

ORIGINAL RESEARCH

# The effects of physical education 2 outdoor adventure courses in the development of students' self-concept

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## Abstract

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Self-concept is the general perception of a person to his or her self, including the person's attributes, and who and what self is. This study investigated if students of Physical Education 2 Outdoor Adventure Courses in the University of the Philippines contribute to the change of their self-concept. Students were selected through random sampling. The survey was designed to be a match-up pair, where respondents answered the Tennessee Self-Concept Scale (TSCS) questionnaire, before and after activities. TSCS examined six basic areas of an adult's life namely physical, moral, personal, family, social and academic self-concept. Factor analysis through the PROMAX rotation method was used to summarize the questions in the survey into a few variables. The findings indicate that there is a significant difference between the pre-test and post-test self-concept gain scores measured by TSCS suggesting that there was a change in self-concept in the students as a result of student participation in PE 2 Outdoor Adventure Courses. Based on the PROMAX 6-factor model, after the camping activities, there is a significant change in the feeling and attitudes of respondents on being accepted by his or her social clusters. For the PROMAX 10-factor model, it can be concluded that after camping activities, there are positive significant changes in the social values of the students. The improvement in their social perception, pessimism and anti-sociality, and image-based social acceptance were also found to be significant. Outdoor Adventure courses has a big impact on mental health of students. This research promote awareness of the psychosocial benefits of outdoor program for other Universities.

**Keywords.** Camping, orienteering, outdoor adventure, PE course, self-concept.

## Introduction

According to Baumeister (1999), self-concept is "the individual's belief about himself or herself including the person's attributes and who and what self is". Having a negative self-concept in adolescents is perceived to be a precursor to the tendency of having behavioral problems. Self-concept can be divided into two aspects-- existential self and categorical self. Existential self is "the sense of being separate and distinct from others and the awareness of the constancy of self" (Bee, 1992 & McLeod, 2008). Awareness of the existential self begins at two to three months old. This happens due to how the baby responds to the world. The categorical self on the

other hand is defined as he or she is an object of the world, which can be based on gender, age, size, and skills (McLeod, 2008).

The idea of self-concept is related to self-esteem and self-worth. Self-esteem refers to "how much we value ourselves and how we view ourselves in our society" (McLeod, 2008). Four major factors influence self-esteem including the reaction of other people, comparison with others, social roles, and identification (Argyle, 2008 & McLeod, 2008). Depending on how we deal with these four factors, low or high self-esteem may result. The key thing about self-esteem is that it is much related to how we view ourselves. The Tennessee Self-Concept Scale (TSCS) was employed in this paper as the method in determining the change in the self-concept of the

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participating campers. The TSCS is described by Fitts and Warren (1996) as follows: The TSCS are designed to examine six basic areas of an adult's life namely physical, moral, personal, family, social and academic self-concept. Physical self-concept provides a means of viewing his or her health, appearance, and sexuality. The moral self-concept reflects the sense of being able to control one's behavior. Personal self-concept shows the person's level of personal adjustments. Family self-concept measures the person's relation with family and close associates. The social self-concept on the other hand measures the person's relation to friends and peers. Lastly, academic self-concept shows how a person perceives his work and school.

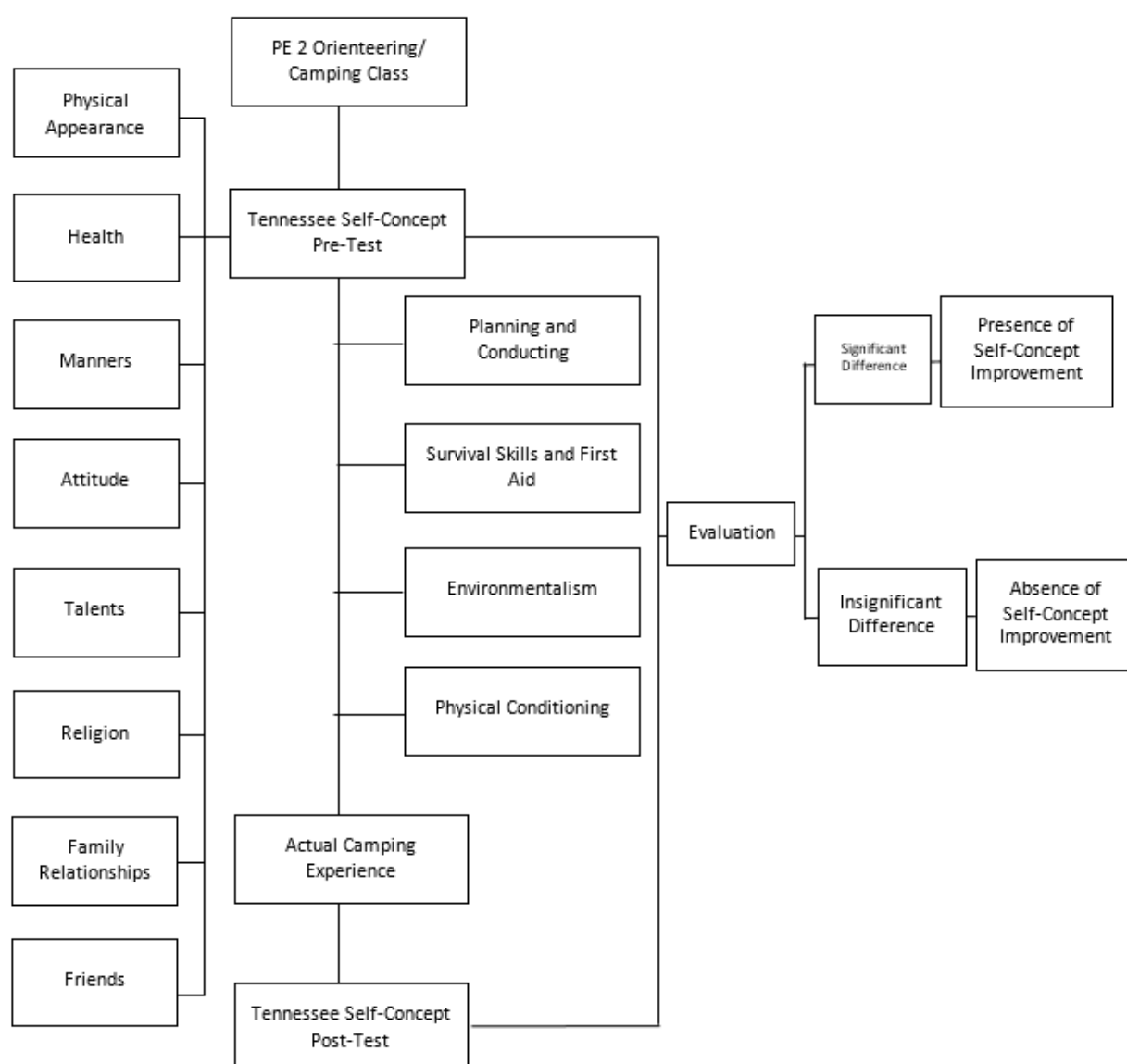
In this study, the effect of having outdoor and camping activities was studied to determine whether there was a significant change in the self-concept of the participants, particularly in college students who

took up PE2 Orienteering and Camping classes at the University of the Philippines, Diliman.

To achieve the purpose of the study, which is to determine the self-concept change in college students participating in PE2 adventure camping experience, the researchers tested the following null hypothesis:

There is no significant difference between the pre-test and post-test self-concept gain scores, measured by the Tennessee Self-Concept Scale (TSCS), as a result of the adventure camping experience in the PE2 Orienteering Course.

The study aims to ascertain if there is a significant change in self-concept among the college students undertaking PE2 Orienteering course & PE2 Camping Class. It also seeks to evaluate whether the change in the self-concept is significant enough to boost the self-esteem of the person and help justify the adventure camping programs of the University.



**Figure 1.** Theoretical and Conceptual Framework

Camping and orienteering are both outdoor activities performed outside the comfort walls of the home. It takes place in a natural or urban campsite and involves the use of tents and other tools necessary for survival in the wilderness. Whenever camping expeditions would be set, different objectives are also being laid down namely, social, education, recreational, and personal goals (Camp Goals & Objectives, 2005). Appreciation and conservation of nature, the attitude of followership and leadership, an independent way of living, and positive interactions among campers are being developed alongside the learning of basic survival skills and recreational purposes. With the involvement of different factors, students who underwent camping activities would then be subjected to a series of tests regarding their self-concept, before and after camping, to identify a significant change which is very crucial in the psychological, personal, and social development of an individual.

The study focused on college students who took up outdoor courses namely PE 2 Camping and PE 2 Orienteering classes. The study's concern is the significant change in the self-concept of the student rather than the physical improvements of the students.

## Methods

This research reflects a quasi-experimental design, which is commonly conducted in field settings where random assignment is difficult or impossible and is often conducted to evaluate the effectiveness of a treatment or an intervention (Cook & Campbell, 1979). In this case, the intervention of camping and orienteering is used to evaluate the students' development of self-concept. The effectiveness was measured through the conduction of matched pairs of surveys, specifically pre- and post-activity surveys. Afterward, the scores obtained from both surveys were subtracted from each other, and this value served as the measurement for the change in opinion, interest, and self-concept. Due to the design of the survey, factor analysis must first be employed to summarize the questions in the survey into a few variables, factors aggregating those which are, most likely, related to each other according to some underlying factor structure. Once the factors have been extracted and identified, the joint significance of the mean factor differences will be tested jointly as

well as the marginal significance through the Friedman Two-Way Analysis of Variance by Ranks, with its respective Post-Hoc comparison tests. The pre-camp and post-camp data were compared by computing for their difference. From there, a factor analysis using the PROMAX rotation method was used to aggregate the data into factors. After undergoing normality tests, the Friedman tests were applied to test for the significance in the variability of the data. The results in each test are explained in the following sections

## Results

The factor analysis procedure is used for aggregating the number of variables considering some underlying structure among unobserved or latent variables called factors. For the study, the use of the procedure is justifiable as it is of high dimensionality, which means there are more variables than the number of observations. If factor analysis were not used, inferences regarding the difference in self-concept due would not be possible. There are many considerations in the employment of factor analysis. A main area is the number of factors to be extracted: since the goal of factor analysis is to reduce the number of original variables, doing so also reduces the amount of variability that can be explained in the original data; also, it is important that the extracted factors can be simply interpreted. Thus, factor analysis is a balancing act for the parsimony of the new data structure.

Choosing the number of factors to be extracted may depend on the expectations and objectives of the researcher-- one may ask "how many factors are expected naturally?"-- Or it may depend on the underlying structure of the data-- a question would be "how much variability will be added if there were one more factor extracted?" These are however, rules of the thumb, but nonetheless, such are simply exploratory in nature. Based on the objectives of this study, it is expected that there will be 6 factors, but based on the data, 10 factors seem to be adequate. The analysis will take on both the 6-factor model and 10-factor model using the PROMAX rotation method. This method, also known as the oblique rotation method, allows the measurement of the correlation between certain factors and is commonly used for larger data sets (International Business Machines Corporation, 2016).

Aggregating the original variables into factors is not simply a selection procedure, but rather, follows a model similar to a regression model-- called a factor model-- but whose methods are diverse. This study takes on the method of factor rotation wherein observations, which corresponds to each question in the questionnaire, are transformed to cluster around a common and more natural structure. This clustering is based on the answers each observation gets and takes into consideration their correlation. This factor rotation is termed an oblique rotation in statistics and is used to obtain a more natural grouping of variables. Simply put, the PROMAX tests were applied to reduce the observations into 6-factor and 10-factor models, respectively, whose groupings resulted in factors wherein its corresponding observations have minimum variability.

From the statements in the questionnaire, each difference was assigned to a specific factor. The date

in table 1 presents the components of each factor from the questionnaire. The numbers suggest the cluster each statement belongs to. As such, a statement assigned to 1 under the column "Promax-6" means that the statement is under the factor "Difference in social acceptance". On the other hand, a statement assigned to 1 under the column "Promax-10" means that the statement is under the factor "Difference in social values". The same applies to the rest of the factors.

It is important to note that the factors operate on the differences in the scores obtained from the pre-camp survey and post-camp survey. Using the PROMAX rotation method (one of the most widely used oblique rotation methods), the factors are interpreted as presented in Table 2. The 6-factor model preserves around 45% of the variability of the data, while a 10-factor model preserves around 53%.

**Table 1**

Components of each factor from the Tennessee Self-Concept Scale Questionnaire.

Number	General Statement	Promax-6	Promax-10
1	Healthy body	5	5
2	Like appear neat and attractive	6	5
3	Attractive	6	5
4	Full of pain and suffering	2	7
5	Untidy	2	7
6	Not a healthy person	2	7
7	Not too fat nor too thin	1	6
8	Not tall nor too short	1	6
9	Like the way I am now	1	3
10	Don't feel as healthy	2	7
11	wish to change a few parts of body	6	2
12	Should have more sex appeal	6	2
13	Take good care of physical self	5	5
14	Feel happy most of the time	4	5
15	Very careful about self-appearance	6	8
16	Not good in games and sport	6	2
17	Behave like a know-all person	6	2
18	Trouble sleeping	3	6
19	Well-mannered	4	1
20	Pious	1	10
21	Honest	1	1
22	Don't have good moral	2	8
23	Bad	3	6
24	Weak-willed	6	8
25	Very satisfied with manners and behaviors	1	1
26	As pious	1	10
27	Satisfied about relationship with God	1	3
28	Not very trusted	4	2
29	Rarely go to place of worship	2	7
30	Lies often	6	8
31	Religion is guide in life	5	9
32	Do what is right most of the time	1	3
33	Work on changing realized mistakes	1	5
34	Unfair ways to move forward	2	4
35	Do bad things	3	4
36	Problems doing the right thing	6	7
37	Cheerful	4	3

38	High self-control	4	3
39	Calm and easy to be befriended	6	10
40	Hated	2	7
41	Not important	2	2
42	Can no longer think straight	5	7
43	Satisfied with self	4	3
44	As intelligent	1	1
45	Good	1	1

**Table 1**

Continued

45	Good	1	1
46	Not the person I hope to become	6	8
47	Hate myself	2	7
48	Gives up easily	2	8
49	Take care of self	1	10
50	Solve problems easily	5	10
51	Willing to admit mistakes without feeling angry	5	9
52	Changes mind	3	1
53	Act without thinking often	3	6
54	Escape problems	4	2
55	Family that is always ready to help	1	1
56	Important to family and friends	1	1
57	Happy family	1	1
58	Not loved by family	2	2
59	Friends are not confident in me	3	6
60	Family does not trust me	6	2
61	Satisfied with relations with family	1	1
62	Treated parents as they should be	1	1
63	Understand family	1	1
64	Sensitive on what family says	1	5
65	Increase faith towards family	4	3
66	Should have loved family more	4	3
67	Try to be fair to family and friends	1	5
68	Make sure I do part in house	6	10
69	Give full attention to family	6	9
70	Quarrel with family often	3	6
71	Give in to both parents	1	10
72	Do not act wisely as seen by family	2	7
73	Friendly	4	3
74	More popular among females	4	2
75	More popular among males	4	5
76	Feel angry towards everybody	6	2
77	Not interested with what others are doing	3	6
78	Find difficult to develop closeness	6	7
79	Socialize	5	9
80	Satisfied with treatment of other people	5	9
81	Make an effort to win people's heart	1	10
82	Should have more manners	4	3
83	Not good in socializing	4	4
84	Not satisfied with mixing with people	6	8
85	Try to understand people's views	1	3
86	Good regards towards everybody	1	7
87	Be friends with everybody	1	3
88	Don't find it hard to talk with people	5	9
89	Difficult to forgive	3	4
90	Difficult to talk with stranger	4	5
91	Don't always speak the truth	6	8
92	Think of bad things to say	3	4
93	Get angry	3	4
94	Become angry when not feeling well	4	4
95	Don't like everybody I know	6	8
96	Bad-mouth other people	6	2

97	Entertained by obscene jokes	4	4
98	Feel like cursing	6	4
99	Prefers winning over losing	4	5
100	Postpone works	4	8

**Table 2**

Promax Rotation Methods.

Factor	6 factor, PROMAX rotation	10 factors, PROMAX rotation
1	Difference in social acceptance	Difference in social values
2	Difference in pessimism	Difference in social perception
3	Difference in effects of maintenance	Difference in social satisfaction
4	Difference in sociality	Difference in social diffusion
5	Difference in social maintenance	Difference in maintenance
6	Difference in social appearance	Difference in feebleness
7	-	Difference in motivation/demotivation
8	-	Difference in pessimism and anti-sociality
9	-	Difference in sociality
10	-	Difference in image-based social acceptance

The 6-Factor Model. The social acceptance factor pertains to the feelings and attitudes of the respondent being accepted by his/her social circles. The pessimism factor mostly aggregates those questions which are socially negative. The sociality factor pertains to a general attitude of the respondent towards his/her peers. The social maintenance factor is concerned with how the respondent balances his/her social circles, which also encompasses the compensation for other perceived factors. Social appearance can be viewed in tandem with social acceptance but is more specific in terms of physical appearance. The final factor, effects of maintenance, can be seen as the effects and posterior perception on the respondent after balancing his/her factors of life.

The 10-Factor Model. The social values factor aggregates those questions which challenge the social values of the respondent. The social perception factor pertains to the attitudes of the respondent in viewing his/her social surroundings. The factors for feebleness, (de)motivation, pessimism and anti-sociality, and sociality can be viewed as the crude behavior of the respondent around other people; while the social diffusion factor, albeit generalizes the four factors, focuses more on how the respondent penetrates social barriers. Social satisfaction can be viewed similarly to social perception but focuses more on how society has filled in the (latent) personal demands of the respondent.

One of the assumptions for the employment of ANOVA is the statistical normality of the data, which

means that the data set falls under a normal distribution, a basic prerequisite for most statistical tests. The statistical software package has a ready procedure for (multivariate) normality tests, which include the tests of Mardia, Henze and Zirkler, and Doornik and Hansen. The tests for the PROMAX 6-Factor and PROMAX 10-Factor models report p-values-- the probability of observing a "worse" event, in statistical literature-- which are significant at the 10% level of significance (Refer to Appendix). This implies that the factor scores based on the observed data did not come from a normal distribution and thus, ANOVA and subsequent T-tests will yield invalid results. One way to remedy this is to transform the data such that it will, most likely, follow a normal distribution, or use an alternative test similar to ANOVA. The alternative to be used is the Friedman test.

Comparison of Factors. An alternative to the parametric ANOVA is the Friedman Two-Way Analysis of Variance by Ranks, or simply, the Friedman test, which tests the same hypothesis. The tests must obtain a p-value of less than 0.05 to be considered significant. The statistical software package outputs a p-value of 0.032 for the PROMAX 6-Factor model, and 0.027 for the PROMAX 10-Factor model for the Joint Tests (Refer to Appendix), which is significant at the 10% level of significance. This implies that there is sufficient evidence from the sample to infer that there is at least one factor, within the respective models, which is significantly different from zero, or equivalently, there is a significant



change regardless of a specific factor. This significance means that the same nonzero and change in value observed in the sample can be extended in the general sample. Therefore, this finding suggests that the change in self-concept as observed through the factors have at least one factor, both for the 6-factor model and 10-factor model that is significant enough to conclude that the same can be said to the general population. This rejects the null hypothesis that there is no significant difference between the pre-test and post-test self-concept gain scores, measured by the TSCS, as a result of the adventure camping experience in the PE2 Orienteering course. The analysis is taken further by looking between each model to see if the differences between factors are significant. As such, the Friedman Two-Way Analysis of Variance by Ranks Marginal/Post-Hoc Tests was conducted. For the first factor model, only the "Difference in Social Acceptance" factor is, has the most considerable value of significance with the p-value of 0.0535 and thus can be concluded as a significant factor. For the second factor model, similarly, the factors with considerable significance are "Difference in Social Values", "Difference in Social Perception", "Difference in Pessimism and Anti-sociality", and "Difference in Image-Based Social Acceptance".

## Discussion

The results of the test reveal that there was a change in the self-concept of the students after engaging in a camping activity. Based on the PROMAX 6-Factor model, it can be said that, after the camping activities, there was a positive significant change in the feelings and attitudes of the respondents on being accepted by his/her social clusters. For the PROMAX 10-Factor model, it can be said that, after the camping activities, there were significant changes in the general perception and attitudes of the respondent towards his/her social circles. Moreover, negative and self-conscious behavior were inferred to have a significant change after the said activities. Specifically, the students were observed to have improved their self-concept in various aspects namely social values, social perception, pessimism and anti-sociality, and image-based social acceptance. This entails that after camping, social values such as honesty and goodness were reinforced through the various forms of social interaction which occurred within the camping duration. Consequently, pessimism and anti-sociality were lessened among the respondents, following the increased social values that they gained during the activity. Furthermore, a positive perspective of the

environment and surroundings was also developed, being highly influenced by their exposure to the open environment that campsites commonly offer. Finally, they reduced their judgment of who they consider as the "other" based on image.

## Acknowledgments

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## Conflict of Interest

The authors declare that there is no conflicts of interest.

## References

- Argyle M. (2008) *Social Encounters. Contributions to social interaction*. Routledge. Taylor and Francis Group. London and New York.
- Bauminster R.F (1999). *The Self in Social Psychology. Key Readings in Psychology*. Psychology Press. Taylor and Francis Group. USA
- Bee, H. (1992). *The developing child. 6th edition*. New York Harper Collins College Publication.
- Camp Goals and Objectives (2005). *Counselors Handbook* <https://www.arizonahemophilia.org/wpcontent/uploads/2015/02/GoalsandObjectivesofCamp.pdf>
- Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design & analysis issues in field settings*. Boston, MA: Houghton Mifflin.
- Fitts, W. H., & Warren, W. L. (1996). *Tennessee Self-Concept Scale TSCS: 2 Manual*. Los Angeles California Western Psychological Services, WPS 1996
- Mutz, M., and Müller, J. 2016. Mental health benefits of outdoor adventures: Results from two pilot studies. Retrieved from <https://www.sciencedirect.com/science/article/pii/S014019711600049X>
- International Business Machines Corporation. (2016). *Factor Analysis Rotation*. Retrieved on Aug 31, 2021 from <https://www.ibm.com/docs/en/spss-statistics/24.0.0?topic=analysis-factor-rotation>
- McLeod, S., A. (2008). *Self-concept*. Simply Psychology. <https://www.simplypsychology.org/self-concept.html>

**APPENDIX****A. Normality Tests for the PROMAX 6-Factor Model**

Test	Test Statistic	Critical Value	P-value
Mardia's Skewness	30.3108	413.684	0.0000
Mardia's Kurtosis	105.014	660.278	0.0000
Henze-Kirkler	4.557573	801.387	0.0000
Doornik-Hansen	-	98.349	0.0000

**B. Normality Tests for the PROMAX 10-Factor Model**

Test	Test Statistic	Critical Value	P-value
Mardia's Skewness	84.09851	1143.223	0.0000
Mardia's Kurtosis	231.8723	1016.878	0.0000
Henze-Kirkler	3.528132	7935.164	0.0000
Doornik-Hansen	-	199.076	0.0000

**C. Friedman Two-Way Analysis of Variance by Ranks Joint Tests for the PROMAX 6-Factor and PROMAX 10-Factor Models**

Friedman Test	Promax-6	Promax-10
N	78	78
Chi-Square	12.212	18.780
Df	5	9
P-value	0.032	0.027

**D. Friedman Two-Way Analysis of Variance by Ranks Marginal/Post-Hoc Tests for the PROMAX-6 Factor and PROMAX 10-Factor Models**

Factor	Promax-6		Promax-10	
	Test Statistic	P-Value	Test Statistic	P-Value
1	9	0.0535	10	0.0308
2	-6	0.2127	-9	0.0535
3	3	0.5716	4	0.4282
4	7	0.1405	3	0.5716
5	4	0.4282	2	0.7343
6	-2	0.7343	-5	0.3082
7	-	-	-4	0.4282
8	-	-	-11	0.0169
9	-	-	2	0.7343
10	-	-	-9	0.0535