



# **Cognitive Learning Style and its Effect on the Perception of Learning, Satisfaction and Social Interactions in Virtual Teams**

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# Premise

This study investigated the relationship between cognitive style and student perceptions of the

- social interactions,
- learning and
- satisfaction

in virtual teams.

# Method

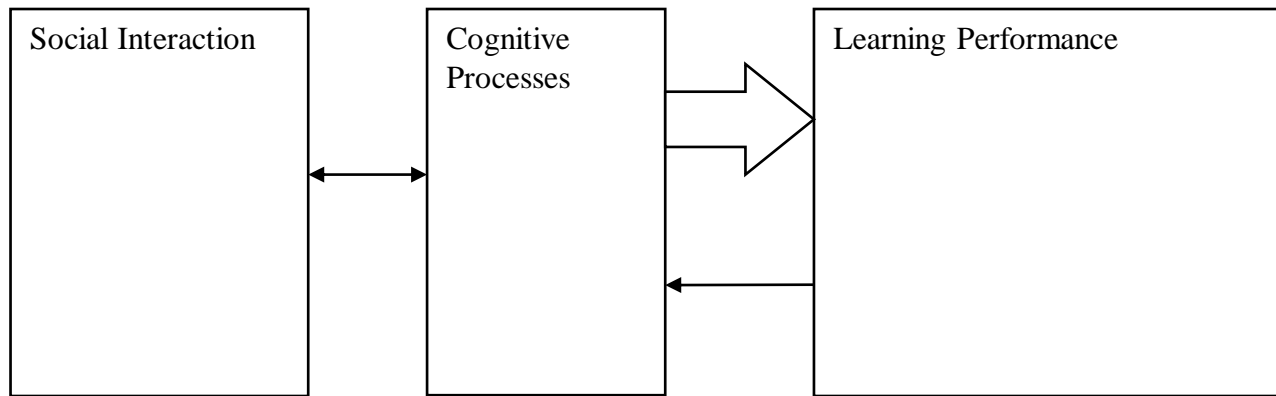
- The cognitive learning style of students enrolled in online courses that required the completion of a team project were determined using an instrument based on Jung's classifications for gathering and evaluating.
- All collaboration among team members to complete the project was done online.
- At the conclusion of the course, students responded to a series of statements relating to the virtual team's cohesiveness, cooperation and communication.
- In addition to social interactions on the virtual team, students were also asked to assess their learning and satisfaction with the virtual team experience.

# Gathering Cognitive Styles

- Jung stated that people perceive experience either by sensing (using the five senses) or by intuition (using indirect attention to associations).
- He concluded that, while *sensing* people focus on personal realities, trust their past experiences, and learn theories best by using practical applications, *intuitive* people are creative, appreciate new ideas, and are motivated by challenges.

# Evaluating Cognitive Styles

- The evaluation of information according to Jung (1923) proceeds either by *feeling*, which is the use of our personal subjective values, or by *thinking*, which is a logical process.
- The *thinking* and *feeling* functions encompass processes that individuals employ to come to conclusions when making decisions (Myers, McCaulley, Quenk, & Hammer, 1998) and while *thinkers* use analysis to reach a conclusion, *feeling* individuals rely on their personal and group values (Myers, McCaulley, Quenk, & Hammer, 1998).



**Figure 1: Social and Cognitive Relationship to Learning Performance**

# Hypotheses

- Individual perceptions of the social interactions within the virtual team are not influenced by cognitive preferences for (a) information gathering and/or (b) evaluation.
- Individual satisfaction with the virtual team experience is not influenced by cognitive preferences for (a) information gathering and/or (b) evaluation.
- Individual perceptions of learning from the virtual team assignment are not influenced by cognitive preferences for (a) information gathering and/or (b) evaluation.

**Table 1: Demographic and Background Profiles**

|                                     | <b>Gathering Style</b> |                | <b>Evaluating Style</b> |                |
|-------------------------------------|------------------------|----------------|-------------------------|----------------|
|                                     | <b>Intuitive</b>       | <b>Sensing</b> | <b>Thinking</b>         | <b>Feeling</b> |
| Female                              | 75.3% (122)            | 77.0% (94)     | 74.1% (163)             | 78.2% (61)     |
| Under 30                            | 54.3% (88)             | 64.8% (79)     | 58.6% (129)             | 56.4% (44)     |
| 30-40                               | 27.2% (44)             | 21.3% (26)     | 25.9% (57)              | 17.9% (14)     |
| Over 40                             | 18.5% (30)             | 13.9% (17)     | 14.5% (32)              | 25.6% (20)     |
| Junior                              | 45.1% (73)*            | 55.7% (68)*    | 46.4% (102)             | 56.4% (44)     |
| Senior                              | 39.5% (64)*            | 36.9% (45)*    | 41.4% (91)              | 34.6% (27)     |
| Novice<br>Internet Experience       | 22.8% (37)*            | 16.4% (20)*    | 18.6% (41)              | 19.2% (15)     |
| Professional<br>Internet Experience | 59.9% (97)*            | 55.7% (68)*    | 55.5% (122)             | 59.0% (46)     |
| Expert<br>Internet Experience       | 17.3% (28)*            | 27.9% (34)*    | 25.9% (57)              | 21.8% (17)     |

\* Difference between groups is significant at .10

**Table 5: Respondents' Perceptions of Social Interaction and Outcomes  
Means by Gathering and Evaluating Styles**

|  | Gathering Style |                | Evaluating Style |                |
|--|-----------------|----------------|------------------|----------------|
|  | Intuitive       | Sensing        | Thinking         | Feeling        |
| <b><i>Statements Relating to Cohesiveness</i></b>  |                 |                |                  |                |
| I felt like I was part of the group.   | 4.31            | 4.30           | 4.31             | 4.41           |
| The group shared common goals with respect to this project.  | 4.12            | 4.03           | 4.07             | 4.13           |
| I felt that I was able to influence the decisions made by this group.  | 3.98            | 4.05           | 4.04             | 4.03           |
| I felt alienated from my group.  | <b>1.86**</b>   | <b>1.68**</b>  | 1.75             | 1.88           |
| I was very committed to the completion of this project   | 4.63            | 4.70           | 4.63             | 4.68           |
| I felt that everyone on the team was very committed to the project.  | 3.52            | 3.57           | 3.58             | 3.44           |
| It was easy to withdraw from participation in the project.   | 2.51            | 2.38           | 2.37             | 2.45           |
| I felt very involved with the group.   | 4.09            | 4.08           | 4.11             | 4.09           |
| One or more members of my group seemed to just "disappear".  | 2.92            | 2.84           | <b>2.77***</b>   | <b>3.14***</b> |
| <b><i>Statements Relating to Cooperation</i></b>   |                 |                |                  |                |
| Everyone in the group contributed to the project   | 3.77            | 3.73           | 3.81             | 3.61           |
| It was easy to monitor an individual's progress in completing assigned tasks.  | 3.91            | 3.89           | 3.39             | 3.44           |
| There was very little conflict among group members in completing the project.  | <b>3.77*</b>    | <b>3.58*</b>   | 3.71             | 3.64           |
| We had a strong team leader for our group.   | 3.82            | 3.78           | 3.79             | 3.88           |
| It was difficult to resolve conflicts that arose during the project.   | <b>2.28*</b>    | <b>2.49*</b>   | 2.39             | 2.45           |
| <b><i>Statements Relating to Communication</i></b>   |                 |                |                  |                |
| Email was an effective way of sharing ideas among the group members  | 3.96            | 4.01           | 4.00             | 4.01           |
| It was easy to communicate with my teammates about the project.  | 3.76            | 3.75           | 3.78             | 3.81           |
| I found it easy to get to know my teammates for the project.   | <b>3.33**</b>   | <b>3.52**</b>  | 3.40             | 3.57           |
| It was easy to delegate tasks on this project.   | 3.69            | 3.80           | 3.74             | 3.70           |
| I found it easy to communicate with my group about the project.  | 3.91            | 3.89           | 3.89             | 4.01           |
| Sharing documents with each other was easy.  | 4.11            | 4.17           | 4.13             | 4.12           |
| I clearly understood my role in the group project  | 4.18            | 4.26           | 4.23             | 4.17           |
| Sharing information among my group was easy.   | 4.11            | 4.16           | 4.13             | 4.13           |
| <b><i>Statements Relating to Outcomes</i></b>  |                 |                |                  |                |
| I learned a lot about the subject of the group assignment.   | <b>4.08***</b>  | <b>3.88***</b> | 4.01             | 3.91           |
| I was satisfied with the way this team worked together.  | <b>3.74*</b>    | <b>3.53*</b>   | 3.69             | 3.64           |
| *Difference between groups is significant at .20.<br>** Difference between groups is significant at .15.<br>***Difference between groups is significant at .05 |                 |                |                  |                |

# Results

- Cognitive gathering style did influence perceptions of the team's social interactions but cognitive evaluating style did not.
- Cognitive differences in gathering style -- sensing vs. intuitive -- did generate differences in the perceptions of learning and satisfaction associated with the virtual team project experience.
- No differences in satisfaction or perceptions of learning were found to be associated with evaluating style.

