



RESEARCH ARTICLE

Structure and Dynamic Interaction within the Volunteer Work Group: A Sociometric Study of the Abwab Al-Khair Association in Bechar, Algeria

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ABSTRACT

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The study aims to uncover the nature of the structure and dynamic interaction within the group, the controlling factors, and to measure the strength and cohesion of the group within volunteer work teams. The Abwab Al-Khair Association in Béchar was chosen as the model. The study included all members of the association (30 volunteers) and employed the sociometric approach as both a method and a tool for data collection and analysis, using questionnaires, sociometric matrices, and social maps. The study concluded with the following findings: the structure of the group in volunteer work relies on several types of social relationships, including: (a) central relationships (stars), (b) reciprocal relationships (dyads), (c) sequential relationships (chains), (d) singular (marginal) relationships, and (e) isolated relationships. The study also identified the existence of informal groups within the organizational structure of the association and the influence of social interaction on group cohesion.

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INTRODUCTION

Volunteer work has both social and personal motivations, as indicated by numerous scientific studies, such as the desire for self-fulfillment, the defense of values, and the dissemination of principles in which an individual believes. It is often limited to a specific group and can only be undertaken by those with certain abilities and interests, such as interaction, solidarity, and social responsibility. These qualities make them a target for charitable fields and spaces, positioning them as active contributors to their communities. Thus, any organization, whether formal or informal, depends on the quality of its active members to form a coherent and harmonious work group, shaped by its formation and dynamics. This group arises from psychological, social, and physical necessities, and the way it is formed holds paramount importance for the group climate as well as the potential influence on some of its members.

In a field study conducted by Hassan Jilali on small groups in organizations and how they are formed and their impact within the organization, he stated that small groups within work organizations emerge within a certain framework that supports them. Members engage in continuous interactions and relationships bound by shared standards and values with the aim of satisfying their social needs.

In examining volunteer work in Algeria in general, and in Béchar in particular, there is noticeable stagnation and a lack of effectiveness at the desired level.

This may be attributed to the way a work team is formed or the lack of integration among its members, resulting in weak or absent cohesion that threatens the preservation of the group's structure. Based on this, the main research question of the study can be formulated as follows:

How can a group be understood as an interactive social structure within volunteer work teams—as represented by the Abwab Al-Khair Association—through sociometric measurement?

Objectives of the Study:

- To review and analyze real-world models of group structures within volunteer work teams and assess their effectiveness.
- To identify the sociometric relationships and status of members within small work groups in the context of volunteer teams and evaluate their cohesion

Definition of Study Concepts:

Structure and Interaction of the Group:

Structure: Radcliffe-Brown defines the concept of structure by stating, 'When we use the term structure, we refer to a kind of systematic arrangement of parts or components. A musical composition has its structure, as does any phrase, and a building has its structure. The components and units of social structure are people, and any person is viewed not as an individual being but as an occupier of a position within a social structure.' According to Brown, 'Structure consists of a set of social relationships. It is not a random composition but is determined by social processes, characterized by a certain degree of relative stability. Although it is expected that there might be changes at this level, they typically occur gradually' (Haji, 2020).

Mahmoud Al-Sayed Abu Al-Nil defines group structure as a system of different positions that determine how individuals behave within the group towards each other. Each position places the individual occupying it in relation to other individuals in different positions (Abu Al-Nil, 2009, p. 480).

Social Interaction: Terminologically, social interaction is defined as a series of dynamic (changing) actions between individuals or groups in which they adjust their actions or reactions according to the actions or reactions of the other party. This interaction usually occurs through a certain medium (language, symbols, signs, gestures, objects) and involves the exchange of specific messages tied to a particular purpose or goal (Bekoush, 2021, p. 308). It is a feeling that involves mutual love, acceptance, and a strong connection to the group, expressing the individual's unity with the group (Zahran, 2004, p. 267). It is the process in which we act and react towards those around us, with every social interaction occurring within a defined time and place (Al-Rikabi, 2018, p. 214).

Group: Terminologically, the term 'group' refers to any assembly of two or more individuals who engage in some form of social interaction in which they rely on each other, with each playing a specific role in achieving the common good or the shared events of the group (Hassan, 2007, p. 80). A group is defined as a set of individuals, limited in number, interacting with one another to achieve a common goal recognized as important. Members of the group often undertake various tasks and roles to fulfill their shared objectives (Al-Taljam, 2003, p. 159). According to the definition found in the Dictionary of Sociology, 'A group does not necessarily have formal rules, objectives, or leadership. It is generally characterized by spontaneity, small size, temporary nature, and interaction among its members based on shared interests and friendly, direct communication. Informal groups can also possess strong collective norms' (Al-Jilani, 2008, p. 114).

Structure and Interaction of the Group: Operationally, it refers to the total interactions among individuals within groups and work teams who share motivations and goals in order to achieve objectives or solve common problems through cooperation and role differentiation. In this structure, we distinguish patterns of social relationships, modes of communication between members, and the identification of positions and their impact on group cohesion.

Volunteer Work Group

Work Group: Terminologically, a 'work group' refers to 'groups formed within an organizational structure to achieve a specific goal or task that requires coordination, interaction, and integration among team members. The team members are responsible for accomplishing these goals, and there is a significant degree of empowerment given to the team to make decisions' (Radwan, 2013, p. 39). Work teams are defined as a type of interaction and interrelation among members that depends on the nature of the assigned task. Each member of the team is distinguished by their contribution to accomplishing the task (Abd Rabbo, 2012, p. 119).

Volunteer Work: Terminologically, volunteer work is defined as a purposeful human activity that involves the use of available material, human, and moral resources in society, aiming to develop and preserve them using the most appropriate methods and approaches in order to achieve the goals desired by the community, while considering the surrounding circumstances and conditions (Al-Sulami, 1999, p. 14).

Volunteer Work Group: Operationally, a volunteer work group is a dynamic, coordinated, and integrated group formed by individuals engaged in purposeful voluntary human activities. Additionally, there is a shared approach to work among its members. These groups are created within volunteer organizations to achieve a specific goal or task that requires coordination and interaction among its members.

Sociometric Relationships

Social Relationships: Terminologically, social relationships are defined as 'a link or bond between individuals and groups, including familial ties and relationships within all other social organizations (such as factories, schools, mosques, etc.). These social relationships among individuals are an essential part of the social structure' (Omar, 1981, p. 71). Social relationships are also defined as a form of social interaction between two or more parties, where each party has an image of the other, which influences their judgment of one another either positively or negatively. Examples of such relationships include friendships, family bonds, kinship connections, neighborhood and school friendships, work colleagues, and acquaintances (Al-Aid, 2020, p. 656).

The term social relationships applies to individuals' responses in all forms of reciprocal interaction attempts. It refers to the expected behavior that occurs between two people, where one influences the other and is influenced in turn. It also refers to the bonds that emerge from social interaction, indicating the connection between two or more people based on mutual affection, selection, or rejection and repulsion (Abd Al-Salam, 1977, p. 74).

Sociometric Relationships: Operationally, sociometric relationships are the interactive connections between members of volunteer work teams based on attraction and repulsion, focusing on the nature of social cohesion within these groups and the impact of this cohesion on achieving their objectives.

RESEARCH METHODOLOGY

The most appropriate scientific method for this study is the descriptive method, as it is the most suitable for studying small groups and the interactions and changes that occur within them, whether these changes are positive or negative. Since this research examines the relationship between groups,

analyzes their structure, and investigates the factors influencing them, it belongs to descriptive studies.

In addition to the use of the sociometric method, which is a systematic approach for studying the current facts related to uncovering what occurs within the group in terms of attraction, repulsion, disintegration, and cohesion, and its impact on the social status and relationships of individuals through their interactions with one another?

Study Sample:

It is noted that in sociometric studies, samples do not adhere to conventional sampling methods. Instead, the entire group must be studied, regardless of the group size varying from one study to another. However, the group should be small to ensure the necessary interaction among members and to facilitate statistical analysis. This study relied on comprehensive enumeration. Hence, we selected the Abuab Al-Khair Association, as it meets the specific criteria and conditions aligned with the research objectives, notably the practice of voluntary work within small groups.

Data Collection Tools:

After reviewing various scientific studies that are relevant and similar to our research for the purpose of gathering the necessary and appropriate data, the study relied on the sociometric approach to measure social relationships. This method is notable for its simplicity and the depth and richness of the results it yields. The sociometric test examines the social structure of the group based on social relationships (attraction, aversion) through the acceptance or rejection of individuals by responding to a set of questions. These questions reflect interactive and social situations and can be classified, according to Moreno, using three criteria: (standards, choice, experience) as follows: 1) - Criteria within group activities, 2) - Criteria outside group activities and leadership criteria. To maintain the confidentiality of member data, the scale was encrypted by assigning each member a number (1, 2, 3, 4, 5, 6, ...). No names were displayed in the scale, diagrams, or analysis.

ANALYSIS OF SOCIOMETRIC TEST RESULTS

In this section, we will analyze the nature of the structure and interaction within the volunteer work teams, comprising 24 members. The goal is to identify the prevalent social relationship patterns among them, assess the cohesion of the group members, and pinpoint the social nucleus and sub-units. The analysis of the sociometric test results involves inputting data into a social matrix to evaluate the group's structure and creating a sociogram that illustrates the members' choices in a clear and expressive manner.

Table 1: Sociometric Analysis of Group Members' Choices in the Social Matrix

Group Members	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
1																	1				3		2		3
2																		3	2	1					3
3	1			2													3								3
4	1		2														3								3
5	3																				1		2		3
6	3																	1					2		3
7					3				1	2															3
8			3						2	1															3
9	3				1					2															3
10							2	1	3																3
11	1				3																2				3
12	3																				2		1		3
13	3																1				2				3
14	3																				2		1		3
15	3																1						2		3
16			2	1													3								3
17	1		2													3									3

18	3								1														2		3
19		2																3		1					3
20	2								3									1							3
21	3																2							1	3
22	3								2									1							3
23	3											1										2			3
24																									0
Total Choices	16	1	3	2	4	0	1	1	6	3	0	1	0	0	0	1	7	5	1	2	7	0	8	0	69
Choice Score	39	3	6	3	10	0	2	0	12	5	0	1	0	0	0	3	14	9	2	2	14	0	13	0	

Source: Prepared by the two students

It is evident from the data in Table 1 that the total number of choices made by the group amounts to 69. These choices have been reorganized in descending order, as illustrated in Table 2

Table 2: Number of Selections and Percentage of Selections

Percentage	Number of Selections	Name (Number)	Number
%23,18	16	1	01
%11.59	08	23	02
%10,14	07	17	03
%10,14	07	21	04
%8.69	06	9	05
%7.24	05	18	06
%5.79	04	5	07
%4.34	03	3	08
%4.34	03	10	09
%2.89	02	4	10
%2,89	02	20	11
%1.44	01	2	12
%1.44	01	7	13
%1.44	01	8	14
%1.44	01	12	15
%1.44	01	16	16
%1.44	01	19	17
%00	00	6	18
%00	00	11	19
%00	00	13	20
%00	00	14	21
%00	00	15	22
%00	00	22	23
%00	00	24	24
%100	69	24	Total

It is evident from Table (2) that member number (1) received 23.18% of the group's selections, while member number (23) received 11.59%. Members number (17 and 21) each received 10.14%, and member number (9) received 8.69%. Member number (18) received 7.24%, and member number (5) received 5.79%. Members number (3 and 10) each received 4.34%, while members number (4 and 20) each received 2.89%. Members number (2, 7, 8, 12, 16, and 19) each received 1.44% of the total selections. However, members number (6, 11, 13, 14, 15, and 22) did not receive any selections, with the exception of member number (24), who was not chosen by any of the group members.

Sociogram Drawing:

Based on the previous data, we can draw a sociogram to represent the nature of the sociometric relationships among the group members. The selections are represented by arrows connecting circles that carry the numbers of the members. The arrow starts from the selecting member toward the members who were chosen. This method illustrates the reciprocal relationships between members, as well as between stars and subgroups. The sociogram also allows for identifying the nucleus and subgroups within the group.

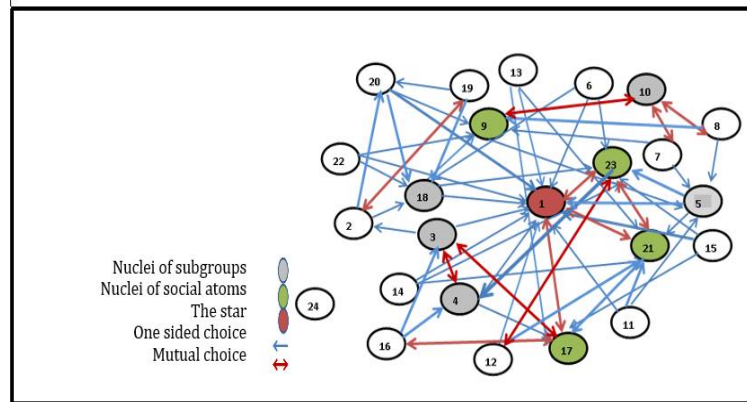


Figure 1: Sociogram Map of Group Members' Selections

It is evident from the sociogram that member number (1) is the star of the group and also represents the formal leadership of this group. Members (23, 21, 17) form sub-groups and are mutually connected with member (1). Additionally, member (9) competes with members (23, 21, 17) in terms of the number of individuals forming social atoms with them. As for members (3, 4, 5, 10), they form smaller social atoms compared to the aforementioned ones.

Social Nuclei and Atoms:

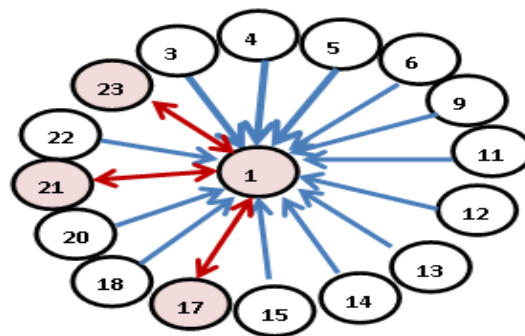


Figure 2: The First Social Atom

The figure represents a social atom with its core being member number (1), consisting of 16 members connected through social relationships. These members are: (3, 4, 5, 6, 9, 9, 11, 12, 13, 14, 15, 17, 18, 20, 21, 22, 23). Member (1) has reciprocal relationships with members (17, 21, 23) and social ties with the other members (3, 4, 5, 6, 9, 9, 11, 12, 13, 14, 15, 18, 20, 22), which enhance their social standing within the group. As shown in the figure representing the first atom, the sociometric score of member (1) is (39), as indicated in the sociometric matrix of members' selections.

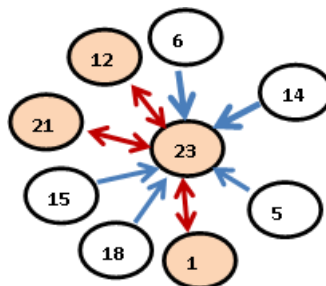


Figure 3: The Second Social Atom

The member (23) forms the core of a second social atom, composed of members who are connected to him through social relationships: (1, 5, 6, 12, 14, 15, 18, 21). He has mutual relationships with members (1, 12, 21), while the other members maintain social connections that strengthen his position within the group. As shown in the diagram, the sociometric score of member (23) is (13).

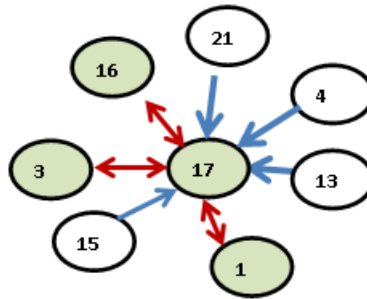


Figure 4: Third Social Atom

Member (17), who received seven (7) selections, forms the core of a social atom. This member is connected by social relationships with members (3, 4, 13, 15, 16, 21), with reciprocal relationships with members (1, 3, 16). The social status of this member within the group has been strengthened, with a sociometric score of (14), as shown in the third social atom diagram.

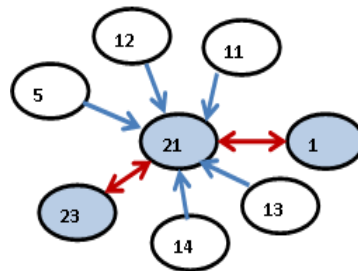


Figure 5: Fourth Social Atom

Member (21), who received seven (7) selections, forms the core of the fourth social atom. They are connected by social relationships with members (5, 11, 12, 13, 14), and there are mutual relationships with members (1, 23). Their social position within the group has been reinforced, with a sociometric score of (14), as shown in the fourth atom diagram.

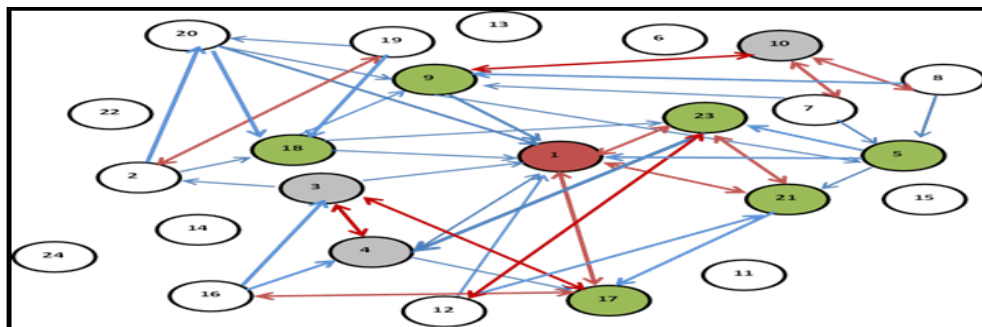


Figure 6: Represents the socio-gram map for the upper atom.

The Upper Atom of the Group:

From the socio-gram map (Figure 4), which represents the upper atom of the studied group, it is clear that member (1), the nucleus of the first atom, has a reciprocal relationship with members (17, 21, 23), the nuclei of the second, third, and fourth atoms respectively. Members (23) and (21), the nuclei of the second and third atoms, are connected by reciprocal relationships. Member (21), the nucleus of the third atom, has a one-sided relationship with member (17), the nucleus of the fourth atom, thus allowing a connection to member (23). These members form a subgroup with member (1). Additionally, member (12) has a reciprocal relationship with member (23), member (3) has a reciprocal relationship with member (17), and member (4) has a one-sided relationship with member (23). Members (5, 9, 18), the nuclei of the fifth, sixth, and seventh atoms respectively, have one-sided relationships with member (1). This structure enables all members to establish either direct or indirect connections with one another.

Based on the nature of these relationships, we can conclude that the atoms constituting the upper atom are interconnected through social relationships that contribute to strengthening the cohesion, integrity, and unity of the group. Members (19, 16, 12, 20, 8, 7, 2) serve as connectors between multiple atoms due to their reciprocal social relationships with these atoms or the reciprocal relationships they maintain among themselves. As for members (6, 11, 13, 14, 15, 22), they form marginal relationships because they did not receive any selections from the members constituting the upper atom of the group. Member (24) is considered isolated as they neither participated in the selection process nor were selected by others.

SOCIOMETRIC RELATIONSHIP PATTERNS IN THE GROUP

Sociometric relationships and their patterns within the group varied depending on the social situations connecting the members, as well as the group's composition and size. This is illustrated by the socio-gram map:

Centralized Relationships:

The socio-gram reveals the presence of several centralized relationships, where those holding central positions received a significant number of selections, which enabled them to acquire social status within the group. Member (1) is the star of this group, having received (16) selections. He is the official leader of the volunteer workgroup and the informal, popular leader who commands respect and holds significant influence and power within the group. His selection indicates that he is the person with leadership qualifications and can be relied upon to lead the groups. Through the social atoms derived from the socio-gram, it is evident that there are several informal groups, indicating the presence of decentralized relationships, not only with the leader but also mutual exchanges among members. This is the strength of the group, as the more reciprocal relationships there are, the more cohesive the group becomes. The group becomes resilient, resistant, and capable of surviving in the absence of the leader, making it more robust than a hierarchical or leader-centered structure. Based on this, we could consider F. Fiedler's suggestion of rotating leadership among group members, which would make it easier to address individual preparedness when facing particular problems. When Elton Mayo and others conducted psychological studies on workers, the results showed that workers naturally form (whether intentionally or unintentionally) groups with their own specific habits, duties, stable methods, and even rituals.

The emergence of non-isolated subgroups within the larger group can be interpreted as an indicator of social adaptation, reflecting an improvement in the group's performance and the individual's degree of integration into the group to which they belong.

Reciprocal Relationships:

We can identify a set of (12) reciprocal relationships, as indicated by the socio-gram with bidirectional arrows denoting mutual selection. In these relationships, influence and counter-influence are exchanged, driven by shared motivations and emotions toward each other. This form of relationship is used to measure the group's cohesion or fragmentation. The presence of several isolated pairs would indicate disintegration within the group, a situation not observed in the current case study.

Isolated Relationships:

From the socio-gram, it is clear that there are several isolated relationships that did not manage to attract any selections from the members. These are represented by the marginal members: (22, 15, 14, 13, 11, 6). This may be due to their inability to adapt, integrate, or interact with the other members. According to statements made by some of these members in the survey, the lack of continuous involvement in volunteer activities, as well as avoiding the emotional pressures and norms imposed by the group, could be reasons for this isolation. As for member (6), he is a responsible member in the association, which provides a clear explanation for his isolation. Despite his intention to belong to the group, as shown by his selections of members (1, 18, 23), he was not selected by any member, indicating a lack of positive interaction and communication with members of any subgroup or even informal leaders. However, this does not rule out the possibility of reintegrating these members into the group according to their inclinations, abilities, and emotional capacities, especially by members (23, 21, 1, 17), who form subgroups that have granted them social status and positions enabling them to influence their attitudes toward the group. This would help avoid any cracks in the social relations between them and the other members. They may form the focal center in Moreno's terminology. The interaction theory suggests that the group is a system of individuals who interact with one another, which leads to specific relationships. Each member is aware of their role within the group, and the interaction results in two types of relationships: positive reciprocal relationships, called attraction relationships, and negative reciprocal relationships, called repulsion relationships. The latter were not included in the rejection selections in the sociometric survey, as social relationships play a significant role in maintaining the group's stability, cohesion, and longevity. This contributes greatly to the achievement of the overarching goal of volunteer work. This does not exclude the presence of other social processes; however, their lack of prominence suggests that their impact is minimal, as evidenced by the socio-metric map.

Sequential Relationships:

To understand sequential relationships, we can start from any member as a point of departure to trace the connections that might occur within the group, eventually leading to another member as the endpoint. This type of relationship helps disseminate informal information, particularly regarding official organizational matters, and facilitates its access to the rest of the group. It also plays a role in spreading rumors within the group.

Subgroups:

Upon reviewing the socio-gram, we observe the presence of a significant number of subgroups, such as the one formed by member (1), the star of the group, along with members (21) and (23). This subgroup indicates a better level of cooperation with others and is referred to as a sociometric clique. Another notable subgroup includes members (17, 16, 4, 3), as well as (10, 3, 4) and (5, 8, 7, 9, 11). A key observation about the interactions within these subgroups is their openness to other members from different groups. As such, these subgroups may play a significant role in maintaining the balance and stability of relationships within the group. The progression from dyadic relationships to triadic, quadradic, or even larger relationships helps create a broader network of connections, contributing

to greater interaction among members. This, in turn, reinforces their sense of belonging and the adoption of the group's culture and standards.

Isolated Relationships:

Member (24) is an example of an isolated individual, as he neither selected any member nor was selected by any group member. According to the social map, this indicates a lack of social adaptation or integration within any subgroup. There is no mutual attraction between this member and the group, which suggests a preference for isolation from the other members. The root cause of this situation appears to be the secretive nature of some volunteers' contributions, which might lead to disengagement from the group.

The Sociometric Network:

Through the analysis of the different patterns of social relationships, various types of communication emerge, including the wheel structure, which is the most efficient and capable network for problem-solving. This is followed in terms of efficiency by the Y-shape relationship, then the chain relationship, and finally the wheel shape. All these communication structures were identified within the studied group. Continuous communication within the group produces unique symbols and rules, and as soon as the group is formed, various communication codes and rules begin to emerge. These become standardized and normative, meaning they are commonly recognized by all members. Communication symbols play a central and general role in the dynamics of the group, contributing to the formation of the social system, social structure, and social cohesion.

ANALYSIS OF RESULTS BASED ON THE SOCIOMETRIC MATRIX:

The sociometric matrix is used to analyze the sociometric relationships within the group, with the assistance of several coefficients, including the influence coefficient, social interaction coefficient, social cohesion coefficient, individual-group compatibility coefficient, and group-individual compatibility coefficient. In this study, we utilized only two coefficients: the social interaction coefficient and the social cohesion coefficient.

Social Interaction Coefficient:

This coefficient is used to determine the quality of interaction among group members. The identification of multiple relationships within the group leads to increased communication among members, resulting in mutual influence that helps in their alignment and understanding of the group's norms.

The social interaction coefficient can be calculated by dividing the sum of the actual relationships within the group by the total number of these relationships, as follows:

$$\text{Social Interaction Coefficient} = \frac{\text{Total Relationships within the Group}}{N(N-1)}$$

$$\text{Social Interaction Coefficient} = \frac{24}{24(24-1)} = \frac{24}{576} = 0.12$$

The social interaction index obtained for the group, which is 0.12, is considered satisfactory, knowing that the total number of relationships in the group cannot exceed 72. Furthermore, the number of preference choices requested from members in the questionnaire was limited to three (3) choices, which facilitates communication within the group, enhances interaction, fosters the growth of social relationships among members, and improves their social status within the group.

Studies by **Elton Mayo** have confirmed that the driving force for individuals is their need to interact with peers, establish relationships, and gain their acceptance. This social interaction is a key factor in strengthening social cohesion and stabilizing the group, which in turn contributes to improving the work environment and the relationships between individuals within the group.

Social Cohesion Index:

The degree of cohesion within groups varies from one group to another, depending on the situations that bring members together and their mutual needs. Social cohesion can be calculated as follows:

The potential number of pairs can be obtained by multiplying the allowed number of preferences (3) by the number of group members and dividing it by 2, as follows:

$$\frac{\text{number of binary choices}}{\text{The potential number of binary relationships}} = \text{Social Cohesion Index}$$

$$36 = 2/24 * 3 = \text{Potential number of dyads}$$

$$0.33 = 36/12 = \text{Social cohesion coefficient}$$

Social cohesion is one of the key social characteristics that has significant implications for the structure and performance of the group. Upon observing the group's social cohesion coefficient (0.33), we can conclude that it is somewhat weak considering the group's size. This indicates that the group needs more interaction and the development of strong social relationships in order to maintain its integrity and unity to achieve its goals. This reflects a lack of activities that promote more positive interaction and, consequently, increased cohesion. This finding is supported by Nasser Yousef's study on the impact of extracurricular activities and their essential role in improving sociometric relationships. If the group continues with such a pattern of relationships that centers around a limited number of members, it is likely to lead to disintegration.

Social cohesion is one of the most important factors for the success of volunteer work teams, as collective activities require the concerted efforts of all team members working as a unified whole.

CONCLUSION

From the above discussion, it can be concluded that sociometry holds significant importance as a measurement tool in the study of group dynamics. Its primary objective is to reveal the social status of each member within the group, as well as their popularity and influence over others. While sociometry may not provide a clear explanation for the existence of social relationships, nor fully interpret the nature of social interactions or the depth of individuals' feelings associated with their choices, its main benefit to researchers lies in understanding the structure of the group and predicting changes within it. Sociometry can thus serve as a fundamental first step in any intervention or activity within the group.

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