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Sociometry as an attitude scale : Theoretical Essay

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Abstract :

In this paper we shed the light on one of the most effective methods of mesurment in social psychology, in this case the Sociometry, however is commonly neglected or misknown among students and researchers in the social psychological field. By introducing the Sociometry, not only as group relationships mesurment instrument, but also as an attitude scale, contrary to common belief that the Sociometric approach has nothing to do with this latter. After analyzing the structure and the use of both Sociometry and attitudes scales, we try to demonstrate that the two emerged from the same concept and have the same function, in spite of the misconception dominating the debate.

Keywords: Sociometry; Sociogram; Attitudes; Scale.

ملخص:

في هذه الورقة البحثية نسلط الضوء على واحدة من أكثر الطرق فعالية و المتعلقة بالقياس في علم النفس الاجتماعي، و نخص بالذكر السوسيومتري، على الرغم ما يواجهه من تجاهل أو عدم معرفة من قبل الطلبة و الباحثين في الحقل النفسي الاجتماعي. سنسعى لعرض السوسيومتري ليس على أساس أنه آداء لقياس العلاقات داخل الجماعة فحسب، و لكن . كذلك . باعتباره سلما للاتجاهات، على عكس ما هو شائع من أن السوسيومتري لا علاقة له بهذا الأخير. سنحاول بعد تحليل تركيب و استخدام كل من السوسيومتري و سلاالم الاتجاهات أن نبرهن أن الاثنين ينبثقان من نفس المفهوم و يُستخدمان لنفس الغرض، رغم الفطرة الخاطئة التي تسيطر على النقاش.

كلمات مفتاحية: سوسيومتري؛ سوسيوغرام؛ اتجاهات؛ سلم.

When we say Sociometry it comes to mind directly the notion of relationships measurement, as an instrument to mesure the psychological distance in the group

such as other phenomenons like group cohesion, attractions, and detecting cliques in the group ...etc As well a simple design to deepen our knowledge and our understanding on what is really hapening between members in the organization. However it's seldom ; if ever, mentioned as an attitude scale, in spite of the nature of its Items or criterions.

For example, in the famous Blackwell Handbbok of Social Psychology, over its four volumes ;

Intraindividual Processes, edited by Abraham Tesser and Norbert Schwarz.

Interpersonal Processes, edited by Garth J. O. Fletcher and Margaret S. Clark.

Intergroup Processes, edited by Rupert Brown and Samuel Gaertner.

Group Processes, edited by Michael A. Hogg and Scott Tindale.

First published in 2001 and edited by a number of exceptionally qualified and dedicated scholars of social psychology, Sociometry has never been mentioned in the chapters dedicated to attitudes and related topics.

Usually, group researchers can observe the ongoing interaction among group members more or less directly. All too often, though, group researchers fall back on the same strategies used in individual-level studies: either measuring “process” by retrospective questionnaires, or measuring only inputs and outputs and simply making inferences and assumptions about what went on in between (Hogg & Tindale, 2001, p. 525).

Etymologically, The term Sociometry is defined as the measurement of the social relationships that exist among the members of a group. The word Sociometry comes from two Latin words socius meaning social and metrum meaning measure. Jacob Levy Moreno coined the term sociometry and conducted the first long-range sociometric study from 1932-1938 at the New York State Training School for Girls in Hudson, New York. As part of this study, Moreno used sociometric techniques to assign residents to various residential cottages. He found that assignments on the basis of sociometry substantially reduced the number of runaways from the facility. (Moreno, 1953, p. 527).

According to the definition and the role of this instrument (Sociometry), as well as the structure of its questionnaire ; consedering it as an attitude scale seems to be making more sense.

In the following pages, we will try to discuss the hypothesis that Sociometry is an attitude scale in its structure as well as its use, by answering the questions ; what

is Sociometry? What is Attitudes and Attitudes Scale? And how can Sociometry be considered as a perfect attitude scale?

What is Sociometry?

Before referring to recent studies and researches in the topic, we would like to know the definition of the man behind the question himself, in this case the American social psychologist and scholar Jacob Levy Moreno (1889 – 1974). Moreno in his great work intitled *Who Shall Survive : Foundations of Sociometry, Group Psychotherapy, and Sociodrama*, first published in 1935 ; and re-edited and published in 1953 ; defined sociometry as as “the mathematical study of psychological properties of populations, the experimental technique of and the results obtained by application of quantitative methods” (Moreno, 1953, pp. 15-16). In other words, Moreno found in this approach a Sociometry represents a quantitative method for measuring social relationships. Added to this, Moreno stated that Choices are fundamental facts in all ongoing human relations, choices of people and choices of things. It is immaterial whether the motivations are known to the chooser or not; it is immaterial whether (the choices) are inarticulate or highly expressive, whether rational or irrational. They do not require any special justification as long as they are spontaneous and true to the self of the chooser. They are facts of the first existential order.” (Ibid, p. 720).

In his groundbreaking work, Moreno (1953) used graphical curves, and there is no mentioning of alternatives to visual analysis of sociometric data at all. In fact, he attributes the breakthrough of the sociometric movement to a showing of sociometric charts at the convention of the Medical Society of the State of New York in 1933 (Ibid, p. xiii).

Since Sociometry had many followers year after year, and generations of teachers, managers, social and work psychologists used sociometric measurement to deepen their understanding of the group. Today, several novel approaches and models of Sociometry are available, and there is also greater awareness of some of the ethical problems in Moreno-type measurement of participants emotional reactions and judgements toward each other.

In the conventional sociometric questionnaire, participants are invited to designate three persons in the group whom they like most and find most attractive (preferences), and three other persons whom they dislike and do not want to be with (rejections). Different sociometric criteria can be used: Who do you like best/or dislike; whom would you choose to travel/not travel with; play with outside; go picnicking, want as a close friend; sit next to, etc. All participants must fill out the questionnaire and each completes the same number of nominations.

Refusal to nominate peers (which is understood from an ethical point of view), or absence from group or workplace when the measurement is conducted, create a serious methodological problem of missing data, which might change the sociometric picture of the group. When all nominations are summed up for the entire group, matrices of attractions and rejections are constructed.

In the example below, from a measurement we conducted among a group of workers in the accommodation service at Amar Telidji University in Laghouat. Here we have the data we collected, represented and organized into the famous table known as Sociomatrix. (Table 1).

	Nassim	Farid	Houria	Fella	Fatiha	Abbess	Afef	Wahiba	Meriem	Amira	(+)	Σ
Nassim		+		+						+	3	3
Farid	+			+				+			3	3
Houria		+				+				+	3	3
Fella		+				+				+	3	3
Fatiha		+		+				+			3	3
Abbess			+	+						+	3	3
Afef	+	+		+							3	3
Wahiba	+				+				+		3	3
Meriem			+	+						+	3	3
Amira			+	+					+		3	3
(+)	3	5	3	7	1	2	0	2	2	5	30	
Σ	3	5	3	7	1	2	0	2	2	5		30

(Table 1 : Sociomatrix representing positive choices among the group members.

To know how much interpersonal preference exists within a small group of Ten members. We gave all the members in this group the following pseudonyms : Nassim, Farid, Houria, Fella, Fatiha, Abbess, Afef, Wahiba, Meriem and Amira. For the purposes of this example, we used the following criterion: "I want that this person to be my partner when carrying out a specific task." I will use the symbol "+" to indicate this preference or positive choice, otherwise known as Attraction. (Name three persons !)

Next, we interviewed each group member individually. When we had established rapport, and have explained that all responses will be kept confidential, we asked the person we were interviewing to rate every other person in the group, based on the criterion. Suppose we were asking Farid. Farid chose as follows:

Nassim +
 Fella +
 Wahiba +

This means that Farid has preference to share the task with a small sub-group in the group with Nassim, Fella and Wahiba.

During the interviews we can elicit details about all of these relationships. we can ask Farid, for example, why he distrusts, reject or hasn't choose any one else in the group, and Farid's ideas about what others could do to improve the situation. Mutual selections are very telling about dyadic friendships in the group. A mutual selection, where both parties identify each other as the most liked peer, indicates friendship and mutual support. The proportion of mutual selections in the workplace tells us about the atmosphere and the harmony in the group. The examination of mutual selections is most important in the margins of the workplace, where workers receive few liking selections. If those workers have at least one mutual selection, it means that they do have a close friend, and their psychological state might well be expected to be better than what it might have been had they not had any mutual selection. If a marginal worker selects only peers who do not reciprocate the choice, the situation is more problematic. Of course those who are not selected at all by anybody are in the worst social situation.

Focusing attention on neglected persons is also very important. Rejected workers, who receive many nominations as disliked peers, are usually quite salient in the workplace as work problem, and much attention is required to deal with them. Much of the current emphasis and attention given in recent years to bullying and to manifestations of violence in workplace is naturally concentrated on the sociometrically rejected persons, and a huge literature on the etiology of violence is available today (see, for example, Hyman et al., 2006). But the neglected persons are invisible and lost in the workplace, remote from the attention of their peers and their managers. (Babad, 2001).

Like in the workplace ; in the school context ; Mitchell (1956) recognized that peer assessment techniques could be used to measure the functioning of individual children across basic dimensions of social behavior. In contrast to prior peer assessment approaches that were focused on particular narrowband constructs, Mitchell used a heterogeneous set of 19 items representing multiple forms of social behavior. He used a paper-and-pencil questionnaire in which children were asked to indicate which of their peers fit the particular items in his list. Using their selections Mitchell assigned a score on each item to each child according to how many times the child had been nominated for it. (Coplan & Bowker, 2014, p.19).

One tradition within sociometry has been concerned with identifying children who show elevated levels on the sociometric dimensions of liking and disliking. During the 1950s substantial progress was made in developing techniques to identify children who are neglected by their peers. Whereas previous techniques were able to distinguish children who were stars or populars in their groups, from children who were rejected, and those who were average on both dimensions. (Ibid, p.21).

In the example above, Affef who got 0 positive nomination, swings between rejection (in the case she got some negative nominations) and neglect.

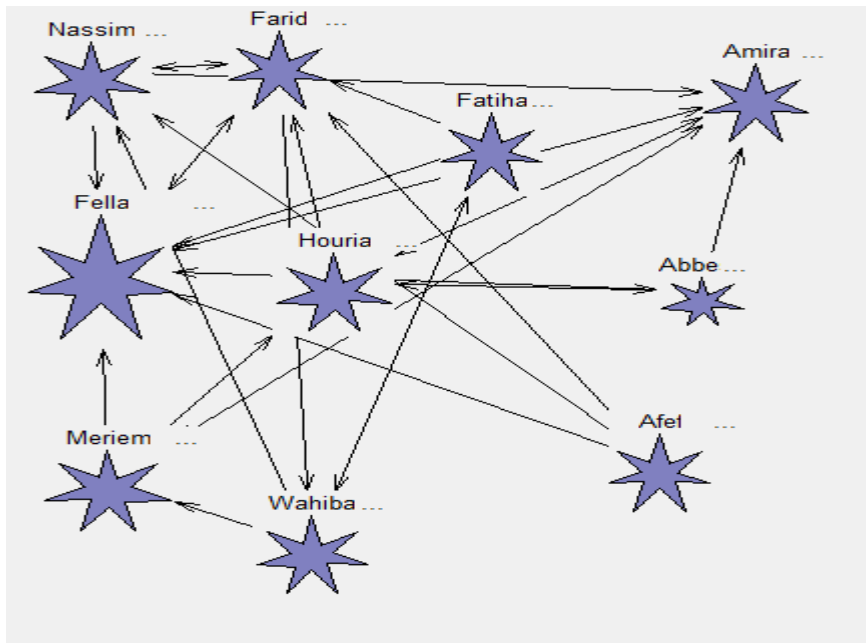
In recent years, application of sociometric techniques (that is, of asking group members about other group members and using their summed responses as the data for analysis) moved from the study of personal attractions and rejections to the cognitive domain, using students as judges of social situations. Whereas the Moreno-type sociometric question always asked respondents for their personal feelings towards their peers, current cognitive sociometry engages students cognitively as judges and asks them to name and to evaluate different role holders in the classroom. They are asked to use their observation and judgment rather than to express their inner feelings.

Sociogram and Graphical Representation :

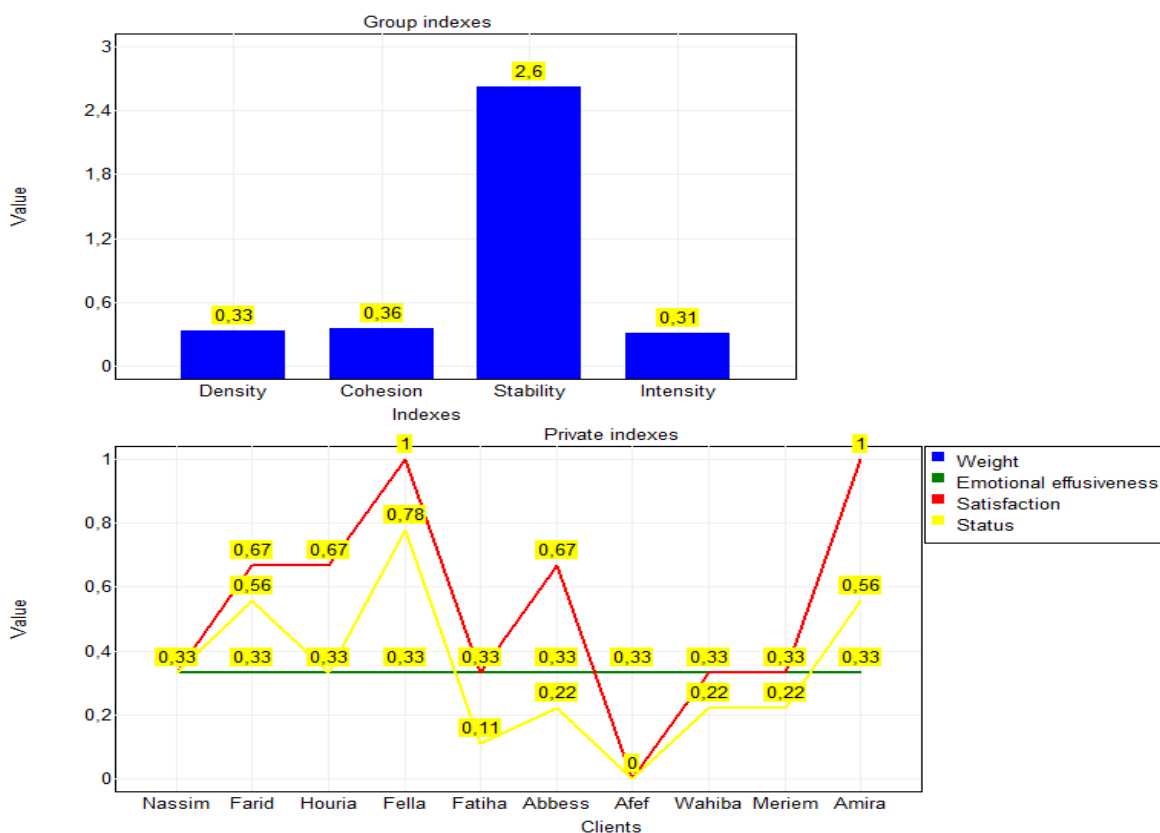
After making the choices, putting them into the Sociomatrix, a description emerges of the networks inside the group. A drawing, like a map, of those networks is called a *sociogram*.

The sociogram is a data analysis technique that focuses its attention on the way in which social relationships are established within any group, Moreno, developed the technique in the mid-30s of the 20th century as a tool for exploratory and diagnostic purposes. Since its creation, sociometry appears as one of the most advanced and ordered strategies to describe and measure group dynamics, since it allows the quantitative study of interpersonal relationships in groups. The sociogram is an important example within sociometry. In essence, the sociogram allows us to study the existing interpersonal preferences in a group of people. Currently it is widely used in various organizational settings, from small schools to large companies. It is also used in intelligence work in order to detect criminal networks. They can be briefly defined as graphics or tools used to determine the sociometry of a social space. (Gomez et Al, 2020). Different forms of sociogram

and graphical representations have been established since, and maybe the famous sociograms are showed below, from the output data of SociometryPro Software we used in our work (Figure 1 and Figure 2).



(Figure 1) Sociogram representing the positive choices between the group members.



(Figure 2) Graphical representations of the members group sociometric situation and group phenomena from SociometryPro output.

Attitudes :

Attitudes study is a huge, rambling behemoth of a topic, the greatest social psychologist ever Gordon Allport (1935) called the attitude, “probably the most distinctive and indispensable concept in contemporary American social psychology.” In all probability, it still is. At the very least, it is the most widely referenced concept in social psychology as the twentieth century draws to a close (Hogg & Tindale, 2001, p. 259).

From an etymological view, Attitude is a word that is part of our commonsense language. It was derived from the Latin *aptus*, which means ‘fit and ready for action’. This ancient meaning refers to something that is directly observable, such as the way a fighter moves in a boxing ring. However, attitude researchers now view ‘attitude’ as a construct that, although not directly observable, precedes behaviour and guides our choices and decisions for action. (Hogg & Vaughan, 2010, p. 94).

Attitudes are important because they involve large parts of our mental life. When we really like something or someone, our relevant feelings, beliefs, and behaviors are all swayed in a positive direction, and it is difficult for people to be “objective” and ignore these tendencies. This potent effect of attitudes is the reason why people often think of attitudes as the principal cause and the principal consequence of important social problems. For instance, if people wish to explain bitter fighting between two ethnic groups (e.g., Shia and Sunni Muslims or Serbs and Croats), the first explanation usually considered is “ethnic hatred,” which is simply a negative attitude toward the other ethnic group. Consequently, if people seek a means to reduce the conflict, they will suggest ways to try and ameliorate the bitter intergroup attitudes. (Kruglanski & Higgins, 2007, p. 565).

Attitudes Scale :

It is interesting that it was not always so. According to Allport, before the attitude concept gained acceptance, there was no agreed upon way to represent preferences, sentiments, and values. But the growth of the attitude concept gave social psychologists a way to discuss and measure such preferences. (Hogg & Tindale, op. cit, p. 259).

Attitudes serve a fundamental function by subjectively organizing people’s environment and orienting them to objects and people in it. (Brown & Gaertner, 2001, p. 175).

Despite empirical evidence that attitudes are typically positive *or* negative, it is also possible that people may hold more complex attitudes toward an object or a

person. People's evaluative reactions toward an attitude can also be *simultaneously* mixed. (Ibid, p. 176).

Attitude scales were developed by the early 1930s and used to measure people's views on issues that were fundamental – then as now – such as politics, religion and race. These scales were questionnaires that asked people what they thought and felt about these issues and how they might act in various situations. (Hogg & Vaughan, op. cit, p 100). And one of the very first attempts to construct a valid and a reliable scale, Thurstone ; according to him, Attitudes can be measured, and his approach was based on psychophysical scaling in experimental psychology. In a study of attitudes towards religion, where more than 100 statements of opinion ranging from extremely favourable to extremely hostile were collected, statistically analysed and refined as a scale. Participants then classified the statements into eleven categories on a favourable or unfavourable continuum. Their responses were used to select a final scale of twenty-two items, two for each of the eleven points on the continuum, using items with the strongest inter-judge agreement. Such a scale can then be used to measure other people's attitudes towards the issue. On a Thurstone scale, a person's attitude score is calculated by averaging the scale values of the items endorsed.

A Thurstone scale is tedious to construct, so Likert (1932) developed a technique that produces a reasonably reliable attitude measure with relative ease – a Likert scale. Respondents use a five-point response scale to indicate how much they agree or disagree with each of a series of statements. The points use labels such as 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree', ranging numerically from 5 to 1. A person's score is summed across the statements and the total used as an index of the person's attitude. Typically, responses to questions will not correlate equally with the total score. (Hogg & Vaughan, 2018, p. 157).

If we focus on the construction of both Thurstone and Likert scales, we easily pointed out they are similar in their linearity, that both are one way scale, with one direct and simple choice for each item. Contrary to Guttman who tried a different approach – a single, unidimensional trait can be measured by a set of statements that are ordered along a continuum ranging from least extreme to most extreme. Such a scale possesses unidimensionality. The statements vary from those that are easy to endorse to those that few people might endorse. Items on a Guttman scale are cumulative: acceptance of one item implies that the person accepts all other items that are less extreme. We could then predict a person's response to less extreme statements by knowing the most extreme item they will accept. Consider these items relating to the topic of inter-ethnic social contact – *I would accept people who are members of the immigrant ethnic group 'X': ... (1)*

into my country . . . (2) into my neighbourhood . . . (3) into my house. Agreement with (3) implies agreement with (1) and (2). Agreement with (2) implies agreement with (1), but not necessarily with (3). In practice, it is very difficult to develop a perfect unidimensional scale, which suggests that people respond on multidimensions rather than a single dimension. (Ibid, 157).

Sociometry as an Attitude scale :

The common idea attributed to the sociometric measurements is that this latter concerns only the relationships in the group, this misconception is behind the fact that sociometry is never mentioned in the chapters dedicated to attitudes, however the study of the group and its considerations doesn't differ from the sociometric approach, and as example ; A researcher interested in studying group interaction process faces three basic steps:

1. Obtaining information about the interactions of some set of groups for some period of time. We will refer to this step as recording.
2. Transforming that information into data – that is, into some systematic set of qualitative or quantitative distinctions. We will refer to this step as *coding*.
3. Processing (qualitatively or quantitatively) and comparing subsets of those data, and interpreting the “meaning” of those comparisons. We will refer to this step as analysis. (Hogg & Tindale, op. cit, p. 526).

In brief, the social psychology of intergroup relations rests on the following fundamental propositions:

1. Group-based attitudes, perceptions, and behavior arise from basic cognitive categorization processes that partition the social world into *ingroups* and *outgroups*.
2. Attachment to and preference for ingroups is the primary driver of intergroup relations. *Ingroup favoritism* gives rise to intergroup discrimination, irrespective of attitudes toward specific outgroups.
3. Attitudes and emotions toward specific outgroups reflect appraisals of the nature of the relationships between ingroup and outgroup that have implications for the maintenance or enhancement of ingroup resources, values, and well-being. *Outgroup prejudices* both reflect and justify the existing structure of intergroup relations. (Kruglanski & Higgins, 2007, p. 695).

Another example is Heider's theory of attitude change, people prefer attitudes that are consistent with each other over those that are inconsistent as we can see in (Figure 3). A person (P) tries to maintain consistency in attitudes to, and relationships with, other people (O) and elements of the environment (X).

In more details ; There are eight possible combinations of relationships between two people and an attitude object, four of which are balanced and four unbalanced (Figure 1). A triad is balanced if there is an odd number of positive relationships and can occur in a variety of ways. If P likes O, O likes X and P likes X, then the triad is balanced. From P's point of view, balance theory acts as a divining rod in predicting interpersonal relationships: if P likes the object X, then any compatible other, O, should feel the same way. Likewise, if P already likes O, then O will be expected to evaluate object X in a fashion similar to P. By contrast, if P likes O, O likes X and P dislikes X, then the relationship is unbalanced. The principle of consistency that underlies balance theory means that in unbalanced triads, people may feel tense and be motivated to restore balance. Balance is generally restored in whatever way requires the least effort. So, in the last example, P could decide not to like O or to change his or her opinion about X, depending on which is the easier option.



(Figure 3) Examples of balanced and unbalanced triads from Heider's theory of attitude change. In the balanced triads the relationships are consistent, in the unbalanced triads they are not. (Hogg & Tindale, op. cit, p. 158).

Conclusion :

To conclude, let's say that sociometry has lost his reputation due to the revolution in the world of computing and then in attitudes skills and statistics ; but if we look back to the early scales, their purposes, theoretical background and how they have been conceived, we realise that sociometry is still present over the

thousands of scales and tests we create and use ; not only this, but even in our analysis of any social psychological situation we face.

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