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# ARE YOU AGREEABLE? PERSONALITY CAN MAKE A DIFFERENCE IN ISD

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## Abstract

*The use of cross-functional project teams (CFT) has become increasingly popular as organizations strive to become more efficient in information system development (ISD). Conflict, however, is often greater on these teams and can sometimes be detrimental to ISD. This paper investigates the impact of personality diversity on different forms of conflict in a setting related to the ISD process. The results of a field study were analyzed utilizing multiple regression analysis. This analysis suggests that certain elements of personality diversity can impact the perceptions of team conflict in an ISD setting.*

**Keywords:** Personality, information systems development, conflict, cross-functional teams, diversity

## Introduction

As organizations strive for a more productive and efficient work environment, utilization of CFTs in ISD has been occurring with more frequency. Individuals on CFTs generally represent associates from differing backgrounds and disciplines within the organization. Involving stakeholders with varying interests and perspectives offers distinct advantages-- enhanced creativity, quicker development time, customer focus and opportunities for organizational learning and effectiveness. (Pinto, Pinto and Prescott, 1992)

Conflict between members is also a characteristic inherent to CFTs. The same diversity that creates the benefits, can often generate conflict centering upon tasks and/or interpersonal relationships. Prior research shows that some types of conflict in CFTs can actually improve desirable outcomes, where as other findings suggest that conflict has detrimental outcomes, particularly when differences accelerate and interfere with group goals. (Jehn, 1995) This paper provides evidence that selected personality characteristics of ISD participants can impact the perceptions of team conflict.

## Research Model

Identification of factors that can impact successful ISD efforts are important in developing a comprehensive model of the team process and ISD. Figure 1 illustrates the research model used in this study. The model, adopted from Pelled (1996), predicts that selected personality characteristics will impact perceived conflict in CFTs.

This theory is of importance from both a research and practitioner perspective. Jehn, Northcraft, and Neale (1999) demonstrated that the association between relationship conflict and overall satisfaction with the team is negatively correlated with intention to remain in the organization. Because negative intention to remain can lead to greater turnover (Jehn, et al., 1999) and result in a negative impact on ISD, the impact of relationship conflict on overall performance is critical to successful development efforts.

Pelled (1996) focused on visible and underlying demographic differences as antecedents to perceptions of group level conflict. In Pelled's model, visible demographic differences, such as age, gender and team tenure, directly contribute to levels of relationship, affective, or interpersonal conflict. Task or substantive conflict in Pelled's model is driven by underlying demographic differences, such as educational background, functional position, and organizational tenure. This set of demographic differences comprises a traditional set of diversity variables (Williams and O'Reilly, 1998). However, an additional

underlying measure of demographic diversity, personality, has rarely been examined in the demographic literature (Milliken and Martins, 1996).

Differences in personality are highly correlated with conflict in a team environment (Kichuk and Weisner, 1997). Using the five factor model of personality (Goldberg, 1992) to define constructs, Kichuk and Weisner (1997) found that personality levels within the team were correlated with overall levels of conflict. The impact of personality levels is also correlated with team performance (Barrick, Stewart, Neubert and Mount, 1998).

This research will investigate the association between three of the measures of personality, conscientiousness, agreeableness, and emotional stability, and two different measures of conflict, relationship and task. The research model investigated is represented in Figure 1.

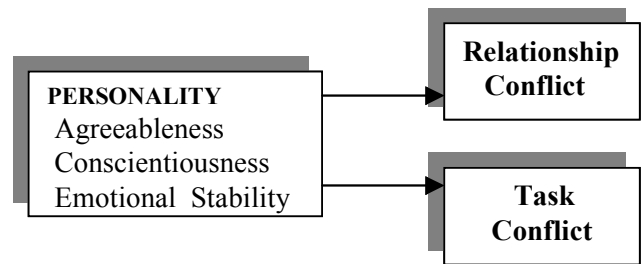


Figure 1. Research Model

## Literature Review

The following is a brief discussion of relevant literature concerning the constructs examined in the study, followed by the hypotheses that were tested.

### *Types of Conflict: Relationship and Task*

Lewin (1948) discusses conflict within groups, stating, “Conflict depends upon the degree to which the goals of the members contradict each other and upon the readiness to consider the other person’s point of view”. The identification of two types of conflict by Lewin (1948), has resulted in the identification of two forms of conflict, one related the task and the other to interpersonal relationships (Jehn, 1995; Pelled, 1996). Task conflict is constructive, and can positively impact team performance (Milliken and Martins, 1996; Williams and O’Reilly, 1998; Pelled, 1996; Jehn, 1997). In contrast, relationship conflict can cause negative, less desirable outcomes within in teams (Milliken and Martins, 1996; Williams and O’Reilly, 1998; Pelled, 1996; Jehn, 1997). In a discussion of development strategies, Newman and Robey (1992) state that the “generation and resolution of conflicts” is of “central theoretical interest to ISD.”

### *Personality Dimensions*

Studies relating to aspects of conflict are abundant in psychology, particularly as they relate to the team setting. Because of the increased level of interaction required on teams, personality traits will be predictive of team task performance. Neumen, Wagner and Christensen, (1999), investigated a broad set of personality factors, related to group diversity along five dimensions know as “The Big Five” or “Five-Factor Model (FFM). The FFM has become the dominant and most widely accepted contemporary model of personality structure and includes the following factors: Agreeableness, Conscientiousness, Emotional Stability, Extraversion and Intellect (Mount and Barrick, 1998). Kichuk and Weisner (1997) identified a set of variables identified as critical personality dimensions for teamwork including Agreeableness, Conscientiousness and Emotional Stability. In addition, Barrick et al., (1998) isolated three constructs of personality present in the five factor model, agreeableness, conscientiousness and emotional stability, and identified their correlation with performance in a team environment. Based upon this research the following three personality dimensions were selected to be examined in the study.

Agreeableness is the tendency to be good-natured, cooperative and trusting (Neuman and Wright, 1999). Individuals who are agreeable are also considered likable (Kichuk and Wiesner, 1997). Adjectives such as selfish-unselfish, stingy-generous, unkind-kind are used to assess agreeableness.

Individuals with high **Conscientiousness** levels are responsible, hardworking, persevering and careful (Goldberg, 1992; Kichuk and Wiesner, 1997). Low levels of Conscientiousness are represented by adjectives such as undependable, negligent, careless and lazy (Goldberg, 1992). Conscientiousness is often described as dependability. (Barrick and Mount, 1991).

Emotional Stability is the tendency to be relaxed, secure and calm (Neuman and Wright, 1999). As with the other dimensions, Emotional Stability can be described on high and low dimensions. Individuals with low Emotional Stability are characterized by anger, depression, guilt and discontent (Barrick and Mount, 1991; Goldberg, 1992; Kichuk and Wiesner, 1997).

### ***Hypotheses***

The three different aspects of personality and the two types of conflict are examined in this research study. The following hypotheses are presented and evaluated:

H1: ISD teams high in Agreeableness diversity measures will have high perceptions of relationship conflict.

H2: ISD teams high in Conscientiousness diversity measures will have high perceptions of relationship conflict.

H3: ISD teams high in Emotional Stability diversity measures will have high perceptions of relationship conflict.

H4: ISD teams high in Agreeableness diversity measures will have high perceptions of task conflict.

H5: ISD teams high in Conscientiousness diversity measures will have high perceptions of task conflict.

H6: ISD teams high in Emotional Stability diversity measures will have high perceptions of task conflict.

## **Research Method**

### ***Data Collection and Measurement***

The data was gathered from eighty-eight graduate and undergraduate IS student teams at a university in the southeastern United States. The students participating in the 88 teams consisted of 377 participants.

Prior to the commencement of this research, an instructor had assigned the students to teams. All student teams were presented the same overall task to perform. The task consisted of assessing the underlying assumptions of an existing feasibility analysis for an ISD plan, and the generation of a counter plan of the feasibility analysis for the same ISD plan. Assessing the feasibility of an ISD plan is an early and necessary step of systems development. To assess personality, subjects were presented with an instrument based on the International Personality Item Pool (Goldberg, 1999). The instrument uses the 100 item questionnaire format validated by Goldberg (1999), and is based on his earlier work with the five-factor model. (Goldberg, 1992; 1993).

The dependent variable assessed in this research was conflict. Because this research investigated different types of conflict, Jehn's (1995) instrument was used. This instrument has been validated by a number of researchers (Simons and Peterson, 2000). Confirmatory factor analysis identified the existence of two dimensions of conflict.

Small group researchers (Janz, Wetherbe, Davis, and Noe, 1997) aggregated individual data measures to the team level using the  $\eta^2$  statistic and F-Ratio. In the present study, individual responses to the measures of conflict were assessed with the  $\eta^2$  statistic to assess consistency of responses within teams. All measures satisfied the criteria for aggregation of measures to the group level. The F-ratio exceeded the threshold of 1.0 in all instance. Likewise, all values of eta-squared exceeded the desirable threshold of 0.20 (Georgopolous, 1986), with the lowest value being 0.28. This set of conditions permitted the data to be aggregated at a team level.

The validity of the measures of personality was assessed next. First, the 100 measures were assessed with the common factor model (Rummell, 1970). The scree plot indicated that five factors were present. The data was then analyzed using squared multiple correlations with promax rotation (Rummell, 1970). Analysis of the rotated factor pattern of the five factors revealed that, with the exception of four 100 markers, each item had the largest loading on its corresponding factor.

All hypotheses were tested with linear regression. For each of the hypotheses the dependent variable (task or relationship conflict) was regressed against a corresponding measure of personality diversity. The mean value, by individual, of each personality factor measure was determined. Values for teams were determined by summing, then averaging the individual measures. Diversity according to personality was calculated using the coefficient of variation (Tsui, Egan, and O'Reilly, 1992). In addition, measures

of visible diversity, gender, age, and race were used in the study, as were measures of underlying diversity such as educational background and work experience. Size of the team and prior work with team members were also evaluated as control variables.

### ***Analysis of Results***

The relationship between personality diversity and conflict was found to vary by conflict type. Relationship conflict was significantly correlated with levels of Conscientiousness and Emotional Stability diversity, whereas only Emotional Stability had a significant correlation with task conflict.

This illustrates that a positive association exists between personality and relationship conflict. Two measures of personality diversity, Conscientiousness and Emotional Stability, had significant, positive association with relationship conflict. The third measure of personality diversity, Agreeableness, was negatively correlated with relationship conflict. This relationship was not significant.

However, the association between personality and task conflict is weaker. The only diversity measure strongly associated with task conflict was Emotional Stability. Although both Agreeableness and Conscientiousness diversity parameter estimates were in the hypothesized direction, the F values were not significant. This indicates a weak level of support for hypotheses 4 and 5.

The results of the hypotheses testing are summarized in Table 1.

**Table 1. Summary of Hypothesis Testing**

| <b>Hyp</b> | <b>Dependent Measure</b> | <b>Independent Measure</b> | <b>Parameter Estimate</b> | <b>R sq</b> | <b>F Value</b> | <b>P Value</b> | <b>Support</b> |
|------------|--------------------------|----------------------------|---------------------------|-------------|----------------|----------------|----------------|
| 1          | Relationship Conflict    | Agreeable                  | -0.641                    | .05         | 1.988          | .1433          | NO             |
| 2          | Relationship Conflict    | Conscientious              | 1.632                     | .072        | 3.291          | .0420          | YES            |
| 3          | Relationship Conflict    | Stable                     | 1.409                     | .09         | 4.445          | .0146          | YES            |
| 4          | Task Conflict            | Agreeable                  | .4378                     | .0486       | 2.170          | .1205          | WEAK           |
| 5          | Task Conflict            | Conscientious              | 0.655                     | .0516       | 2.314          | .1051          | WEAK           |
| 6          | Task Conflict            | Stable                     | 0.491                     | .0532       | 2.390          | .0977          | YES            |

Examination of Table 1 shows strong support for two of the research hypotheses. At an alpha level of .05, Conscientiousness and Emotional Stability diversity both have significant positive association with relationship conflict. The association between Emotional Stability diversity with task conflict was significant at an alpha level of 0.10.

### **Discussion**

This research provides two new contributions to the IS literature. First, it provides support for the existence of two forms of conflict in an ISD environment. Although the existence of both types of conflict has been verified in other streams of research literature, this research provides empirical support for the existence of them in an ISD related task. Second, this study provides evidence of an association between conflict and personality diversity in project teams. Although the relationship between personality types and conflict has been discussed in recent management literature, the present study points to a difference in the relationship between the association of diversity levels by personality types and the separate dimensions of conflict.

A highlight of the study is the impact of diversity on personality dimensions and conflict, particularly relationship conflict. Teams with high conscientiousness and emotional stability diversity have more relationship conflict. The impact of agreeableness

diversity is less significant, and in the opposite direction than hypothesized. It shows that the greater the agreeableness diversity in the team, the lower the relationship conflict. Results for the impact of personality on task conflict are also supported, although not as strong as the impact of personality on relationship conflict. The presence of emotional stability diversity has a significant relationship with higher levels task conflict.

Study results also lend support to the hypotheses set forth by Barrick and Mount (1991), regarding the importance of conscientiousness and emotional stability in the team environment. In addition, the impact of agreeableness diversity with these two personality measures provides further insight into the potential causes of relationship and task conflict.

## Limitations

The participants in the study are teams of students at a large metropolitan university in the southeast. Therefore, results of the study may not be generalizable to the IT professional. However, they are generalizable to a larger population of students. All measures included in the study are self-reported and were aggregated at the individual level to derive a team level measure. The team level measure is the mean of the responses to aggregated measures. Even though commonly accepted practices were used to determine the appropriateness of aggregation, the granularity of information is lost when the aggregation occurs.

## Recommendations

Understanding the nature of conflict in a team environment can provide both team leaders and team members with insights into the improvement of the process of ISD. Future research should address the existence of both levels and types of conflict present in actual systems development teams.

In addition to the level and nature of conflict, assessment of the separate levels of personality in development teams can help provide additional insights into the overall structure of the systems development team. Future research should also address personality levels on development teams. Assessing the personality of potential ISD team participants and their affect on personality diversity may assist in taking precautions to minimize diversity levels that could prove beneficial to overall systems development.

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