Relating Personality Traits and Prior Knowledge to Focus Group Process and Outcome: An Exploratory Research

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Abstract

In this study, we investigated how each personality traits, described by the Big Five, and the prior knowledge of a group affect the process and outcome of the electronic focus group. On the basis of data from 38 students, who formed 5 electronic focus groups, results indicated that 2 dimensions of personality, Adjustment ($r = -0.975$) and Agreeableness ($r = -0.938$), were significantly related to the outcome of group discussions. Another 2 dimensions of personality, Openness ($r = 0.935$) and Conscientiousness ($r = 0.822$), were significantly related to the process of group discussions. Prior knowledge on the other hand did not contribute significantly to both the process and outcome of group discussions. These findings suggest that personality may be a more valid predictor in determining group process and outcome than the prior knowledge of the group members in a text-based electronic communication environment.

Keywords

Electronic focus group, personality, Big Five, prior knowledge, group environment, computer-mediation

1. Introduction

With the present technology and new generation of people, communication has increased its extensiveness with the addition of new communication environment through computer mediated means. Furthermore, an increasing number of individuals and organizations have come to rely and take advantage of what technology can do for communication.

Communication is one of the most basic and important tool for any group process to get started and it also assists the group in achieving its goals. The environment, under which communication takes place, plays an important role in determining the outcome of the communication. The success of achieving what the group wants, results from an uninhibited, synergistic environment in which the group is comfortable with (Clapper & Massey 1996). In this study, electronic communication environment is being used and, is one that only allows text-based communication without any visual aids and realized through computer-mediation.

In an electronic communication environment, participants undergoing a discussion feel more uninhibited to contribute. Important factors such as group composition, controversial topics and moderator’s influence are much minimized in terms of their influences on the inhibitions
individuals faced during a group discussion (Montoya-Weiss, Massey & Clapper 1998). However, these researches did not investigate on what are the factors that will now have major influences on the process and outcome of a discussion held under this electronic environment.

Therefore, what input variables will affect a group’s process and outcome? In this study, we suggest that in an electronic communication environment individual characteristics will now play a much more significant role in determining the outcome of a discussion. Since individuals do not get to see each other face-to-face, impressions and perceptions of each other will less likely to influence individuals’ participation. Therefore, it is suggested that individual characteristics, especially personality and prior knowledge, will now affect the process and thus the outcome of a discussion held under an electronic environment.

In order to setup the relevant environment for this study, electronic focus group methodology is being used to conduct the experiments involved. Focus group is widely used as a tool to create knowledge and for brainstorming purposes in academic research and other areas such as business decision making (Clapper & Massey 1996).

Thus with the electronic means as an alternative and as more organizations are embracing modern technology, it is therefore important to know how such individual factors, specifically personality and prior knowledge, are able to contribute to knowledge creation when electronic focus group methodology is being used.

2. Literature Review

In order to study the importance of how personality and prior knowledge contribute to the process and output of a discussion in a group, there are three building blocks or ideas that should be expounded. These three building blocks are communication, personality and knowledge creation. They will give the idea of why participants, under certain conditions will feel inhibited to talk during a group discussion, and how personality and prior knowledge can contribute to the process and output of the group discussion.

2.1 Communication

Interpersonal communication study is important since communication is required for any goals, such as for task-oriented, relationship building to be achieved. A basic model of how communication takes place interpersonally between two persons, who interchangeably act as either a sender or receiver, is shown in Figure 1 (Hellriegel, Slocum & Woodman 2001). The model also shows the elements involved during interpersonal communication.
A message usually contains more than just words and sentences. It contains other cues which are broadly categorized into two groups, that is, verbal and non-verbal cues. Non-verbal cues include body motion or kinesic behaviour, physical characteristics, touching behaviour, paralanguage, proxemics, artefacts and environmental factors (Knapp 1980). Depending on the type of discussion goal, these cues may affect the success in achieving the discussion goal (Ellis & Fisher 1994).

The channels shown in Figure 1 are the medium or the environments in which messages are being sent across from the sender to the receiver. In an electronic text-based communication environment, majority of the cues are not being transmitted across the network. The nature of the environment does not allow these cues to be sent or received because such cues cannot be symbolized into words easily. Even if the members were to type “emoticons”, which are combination of characters to symbolize certain emotions, the degree of impact is greatly reduced and most of such symbolizations are much left to the receiver to interpret accordingly to the context. Therefore communication environment have different impact on task outcomes depending on the task types (Short, Williams & Christie 1976).

2.2 Personality

Personality is a stable characteristic of a human being and does not change rapidly over a long time. As Salvatore Maddi, a well-known personality theorist defined personality as:

*Personality is a stable set of characteristics and tendencies that determine those commonalities and differences in the psychological behaviour (thoughts, feelings, and actions) of people that have continuity in time and that may not be easily understood as the sole result of the social and biological pressures of the moment.*

Hence there are many studies that used and viewed personality as important predictors and determinants of what people will produce under certain conditions, for example job performance (Sackett, Gruys & Ellingson 1998).
However, within this relatively stable manner of individual’s personality, there are situational forces that restricts an individual the degree he/she wants or able to exhibit his/her behaviour. In other words, how precise an individual’s personality characteristics can predict behaviour depends on how much the external environment inhibits the individual’s freedom to behave in particular ways (Barrick & Mount 1993).

There are two types of situations, namely strong and weak situations. Strong situations are those in which individuals feel the strong needs or pressures to conform, thus leading to a restriction in the range of behaviours the individuals are able to exhibit. On the other hand, weak situations do not have or have few needs for individuals to conform. Thus the individuals have a wider choice of behaviours that they are able to exhibit (Mischel 1977, Barrick & Mount 1993).

There are many attributes of personality or personality traits, and past studies have used different taxonomies of personality when using it as a subject under study. Within the last twenty years, a well-accepted personality classification emerged and is commonly referred to as the Big Five. The Big Five is a model consisting of five major personality traits, namely, Adjustment, Openness, Sociability, Agreeableness and Conscientiousness.

Each of the five major personality traits includes a large number and range of specific traits or dimensions. Figure 2 shows the classification of some traits into the Big Five model (Hellriegel et al. 2001, p. 62).

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### The Big Five Personality Factors

1. **Adjustment**
   - **Strong Adjustment:** secure, unflappable, rational, unresponsive, guilt free
   - **Weak Adjustment:** excitable, worrying, reactive, high-strung, alert

2. **Sociability**
   - **Low Sociability:** private, independent, works alone, reserved, hard to read
   - **High Sociability:** assertive, sociable, warm, optimistic, talkative

3. **Openness**
   - **Low Openness:** practical, conservative, depth of knowledge, efficient, expert
   - **High Openness:** broad interests, curious, liberal, impractical, likes novelty
4. Agreeableness

Low Agreeableness:
sceptical, questioning, tough,
aggressive, self-interest

High Agreeableness:
trusting, humble, altruistic, team
player, conflict averse, frank

5. Conscientiousness

Low Conscientiousness:
spontaneous, fun loving,
experimental, unorganized

High Conscientiousness:
dependable, organized,
disciplined, cautious, stubborn

Figure 2. Big Five Personality Model

2.3 Knowledge Creation

Knowledge has been defined as information combined with experience, context,
interpretation and reflection (Davenport, DeLong & Beers 1998). Knowledge has two
dimensions, either tacit or explicit (Polanyi 1996). Tacit knowledge is difficult to capture,
codify, adopt and distribute because individuals find it hard to articulate this type of
knowledge, whereas explicit knowledge is easily expressed and communicated between

Groups are a common source used in organizations for generating knowledge. The group
members interact with each other on the ideas generated by them. In this sense, each
individual group member has already possessed some knowledge about the discussion topic
before they are being assembled as a group.

In most group studies, one of the measurements used for task outcome variables is usually by
the amount of knowledge or the number of ideas created. There are also different methods to
quantify the amount of knowledge created. From the past studies made, there are three
commonly used methods. First is by counting the number of ideas made by the group, second
is the number of unique ideas and third is counting the number of themes which are
classifications of similar ideas.

3. Research Question, Model and Hypotheses

In this study, the following research question is being addressed: in a text-based electronic
communication environment where there is a lack of cues being transmitted, does
personalities and prior knowledge of the individuals in a small group play an important part
in affecting the group processes and task outcomes.

In order to address the research question, a model will be proposed in the following.
3.1 Model

Adopting from past researches, an input-process-output model is proposed as shown in Figure 3.

![Figure 3. A Model of the Flow of Effects for Text-Based Electronic Focus Groups.](image)


The model will be used to analyze how the input variables, specifically personality and prior knowledge, affect the process variable that is the number of utterances and output variable, the number of new knowledge. Further the input variables or the independent variables will be investigated to answer why they are important to be considered with regards to the research question.

3.2 Personality

In a text-based electronic communication environment, participants in the group discussion do not easily perceive non-verbal cues made by each other. Furthermore, with the ability to communicate in parallel, participants are most likely not able to take up too much time trying to analyze each other’s emotions and feelings for each utterances they made. Participants do not seem to wait for each other to finish their sentences before typing their own.

Further, within the time constraints of the group discussion and under electronic communication environment, participants are most likely to focus on the task. Participants will spend most of the time discussing about the discussion topic and thus having higher task focus than in a face-to-face communication environment (Straus 1997).

Communication apprehension (CA) is defined as an individual’s level of anxiety associated with either real or anticipated communication with other people (McCroskey 1977). Individuals with higher level of CA will avoid communication more. Thus the lower the CA the individuals have, the more ideas will be produced (Jablin, Seibold & Sorensen 1977). However, CA is not to be perceived as a personality trait but rather a continuum with Traitlike CA and Situational CA marking the two extremes (McCroskey 1984).

A higher degree of CA is expected when the situation is novel to the group members. Other reasons for higher CA are uncertainty about “correct” behaviour in the group, unfamiliarity
and dissimilarity with other group members and finally, being prominent in the environment. However, using a text-based electronic communication environment should ease the key casual factors for CA (Clapper & Massey 1996).

Hence, due to the time constraints and the nature of the communication environment, each individual will focus on achieving the task, and the result of the group process and outcome will more likely be attributed to specific personality traits of each group participants. The participants will less likely have the time to consider about the “correct” behaviours they should have in the group. As a result, each participants of the group will behave or act more accordingly to their own personalities.

The personality traits considered in this study uses the Big Five, namely, Adjustment, Sociability, Openness, Agreeableness and Conscientiousness. We hypothesize that two of the dimensions of personality, Adjustment and Agreeableness, will affect the task outcome in terms of the number of new knowledge created respectively. We expect that groups with lower Adjustment characteristics, such as worry, nervousness, high-strungness, and self-pity, will tend to be less successful than more emotionally stable groups. This is because these traits tend to inhibit rather than ease the process of knowledge creation. We also expect that groups with lower Agreeableness tend to create more new knowledge than those with higher Agreeableness. When there are more questions being asked, when there are more group members who are sceptical, more conflicts will be resulted. Group members will then be more specific in their reasoning and find out about knowledge that may be unknown to the group members. Hence more new knowledge will be created.

\[ H1a: \text{The stronger the Adjustment personality trait of the electronic focus group, the greater the number of new knowledge will be created.} \]

\[ H1b: \text{The lower the Agreeableness personality trait of the electronic focus group, the greater the number of new knowledge will be created.} \]

We also hypothesize that Openness and Conscientiousness will affect the task process in terms of the number of utterances made during the discussion. Openness includes traits like curious, broad-minded, intelligent and creative. Therefore, it is expected that groups with higher Openness trait, will have a higher number of utterances during the discussion. We also expect that groups will make more utterances if they have higher scores for Conscientiousness. In previous studies by Barrick and Mount (1993), persons high in Conscientiousness generally perform better than those who are not. In this study, we believe that groups with higher Conscientiousness will make more utterances than those who have lower Conscientiousness scores.

\[ H2a: \text{The higher the Openness personality trait of the electronic focus group, the greater the number of utterances will be made.} \]

\[ H2b: \text{The higher the Conscientiousness personality trait of the electronic focus group, the greater the number of utterances will be made.} \]

### 3.3 Prior Knowledge

Usually in a group discussion, the topic under discussion will be familiar to the participants of the group. Hence, even before the participants start discussing in a group, each participant brings in their own knowledge and experiences on the topic. This is termed as prior knowledge.

In the past group studies, prior knowledge is not usually considered. The amount of prior knowledge the group input will affect the task outcome and probably towards the satisfaction
of the task process. In determining the task outcome, past researches counted the number of ideas, number of unique ideas or the number of themes created. However, these quantifications do not consider prior knowledge. Therefore, in order to properly define what new knowledge created by the electronic focus group is, prior knowledge must be considered.

We expect that the groups with higher amount of prior knowledge towards the discussion topic will result in the group making more utterances than those of lower amount of prior knowledge. This is because groups with more prior knowledge about the discussion topic will tend to talk more. Similarly, groups with higher amount of prior knowledge will also tend to produce a higher number of new knowledge. With more discussions being made, we believe that more new knowledge will be created.

\textit{Hypothesis 3a: The higher the amount of prior knowledge of the electronic focus group, the greater number of utterances will be made.}

\textit{Hypothesis 3b: The higher the amount of prior knowledge of the electronic focus group, the greater the number of new knowledge will be created.}

In this study, the quantification of new knowledge created by the group takes into the consideration of the group’s prior knowledge. The following equation shows this relation.

\[
\text{New Knowledge created by group} = \text{Total Knowledge contributed by group} - \text{Prior Knowledge of the group}
\]

4. Research Methodology

4.1 Electronic Focus Group

Focus groups are interactive discussion groups that are used for generating knowledge and are used to analyze and determine opinions, attitudes and attributes (Parent, Gallupe, Salisbury, & Handelman 2000, Ellis & Fisher 1994, p. 145). A focus group is an instance of non-repeating group behaviour, that is, the individuals in the focus group are assumed that they have not work as a group before and thereafter the focus group discussion, they will be disbanded (Clapper & Massey 1996).

Traditionally, focus group is done under the face-to-face communication environment. During a face-to-face communication, participants of the focus group are not only able to receive messages from the speaker but also able to perceive other cues which can be categorized into either visual or auditory. However, in an electronic environment, the various degrees of these cues are greatly minimized during transmission. Hence electronic text-based communication software is said to have media leaness.

Another important feature of electronic text-based communication is that participants are able to preserve their identity while having their discussion. Unlike face-to-face communication, participants have more anonymity in an electronic text-based communication. Therefore with this environment, participants will be able to communicate in a free-flowing, uninhibited manner (Montoya-Weiss et al. 1998). It was found that even when participants do not preserve their identity with the use of Group Support System, there is a decrease in the power of the group majority to influence a member (Clapper & Massey 1996).

Thus, with the above nature characteristics of electronic focus group, it is said that this environment enables participants to communicate in an uninhibited manner. Without any inhibitions, participants are able to communicate and behave accordingly to their own personalities. Further, focus group itself offers synergy, snowballing, stimulation and spontaneity for participants (Parent et al. 2000). Inputs of one member can prompt quick and
sometimes innovative responses in another, and a genuinely creative outcome may occur (Clapper & Massey 1996).

4.2 Subjects and Software

38 students undertaking a knowledge management course, which require an experimental participation, served as subjects for the experiment. 5 of these students are undergraduates, 26 are graduates and remaining 7 are post-graduates. 30 of them are aged between 21 and 30, and remaining 8 aged between 31 and 40. In terms of gender, 20 are males and 18 are females.

The subjects were also asked about whether they have studied the topics under discussion, namely, Customer Relationship Management (CRM), E-Governance (EG) and Knowledge Management (KM) and whether their previous and/or current occupations concern these topics. 19 of the subjects have studied CRM, 9 have studied EG and 35 have studied KM. 5 of the subjects’ previous and/or current occupations concerned CRM, no subjects’ previous and/or current occupations concerned EG and 9 concerned KM.

The survey also inquired the subjects regarding their experiences in online communication. 33 of them have chat online before and 17 of these subjects have been chatting online for 2 to 5 years.

The software being used in the experiments is Global Communication Network (GCN). Since the experiments just involve chatting online, GCN is more than enough to support this function. The advantages GCN have over other communication software, such as ICQ, are that its logging of the chat session is in hour:minute:second precision. Further GCN has both public and private chat rooms. All experiments were held in private chat rooms so that no noise from external sources would interrupt the discussions.

Subjects have had no difficulties in using GCN since it has not many differences from commonly used chat software like ICQ or MSN Messenger.

4.3 Experimental Procedures

Subjects were divided into 5 groups according to their working experiences and whether they have studied the topics under discussion.

The experimental procedure consisted three parts. First, subjects completed a pre-questionnaire that is composed of demographic questions, questions enquiring individual experience with computers and online communication, and prior feelings about the later discussion session and other participants. It also included a personality test (Howard, Medina & Howard 1996) and a prior knowledge questionnaire. Secondly, subjects underwent the discussion using computer mediated means. Lastly, subjects completed a post-questionnaire.

5. Results

5.1 Personality, Utterances and New Knowledge

The means of each personality traits are being calculated for each group. Correlation tests were also done involving each mean of the personality traits and new knowledge, and the results are shown in Table 1.
Table 1. Correlations between Personality Traits and New Knowledge

From Table 1, H1a and H1b are supported at a significant level of 1%. That is, in terms of Adjustment, the stronger the Adjustment of the group, the higher the amount of new knowledge created ($r = -0.975$, $p$(one-tailed) = 0.002). Similarly, having a higher number of group members who are low in Agreeableness will contribute more to the pool of new knowledge created ($r = -0.938$, $p$(one-tailed) = 0.009).

Correlation tests were done involving each mean of the personality traits and total number of utterances and the results are shown in Table 2.

Table 2. Correlations between Personality Traits and Number of Utterances

As from Table 2, H2a is supported at a significant level of 1% and H2b is support at a significant level of 5%. When there are more group members who have high Openness, there will be more utterances made ($r = 0.935$, $p$(one-tailed) = 0.010).

Groups that consist of members who are high in Conscientiousness will also make more utterances during the discussion process ($r = 0.822$, $p$(one-tailed) = 0.044).

5.2 Prior Knowledge, Utterances and New Knowledge

The subjects were asked on their knowledge about the respective topics that they would be discussing during the session. The logs of the discussions were then saved, and analyzed and similar ideas were grouped together. These total numbers of knowledge were then subtracted with each respective group’s prior knowledge, thus forming the number of new knowledge created by each respective group. A Linear Regression Analysis was done involving prior knowledge and number of utterances made. The result is shown in Table 3.
From the above result, H3a is not significantly supported at significant level of 5%.

A Linear Regression Analysis was also done involving prior knowledge and new knowledge. The result is shown in Table 4.

As in Table 4, H3b is also not significantly supported at significant level of 5%.

6. Discussion

Table 5 provides a summary of the results of assessment of hypotheses.

The study has showed some very interesting results in a way that prior knowledge does not contribute to the group discussion process and outcome as significantly as the personality traits involved in the study. In the following, we will suggest why this is so.

6.1 Personality

Groups that contain more members who are strong in Adjustment produce more new knowledge than those who are not. Adjustment trait is associated with emotional stability. Strong Adjustment persons are those who are unflappable and rational, whereas weak Adjustment persons are those who are worrying and high-strung. Hence group members who have strong Adjustment trait have less inhibition to contribute to the pool of knowledge created.
In terms of Agreeableness, groups that have more members who are low in Agreeableness may contribute more to the pool of knowledge created than those who are not. This may be caused by having higher amount of conflicts or competitiveness within group members. Hence each individual will try to prove or reason further, producing more new knowledge. However, past researches have also concluded that a right and balance amount of conflict is needed for quality outcomes from a group discussion. Hence, it should not be conclusively said that having more members who are low in Agreeableness will produce more new knowledge. If the amount of conflicts is too much for the group to handle, the group process and group outcome may be affected adversely.

The group consisting of highly curious persons will try to ask more questions and probe further into knowledge that were not previously found or known to them. Creativity is also associated with Openness. Hence, groups with high Openness may tend to be creative in their contributions toward the discussion topic. Being more creative, the group may tend to make more utterances during the discussion. This is because the ideas that are contributed during the discussion are novel. Therefore, members of the group will tend to ask more questions on these ideas and the individuals who have made those novel ideas will try to explain more about why the ideas are relevant to the discussion topic. However, it must be noted that creative contributions may not be associated with new knowledge created, as these creative contributions may not serve as useful or relevant knowledge with respect to the discussion topic.

It is also shown that groups with more members who are high in Conscientiousness make more utterances during the discussion. This may be obvious since members who are high in Conscientiousness are responsible, hardworking and thorough persons. Thus in trying to achieve the goal of the discussion topic, groups with high Conscientiousness scores tend to make more utterances. Probably combined with Openness, the creative ideas made by the individuals are being questioned more thoroughly and these individuals, being responsible and thorough, will also try to explain their creative ideas more precisely. Hence, in the process, the number of utterances made by the group of high Conscientiousness is higher than those of low Conscientiousness.

6.2 Prior Knowledge

In this study the results from the Linear Regression Analysis of prior knowledge against number of utterances made and the number of new knowledge created were not statistically significant. Therefore, groups that have members who are highly knowledgeable in the discussion topic may not tend to communicate more and may not contribute significantly to the pool of new knowledge.

This may be due to the personalities of the members in the groups even though the discussions were held in an electronic environment. As discussed before and in past researches, in an electronic environment, members of the group discussion should feel less inhibit to participate in the discussion than when the discussion is held face-to-face. However, members still have further inhibitions which may be due to individual personalities. Therefore, it cannot be concluded that groups with higher amount of prior knowledge will make more utterances and create more new knowledge than those with lower amount of prior knowledge.

In this light, we can observe that not only the communication environment plays an important part in having a successful group discussion. An important factor, which is personality, should also be considered when the success of the group discussion is judged by the amount of new knowledge created.
7. Limitations

It must be noted that in this study, there are limitations in the experimental tools used and the procedure itself. Firstly, the personality test used, The Big Five Locator has much less items to be measured than those frequently used such as NEO PI-R and NEO FFI. Therefore in terms of precision, it may not accurately reflect the true personalities of the subjects used in the experiment. However, it is also due to the number of items needed to be measured in The Big Five Locator, which we have decided to use it. In the experimental procedure, subjects were required to answer a prior knowledge questionnaire and a pre-questionnaire, which included the personality test, before they enter the discussion. Therefore, in order to balance the subjects’ concentration and energy on all tasks required for the experiment to run successfully, The Big Five Locator was used.

Next, the measurement of knowledge required both objectivity and subjectivity of the experts. It is because of the subjectivity factor, the measurement of new knowledge created may not truly reflect on the actual knowledge gained by the individuals of the group. In addition, part of the knowledge gained may be categorized as tacit knowledge which is difficult to capture and codify because individuals find it hard to articulate this type of knowledge.

Lastly, the subjects were required to participate in this experiment as part of their course requirements. Therefore this motivation may have contributed partially to the experiment results.

8. Conclusion

The usage of focus groups in organizations is as important as ever in creating knowledge. In order to have a successful focus group discussion, many factors have to be considered. For instance, past researches have noted that the use of electronic means to conduct focus group sessions have give rise to a non-inhibiting and synergistic environment.

However, there are other factors that should also be considered such as personalities and the prior knowledge of the group. As in this study, the personality factor can affect the task outcome significantly. Even if the group has a higher amount of prior knowledge, individuals may still feel inhibited by their personalities to communicate more during the discussion. The individuals may not be creative enough to produce more new knowledge even though they have more prior knowledge with respect to the discussion topic.

This has been an interesting research work on how personality and prior knowledge affect the task processes and outcomes of electronic focus groups. There is still the need to further research on how individual personality and group personality can affect both the individual and group. In addition, the relation between individual prior knowledge and new knowledge gained after a discussion should be investigated in future works.
References


