teams



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### ARTICLE INFO

#### Article history:

Available online 2 April 2013

#### Keywords:

Virtual teams  
Personality  
Cognitive style  
Big Five  
MBTI

### ABSTRACT

This study tests the effects of personality and cognitive style on preference of individuals for working in virtual teams. The results support the use of both personality and cognitive style as predictor variables with each uniquely contributing to two facets of virtual team preference, namely preference for virtual teams over working alone and preference for virtual teams over traditional groups. Results are discussed regarding the impact of cognitive style and personality for corporate implementation of virtual teams.

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### 1. Introduction

A virtual team is defined as a group of people with unique skills who work interdependently but are separated geographically which necessitates their interacting using technology (Lipnack & Stamps, 2000). Thus, virtual teams allow members to accomplish specific tasks while transcending traditional restrictions of time and proximity (Montoya, Massey, & Lockwood, 2011; Townsend, DeMarie, & Hendrickson, 1998). Consequently, virtual teams differ from face-to-face teams in that members are physically separated from one another and they rely on technological devices for communication and information exchange (D'Souza and Colarelli, 2010). Virtual teams have become commonplace in large organizations, with one study reporting that 50% of all companies with more than 5000 employees incorporate virtual teams as vehicles for conducting work (Martins, Gilson, & Maynard, 2004). Various issues related to virtual teams have been investigated including effectiveness (Furst, Blackburn, & Rosen, 1999; Maznevski & Chudoba, 2000), trust (Jarvenpaa, Knoll, & Leidner, 1998; Sarker, Valacich, & Sarker, 2003), and adaptation (Majchrzak, Rice, Malhotra, King, & Ba, 2000).

Recent research has begun to examine issues surrounding the selection of virtual team members. A study by D'Souza and Colarelli (2010) found that the skills one brings to a team are a more important selection criteria for virtual team membership than for face-to-face team membership, but that personal characteristics

(attractiveness, race, gender, and attitudinal similarity) are more important criteria for selecting face-to-face teams members, as self-reported by team members. What remain unexplored are the factors that predict why someone would want to be a member of a virtual team. The purpose of this study is to fill this gap in the literature on virtual teams.

The two major differences between virtual and face-to-face teams offer insight into this question. Traditional explanations for why people would want to work in a team focus around personal characteristics. Simply put, we prefer working with those who are physically attractive (Patzner, 2006) and/or who are similar to ourselves in terms of race (Wade & Okesola, 2002), gender (Colarelli, Spranger, & Hechanova, 2006) and attitudes (Byrne, 1971). However, since virtual teams do not meet face-to-face, we must look elsewhere for predictors of virtual team preference. The fact that virtual teams rely on computer mediated communication suggests that how one feels about using technology to communicate may play a role in virtual team preference.

Early research on information systems identified personal factors as important determinants of successful IS implementation and adoption (Lucas, 1981). These personal factors were of a dispositional nature and included personality and decision (cognitive) style. Research has looked at the effects of personality (Landers & Lounsbury, 2006; Zmud, 1979) and cognitive style (see Huber (1983) and Robey (1983), for a debate on the role of cognitive style.) as well as on their comparative effects (McElroy, Hendrickson, Townsend, & DeMarie, 2007) on one form of computer mediated communication, Internet use. We build off of this literature by examining the respective roles played by personality and cognitive style as determinants of preference for working in virtual teams.

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Personality and cognitive style have already been shown to be important predictors of team member attitudes within the virtual team environment. For example, personality traits have been argued to affect individual trust among team members and willingness to collaborate in virtual teams (Brown, Poole, & Rodgers, 2004) as well as readiness to adopt collaboration technology (Vreede, Vreede, Ashley, & Reiter-Palmon, 2012). Moreover, cognitive style has also been argued to be a significant predictor of the effectiveness of computer-mediated knowledge sharing among team members (Taylor, 2004).

One avenue which has not yet been explored is the connection between personality and cognitive style, and the relative contribution of both factors towards *preference* for participating in virtual teams. Our purpose is not to delineate how specific components of personality or cognitive style influence virtual team preference, but rather the collective role played by each of these dispositional factors. Understanding individual preferences for participating in virtual teams is important in that by preemptively selecting or assigning those individuals who prefer working in such teams organizations can minimize resistance and other problems that may occur after virtual team implementation.

## 2. Background

### 2.1. Personality

Personality is a stable pattern of psychological processes, characteristics, and tendencies arising from motives, feelings, and cognitions which can be used to determine individual commonalities and differences in thoughts, feelings and actions (Maddi, 1989; Mayer, 2005). One way in which personality has been described is in terms of traits. These traits serve as measures of individual dispositions as well as comparative mechanisms of individual differences (Allport, 1966). Various instruments have been developed to measure individuals based on certain specified trait dimensions. Recently, research has shown that several of these measures are related hierarchically with each providing a varying degree of abstractness (Markon, Krueger, & Watson, 2005).

Among the contemporary measures of personality, the Big Five model has proven to be a robust and useful tool for understanding personality among individuals. The Big Five is based on the lexical hypothesis, which posits that socially relevant and salient personality characteristics are embedded in natural language (Allport, 1937; John, Angleitner, & Ostendorf, 1988; Saucier & Goldberg, 1996). The Big Five structure has been extensively tested using disparate samples in various contexts for a number of years, providing substantial evidence of its merits as a measure of individual personality and personality differences (see John, Naumann, & Soto (2008) for an extensive review of the history of the Big Five factor model).

Within the Big Five, *extraversion* represents sociability, cheerfulness, and optimism with extraverts seeking out new opportunities and excitement. *Neuroticism* represents a lack of psychological adjustment with high negative emotional stability. Neurotic individuals are typically fearful, sad, embarrassed, distrustful, and have a difficult time managing stress. *Agreeableness* represents a tendency to be sympathetic, good-natured, cooperative, and forgiving with highly agreeable people tending to help others more readily. *Conscientiousness* represents the tendency to be self-disciplined, strong-willed, reliable, and deliberate with conscientious people actively planning, organizing, and carrying out tasks. *Openness* represents curiosity and willingness to explore new ideas with open individuals tending to devise novel ideas, hold unconventional values, and question authority (Costa & McCrae, 1992).

Recent research has linked personality traits to socio-technical characteristics of virtual teams. For example, personality traits have been argued to affect individual disposition to trust (as it does in face to face teams) and willingness to collaborate in the computer-mediated communication environment used by virtual teams. Research finds that individuals high in affiliation exhibit higher levels of trust in virtual collaboration (Brown et al., 2004). Also, four of the five Big Five measures (minus neuroticism) were found to correlate with subjects' ease of transition to collaboration technologies, with extroversion negatively correlated, while agreeableness, openness, and conscientiousness had a positive correlation with the ease of transition construct (Vreede et al., 2012). Extraversion (from the Big Five instrument) was found to be related to both the nature of group interactions and to the actual performance of virtual teams. Virtual teams with either high levels of extraversion or high variation in extraversion between team members had less constructive interaction styles within teams (Balthazard, Potter, & Warren, 2004). Personality-based trust was also found to affect overall trusting motives in a virtual team environment (Sarker et al., 2003). Higher levels of extraversion and agreeableness were found to lead to shorter pauses, and therefore greater trust, among virtual team members in technology assisted communication (Kalman, Scissors, & Gergle, 2010). Furthermore, using meta-analysis techniques, team performance was found to be positively affected by all five dimensions in the Big Five model (where emotional stability is utilized as opposed to neuroticism) (Bell, 2007; Mathieu, Maynard, Rapp, & Gilson, 2008).

While none of these studies juxtapose the personality differences between successful face to face and virtual team members, they do underscore that the socio-technical environment of the virtual team is distinct from the face to face team, and that there are personalities that perform better within this distinct environment. Since the personality requirements for a virtual team are demonstrably distinct, an examination of the impact of personality on individual preference for the virtual environment allows us to assess if an individual's personality profile also directs their disposition toward the virtual work environment. Therefore, we hypothesize:

**H1.** Personality will explain variation in preference for working in virtual teams.

### 2.2. Cognitive style

Cognitive style refers to a broad range of theory related to information processing and decision-making among individuals (Armstrong, Peterson, & Rayner, 2011; Ausburn & Ausburn, 1978; McElroy et al., 2007; Messick, 1976). There are a number of measures of cognitive style, such as the Kirton Adaption Innovation (KAI) instrument (Kirton, 1989), the Cognitive Style Index (CSI) (Allinson & Hayes, 1996), and the Kolb Learning Style Inventory (KLS) (Smith & Kolb, 1986). The Myers-Briggs Type Indicator (MBTI) is an omnibus instrument used to capture Jung's (1921) conceptual cognitive style dimensions (Wheeler, Hunton, & Bryant, 2004) and is a (at least partial) theoretical antecedent to the CSI (Allinson & Hayes, 1996), the KAI (Kozhevnikov, 2007), and the KLS (Isaksen, Lauer, & Wilson, 2003). Despite criticism on its psychometric properties (Boyle, 1995; Gardner & Martinko, 1996) and length (Allinson & Hayes, 1996), the MBTI has undergone extensive validity and reliability assessments (Harvey, 1996) and is widely used. The MBTI is designed to measure individual preferences in how people apprehend and process information (Myers, 1995), which lends itself nicely to business environments including decision-based environments such as team-work.

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