

# Q-Sort: A Blended Methodology Applied to a Personality Inventory

Rosa Rodrigues<sup>1,2,3</sup>, Paula Lopes<sup>1,4</sup> and Miguel Varela<sup>1,2</sup>

<sup>1</sup>Instituto Superior de Gestão – Business and Economics School, Lisboa, Portugal

<sup>2</sup>CEFAGE – Center for Advanced Studies in Management and Economics, Évora, Portugal

<sup>3</sup>The Transdisciplinary Research Center of Innovation & Entrepreneurship Ecosystems (TRIE), Lisboa, Portugal

<sup>4</sup>Lusofona University / CICANT - Centre for Research in Applied Communication, Culture, and New Technologies, Lisboa, Portugal

[paula.rosa.lopes@ulusofona.pt](mailto:paula.rosa.lopes@ulusofona.pt)

[rosa.rodriques@isg.pt](mailto:rosa.rodriques@isg.pt)

[miguel.varela@isg.pt](mailto:miguel.varela@isg.pt)

**Abstract:** The instruments that are constituted by inquiries that intend to investigate the opinions, behaviors and attitudes, instead of putting the person to the test, intend to find out how they would act in a given situation. Although there are no right or wrong answers, there is a tendency to respond in a socially acceptable way, even if the answer does not correspond to reality. This problem can be overcome through the Q-sort methodology that combines quantitative and qualitative data and analytical techniques that are not present in other methods. In this way, it consists of presenting the participants with a set of statements on a given topic and asking them to classify them according to their opinion, according to a predefined distribution, which is generally approximately normal. This methodology forces participants to distribute the score among the items on the scale, thus avoiding the constraints associated with social desirability and the tendency to respond in the same way or always through the midpoint to different questions. Another advantage is that it provides linearity and near-normality to the scale, which makes it possible to compare subjects more easily. Nevertheless, its advantages, Q-sort methodology also has negative points because forced-choice measures produce ipsative data that lead to distorted scales and problematic psychometric properties. As the data are obtained by ordering a set of items or by forcefully choosing one item over another, it is impossible to achieve very high or very low values on all scales, which gives rise to a large number of negative values that, in turn, result in an average correlation between the scales, which is also negative. In view of the above, it was considered relevant to apply the Q-sort methodology to a personality inventory, whose data were collected from 175 university students attending the Portuguese higher education institution which specializes in the area of economic and business sciences. The Q-sort methodology plays a crucial role in personality inventories by offering a subjective and personalized approach to assessing personality traits. It enables a more thorough and contextual analysis of individual traits, thereby contributing to a deeper and more comprehensive understanding of the human personality. The results of the empirical study showed that despite the mean values being negative or very close to zero, they allowed the grouping of respondents according to their similarities in terms of their personality traits depending on the course they attend.

**Keywords:** Q-sort methodology, Data analysis methodology, Social research, Human perspectives, Personality

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## 1. Introduction

Q-methodology was presented by Stephenson (1935) and later refined in Brown (1996) for the areas of social sciences and humanities for studying subjectivity through a combination of qualitative and quantitative techniques (Zabala, Sandbrook and Mukherjee, 2018). It is a methodology that aims to ascertain subjective perspectives, beliefs and concepts that characterize human mental states and behavioral manifestations (Akhtar-Danesh, 2018). May, Luke and James (2018) adds that the Q-sort methodology has been frequently used in research dedicated to the study of personality, since they are usually carried out with self-report instruments, which implies that in most cases the answers are given in line with social norms and with the representations that people construct of reality and not according to reality itself (Escobar Cabello and Sánchez Soto, 2019).

Research on social desirability gains importance when dealing with practical issues faced by organizations that use personality inventories to improve the decision-making process (Pechorro et al., 2012). As they are self-descriptive tests, they can be influenced by the motivation to present the expected result, leading the subject to purposely distort their answers to make a good impression. Many organizations consider this situation to be very difficult to overcome, which significantly reduces the validity of personality measures as useful tools in the work context, namely during the recruitment and selection process (Lee, Joo and Lee, 2019).

According to Fortunato, Tanzilli, Lingardi and Speranza (2022) when a person fills out a personality inventory using a Likert-type scale, he or she becomes a passive subject who undergoes an assessment. Through Q-sort, people are genuinely active, because they give their point of view through a set of items that holistically portrays

their personal characteristics. Following this idea, Lundberg (2019) states that the added value of this method is that, unlike the traditional method (Likert-type scale) that assigns a value to each question, the Q-sort induces participants to consider the characteristics that the participants have, define as a whole.

Thus, it is desirable that the data follow a normal distribution, as it means that the values of the variable are grouped around the mean, in a symmetrical pattern, which reveals that the responses of the participants are diversified, a fundamental aspect for the realization of statistical inferences (Kamperman, Kooiman, Lorenzini, Aleknavičute, Allen and Fonagy, 2022).

The Q-sort methodology is a widely employed technique in personality inventories, aiding in the assessment and categorization of individual traits and characteristics. Its significance in personality inventories stems from its provision of a more personalized approach to evaluating personality traits. Unlike other methods that utilize questionnaires with predetermined responses, the Q-sort enables participants to assess and rate their own personality traits on a graded scale (Block, 1961; Miller and Ozer, 2022).

This qualitative approach allows individuals to express their opinions and perceptions about themselves in a more individualized manner, considering the complexity and nuances of personality traits. Additionally, Q-sort enables comparison between different individuals, facilitating the identification of patterns and individual differences. Another advantage of the Q-sort methodology is its flexibility and adaptability (Rost, 2021). It can be applied in both clinical situations and academic research, allowing for the analysis of various aspects of personality (e.g., temperament, social interaction styles, personal preferences; Lutfallah and Buchanan, 2019).

However, it is important to note that the Q-sort methodology is not a standalone method for personality assessment but can be used in conjunction with other assessment instruments and techniques. The combination of different methods can provide a more comprehensive and accurate understanding of an individual's personality. Q-sort is a measure designed to describe reality and relate it to psychological attributes (Big Five traits, affect, and well-being; Miller and Ozer, 2022).

The purpose of this study is part of this theme and aims to present the Q-sort methodology, namely its stages and the advantages and disadvantages of its use. A comparison of this methodology with the Likert-type scales is also made and its application to a personality inventory based on the Big Five model is demonstrated (Lynn, 2021). Taking into consideration the information provided, the following research question has been formulated: What disparities can be identified in the outcomes of a personality inventory when comparing the Q-sort methodology with Likert-type scales?

## **2. Literature Review**

### **2.1 Q-sort Methodology**

Q-sort is a mixed research method that uses quantitative results to confirm qualitative results in order to better understand the phenomenon under study (Santos et al., 2019). One of the strengths of this methodology is its exploratory approach and its potential to generate theories, since, generally, no hypothesis is formulated before the execution of the study (Lundberg, 2019). In addition, several authors (e.g., Moree, 2017; Thompson et al., 2013) describe the Q-sort methodology as a reliable approach to filling the gaps inherent in the R method, which only allows relating the differences between individuals, while Q-sort makes it possible to relate intra-individual differences.

Eyvindson et al. (2015) allude that the R method emphasizes the analysis of the relationships between the variables, while the Q method focuses on comparing the perception of each individual within the sample in which they belong. This method consists of a group of statements or objects about a topic predetermined by the researcher (e.g., The sustainability practices adopted by the organization comply with current legislation) and from which participants classify these statements into categories (Santos, Petrini, Lupion and Hepper, 2019).

The Q-sort table includes a rating scale that can range from minus three to plus three (-3 and +3) to minus six to plus six (-6 to +6), depending on the degree of agreement, the frequency with which certain behavior occurs or the importance attributed by the participants to each of the statements presented. There is no ideal range, because it depends on the number of statements. A greater number of statements generally requires a wider reach (Akhtar-Danesh, 2018).

When organizing the statements according to their personal opinions, each one occupies a place in the table according to the score given to each one, which varies from negative to positive (Figure 1). After completing each individual Q-sort, the statements receive the rating corresponding to their place in the table and in the

general Q-sort, made up of the responses of all participants. The score given to each statement is added up and generates the final score for each category (Lutfallah and Buchanan, 2019).

The number of columns and rows that make up the table depends on the number of statements developed/selected by the researcher, each of which must have a place in the table so that it can be sorted by the participant. If the number of statements to be evaluated is 25, the table must consist of 25 spaces (Santos, Petrini, Lupion and Hepper, 2019).

The table presented in Figure 1 is composed of nine columns, where the value minus four (-4) corresponds to total disagreement with the statement and four represents total agreement with it. The number of responses corresponding to each statement was limited in advance, which forces a forced distribution and encourages participants to carefully reflect on the ranking of statements according to their point of view on the topic (Lucinski, 2016). The Q-sort matrix facilitates the analysis and interpretation of results and increases the precision of the analysis performed (Dieteren, Patty, Reckers-Droog and Exel, 2023).

Strongly disagree			Neutral			Strongly agree		
- 4	- 3	- 2	- 1	0	1	2	3	4

Figure 1: Q-sort Table With Extremes That Oscillate Between – 4 and 4

(Adapted from Santos, Petrini, Lupion and Hepper, 2019).

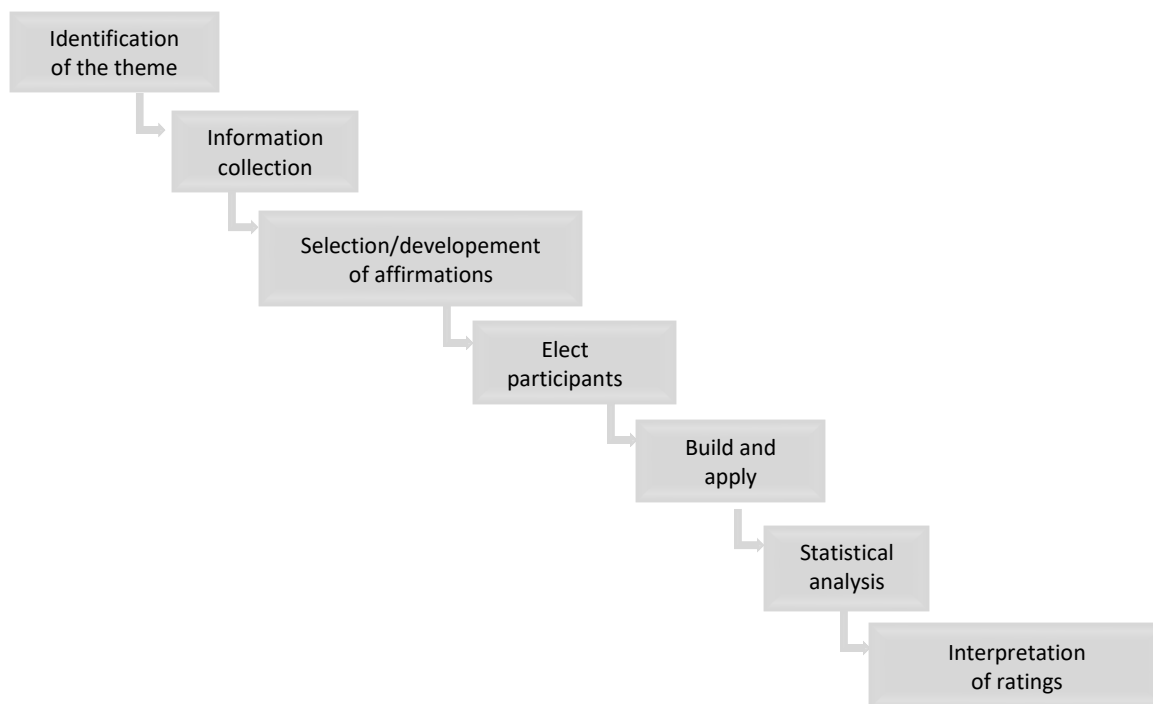
The Q-sort methodology makes it possible to establish correlations between people and not between measurement instruments, so that participants who order items in a similar way share the same point of view on the subject under analysis. Based on individual correlations, factors are extracted that identify people who reveal similar or different opinions regarding a given topic (Escobar Cabello and Sánchez Soto, 2019). The linearity and approximation of the normality of the data distribution, allows the subjects to be compared with each other more easily (Stenner and Capdevila, 2020).

**2.2 Q-sort Methodology Phases**

The effectiveness of the Q-sort methodology depends on the fulfillment of the steps recommended by Ferreira, Oliveira and Ferreira (2022), namely: (i) identification of the topic to be analyzed; (ii) gathering information from a literature review or through interviews with experts in the study area; (iii) selection/development of a representative set of statements; (iv) election of participants who meet all the inclusion criteria; (v) construction and application of the Q-sort with the statements considered most relevant to answer the research problem; (vi) statistically analyze individual and global results through factor analysis of Q-sorts, with the aim of revealing which individuals are part of each point of view and the “strength” of this connection; (vii) and qualitative interpretation of ratings to explore statements that differentiate one factor from others (Figure 2).

It should be noted that the Q-sort methodology does not require large samples, because after a certain number of statements, theoretical saturation is reached and no new information is introduced (Maia, Espindola and Veiga, 2018). In addition, statistical validity is not the main concern of this type of methodology, since the importance falls on the different opinions (subjectivity) about the topic being studied and not on the percentage of the population that adheres to each of these opinions (Ferreira, Oliveira and Ferreira, 2022).

This methodology allows analyzing whether there is agreement between the opinions of the participants, how and why it occurs. The comparison of convergent, complementary and/or contradictory opinions can be extremely useful in all areas of knowledge, in particular those dedicated to the study of subjective social phenomena that largely depend on the values and beliefs of those who evaluate them (Escobar Cabello and Sánchez Soto, 2019).



**Figure 2: Q-sort Methodology Phases**

(Adapted from Ferreira, Oliveira and Ferreira, 2022).

The use of the Q-sort methodology in self-report measures that assess human behaviors and characteristics (e.g., personality, skills) has also been growing in recent years (May, Luke and James, 2018). The use of this methodology makes it possible to define similar profiles of individuals who share the same ideas, attitudes and behaviors (Stenner and Capdevila, 2020) regardless of sociodemographic variables (e.g. sex, age, education level).

It is important to mention that like any methodology, this one also has advantages and disadvantages that we will now describe.

### 2.3 Q-sort Methodology's Advantages and Disadvantages

One of the main advantages of this methodology is related to the decrease in the number of answers attributed to the midpoint of the scale, because when participants answer different types of questions in the same way, validity is compromised due to the bias of the results (Karim, 2001).

According to Stenner and Capdevila (2020), the person always marks the same answer because he is afraid to take a position on the issue under analysis and decides to respond according to his perception that it is socially desirable. With Q-sort, participants are forced to distribute their answers across the various spaces of the table, which implies decision making and, as such, the effort to distort the answers is considerably less (Ramlo, 2021).

Unlike questionnaires, whose items can be answered using a Likert-type scale, which requires a single reading for a generally direct and quick response, Q-sort may require several decisions to assign an answer, because it requires the comparison of each affirmation with the others, which increases the validity of the evaluation process (Eyvindson et al., 2015).

Another advantage concerns the a priori criterion used by the researcher to develop the measurement instrument, since, as he is responsible for choosing theories and/or variables, he selects the response scales that may allow him to validate his hypotheses (Lundberg, 2019).

In the Q-sort, the answers are classified, by the participants, according to their references on the topic under analysis, that is, it is the respondent who decides the importance he attaches to each statement in relation to the others and their order in the table. Subsequently, this ranking is compared with that of the other participants to assess the similarities and differences regarding their points of view. Thus, it is not the researcher who prepares the Q-Sort who decides, a priori, the classifications, but the respondent, from his point of view (Stenner and Capdevila, 2020)

Despite its advantages, the Q-sort methodology also has negative points, because forced-choice measures produce ipsative<sup>1</sup> data that lead to distorted scales and problematic psychometric properties (Salgado, Anderson and Tauriz, 2015). In this context, Martínez, Moscoso and Lado (2021) refer that as the results are relative, it is impossible to obtain very high or very low values on all scales, which increase a large number of negative values which, in turn, result in an average correlation between the scales, also negative. And despite these averages approaching zero, when there are few scales involved, it becomes difficult to assess construct validity through the Classical Test Theory (Kleka and Soroko, 2018), which leads Walton, Cherkasova and Roberts (2020) stating that with less than 30 scales it is practically impossible to obtain psychometric parameters that can be interpreted.

Dieteren, Patty, Reckers-Droog and Exel (2023) also mention that often a normal distribution may not be appropriate for ipsative data, because as all scales are correlated, it is more likely that profiles with predominantly positive or negative values will emerge, which have asymmetry coefficients and kurtosis that deviate from the range -1.96 to 1.96, recommended in the literature (Marôco, 2021).

The interdependence present in the forced choice scales and in the observed results can change the psychometric properties of the instrument, because the selected item does not depend only on the level of latency that it is measuring, but also on the set of items to which it belongs, which makes that each observed result is influenced by the results of the set of items (Welter and Capitão, 2007). Santos, Petrini, Lupion and Hepper (2019), in turn, report that due to the low intercorrelation of the items, the subscales tend to have low internal consistency, with average values around 0.20, which is why it is not rare to reject them to the detriment of the subscales. Likert scales.

### **3. Q-sort Methodology Versus Likert-Type Scales**

The choice of the Q-sort methodology instead of the Likert scale was due to the fact that the objective of the study was to order a set of behaviors/characteristics according to the frequency with which they occur (Stenner and Capdevila, 2020).

Likert-type scales have the inconvenience that the respondent looks at each variable individually and not as a whole composed of items that must be related (Costa, Orsini and Carneiro, 2018). When considering each variable separately, it becomes very difficult to weigh its importance in relation to the others. In addition, there is a tendency to select the midpoint of the scale, assign extreme values and/or respond according to what is considered socially desirable (Stenner and Capdevila, 2020). This strategy causes many repetitions between the variables, which tends to bias the results, since the objective is to produce a list ordered according to the frequency with which a certain behavior occurs, the degree of agreement or the relative importance of each item (Ramlo, 2021).

Added to this inconvenience is the propensity to generate asymmetric distributions and with Q-sort this problem is overcome because the participant has to look at the items as a whole and classify them according to a predefined quasi-normal distribution (Escobar Cabello and Sánchez Soto, 2019). The respondent has to reflect on each of the items and order them according to the degree of importance, frequency or agreement in relation to a given subject. In this way, a hierarchical list is obtained, without classification ambiguities and without any probability of having repeated variables in the same position (Santos, Petrini, Lupion and Hepper, 2019).

By forcing the creation of an approximately normal distribution, the Q methodology facilitates inferences and statistical comparisons between the various elements of the group and how each item is compared with the others, more realistically reflects the opinion of the participants on the subject under study, without it being socially desirable (Kamperman et al., 2022).

Despite the advantages of the Q-sort, when questions are formulated to measure attitudes and opinions, Likert-type scales are generally used because they allow the assessment of the respondents' opinion on a specific subject, in terms of agreement (agree versus disagree) or frequency (few versus often). However, since its appearance (Likert, 1932) validity and reliability have been discussed in terms of the number of points on the scale. There are authors (e.g., Dalmoro and Vieira, 2013; Lozano, García-Cueto and Muñoz, 2008; Weng, 2004) who argue that a seven-point scale gives better results than a five-point scale, because the internal consistency of the instrument increases as the number of response categories increases.

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<sup>1</sup>Data obtained through the ranking of a set of items or through the forced choice of one item over another (Brown and Maydeu-Olivares, 2011).

However, the validity of Likert-type scales depends on the subject under study and the importance attributed to it by the respondents, because any question that is considered irrelevant will have a similar answer regardless of the number of points on the scale. to cluster around the center or at the extremes (Costa, Orsini and Carneiro, 2018). On the other hand, it appears that when the subject in question is relevant to the respondents, the greater the number of response options, the better the reliability and construct validity of the scale, because it reduces the ambiguity of the answers and becomes closer to the reality of respondents (Dalmoro and Vieira, 2013).

Both methodologies have advantages and disadvantages, and both require correlations, but while in Likert-type scales correlations are performed between items, in Q-sort methodology they are performed between people (Gao and Soranzo, 2020).

#### **4. Application of the Q-sort Methodology to a Personality Inventory**

Personality has become increasingly important in several areas of knowledge, as it is through its study that it becomes possible to identify patterns of behavior and attitudes that make each individual unique (Rodrigues and Gomes, 2022). In addition, there are several studies (e.g., Brandt et al., 2019; Graham et al., 2020; Rais and Chandgude, 2020; Smith et al., 2021) that over time have shown that the measures of personality predict academic and professional performance, learning ability, productivity, salary, career progression and other relevant criteria in both an educational and organizational context.

In this research, the application of the Q-sort methodology followed the steps recommended by Ferreira, Oliveira and Ferreira (2022). Thus, after identifying the model to be used, an extensive literature review was carried out around the Big Five model, which postulates the existence of five dimensions: (i) Extroversion, which characterizes warm, assertive people, who experience positive emotional states and they feel good about themselves and the world (Brandt et al., 2019); (ii) Neuroticism, which concerns the tendency to experience negative emotional states and to face the world and oneself as something harmful (Pechorro, 2019); (iii) Agreeableness, which represents cooperativeness, altruism and team spirit and as such constitutes the core of interpersonal relationships (Tackett, Hernandez and Eisenberg, 2019); (iv) Conscientiousness, which is seen as a good predictor of professional performance, because it reflects how scrupulous, careful and persevering a person is (Smith et al., 2021); (v) and Openness to experience, which is directly related to the person's area of interests and their tendency to take calculated risks (Bergner, 2020).

The added value of the Q-sort methodology lies in its ability to enable a deeper understanding of individual perspectives and differences among participants. This is particularly useful in studies seeking to comprehend the diversity of opinions within a group and identify patterns based on the rankings (Ramlo, 2021).

#### **5. Method**

In accomplishing this work, a mixed methodology was employed, from which two studies were conducted: one of a qualitative nature and another anchored in a quantitative approach.

##### **5.1 Participants**

###### *Study 1*

Semi-structured interviews were conducted with 97 employees of a consulting company who received ratings of "Very good" and "Excellent" in their performance evaluations in the past year. The ages ranged from 28 to 51 years old ( $M = 35.2$ ;  $SD = 1.03$ ), and 56.7% were male. Regarding tenure, it was found that 35.2% of the interviewees had been with the organization for more than 10 years.

###### *Study 2*

The sample consisted of 175 students, aged between 18 and 31 years old ( $M = 22.40$ ;  $SD = 3.15$ ), who are studying at a Portuguese higher education institution specializing in the area of economic and business sciences. Of the students, 36.0% are enrolled in the Bachelor's program in Management, 29.7% are pursuing Economics, and 34.3% are studying Human Resources Management (HRM).

###### *Procedures*

The interviews were conducted individually in an appropriate location and lasted approximately 20 minutes. The questionnaires were administered in the classroom with prior authorization from the instructors. In both cases, the participants were informed about the study's objectives. It was also ensured that the guidelines of the



General Data Protection Regulation (GDPR) regarding the confidentiality and anonymity of the provided responses would be followed.

After analyzing the content of the interviews, the development of items was carried out, which were subsequently analyzed through spoken reflection of the items, involving ten experts dedicated to the study of personality (Rodrigues and Gomes, 2022). Next, the statements to be included in the measurement instrument were selected, and the Q-sort was constructed (Ferreira, Oliveira and Ferreira, 2022). It is worth mentioning that the research aimed to analyze the type of personality of university students, so only subjects who were enrolled in an undergraduate program were included in the study (inclusion criteria).

*Results* Before applying the Q-sort, participants were instructed to assign a score to the items, ranging from -3 (Never) to 3 (Always). Then, each respondent was asked to order the 23 items in the seven columns presented, and what was intended was explained in detail (Table 1).

**Table 1: Q-sort Presented to Study Participants**

This questionnaire consists of 23 statements that you should read carefully, and then sort them according to the frequency with which they occur. For each statement, there are seven response options ranging between -3 = Never and 3 = Always. In each cell of the table, place the number corresponding to the following statements.

1	I put others in first place.
2	I am always ready to help.
3	I put the interests of the group ahead of mine.
4	I consider myself a tolerant person.
5	I'm a humble person.
6	I am selfless.
7	I make friends easily.
8	I feel good when I am surrounded by people.
9	I like to meet new people.
10	I easily fit into any group
11	I am little impulsive.
12	I'm a relaxed person.
13	I'm a patient person
14	I consider myself a calm person.
15	I'm a punctual person
16	I perform all the tasks assigned to me with the same rigor.
17	I always do more than what is asked of me.
18	I consider myself a scrupulous person.
19	I think through all the pros and cons thoroughly before deciding.
20	I easily adapt to new contexts (e.g. cultures, environments).
21	I am not afraid to face any kind of challenge.
22	I am always willing to learn new things.
23	I can solve complex problems.

Never	Neutral			Always		
-3	-3	-1	0	1	2	3

In the first column on the left (-3) the respondent placed the characteristics/behaviours he demonstrates less frequently and in the first column on the right (+3) he placed his most frequent behaviors/characteristics. The number of values in each column was defined in order to form a normal distribution.

The Q-sort technique aimed to identify the participants' opinion about their way of thinking, feeling and acting that characterize the way they interact with others and adjust to the demands of the environment in which they are inserted. This methodology forced respondents to distribute the statements among the various cells that make up the table, which prevented them from always responding in the same way or always using the midpoint to the different statements (Kamperman et al., 2020). In addition to avoiding social desirability, Q-sort facilitates the comparison of the various participants in relation to a given characteristic/behavior, because the correlations are determined between the various subjects and not between the measures that evaluate them (Gao & Soranzo, 2020).

The individual and global results analyzed through the factor analysis of the Q-sorts revealed that the internal consistency indexes are much lower using this methodology than when using Likert-type scales (Table 2). Conclusions that are congruent with those found by Havlíková (2016), according to which the Likert-type scale improves statistical relevance and facilitates the interpretation of results. In the same vein, Walton, Cherkasova and Roberts (2020) report that when the measures are composed of a small number of subscales, as is the case of the study presented here, it is very difficult to achieve adequate indices of validity and reliability.

**Table 2: Internal Consistency Indices: Likert Scale Versus Q-sort Methodology**

Personality Dimensions	Likert scale	Q-sort methodology
Neuroticism	0.83	0.53
Conscientiousness	0.84	0.48
Openness to experience	0.80	0.31
Extroversion	0.75	0.36
Agreeableness	0.80	0.26

As previously mentioned, the ipsative data resulting from measures that force the choice of one item over another give rise to questionable psychometric indicators (Salgado, Anderson and Tauriz, 2015). Since the answers given to a given item are ranked, in relation to the others, they generate negative average values or very close to zero, which in turn translate into equally negative correlations, in most dimensions (Table 3).

**Table 3: Correlation Between the Five Personality Dimensions**

Personality Dimensions	M	SD	1	2	3	4
Neuroticism (1)	0.84	0.72	-			
Conscientiousness (2)	0.43	0.34	- 0.100	-		
Openness to experience (3)	0.72	0.92	- 0.315**	- 0.010	-	
Extroversion (4)	0.04	0.57	- 0.206**	- 0.353**	- 0.248**	-
Agreeableness (5)	- 0.51	0.60	- 0.105	- 0.054	- 0.019	0.033

Note: M = Mean; SD = Standard deviation; \*\* $p < 0.001$

Despite its limitations, this study allowed the grouping of respondents according to their similarities in terms of their personality traits, depending on the course they attend. The results obtained were coded into two groups according to their midpoint: (i) low values and (ii) high values, resulting in the results shown in Table 4.

**Table 4: Personality Traits of Participants Depending on the Degree They Attend**

Personality traits	Economics	Management	HRM
Neuroticism			
Low values	42.3%	68.3%	53.3%
High values	<b>57.7%</b>	31.7%	46.7%



Personality traits	Economics	Management	HRM
<b>Conscientiousness</b>			
Low values	38.5%	46.0%	46.7%
High values	<b>61.5%</b>	54.0%	53.3%
<b>Openness to experience</b>			
Low values	42.9%	40.4%	43.3%
High values	57.1%	<b>59.6%</b>	56.7%
<b>Extraversion</b>			
Low values	68.3%	73.0%	67.3%
High values	31.7%	27.0%	<b>32.7%</b>
<b>Agreeableness</b>			
Low values	90.4%	63.5%	6.7%
High values	9.6%	36.5%	<b>93.3%</b>

The results obtained suggest that students who attend the degree in Economics are the most emotionally unstable, as they have the highest percentage of high values in the Neuroticism dimension (Pechorro, 2019); on the other hand, they are also the ones that stand out in the Conscientiousness dimension, which assesses the degree of organization, persistence and motivation that characterize goal-oriented behavior (Dietl and Kombeiz, 2020). High values in this domain differentiate people who are scrupulous from those who are lazy and careless. The conscientious subject is determined, confident, punctual, hardworking, self-disciplined and ambitious, so he is usually successful both academically and professionally (Smith et al., 2021).

Students in the Management course stand out in the Openness to experience dimension, which is expressed through the exploration of what is unfamiliar to them (Bergner, 2020). People with high values in this factor are curious about their inner and outer world, so their experiences are very rich and, as such, they are always willing to consider new ideas and unconventional values (Lynn, 2021).

Finally, it was found that students who attend the degree in HRM are the ones with the highest values in the Extraversion and Agreeableness dimensions, which is reflected in the amount and intensity of their interpersonal interactions (Tackett, Hernandez, Eisenberg, 2019). Extroverts are sociable people who, in addition to enjoying socializing with others, are optimistic, enjoy fun, are affectionate, active, and talkative (Brandt et al., 2019). Allied to these characteristics are the attributes of kindness, namely: altruism, sympathy, benevolence, and willingness to believe in others (Smith et al., 2021).

## 6. Conclusion

In conclusion, the Q-sort methodology offers a unique approach to interpreting results, focusing on the comparison of individuals rather than items, as observed in Likert-type scales. This method reveals the subjectivity of interrelationships and similarities among individuals within a sample (Gao and Soranzo, 2020).

A significant distinction between Likert-type scales and Q-sort is that the former yields average item scores based on participants' random choices, whereas Q-sort compares and hierarchically groups all items. Likert-type scales are prone to bias when participants tend to select the same answers, which is mitigated by the forced choice technique employed in Q-sort (Almiro, 2017; Escobar Cabello and Sánchez Soto, 2019).

It is essential to note that Q-sort is not a statistical method aimed at identifying correlated input variables or forming new variables for evaluating similar aspects. Instead, its purpose is to explore similarities and differences among participants (Stenner and Capdevila, 2020).

The Q-sort methodology finds utility in studying social phenomena characterized by debate, conflict, and contestation (e.g., sustainability, politics, religion; Lundberg, 2019), as well as in measuring attitudes, behaviors, and personal characteristics assessed through self-report instruments (e.g., personality, skills, aptitudes; May, Luke and James, 2018). Its objective is not to ascertain absolute truth but rather to collect and compare diverse opinions and perspectives (Wulff, 2019).

According to Santos, Petrini, Lupion and Hepper, 2019 (2019), the distribution utilized in Q-sort methodology presents advantages over traditional Likert-type scales. Notably, respondents are unable to agree with all questions or solely choose central answers; instead, all responses must be allocated within the corresponding table space assigned to each item (Ramlo, 2021).

Developing a Q-sort instrument involves presenting a set of statements to participants, who must then distribute them based on their degree of agreement, frequency, or importance. This classification relies on participants' own references and follows a pre-established nomenclature (Rampold et al., 2020).

The Q-sort methodology was devised to provide individuals with an opportunity to express their opinions on a given topic, without the researcher determining the variables necessary for validating their research hypotheses (Ferreira, Oliveira and Ferreira., 2022).

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