

# CROSS-SECTIONAL STUDY OF TEAM BEHAVIOR AND TEAM SUCCESS: THE SIMULATED CASE STUDY OF AN SME

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## ABSTRACT

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This paper examined a Cross-sectional Study of Team Behavior and Team Success. The sample size was 37, comprising 26 males and 11 females. The Myers Briggs Psychological Type Indicator (MBTI) was used as a tool to classify psychological personality type. The Belbin Team Role theory was used to design an optimum team. The remaining participants were randomly grouped into 3 teams. Team behavior and performance were studied and evaluated among the 4 teams. Each group was assigned to work as a team to resolve the assigned problems under certain constraints. Team performance criteria were: effectiveness, creativity and efficiency. Team behavior and performance were jointly evaluated by a general manager and a consultant.

The results of the study were well explainable and congruent with the Myers Briggs Psychological Type theory and the Belbin Team Role theory. This research suggested that the integration of both theories could be the management tool of choice to establish the right team at the right time and place in order to sustain organizational growth and strength.

**Keywords:** Team, Team Behavior, Psychological Personality, Team Performance

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## Introduction

The concepts of Swiss psychologist Carl G. Jung were elaborated on by Katharine Cook Briggs (1875-1968) and her daughter, Isabel Briggs Myers (1897-1980). They developed a theory known as the Myers Briggs Psychological Type Indicator (MBTI [1]) based on their keen and disciplined observations of human personality differences. More than three million MBTIs has been administered annually in the United States. It was also used internationally and has been translated into many languages, including French, Spanish, Japanese, Korean, German, Danish, Swedish and Chinese [1]. The MBTI was developed to provide a wide range of individuals with the tools for determining psychological type. After more than 60 years of research and development, the MBTI is the most widely used instrument for understanding normal personality differences [1]. The MBTI has been used in many various fields, for example: (Isabel Briggs Myers: 1993)

Team building  
Self development  
Relationship counseling  
Academic counseling  
Organization development  
Problem solving  
Management and leadership training

Education and curriculum development  
Diversity and multicultural training

There are 4 basic pairs of preferences as theorized by Myers and Briggs:

E and I, S and N, T and F, and J and P.

Participants in this study had to define their preferences as follows:

1. Where do you prefer to focus your attention?

E refers to Extraversion while I refers to Introversion.

2. How do you digest information?

S refers to Sensing while N refers to Intuition.

3. How do you make decisions?

T refers to Thinking while F refers to Feeling

4. How do you orient yourself to the outer world?

J refers to Judging while P refers to Perceiving.

According to the Myers Briggs Psychological Type Theory, understanding the character and the effects of each preference is the starting point. Moreover, each preference becomes more revealing when combined with other preferences. The combinations shown in Tables 1, 2 and 3 illustrate individual preferences in terms of

leading process, mental process and socializing process.

The combinations T-F and J-P can be seen as leading processes or preferences.

|    |    |    |
|----|----|----|
| TJ | FJ | TJ |
| TP | FP | TP |
| TJ |    | TJ |

**Table 1:** Combination of T-F and J-P

Source: Isabel Briggs Myers (1993) Introduction to Type, A guide to understand your results on the MBTI Fifth edition, Consulting Psychologists Press Inc, California 1993 pp.26

1. TJ Type: The Logical Decision Maker  
Tends to be tough-minded and analytical. Makes decisions based on principles and systems, overall impacts, and rational analysis of outcomes.

2. TP Type: The Adaptable Thinker  
Tends to be objective, skeptical and curious, especially about the given material and its possibilities.

3. FP Type: The Gentle Performer  
Tends to be adaptable, seek harmony and affiliation, and is concerned with the human aspects of a problem. Very supportive, offering encouragement and coaching.

4. FJ Type: The Benevolent Administrator  
Tends to be mindful of others' needs and brings harmony into relationships. Inspires and is willing to help others with their decisions, or teach others to be more confident. Smooth talkers and good persuaders, but not sincerely supportive of the individual.

The combination of S-N and T-F can be seen as a mental process or preference

|    |    |    |    |
|----|----|----|----|
| ST | SF | NF | NT |
|----|----|----|----|

**Table 2:** Combination of S-N and T-F

Source: Isabel Briggs Myers (1993) Introduction to Type, A guide to understand your results on the

MBTI Fifth edition, Consulting Psychologists Press Inc, California 1993 pp.27

1. ST Type: Guardian, Inspector

Tends to focus on facts and applies facts and experiences to handle problems. Practical and analytical.

2. SF Type: Performer, Promoter

Tends to focus on facts and applies to concerns on a daily basis to help others. Sympathetic and friendly.

3. NF Type: Mentor, Soother

Tends to focus on possibilities and understands the aspirations of others. Enthusiastic, insightful and communicative, and understands others' concerns.

4. NT Type: Mastermind, Inventor

Tends to focus on possibilities and is keen on developing concepts that capture individual needs. Logical, analytical, a good listener, and accepting of others' point of view.

The Combination of E-I and J-P can be seen as a socializing process or preference.

|    |
|----|
| IJ |
| IP |
| EP |
| EJ |

**Table 3:** Combination of E-I and J-P

Source: Isabel Briggs Myers (1993) Introduction to Type, A guide to understand your results on the MBTI Fifth edition, Consulting Psychologists Press Inc, California 1993 pp.27

1. IJ Type: Closed, Straight Forward  
Tends to be introspective and persevering. Changes evidence to suit personal perceptions.

2. IP Type: The Close-Tied Associate  
Tends to be introspective and adaptable in little things, but firm on issues deemed important.

3. EP Type: The Open-Tied Associate  
Tends to be active, energetic, sociable and able to deal with change. Likes to seek new experiences.

4. EJ Type: Open, Straight Forward.  
Tends to be fast-moving, confident, decisive and out-going. Likes to make things happen.

The Combination of E-I and S-N can be seen as a socializing process or preference.

|    |    |
|----|----|
| IS | IN |
| ES | EN |

**Table 4:** Combination of E-I and S-N

Source: Isabel Briggs Myers (1993)

Introduction to Type, A guide to understand your results on the MBTI Fifth edition, Consulting Psychologists Press Inc, California 1993 and conceptualized by researcher.

## 1. IS Type: The Hands-on Worker

Tends to be hands-on, sticks to the job and individualistic.

## 2. ES type: The Smart Supervisor

Tends to be smart in helping others. Team-oriented.

## 3. IN Type: The Healing Mastermind

Tends to be mastermind and at the same time, healer.

## 4. EN Type: The Resolver

Tends to be jack-of-all-trades and problem resolver.

Overall, there are 16 possible combinations of preferences characterizing 16 different personality types. See Table 4

|      |      |      |      |
|------|------|------|------|
| ISTJ | ISFJ | INFJ | INTJ |
| ISTP | ISFP | INFP | INTP |
| ESTP | ESFP | ENFP | ENTP |
| ESTJ | ESFJ | ENFJ | ENTJ |

**Table 5:** Combination of E-I, S-N, T-F and J-P

Source: Isabel Briggs Myers (1993)

Introduction to Type, A guide to understand your results on the MBTI Fifth edition, Consulting Psychologists Press Inc, California 1993 pp.25

Characteristics of the 16 personality types:

## 1. ISTJ

Serious, quiet, earns success through concentrated efforts and thoroughness. Practical, orderly, logical and dependable.

## 2. ISFJ

Quiet, but friendly and conscientious. Loyal, considerate, perceptive and concerned with how others feel.

## 3. ISTP

Cool onlookers - quiet, reserved, observant and analytical of life, with detached curiosity and unexpected flashes of humor.

## 4. ISFP

Retiring, quiet friendly, sensitive, kind, and modest about their abilities.

## 5. ESTJ

Practical, realistic, matter-of-fact. Likes to organize and manage activities.

## 6. ESTP

Good at on-the-spot problem solving. Likes action, enjoys whatever comes along. Tends to like mechanical devices and sports, with friends on the side.

## 7. ESFJ

Warm-hearted, talkative, popular, conscientious and active in committees.

## 8. ESFP

Outgoing, accepting and friendly. Likes action and making things happen. Best in situations that need sound common sense, and has practical abilities in working with others.

## 9. INFJ

Succeeds through perseverance, originality and the desire to do whatever is needed or wanted. Quietly forceful, concerned for others.

## 10. INFP

Quiet observer, idealistic, and desires to understand people. Curious and quick to see the possibilities.

## 11. INTJ

Skeptical, critical, independent and determined. Has great drive for their own ideas and purposes. Quick in finding meaningful patterns in external events. Long-range vision.

## 12. INTP

Quiet and reserved, but enjoys theoretical or scientific pursuits. Likes to solve problems and analyze.

## 13. ENTP

Quick, ingenious and good at many things. Alert and outspoken. Resourceful in solving new challenges.

## 14. ENFP

Warmly enthusiastic, high spirited and ingenious. Quick in finding solutions for any difficulty and ready to help anyone with a problem. Jack-of-all-trades and master of none.

## 15. ENFJ

Responsive and responsible. Feels real concern for what others think or want. Likes to facilitate others' efforts and enable others to achieve their potential.

## 16. ENTJ

Frank, decisive, a leader in activities. Able to develop and implement comprehensive systems to solve organizational problems.

### Belbin Team Role Theory

Belbin first began studying teams at Henley Management College in the 1970s. Over a period of ten years, he carried out extended observational research to determine which factors influenced team failure or success. A management game was designed to reproduce work life. It contained all the principal variables that typify the problems of decision-making in a business environment. The experiment was designed along scientific lines with careful measurements taken at each stage.

At first, Belbin hypothesized that high-intellect teams would succeed where lower intellect teams would not. However, the outcome of this research was that certain teams, predicted to be excellent based on intellect, failed to fulfill their potential. In fact, it became apparent by looking at the various combinations that it was not intellect which enabled a team to succeed; the critical factor for success was balance. The most successful companies tended to be those with a mix of different people, i.e. those with a range of different behaviors. In fact, nine distinct clusters of behavior turned out to be distinctive and useful, while the balance was dependent on the purposes and objectives of the team. Belbin Team Role theory was developed based on research on over 200 teams conducting management business games at Administrative Staff College, Henley, in the UK. Belbin described and provided the role definitions, which comprise the fundamentals of his studies and play an important role in various aspects of his study. He defines two role styles: functional and team roles. A Functional role is a required function for the survival and ongoing life of a social system. But Team roles are a set of roles defined within a definite context. In

other words, it is the sum of roles that are required for the pursuit to be achieved. While team roles do not describe the function of the team, they do describe the suitability of each team member.

The high performance teams required a balanced distribution of all roles within the team. Belbin also thought that the team role concept should be distinguished from the concept of the functional role, which solely addresses job related, operational and technique knowledge. As a result, some team members might have the same functional role but with different team roles.

Belbin first labeled the team roles as: Chairman, Shaper, Team Plant, Resource Investigator, Monitor Evaluator, Team Worker, Company Worker and Completer Finisher. Subsequently, he renamed "Chairman" as "Coordinator" and "Company Worker" as "Implementer." He also added a ninth role - "Specialist". The characteristics of these roles will be elaborated on later.

However, research supporting the idea of integrating the Myers Briggs Psychological Type theory together with Belbin's team theory is scant. This research was conducted to assess organizational competency and secure organizational technical expertise. A general manager wishes to establish an organization succession plan in parallel with its recruitment plan to sustain organizational competency and growth.

According to the Belbin Team Role theory, an excellent team should comprise three groups as follows: Action oriented team, People oriented team and Think Tank oriented team.

The Action oriented team consisted of company worker (CW) or Implementer, Shaper (SH) and Completer-Finisher (CF).

The People oriented Team consisted of Chairman (CH) or Coordinator, Team Worker (TW) and Resource Investigator (RI).

The Cerebral or Think Tank Team consisted of Plant (PL), Specialist (SP) and Monitor-Evaluator (ME)

In general, the Belbin Team Role theory described the nine types of people identified as useful to a team.

1. Company Worker (CW) or implementer was usually dutiful, predictable and conservative. Their positive qualities could be described as: organizing ability, practical commonsense, hard working and self-disciplined. The potential weaknesses were lack of flexibility and unresponsiveness to unproven ideas.

2. Shaper (SH) was usually highly strung, courageous, dynamic and outgoing. Their negative qualities could be proneness to provocation,

irritation and impatience, which could be tempered by a good leader or chairman (coordinator).

3. Chairman (CH) or Leader or Coordinator was someone with a capacity for treating, resolving or welcoming all potential contributors on their merits and without prejudice, with a strong commitment to objectives. However, Chairman could also be seen as a person who lacked creativity or was simple, with an average intellect.

4. Completer-Finisher (CF) was conscientious, orderly, painstaking and sometimes a bit anxious. The positive qualities of CF were the capacity to follow through, or at the very least, muddle through to get things done.

5. Team Worker (TW) was usually socially oriented, perceptive and diplomatic, a good listener, co-operative and helpful. The negative qualities were indecision, reluctance and weakness, especially during moments of crisis. However, a Team Worker was sensitive in responding to others and able to promote team spirit.

6. Resource Investigator (RI) had the tendency to get around, find out what was going on, liked to meet people and handled questions well. Normally, a Resource Investigator was an executive who was never in his office, and if he was, "He is on the phone". The RI tended to have the knack of doing business, but had no less a facility for getting new things started.

7. Plant (PL) was creative, unorthodox and a generator of ideas. A good Plant was bright and very innovative, but often had difficulty in communicating with others. Multiple Plants in a team could lead to misunderstandings, as many ideas were generated without sufficient discernment or the impetus to follow the ideas through to action. Long-established organizations seldom had Plants in executive positions unless in response to a challenge that has disrupted the organization's continuity. While Plants were relatively uncommon in secure and established firms and organizations, they were plentiful in newly formed companies. Most of them were individualistic and disregarded routine details or protocols.

8. Monitor – Evaluator (ME) was a logical observer and prudent. Since MEs were good at detaching themselves from bias, they had the ability to see all available options with the greatest clarity and impartiality. They took a broad view when problem-solving, moving slowly and analytically. They always come to the right decision when a judgment was needed. A brilliant Plant (PL) or enthusiastic Resource Investigator (RI) might be valued members of a team, but they were seldom the best people to judge the merits of any idea that they

were canvassing. However MEs often lack inspiration or the ability to motivate others in their team.

9. Specialist (SP) was the person who provided knowledge and skills in rare supply. Specialist was passionate about learning in their own particular fields. They often strived to improve and built upon their expertise. If there was anything they did not know, they would be enthusiastic in finding the answers. Specialists brought a high level of concentration, ability and skill in their discipline to the team, but only within their own expert or interested fields. They were rather more skillful in technicalities than creativity. Specialists contributed only on a narrow scope of specialized knowledge, while Plants were more open to use or integrate various sources of knowledge to solve difficult or newly emerging problems.

Regarding both theories, it was possible to label the 9 types of Belbin Team Role theory with the Myers Briggs Psychological Type Indicator (MBTI) as follows:

| Belbin Team Role                | Possible MBTI Type   |
|---------------------------------|--|
| 1. Shaper (SH)                  | ISTJ or ESTJ   |
| 2. Company Worker (CW)          | TJ is logical decision maker   |
| 3. Completer-Finisher (CF)      | ISTP or ESTP   |
| 4. Chairman (CH) Or Coordinator | TP is Adaptable Thinker  |
| 5. Team Worker (TW)             | INTJ   |
| 6. Resource Investigator (RI)   | ENFP (Champion) or INFP (Healer) or ENTJ (Field Marshall) or INTJ (Mastermind) |
| 7. Plant (PL)                   | ISFP or ESFP or ISFJ   |
| 8. Monitor – Evaluator (ME)     | Can't be EXXJ since EJ enjoys new things                                       |
| 9. Specialist (SP)              | ESFJ   |
|                                 | Can't be FP since FP is too sympathetic for negotiation process                |
|                                 | ENTP   |
|                                 | INFJ (Counselor) or ENFJ (Teacher)   |
|                                 | INTP   |
|                                 | since Specialists tend to be introverts  |

**Table 6:** Belbin Team Roles and Possible MBTI Types \*

\* Conceptualized by the researcher

### Research Methodology

The research method was a cross-sectional study to determine team behavior. Participants were assigned to work as a team to perform simulated jobs at certain times, with a duration of about 2 hours. The sampling method was 100 percent and only permanent employees were selected. Outsourced workers were not included in this study. The simulated job was designed to be similar to their actual jobs: contracting for the erection of tubular scaffolding systems. All their scaffolds were constructed by certified scaffolders under qualified supervision, and where necessary, by our professional engineer, to secure safe usage in accordance with industry standards. They had a sizeable inventory of scaffolding materials, which enabled them to take on major construction projects and maintenance contracts in oil, gas and petrochemical plants. Details of Logthai Hai Leck Engineering Co., Ltd can be found on their website: <http://www.haileck-thailand.com/index.html>

Chopsticks were used as the simulated scaffolds, and rubber bands as connectors for erection. The job criteria were height and firmness sufficient to support as many potatoes as possible. The potatoes needed to be punctured to create holes, but only by using pieces of soft straw, thus requiring innovative ideas to achieve such. The punctured potatoes were then hung with rope.

The General Manager and Consultant teams were responsible for evaluating the final, simulated scaffolds, which had been built through team effort. The criteria were: Within time, Firmness, Team performance, Innovation and Resources used. Evaluation scores were ranked from 1 = minimum, 2 = average and 3 = maximum.

### Results and Discussion

| Team Type | Team Number |   |   |   |
|-----------|-------------|---|---|---|
|           | 1           | 2 | 3 | 4 |
| 1.SH      |             |   |   |   |
| ISTJ      |             | 1 |   | 1 |
| ESTJ      | 2           |   |   | 1 |
| 2.CW      |             |   |   |   |
| ISTP      |             | 1 | 2 |   |
| ESTP      | 1           |   | 1 | 1 |
| 3.CF      |             |   |   |   |
| INTJ      |             |   | 1 | 1 |
| 4.CH      |             |   |   |   |
| INTJ      |             |   |   | 1 |
| ENTJ      |             |   |   |   |
| ENFP      | 1           | 2 | 1 | 1 |
| INFP      |             | 1 | 1 |   |
| 5.TW      |             |   |   |   |
| ISFP      | 1           |   | 2 |   |
| ESFP      | 1           | 2 |   |   |
| ISFJ      | 1           | 1 |   |   |
| 6.RI      |             |   |   |   |
| ESFJ      | 2           | 1 | 1 | 1 |
| 7.PL      |             |   |   |   |
| ENTP      |             |   | 1 | 1 |
| 8.ME      |             |   |   |   |
| INFJ      |             |   |   | 1 |
| ENFJ      |             |   |   |   |
| 9.SP      |             |   |   |   |
| INTP      |             |   |   |   |

**Table 7:** Summary of the amount of Team Role types in each team

Participants consisted of 37 persons, 26 male and 11 female, divided into 4 groups. One group was intentionally set up and fitted according to the Belbin Team Role principle; this was the optimum team or the perfect team. The remaining participants were randomly grouped into 3 teams. See details of the 4 teams in Table 6.

Results of the evaluation were summarized as in Table 7.

| Criteria and points | Team Number |   |    |    |
|---------------------|-------------|---|----|----|
|                     | 1           | 2 | 3  | 4* |
| 1. Within time      | 3           | 3 | 3  | 3  |
| 2. Firmness         | 1           | 1 | 1  | 3  |
| 3. Team performance | 2           | 1 | 2  | 3  |
| 4. Innovation       | 2           | 2 | 1  | 3  |
| 5. Resources used   | 10          | 9 | 10 | 14 |
| 5. Total            |             |   |    |    |

\* The Optimum Team

**Table 8:** Evaluation Scores of the Four Teams

According to the overall criteria, total scores for the optimum team or Team 4, Team 1, Team 2 and Team were 3, 14, 10, 9, 10 points respectively. The optimum team achieved the highest total score since they had all the necessary members for a good team according to Belbin Team Role theory. However, Team 3 achieved the highest score for firmness and lowest score for team performance since the team lacked the Monitor-Evaluator person, leading to a superfluous use of resources.

## Discussion

The human personality has become much more complex and very dynamic due to changes in the environment. The Myers Briggs Psychological Type Indicator (MBTI) could clarify personal preference, but did not measure the skills or abilities of a person. Psychological type was only one tool capable of guiding us toward understanding personal preference, and should not be used as an excuse for doing or not doing something.

The modern world paradigm has superimposed itself on society for more than 100 years. The consequence of the rationality of this modernity could lead to an increase in the creation of TJ combination type populations if they were not aware enough, especially in those of younger age. In this era, combinations T-F and J-P were seen, but it appeared that TP and FJ combinations were difficult to find. However, if a TJ combination type population were to gain more experience and freedom, they could probably transform into a TP combination personality type, which would allow them to be more open or adaptive to the dynamic world. Another factor was the rapid change of

social contexts such as social networks, which could accelerate the transformation of a TJ combination population to a TP combination population. The FJ combination was also hardly found in contemporary society. The most probable factor for this was the lack of personal freedoms in most of today's societal structures. In addition, the superimposition of high technology and science could be the major cause of the overriding of an FJ combination population by a TJ combination population. The capacity for individual freedom requires lengthy learning, practice, and experiencing multiple processes to broaden one's world's view. Similarly, a change from IS combination to IN combination and IN to EN combination could probably be transformed through coaching and training or simulated seminars, or through exchange programs.

However, the transformation of an IN combination in a child to IS or ES was frequently found. In childhood, "Intuition" was often found in the form of "born to be" or gifted. However, most of a child's intuition was tainted by the rationality of the modern social structure, typically lost on the road to adulthood. Children have been taught to become more cerebral and logical, and to not rely on the power of intuition which is difficult to prove. The preference for rationality thus became predominant by the time they reached adulthood. Furthermore, there were more ES combination types found in growing children with greater exposure to the outer world.

The dynamic of psychological type depends on an individual's inner processes and external exposure. However, psychological typing was not the ultimate tool and cannot explain everything. Therefore, this study aimed to show that the integration of Belbin Team role theory and Myers Briggs Psychological Types had the potential to be more precise in predicting team behavior. An organization succession plan in parallel with a recruitment plan could be assessed, established and evaluated by applying the conclusions of this trial. The researchers urged the community of practice to conduct further research in these areas.

## Conclusion

This psychological personality trial was just the beginning. It proved useful in exploring and understanding the interactions and personal preferences of each type, and in how to balance the tension of opposite types and move forward. The integration of Belbin Team role theory was more effective in managing the team regarding the development and securing of an organization's

technical expertise [3, 4]. The application of other management concepts and tools was urged to integrate or reflect on and analyze the team phenomena, for example (Miller, S.L. (2009). *Why teams win: Key to success in business, sport and beyond*. Mississauga, ON: John Wiley and Sons [5]).

However, the results of this study fit very well and were congruent with Myers Briggs Psychological Type theory and Belbin Team Role theory. The researcher suggested that the integration of both theories could be the management tool of choice to establish the right team at the right time, in order to secure technical expertise and sustain organizational growth and strength in the long term.

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### APPENDICE : Activity Pictures





