Relationship Between Egostates and Performance in 470 Class Yacht Races

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In a 470 class yacht which is manipulated by two persons (crew and skipper), performance is considerably affected by the partnership. To make a partnership, they have to understand each other not only at the skill level but also at the personality level.

The purpose of this study was to examine the relationship between the egostate and performance with an egogram which is a means of the structural analysis in Transactional Analysis. The egogram consists of five egostates (CP; Critical Parent, NP; Nurturing Parent, A; Adult, FC; Free Child, AC; Adapted Child). The egogram used in this study was the TEG (Toudai-shiki egogram) developed by Tokyo University in Japan.

The subjects were 76 pairs who participated in the 1990 all Japan National 470 class yacht Championship. The TEG was administered before and after the race. The subjects were asked to answer the TEG concerning themselves and their partner.

The results indicated that there is no relationship between the egostate and good performance. But in the TEG profiles of the crew and skipper, there were some pairs which the TEG profile provided by the subjects was similar to that provided by for his partner. Such pairs performed well in races.

These results suggested that the egogram may be able to be used in studying partnerships in pair sports.

PURPOSE

In team sports and pair sports, the human relationship among the teammates and partnership are important factors affecting performance as well as individual ability. As to the relation between the human relationship among teammates and performance, most researchers have mainly focused on leadership and team cohesion (Peterson & Martens, 1972[7]; Bird, 1977[2]; Landers, et al, 1982[4]; Weiss & Friendrichs, 1986[10]; Niwa, et al, 1991[5]). However, there are few studies that have considered whether performance is affected or not by the degree of understanding each other one's way of thinking and one's point of view among the teammates (Yonekawa, et al, 1991[9], Okazawa, et al, 1991[6]).

Especially, in pair sports played by two persons, partnership involving understanding each other affects performance considerably.   For example, if there is a misunderstanding in the way of thinking and point of view between the pair, performance may become adversely affected.

470 class yacht races are one of the ocean sports.   Generally, classes is determined by yacht size and weight.   This 470 class yacht is manipulated by two persons, called crew and skipper.   In this class, if they don't understand each other, for example about which direction they should go, when the skipper should tag, and so on, they cannot manipulae the yacht well.   Otherwise, they can manipulate yacht well, if the crew understands skipper's thinking.

Thus it seems that the relationships between crew and skipper are important factors affecting performance.   In other words, the degree to which the crew and skipper understand each other is an important factor in 470 class yacht races.   And if they understand each other in races, they will achieve their best performance in races.

The purpose of this study was to examine to the relationship between the degree of understanding between the crew and skipper and performance, by means of the egogram (Bern, 1964[1]; Dusay, 1977[3]) which is a means of structural analysis in Transational Analysis (TA).

METHOD

Subjects

The subjects were 76 pairs who participated in the 1990 all Japan National 470 class yacht Championship.

Questionnaire

The questionnaire used in this study was TEG (Todai-shiki egogram) developed by Tokyo University in Japan to assess egostates (Suematu, et al, 1989[8]).   According to TA, egostates are classified into five: (Bern, 1964[1]; Dusay, 1977[3]): Critical Parent (CP), Nurturing Parent (NP), Adult (A), Free Child (FC), and Adapted Child (AC) (cf. Fig. 1, Tab. 1).   TEG has 5 subscales each of which contains 10 items, and one Lie scale contains 10 items.   The TEG was administered to subjects before and after the race.   Then the subjects were asked to answer the TEG concerning themselves and their partner.   First, the subjects were asked to answer the TEG concerning themselves (self-estimation).   Second, they were asked to answer the TEG for their partner
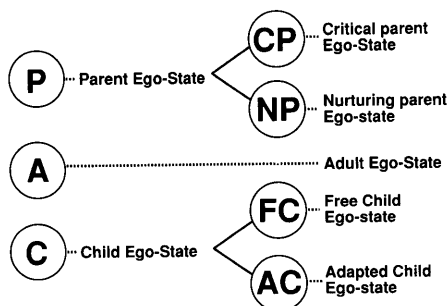

Fig. 1   Five Ego-states

Tab. 1 Positive and negative side of Five Ego-States

	CP	NP	A	FC	AC
	Critical Parent	Nurturing Parent	Adult	Free Child	Adapted Child
Positive	Idealize Ethical Order	Empathy Nurturing Acceptance	Rational Objective Calm	Naivety Curiosity Oliginality	Concessive Obedient Careful
Negative	Prejudice Critical Controll	Overprotection Interference Indulgent	Calculating Cool Uninteresting	Egotical Selfish Impulsivily	Dependence Endure Modest

(estimation for partner).　Subjects were given the instruction such as "if your were your partner, how would you answer each question in the questionnaire?".　TEG was send to 76 pairs, and 47 pairs (61.8%) supplied answers.　The data for these 47 pairs were then analyzed.

Data analysis

　　The degree to understanding between crew and skipper was calcualted in the following way. In order to evaluate the similarity between the TEG profiles, the both TEG profiles about the skipper's self-estimation and estimation by the partner, the crew's self-estimation and estimation by the partner, and self-estimation for the crew and skipper were arranged on one sheet.　There were 47 ×3 sheets for this study.　The 47×3 separately sheets were compare and evaluated by two experts for TEG profile from the point of view of similarity for the self-estimation and estimation by the partner, self-estimation of the crew and skipper (method of pair comparisons).　The reliability between two experts were calculated by the Spearman's rank correlation method, and those coefficients for them were r=0.90 (skipper), 0.87 (crew), 0.88 (crew and skipper) respectively. Then based on the similarity, the TEG profiles were arranged in order 1st to 47th.

　　For performance the results of the 1990 all Japan National 470 class yacht Championship were used.　But as 76 pairs participated to this championship, the 47 pairs subjected to this study were ranked 1st to 47th on the basis of the results of this championship.　In this study, the Spearman's rank correlation coefficients were calculated for relationship between the similarity of both TEG profils and their performance.

## RESULTS AND DISCUSSION

Correlational Analysis

　　The scatterplots enables us to study the nature of the relationship between two variables. Figure 2 to 4 are the scatterplots for relationship between the similarity of both TEG profils and their performance.　Figure 2 shows the scatterplots based on the order between the similarity of crew's self-estimation and estimation by his partner and the order of the performance.　Figure 3 shows the scatterplots based on the order of similarity of skipper's and the order of the performance.　Figure 4 is the scatterplots based on the order of similarity between the self-estimation of the crew and that of skipper and the performance order.
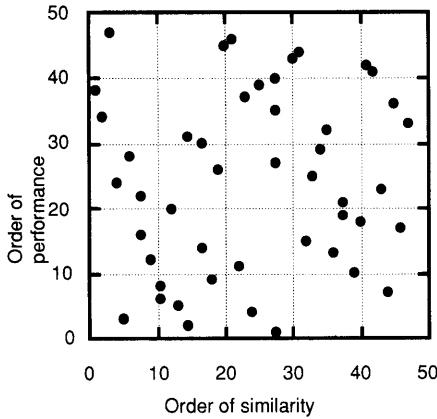
Fig. 2 **Scatterplots of performance and Similarity for TEG profile (crew)**
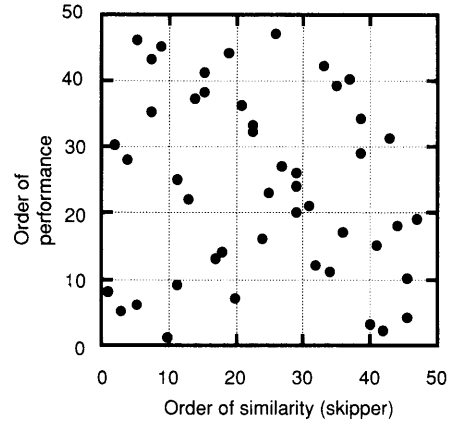
Fig. 3 **Scatterplots of performance and Similarity for TEG profile (skipper)**
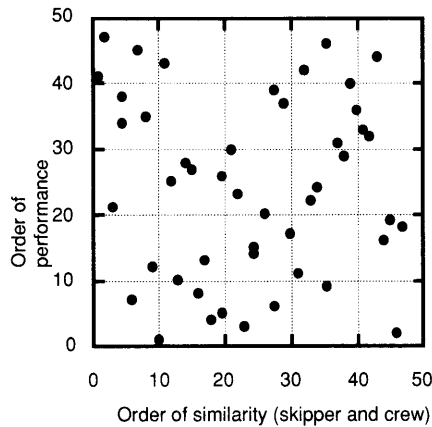
Fig. 4 **Scatterplots of performance and Similarity for TEG profile (skipper and crew)**

As in figure 2 to 4, the shape is almost a circle. This means that there is no correlation between the similarity of both TEG profils and performance. Indeed, the Spearman's rank correlation coefficient were $r=0.16$ (fig. 2), -0.10 (fig. 3) and 0.03 (fig. 4) respectively.

These results showed that there is no relationship between performance and the degree of understanding between crew and skipper. It seems that the reason why there is no statistical correlation is the large differeces at skill level. In this race, pairs that had competed in the world championship and novice pairs participated. It can be proposed that the results of the races were affected strongly by skill levels rather than the degree of understanding between crew and skipper. Therefore, to pick up the top 5 pairs in this race having the similar skill levels, the relationship between performance and the degree of understanding between crew and skipper were reconsidered.

Case Study

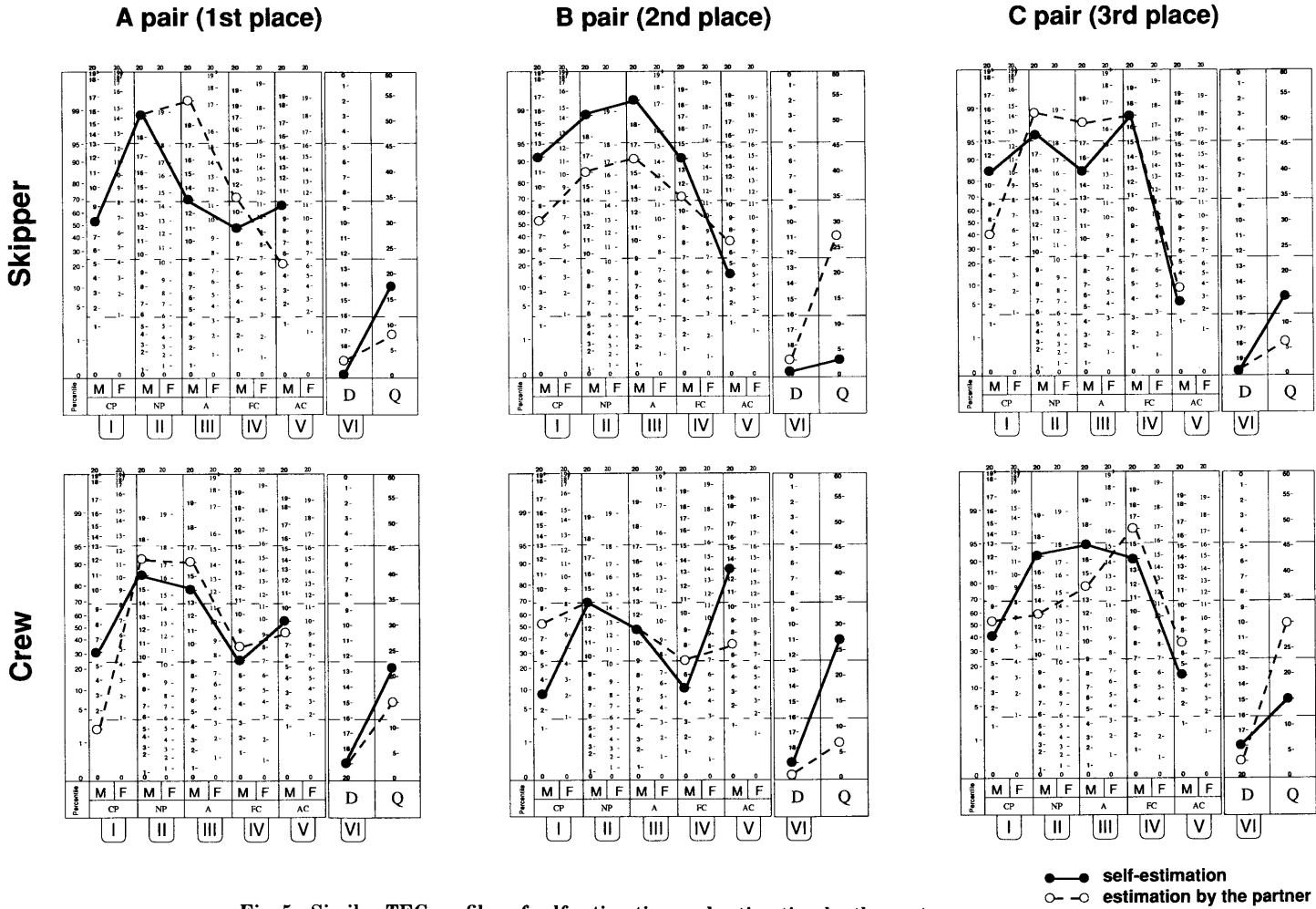The top of 5 pairs in this race are the member of the Japan National team which participated in

A pair (1st place)

B pair (2nd place)

C pair (3rd place)

Skipper

Crew

●——● self-estimation
○– –○ estimation by the partner

Fig. 5　Similar TEG profiles of self-estimation and estimation by the partner

D pair (6th place)

E pair (11th place)

Skipper

Crew

● — ● self-estimation
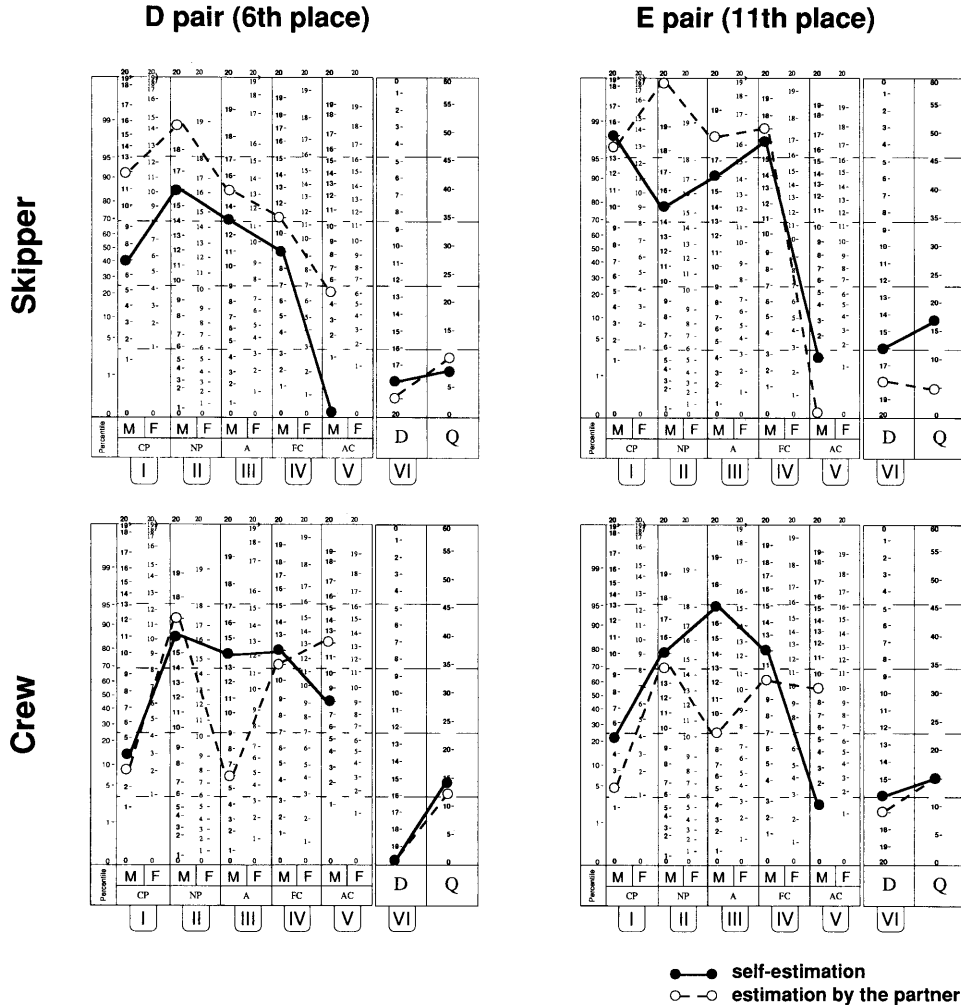○ — ○ estimation by the partner

Fig. 6   Dissimilar TEG profiles of self-estimation and estimation by the partner

the world Championship.   There are similar TEG profiles of self-estimation and estimation by the partner for 3 pairs, and the other showed dissimialr ones (cf. fig. 5, 6).   The former pairs took the top three places in this race, the latter 2 pairs took sixth and eleventh places.

The two pairs performed less in the competition showed distinct difference between the self-estimation and the estimation by the partner concerning with 'Adult' subscale on both crews.   It appears that crews were estimated that they were cool and think calmly every times, but the other hand, the skippers estimated their partners' coolness too lowly.   It seems that this gap caused undesirable interpersonal relationship between the pairs, thus the performance would become worse in the competition.

These results showed that the pairs understanding each other performed well.   Therefore it it supposed that at a similar skill level, the degree of understanding between crew and skipper affected their performance.   But because the data are few, further study in necessary.

CONCLUSION

This study was undertaken to examine the relationship between the degree of understanding between crew and skipper and performance using the TEG (Todai-shiki egogram).　Although there is no statistically relationship, at similar skill levels, the degree of understanding of each other affected the performance.　In future studies, it will be necessary to clarify in detail in what cases the degree of understanding would affect the performance.

REFERENCES

1) Bern, E., "Games People Play", New York: Grove Press, 1964.
2) Bird, A. M., "Development of a Model for Predicting Team Performance", Research Quarterly, 48–1: 24–32, 1977.
3) Dusay, J. M., "Egogrames", New York: Harper & Row, 1977.
4) Landers, D. M., et al, "Causality and Cohesion-Performance Relationship", Journal of Sport Psychology, 4–2: 170–183, 1982.
5) Niwa, T., et al, "Strength in Match and Authority-Power Structure of Rugby Football Clubs from the Viewpoint of Human Relationships", Japanese Journal of Sport Education Studies, 10–2: 143–155, 1991. (in Japanese).
6) Okazawa, Y., et al, "Study on Mental Management for Team Sports; 3–1, Table Tennis", Research Reports on Sport Medicine and Sciences of Japanese Amateur Sports Association, NO 4: 25–34, 1991. (in Japanese)
7) Peterson, J. A. and Martens, R., "Success and Residential Affiliation as Determinants of Team Cohesiveness", Research Quarterly, 43–1: 62–76, 1972.
8) Suematu, H., et al, "Egogram Pattern", Japan: Kaneko-shobou, 1989. (in Japanese)
9) Yonekawa, N., et al, "Psychological States of Yacht Sailor on the Asian Games", Research Reports on Sport Medicine and Sciences of Japanese Amateur Sports Association, NO 2, 341–350, 1991. (in Japanese).
10) Weiss, M. R., Friedrichs, W. D., "The Influence of Leader Behaviors, Coach Attributes, and Institutional Variables on Performance and Satisfaction of Collegiate Basketball Teams.", Journal of Sport Psychology, 8–4: 332–346, 1986.