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Analysis of Group Cohesion: Discussion of Connotation and Construction of Scale

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Abstract

This study explores the factors that influence the cohesion of military groups and develops a scale for measuring the current state of group cohesion in the military. The importance of military unity has always been a significant factor in victory in war, and group cohesion plays a pivotal role in the success or failure of military operations. The research is divided into two phases: the first phase includes a literature review, in-depth interviews, and focus group discussions to gather information about the connotations of military group cohesion. The interviews revealed that the elements of military group cohesion encompass five dimensions: cooperation, communication, leadership, commitment, and the external environment. In the second phase, based on data obtained from the interviews, a military group cohesion questionnaire was developed, and 214 personnel from grassroots units were tested to assess the reliability and validity of the scale. The results indicate that better performance correlates with higher group cohesion. The findings of this study can serve as a reference for relevant units when formulating policies.

Keywords: Confirmatory factor analysis, Group cohesion, Scale development.

1. Introduction

The historical battle of the Three Kingdoms in ancient China, "Chibi", Zhou Yu burned Cao Cao's army, relying on the cohesive centripetal force of the whole army. Under the conditions of the disparity in military strength, the victory of the battle was won. From then on, the situation of the Three Kingdoms was determined. The best example of group cohesion that can arouse group emotions and motivate group performance. Especially in the military team, all members must abide by discipline, obey the command, and have stronger cohesion to defeat the enemy. This is also the biggest key to the military's victory. It can also be seen that the military's group cohesion has been in the military since ancient times. The task has a decisive influence.

Western military psychologists generally believe that group cohesion is the key and foundation of effective combat effectiveness, and it is the most substantial factor that has a substantial impact on combat effectiveness (Rielly, 2000). In addition, Griffith's (2002) research shows that cohesion can establish soldiers' identity with the unit, reduce friction between each other, and increase combat effectiveness. Cohesion has different directions, including horizontal (horizontal cohesion, between comrades at the same level) and vertical (vertical cohesion, leadership). And subordinates); has different functional components, including instrumental (instrumental aspect, actions and skills) and emotional (affective aspect, feelings and emotions). Bartone and others found in the study of Norwegian military school students that factors such as team members' familiarity and experience of tasks, as well as supportive leadership styles can also affect the development of team cohesion. It can be seen from this that group cohesion has an important influence on military effectiveness.

Taiwan's national defense system is based on recruitment. The soldiers' fighting motives mainly come from generous salaries and strict disciplines that must be followed. However, group cohesion is still an important factor for victory or defeat in military organizations or activities, and an in-depth understanding of military cohesion is also necessary. Through cooperation and sharing, members can increase interpersonal interaction and experience feedback, and share information with each other. Through this process of group cooperation, group cohesion can be enhanced, the task pressure can be reduced, and the task can be achieved together (Baker & Salas, 1996; Cannon Bowers, Salas, & Converse, 1993).

Most of the research on group cohesiveness focuses on sports groups, and there is very little research on "military". Therefore, it is practically necessary to study group cohesiveness in military situations. This research first explores the formation factors and literature theories of group cohesion through focus group interviews, and finds out the important aspects that affect military group cohesion. Secondly, the researchers compile the cohesion of military groups based on these aspects, hoping to use the scale to understand the true appearance of the cohesion

of military groups, and propose the most appropriate training methods to improve team performance. The purpose of this research is threefold:

1. Explore the formation elements of military group cohesion.
2. Explore the factors that affect the cohesion of military groups.
3. Compilation of a scale of cohesive strength of military groups with good reliability and validity.

2. Literature

2.1. The Concept of Group Cohesion

The theory of group cohesion was first proposed by Fesinger, Schachter, and Back (1950). They argued that group cohesion is a force induced by mutual attraction between groups and members. The mechanism formed is: groups can help group members achieve their personal goals. The group also relies on the contributions of its members in order to continue to operate, and the two are in a symbiotic relationship of interdependence. Strong group cohesion can bring scattered individuals together. Leaders can use cohesion to predict group performance and encourage group members to produce specific group behaviors (Hogg & Vanghan, 2005). Bollen and Hoyle (1990) believe that group cohesion refers to an individual's sense of belonging to a specific group, or the common feelings between him and other members of the organization. Hogg (1992) believes that cohesion is a kind of self-identification and self-belonging, which is recognized by oneself or other members of the group. Lott (1965) define group cohesion as "the degree and strength of maturity and positive attitudes among group members"; Bollen & Hoyle, (1990) believes that group cohesion is "an obstacle to the division of a group", and its definition focuses on the entire group Rather than individual members. Some scholars also define group cohesion as the degree to which members desire to belong to the group, whether it is emotional or conscious connection (Carron & Brawley, 1985). Yalom (1995) believes that the definition of group cohesion is "the force that urges all group members to stay in the group." In addition, some scholars believe that group cohesion is not only an interpersonal relationship, but also includes the tasks of the group. Carron (1985) defines group cohesion as "a dynamic process in which groups are linked together, which is a united pursuit of goals and objectives." In addition to the above definition, Shaw (1981) believes that group cohesion also includes morale and the motivation of members to participate, as well as the cooperation of group members (Cota et al., 1995). Based on the definitions of the above-mentioned scholars, we can see that the common point is the concept of "group unity" or "weness" presented by each group, which is group cohesion. In the research of military teams, Griffith (1988) also provides a similar theoretical framework. He pointed out that cohesion has different directions, including horizontal cohesion (between comrades at the same level) and vertical cohesion (between leaders and subordinates), and different functional components, including instrumental aspect, action and Skills and affective aspects (feelings and emotions) ,Figure 1. Griffith and Manning (2002) found three very important conditions for the formation of military team cohesion: "team members with similar or common social backgrounds", "common experience formed in the military", and "clear and meaningful team tasks and Target". In addition, the cohesiveness is further considered in the morale (individual level), team cohesion (group level) and team spirit (military level), and the system design and necessary leadership factors that link this level of relationship are pointed out.
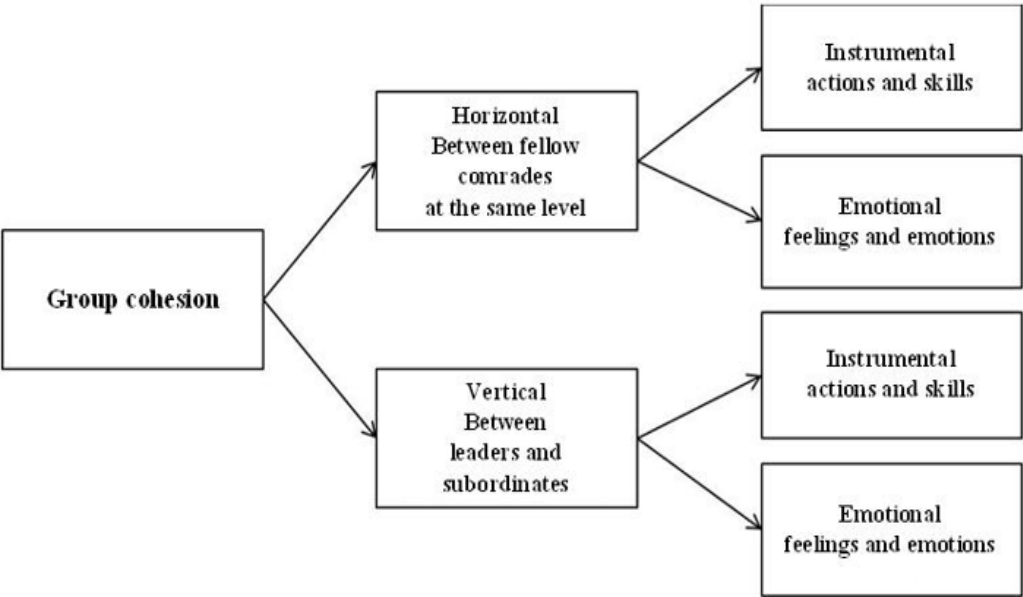

Figure 1. Griffith conceptual model of cohesion.

2.2. Factors Affecting Group Cohesion

Robert and Lawrence (2005) found that the factors affecting cohesion can be divided into four categories: commitment, communication, cooperation, and leadership (Figure 2).
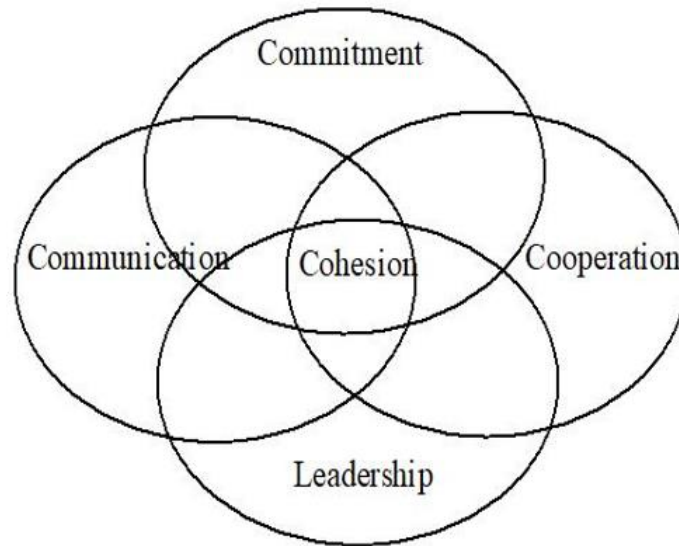
2.2.1. Commitment

Figure 2. The components of cohesion (Robert & Lawrence, 2005).

There is a positive correlation or positive influence between organizational commitment and group cohesion, that is, the stronger the organizational commitment, the stronger the group cohesion. If this relationship is applied to the military situation, this research inferred that as soldiers' commitment to the military becomes more positive, for example, the recognition and value recognition of military objectives, the emotion of working hard in the military team, and the desire to continue to be a part of the military become stronger. , Because motivated by these factors, it will help to improve their social relations and task integration in the military, that is, it can improve the cohesion of military groups.

2.2.2. Communication

Team members with a high degree of team cohesion have a higher frequency of communication, and they continue to communicate among members. The quality of their communication is good, and there will be more positive communication content and behaviors. Therefore, communication between all levels in the military is very important and has an extremely important impact on the accomplishment of military missions and group cohesion.

2.2.3. Cooperation

An efficient organization can achieve its goals through teamwork. Research shows that the ability of teamwork can be trained, and by training members to cooperate in a team to accomplish tasks, group cohesion can be improved (Cannon-Bowers & Salas, 1998). The unit's past successful experience can also allow team members to anticipate success and bring members' confidence in stability (Niebuhr, Knouse, & Dansby, 1994).

2.2.4. Leadership Behavior

Forsyth (1983) pointed out that in a highly cohesive team, members are more able to accept the team's goals, decisions and norms. Once the subordinates have higher trust in the supervisor, the cohesiveness of the subordinates will be higher. This study believes that transformational leadership can have a positive impact on the cohesion and work performance of team members.

Therefore, the "commitment" of group members to the group, the "communication" between group organizations, the "cooperation" of the team between members, and the "leadership behavior" of the leader are all factors that affect the cohesion of the group, and these factors can be used to observe important indicators of group cohesion.

2.3. The Impact of Group Cohesion on the Group

Studies have found that the performance of cohesion is related to team members' higher satisfaction, lower absenteeism, and member stability (Lott et al., 1965; Stogdill, 1972). Le Unes and Nation (1989) also believe that when team cohesion is high, the result of team success is also high. Therefore, this study divides the influence of group cohesion on the group into the following two parts:

2.3.1. Impact on the Relationship Between Group Members

Cohesion is the core of effective team operation (Hackman, 1990), which can increase the loyalty of members to the organization and reduce the number of members leaving the group. Highly cohesive groups, members are generally more involved in group affairs, and will also show a high degree of cooperation when performing group tasks. In addition to having a high degree of satisfaction among members, they will also have a high commitment to goals, thereby improving group performance (Shaw, 1981; Wright & Drewery, 2002).

2.3.2. Impact on Group Performance

Oliver et al. (1999) found that the influence of cohesion is significantly related to the performance of individuals and groups. Hogg (1992) advocated that group cohesion can increase the productivity and performance of the group, increase compliance with group norms, improve morale and job satisfaction, help the internal communication of the group, reduce hostility within the group, and increase self-worth (self- worth). Team members with high cohesion can not only enhance their own value, but they can also respect each other, work

together, and are willing to commit to doing their best for the team's goals, and then achieve higher team performance.

2.4. Measuring Tool for Group Cohesion

This study collected several measurement tools related to the cohesion of military teams. The relevant contents of the questionnaire are as follows:

2.4.1. The Study by Bartone et al. on the Norwegian Naval Academy in 2002

The group cohesion power scale proposed by Bartone et al. contains two concepts: one is the concept of the individual, that is, the degree of group cohesion that an individual thinks of himself in the organization; the other is the concept of group, that is, the degree to which individuals believe that others are group cohesive in the unit (Bartone et al, 2002).

2.4.2. Combat Readiness Morale Questionnaire (CRMQ)

CRMQ originally had 30 questions, compiled by the Israel Defense Forces to measure unit cohesion and morale perceived by soldiers. It was later adapted by Gal and Manning into a 31-question questionnaire. CRMQ is the most commonly used scale in military morale research (Gal & Manning, 1987). In addition to measuring "morale", this scale also measures the army's combat readiness.

2.4.3. Questionnaire for the Assessment of the U.S. Troop Deployment System

The questionnaire was compiled by the Walter Reed Army Institute of Research (WRAIR). It contains 19 questions from the CRMQ and 25 questions from the field force questionnaire used to assess the attitudes of soldiers before Normandy landing.

2.4.4. Combat Platoon Cohesion Questionnaire (CPCQ)

The questionnaire was compiled by The US Army Research Institute for the Behavioral and Social Sciences (ARI). It includes 79 items, one for each of the three components (horizontal, vertical, and organizational) A subscale composed of five questions. Afterwards, a reduced version of the 20-question study was developed one after another, called the Platoon Cohesion Index (Platoon Cohesion Index).

The measurement tools mentioned above are all researches of various countries. Due to the different military cultures and historical contexts of various countries, there are still many problems in using the questionnaire directly. This study believes that a set of measurement tools that can effectively measure the cohesion of military groups should be appropriately developed to have a positive benefit to the military, and contribute to different military cultures and particularities, and have a good reliability scale.

3. Method

3.1. In-Depth Interview

3.1.1. Purpose of the Interview

To collect various factors that affect the cohesion of military groups, this study conducted two in-depth interviews. Its purpose is to be able to fully understand the interviewee's ideas about group cohesion, and to obtain more information about group cohesion as a basis for developing measurement tools.

3.1.2. Interviewee

This study believes that the more military qualifications the interviewee has, the richer the information they can provide. Therefore, the researcher interviewed two senior military officers with the ranks of colonel and lieutenant colonel. They have served in the army for more than 20 years. Both interviewees have experienced a variety of military positions and have served in a variety of different characteristics.

3.1.3. Interview Process

This research adopts a general interview guide method, that is, to determine the outline of the interview questions before the interview, to ensure that the focus of the interview is focused on the research topic. This research starts from the interviewee's experience and extends the question through their own experience, so that the interviewee can clarify their concepts and ideas about group cohesion.

3.1.4. Interview Results

This research conducted data analysis based on the results of interviews and found that when military senior cadres interpret the definition of group cohesion based on their own experience, they mainly explained the definition of group cohesion from the perspective of a leader. They will focus on "leadership".

3.2. Focus Group Interviews

3.2.1. Purpose of the Interview

This study hopes that the focus group discussion can stimulate more different ideas among the interviewed members, and through the sharing and comparison of experiences, the depth and breadth of the information can be enriched.

3.2.2. Interviewees

This study selected 10 military officers and 13 military academies, and conducted 2 focus group interviews. Interviewees have experienced various positions and military education in military forces, and are familiar with the development of the group in the military situation.

3.2.3. Interview Results

In the focus group interviews, members mainly focused on: "the feeling of getting along with group members", "the process of communicating with the chief or colleagues", "the sense of accomplishment of working in the group" and "the environment and rewards provided by the group" and so on.

3.2.4. Topic Construction

This research categorizes it into the four concepts of "commitment", "communication", "cooperation" and "external environment", and writes the topic based on it.

4. Results

4.1. Comprehensive Survey of Questions on the Army Group Cohesion

4.1.1. Subject Orientation

Based on Robert and Lawrence's (2005) US military's research on cohesion, this study divides the factors that affect cohesion into four aspects: commitment, communication, cooperation, and leadership, and compiles four subscales according to the connotation of these four concepts. 60 questions. In addition, this research adapted the descriptions of interviewees in in-depth interviews and focus interviews into appropriate declarative sentences. This research includes 5 aspects and 70 topics including cooperation, communication, leadership, commitment and external environment. Therefore, based on the content of the above two scales, a total of 130 questions related to the cohesion of military groups have been compiled.

4.1.2. Measurement Scale

This study chose to use the Likert four-point scale to avoid the "centering reaction".

4.1.3. Validity Evaluation

This step is to improve the surface validity of the questionnaire, which is carried out in the way of expert validity, and three evaluators are selected to participate in the process of expert evaluation. The researcher finally selected at least two evaluators to agree that it was a scale question for group cohesion description sentences, and a total of 108 questions were obtained.

4.2. Reliability and Validity

4.2.1. Scale Connotation and Research Framework

This research derives the structure of military group cohesion as shown in Figure 3. It is found that "commitment", "communication", "cooperation", "leadership" and "external environment" are important factors that constitute the cohesion of military groups.
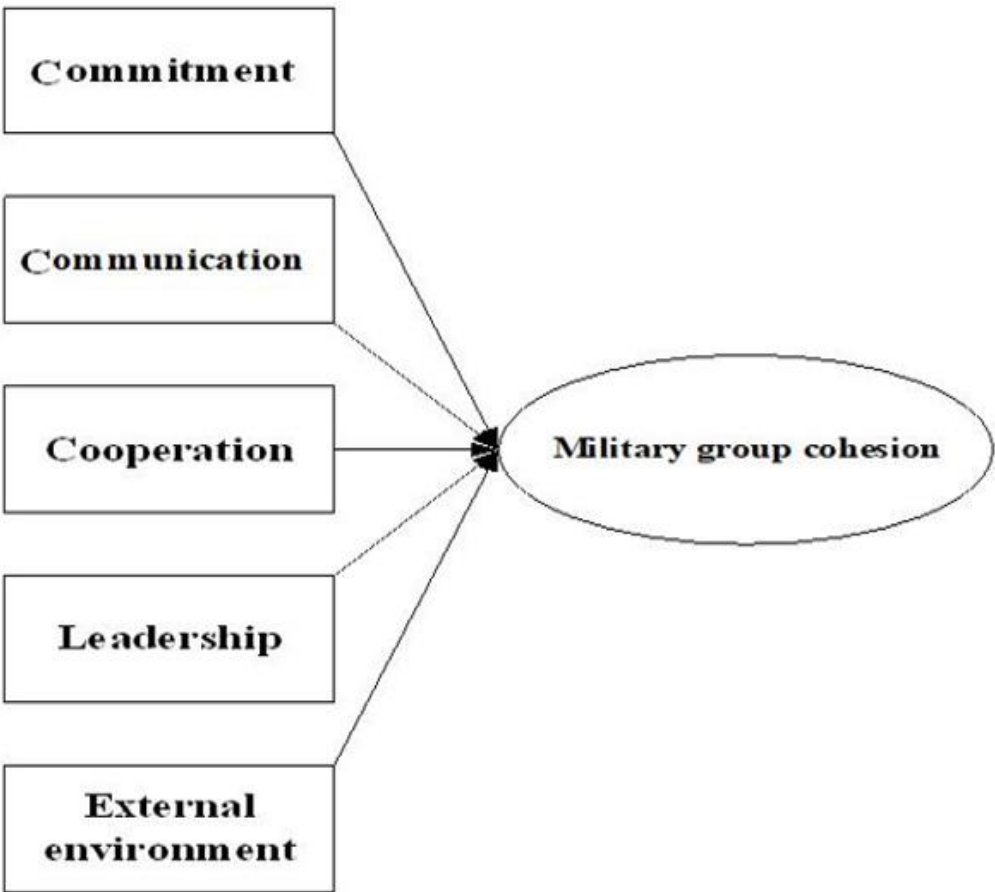

Figure 3. Connotation and framework of military group cohesion.

4.2.2. Research Hypothesis

(1) The military group cohesive strength scale has good internal consistency and reliability.
(2) The military group cohesive strength scale has good retest reliability.
(3) The military group cohesive strength scale has good construct validity.
(4) The military group cohesive strength scale has good correlation validity.
(5) Units with different degrees of military group cohesion have significant group differences in work performance.

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4.3. Research Object

In this study, using the convenient sampling method, 4 military units and 214 military officers and soldiers were selected as the tested samples. After deleting the 13 members of the sample whose scores are greater than plus or minus two standard deviations of the average, the effective sample number is 201 for data analysis. The basic data distribution of the tested objects is shown in Table 1.

4.4. Research Results

In the reliability test, this study uses internal consistency and retest reliability tests to evaluate the internal stability of each subscale. The validity analysis is focus on content validity and construct validity.

4.4.1. Reliability

(1) Internal consistency: Cronbach's α value is shown in Table 2. The internal consistency letter of the total scale is .971, and the subscales are between .814 and .946, indicating that the scale has a good internal consistency reliability.

Table 1. Basic information of the research of the research object.

Unit	1	2	3	4	Subtotal
Numbers	54	52	49	46	201
Percentage	26.87%	25.87%	24.38%	22.89%	100%

Gender	Male	Female	Subtotal
Numbers	193	8	201
Percentage	96.02%	3.98%	100%

Class	Officer	Sergeant	Soldier	Subtotal
Numbers	12	50	139	201
Percentage	5.97%	24.88%	69.15%	100%

Education	Graduate School	Junior College	High School	Secondary	Subtotal
Numbers	6	77	99	19	201
Percentage	2.99%	38.31%	49.25%	9.45%	100%

(2) Retest reliability: The stability test of this scale is the result obtained by filling in the same sample book after one month's interval. The sample is 100 people. From Table 4-4, it can be seen that the retest reliability of each subscale is between .630 and .757, and the retest reliability of the total scale is .791, which shows that the military group cohesive strength scale measured twice the scores are highly correlated, which shows that the scale has good retest reliability.

Table 2. Cronbach's α value of each subscale and total scale.

	Cooperation	Communication	Leadership	Commitment	External Environment	Total Scale
Cronbach's α	0.844***	0.900***	0.946***	0.912***	0.814***	0.971***

Note: ***$p < 0.001$.

Table 3. Pearson correlation coefficient of each subscale and total scale.

	Cooperation	Communication	Leadership	Commitment	External Environment	Total Scale
Pearson correlation	0.630***	0.757***	.739***	0.723***	0.732***	0.791***

Note: ***$p < 0.001$.

4.4.2. Validity

The researcher uses the validity criterion correlation validity and construction validity to verify the validity of the military group cohesion power scale, the method is as follows:

(1) Construct validity: In the factor analysis, the total explanation is 80.113%, the Eigenvalues is 4.006, and the factor loading of each subscale is between .840 and .935, indicating that all five dimensions can be aggregated into a big construct. In the confirmatory factor analysis, each path coefficient also reached a significant level of $p<.05$, and the indicators all reached the recommended standard value, indicating that the factor model has a good adaptability.

(2) Efficacy criterion correlation validity: In order to explore the correlation validity of the scale, the researcher analyzed the five subscales of cooperation, communication, leadership, commitment and external environment through five scale questionnaires, namely: "Combat Unit Cohesion Questionnaire" (Combat Platoon Cohesion Questionnaire, CPCQ)", "Organizational Commitment Questionnaire (OCQ)", "Multifactor Leadership Questionnaire (MLQ)", "Communication Satisfaction Inventory, CSI) "Army Morale Scale", a total of 102 personnel from a certain two units of the Navy and the Gendarmerie were selected by a convenient sampling method, and the validity standard related validity check was conducted. Among them, 50 personnel were tested for volume A and 52 were tested for volume B. From Table 4, it is known that the Pearson r of each subscale of the military group cohesion power scale and each effect standard questionnaire is between .528 and .887, both reaching a significant level ($p<.001$), indicating that the military group cohesive strength There is a good degree of correlation between the table and the five standard questionnaires, and each subscale should be able to measure the concept of the study.

Table 4. Correlation between the dimensions of the military group cohesive strength scale and the scale of each effect standard.

	Cooperation	Communication	Leadership	Commitment	External Environment	Total Score
Cooperation Standard	0.841***					
Communication Efficacy Benchmark		0.528***				
Leadership Benchmark			0.887***			
Commitment				0.825***		
External Environmental Performance Standard					0.729***	
Cohesion Benchmark						0.785***

5. Conclusions

5.1. Scale Construction and Connotation

5.1.1. Scale Content and Reliability and Validity Test

The official scale of military group cohesion compiled by the institute includes five subscales: "cooperation", "communication", "leadership", "commitment", and "external environment". As far as the content of the scale is concerned, the development process of the military group cohesive strength scale is rigorous, and the contents of the scale are all from the results of actual interviews, and the scale is well constructed. In the reliability section, the Cronbach's α coefficient of the scale is .971, and the internal consistency of the subscales is between .814 and .946. Therefore, the scale has excellent internal consistency reliability and supports Hypothesis 1. After a month or so, the same group of samples were tested again, and the result was a retest reliability of .791, and the retest reliability of each subscale was between .63 and .751, The scale also has good retest reliability, supports Hypothesis 2.

5.1.2. Validity Test

In the part of validity, the explanatory value is 80.113%, the Eigenvalues is 4.006, the factor load of each subscale is between .840 and .935, and the path coefficients all reach the significant level of $p<.05$, The scale also has good construct validity, supports Hypothesis 3. In the test of criterion-associated validity, the Pearson r obtained is between .528 and .887, which all reach the statistically significant level of $p<.01$, showing good criterion-associated validity, supports Hypothesis 4. Analysis of the difference in work performance of units with different degrees of group cohesion It shows that the military group cohesive strength scale can reflect the performance of the unit, and the better the performance, the higher the unit group cohesion, which means that the military group cohesive strength scale has good validity, supports Hypothesis 5.

5.2. Suggestion

5.2.1. Limitations

To test the validity of the scale, the correlation coefficients between the various standard questionnaires ranged from .528 to .887. Although the total explanatory amount of the construct validity reached 80.113%, there was still 19.887% of the variance unclear. Although the military group cohesion table of this research includes five dimensions: communication, commitment, cooperation, leadership and external environment, it fails to fully present the connotation of military group cohesion, and further research remains to be discovered.

5.2.2 The connotation of military group cohesion: The connotation of the "external environment" of the military group cohesion scale in this study was discovered after interviews. The literature and questionnaires similar to the connotation of "external environment" have also been studied in the US military. Foreign literature has confirmed that the environment provided by the group is good or bad. For example, if the hardware equipment of the group is comfortable, the time of members staying in the group will be lengthened, and the opportunities for interaction with each other will increase, thereby affecting the cohesion of the group (Carron, 1982).

This study found that "external environment" factors affect group cohesion. The environment and favorable treatment satisfy the extrinsic motivation of the group members, making the group members willing to contribute to the group. If the environment and treatment of the military can be improved, this will increase the military's combat power and morale. Subsequent researchers can do more rigorous research on the "external environment" factors.

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