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Psychological Types and Learning Styles in Medical Education

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Abstract

The aim of the research is to measure the relations and the directions of two modalities to study the approach to objects and learning. An observation group of 213 subjects, 93 males (43,7%) and 120 females (56,3%), (average of 24,73 years old; SD 2,28) all students from the V year Medicine and Surgery from the University of Messina, were involved. The evaluation was carried out with The

Kolb's LSI II (Italian Adaptation) and the Mayers-Bryggs Type Indicator. Descriptive and correlational analysis were carried out. Significant correlations emerged respectful to the Jung's introversion and extraversion (Hp 1), so that we assist to a positive correlation among every style. Referring to Learning Styles and the Jung's functions (Hp 2), significant positive and negative correlations emerged, but for AE. Significant and negative correlations emerged for judging functions, AC and RO (Hp 3). Negative correlations were highlighted by the relation among the two Leaning Styles groups and judging functions (Hp 4).

The study could provide an integrative way to consider the teaching activity and the curricula . The relations suggest that the awareness of the students about their learning and adaptation process can provide a viable mode to satisfy their desires.

Key words: Learning Styles, Psychological Types, Medical Education, Psychology, MBTI, Kolb's LSI-II

Introduction

Numerous Universities of Medicine and Surgery set a complex education as objective, to implement the knowledge of the student with a multidisciplinary approach based on biology, sociology and psychology. Even though the premise results are valid, it is useful to suggest as in many cases the above mentioned objective is still linked to an ideal rather than real dimension. As it is possible to understand through the study plans, there is a gap between the importance attached to the learning process and the final result, in terms of University leaving, high rate of course transfer and the dissatisfaction expressed.

Over the technical approach, one important aspect for the medical practice is referred to the possibility of self-knowledge even before understanding each other. With it the dynamic and analythical psychology highlighted the possibility to reach the latent, hidden, unknown contents, such as for imagery and drives; in

general representations and associated affectivity. It would represent the occasion to consider and to support the relationship between doctor and patient in a different perspective. Transference and counter-transference are in fact not strictly related just to a psychodynamic-clinic relationship. It could be understood though the above mentioned dynamics, involving the subject and the object in different types of contact and deriving affectivity. The theme of Self-knowledge has been represented a crucial fact for the medical education for a long time. It could be noticed as a deep self-knowledge that can help the physician in the relations with patients (Beach et al., 2006).

For several years the importance of providing students with useful modalities to understand their personality was emphathized, as for emotional states, beliefs and ideals (Novack et al., 1999; Self & Wolinsky, 1992). With reference to the professional education it is known as well provided trhough strategies that pay attention to the promotion of reflection and emotional knowledge(Wald et al., 2015).

However the phenomenon of the self-knowledge should take into account that most of the mental processes involved also in perception, physical-motor development, attitudes, personality, self-esteem, are unconscious (Wilson & Dunn, 2004). The classification of Psychological Types suggested by C. G. Jung (1921), take into account conscious and unconscious processes and provide a psychodynamic perspective that can highlight the individual differences.

In particular through the analytic method, it is possible to study the principal functions of personality characterising the students of medicine and surgery.

As suggested by the personality types, the introverted attitude of a doctor towards patients will be different from the extraverted one: who is closer to an introverted attitude infact would think, feel and act in a different way compared to the

extravert who would be closer to the external world instead of the inner representations.

This conception, in terms of Jaspers' meaning of psychology as the relation between a subject and an object (1913), suggest the different way to have relationships with objects, both internal as and external representations.

This mode of relating to objects, will then involve a more *judging* and rational approach, intended as *thinking* and *feeling* and a more perceiving approach as for *intuition* and *sensation*, all functions that characterise the personality (Myers, 2016).

The two attitudes are respectively:

Extraversion: Extroversion means orientation of libido towards the outside. Extroversion is a relationship of the subject with the object that the subjective interest moves positively towards the object.

Introversion: the addressing of the libido towards the inside of the subject. This fact expresses the type of relationship of the subject to the object. Interest is not directed to the object, but withdraws itself and returns to the subject.

The four functions are:

Two perceiving: Sensation and Intuition

Two judging: Thinking and Feeling

In particular it should be noticed how the *thinking* and *feeling* functions are referred to rationality and can well serve to the scientific thought as well as perceiving functions can be useful for the diagnostic a subjective process to get in relation with patients and for creativity.

The knowledge about the psychological types can also highlight their relation with the learning attitudes of the students, better known as the learning styles (Kolb, 1976; 1984).

This psychodiagnostic test proposes highlighting 4 types of learning styles:

Concrete Experience: direct and personal involvement in the experiences, emphasizing the intuitive and emotional side to the detriment of the purely rational and scientific in dealing with problems. Relational and social skills are excellent; the environment suitable for this type of learners are the least structured possible, with involvement in real and concrete problems that require great openness.

Reflective Observation: tendency to understand the meaning of ideas and situations, emphasizing observation and understanding rather than application. The subjects that manifest this type of learning are very familiar in tracing the cause - effect relationships and therefore in drawing consequences from the facts. They also have the ability to see the same situations from different points of view, manifesting calmness, impartiality and autonomy in judgment.

Abstract Conceptualization: ability to manipulate ideas and concepts following logical principles, involving in the act of knowledge a lot of thought and very little the emotional side.In these subjects is present the propensity to planning, design, manipulation of abstract symbols and to perform quantitative analyzes. The values expressed by these subjects are the precision, the discipline, the analysis and the organic structuring of conceptual systems.

Active Experimentation: tendency to act on reality (be it in relation to situations or people) to modify it. His belief is action rather than reflection, which leads to face the reality in a highly pragmatic, the functioning of things regardless of their

value or absolute meaning. Individuals who demonstrate this ability are therefore able to change situations and achieve and achieve results.

These kinds of results could provide answers relative to the relation among attitudes, learning styles, psychological types' functions, shedding light on the medical practice that takes self-knowledge into account.

So the objective of this research can be identified in the clarification of different types of relations. The central theme is Medical Educations, such a need to implement not only the competence, but also the comprehension of what could happen psychologically in the contact with the patient and vice versa. Competence and comprehension are central factors in clinical practice, but neither of them is independent. Each one of them in fact is linked to the subject way of being and his relations the other's ways. So that the following hypothesizes are related to the common and divergent relationships among the inner factors of explicative and comprehensive approaches. As a way to better direct one's way of being to medical practice, the different points aim to suggest educational curricula close to the dynamics of the subject.

With reference to what we suggested above, we hypothesize that:

(Hp1): there are correlations among the four Learning Styles and the two Psychological Types's attitudes intended Extraversion and Introversion;

(Hp 2): there are correlations among the four Learning Styles and the four Functions of Psychological Types;

(Hp 3): there are correlations among the four Learning Styles, Perceiving and Judging groups of functions;

(Hp 4): there are correlations among the two groups of Learning Styles (AC-CE, RO-AE), the groups of Perceiving and Judging functions.

Material and Methods

The observation group consists of V year Medicine and Surgery students from the University of Messina. The activity of the students is related to the Chair of Clinical Psychology of the Professor Salvatore Settineri.

The sample is composed of 213 subjects, 93 males (43,7%) and 120 females (56,3%), the age of the students has an average of 24,73 years (SD 2,28).

Research Method

For the analysis of the collected data, the following tools were used:

1) The Myers-Briggs Type Indicator (1962), F form

The test directly inspired by the Jungian theory of Psychological Types (Jung, 1921), provides the analysis of two psychological attitudes and four functions.

2) Learning Style Inventory II, Kolb, D. (1985), as Italian Adaptation (Mento, Merlo, Settineri, 2017)

The attitudes and the four functions have been considered as useful variables for the study of their relation with Learning Styles in the context of Medical Education.

Numerical data is expressed as mean and standard deviation (S.D.) and categorical variables as number and percentage.

Examined variables were not normally distributed, such as verified by Kolmogorov Smirnov test; consequently the non-parametric approach has been used.

The non parametric *Spearman correlation test* was applied in order to assess the existence of any significant interdependence between the four cognitive parameters and other numerical variables such as Extraversion, Introversion, Sensation, Intuition, Thinking, Feeling, Concrete Experience

Reflective Observation, Abstract Conceptualization, Active Experimentation.

Statistical analyses were performed using SPSS 17.0 for Window package.

A P-value smaller than 0,05 was considered to be statistically significant.

Results

Descrittive statistics

1. Absolute Frequency for Percentage and Categories

Sex

Sex	Frequency	Percentage
Male	93	43.7
Female	120	56.3
Total	231	100

Psychological Types

	Frequency	Percentage
Extraversion Feeling	48	22.5%
Extraversion Intuition	24	11.3%
Extraversion Thinking	19	8.9%
Extraversion Sensation	8	3.8%
Introversion Sensation	70	32.9%
Introversion Intuition	14	6.6%
Introversion Thinking	29	13.6%
Introversion Feeling	1	0.5%
Total	213	100%

Attitude Types

	Frequency	Percentage
Extraversion	99	46.5%
Introversion	114	53.5%
Total	213	100%

2. Descriptive Statistics for numeric variables

			Percentile		
	Mean	SD	25	50	75
Age	24.7	2.3	23	24	25
Extraversion	11.8	4.9	8	12	16
Introversion	13.4	5.6	9	13	18
Sensation	15.1	6.6	11	15	20

Intuition	9.7	5.2	6	9	13
Thinking	13.2	6.1	9	13	18
Feeling	6.3	4.0	3	6	9
Abstract Conceptualization	26.6	6.8	22	26	31
Concrete Experience	29.9	6.0	26	30	34
Reflective Observation	34.4	9.9	24	34	39
Active Experimentation	30.7	6.3	26	30	35
AC-CE	56.5	7.6	51	56	62
RO-AE	64.1	7.6	59	65	70
Perceiving	24.7	4.2	22	24	27
Judging	19.6	4.4	17	19	22

The descriptive statistics highlight a prevalence of female Medical Students. The most common Psychological Type is Extraversion Feeling, the least expressed typology is Introversion Feeling.

The frequency of psychological attitudes show a prevalence of Introversion, of Feeling about the functions. In terms of learning styles, we assist to a prevalence of Reflective Observation, although the scores are well distributed on all learning styles.

Table 1. In table 1 the correlation coefficients among variables reported

	Extraversion	Introversion
Abstract Conceptualization	.199**	-.226**
Concrete Experience	-.232**	.263**
Reflective Observation	-.133	.177*
Active Experimentation	.207**	-.210**

**correlation statistically significant at .01 level (2-tailed)

Significant correlations were found among the four Learning Styles and the two Attitude Types. In the specific case they suggest a polar direction, directly confirming the idea of the opposite disposition of Extraversion and Introversion psychological attitudes.

In the specific cases, every significant and positive correlation found on Introversion corresponds to a polar, negative correlation on Extraversion and vice versa. The only non-significant correlation was that between Reflective Observation and Extraversion, plausible for the antithetic disposition of the phenomena mentioned.

In the specific cases, the disposition of the subject with a prevalence of extraversion attitude provides the necessity of projection of libido on the object, in order to explicate the prevalent function. As suggested by the positive direction of extraversion with Abstract conceptualization, the articulation of the subject's energy on the object represents the first state of the transformation.

The involvement of the object, the manipulation of ideas through logic are common features of Extraversion and of Reflective Observation. This data suggests the common direction and the two variables observed. The same direction was observed with respect to Active Experimentation, where the tendency of modifying the reality, to base the experience on reality and logic are functions foreseen by the psychological attitude of Extraversion.

These are different from the Concrete experience where the relation with the object is involved less than the processes that produce more pleasure for the extroverted subject. The directions of Introversion as suggested above, are opposite from those of Extraversion. In these terms, we assist to the negative direction of Introversion with Abstract Conceptualization and Active

Experimentation, and to the positive direction among Introversion, Concrete Experience and Reflective Observation.

Table 2.

	Sensation	Intuition	Thinking	Feeling
Abstract Conceptualization	-.252**	.268**	-.360**	.357**
Concrete Experience	.184**	-.178**	-025	.029
Reflective Observation	.092	-.045	.336**	-.298**
Active Experimentation	.078	-.131	.053	-.086

**correlation statistically significant at .01 level (2-tailed)

As suggested before referring to the significant correlations on Attitude Types, the study on the specific Functions and of the Learning Styles provides significant correlations. Among the variables, the stronger correlations were found among Abstract Conceptualization and every single Function. It suggests the horizontal dimension of Abstract Conceptualization that works through all four functions.

As a necessary and preliminary act of consideration of the object, it is useful to know for the following projection of affection on the external or internal object.

In particular, positive and significant correlations were found among Abstract Conceptualization, Intuition and Feeling whereas the negative significant correlations were those among Abstract Conceptualization, Sensation and Thinking. It could be considered as a result in line with the opposite nature of the same field functions, as perceiving and judging, where in the same typology we can find the theme of the opposites.

The Concrete Experience correlations were found in reference to Sensation and Intuition, both perceiving functions and in particular positive for Sensation and negative for Intuition; in the same way the Attitudes respect the polar disposition.

In opposite terms the domain of judging functions have correlations with the Reflective Observation, keeping their inner opposite dispositions of positive relation with Thinking and negative with Feeling.

No significant correlations were found among Active Experimentation and the four functions, conceivably it could be considered as based on the significance of the process of transformation, understood as the necessity through which the process of transformation of the object and the energy destined to it, useful for the adaptation process and for the realization of the Self.

Table 3.

	Perceiving	Judging
Abstract Conceptualization	-.087	-.185**
Concrete Experience	.073	-.032
Reflective Observation	.103	-.211**
Active Experimentation	-.022	.016

*correlation statistically significant at .05 level (2-tailed)

**correlation statistically significant at .01 level (2-tailed)

Perceiving and judging psychological functions are studied with reference to the four Learning Styles. The emerging data suggests two negative correlations. Only the judging functions are involved in the relationship, so that Abstract Conceptualization and Reflective Observation present negative correlation with the group of Judging Functions.

The two learning styles maintain the direction expressed also in the relation with Thinking function. This relation can be understood in the different orders that the

involved parts represent. In the specific case the use of a psychological test thought for the consideration of a cognitive style and another one useful for the consideration of the transcendent adjustment and adaptations, expresses a difference that is based on the sense of the concepts. In terms of developmental psychology, we assist to a transformation of a concrete thinking to a hypothetical way to consider the objects.This state is closer to the learning style; the second point of view is referred to the transcendent use of functions, closer to the mental images. The difference and the opposite direction of the result above mentioned and reported, suggests not the impossibility of integration of the two orders, but the necessity to study in depth the whole possibility. Therefore the consideration of the opposite direction of the rationality intended as a way of development of the mind's proprieties and the knowledge of the transcendent function of analytical rationality can suggest a proper way of comprehension between a useful method to organize the reality and a deep way to project affectivity on objects, intended both as inner in the case of introversion and external in the case of the extraversion. The study of the difference between these two approaches can for example suggest the order in which the paradox of high intelligence and low study performance could be based, where the functions related to the organization of meanings and information is compensated, but the possibility to dedicate it to a functional and adaptive study is forbidden due to an adverse inner resonance.

Table 4.

	Perceiving	Judging
Abstract Conceptualization & Concrete Experience	-.039	-.211**
Reflective Observation & Active Experimentation	.051	-.206**

*correlation statistically significant at .05 level (2-tailed)

**correlation statistically significant at .01 level (2-tailed)

Considering one grouping method, as suggested by Kolb's studies and by subsequent analyses of more authors (Wilcoxson & Prosser, 1996; Yahya, 1998; Baynes, 1999), it is possible to notice a close relation to AC and CE learning styles, subsequently the same as for RO and AE.

In this optic, in order to consider the whole possibility to study in depth the relations between the style and the function, the two domains were studied in their relation to perceiving and judging functions.

In the specific case, both groups of learning styles have negative correlations just with Judging functions. It could suggest the interesting difference between a way to think related to images (more transcendent) such as for regressions in the service of the Ego and another way to evoke the thought, in this case closer to a cognitive perspective.

As suggested in the previous analysis the meaning of the difference between a more cognitive and a more comprehensive approach determinates results that could be intended both in the order of explication and comprehension.

About the first term the significant correlations among both groups of learning styles and judging functions suggest a data related to the cognitive and rational dimension of the phenomena involved.

Both for AC-CE and RO-AE the correlations with the judging group of functions are significant and negative. Through the second and comprehensive point of view we assist to opposite directions that suggest the different nature of a cognitive and *logos* oriented way to build a knowledge and a more transcendent and imago oriented way to comprehend and to represent the object relations.

Discussions

The review of the literature of Boet et al. (2012), suggests that the research in the field of medical education requires care, clear formulation of hypothesis and the implementation of methodologies that can reveal evidence.

The authors suggest different researches through which it is possible to highlight paths, results and approaches about the theme. The paths that were allowed to transform the data in interventions are considered as crucial to the formulation of curricula based on the evidences (Petersen, 1999; Harden et al., 2000), also thanks to the involvement of social sciences and psychology.

Psychology is meant as the relation between subject and object in the Jaspers' point of view (1913), so the emotions and their knowledge are considered as central referring to their role in who is becoming a physician and in who will be a patient.

Referring to this fact, the promotion of a phenomenological comprehension of empathy results as central (Hooker, 2015).

The reflections on the human experience provided by human sciences and lived pathologies, could be considered as the core of the medical practice (Evans, 2002) that requires to consider the human integrity through a phenomenological lens. The knowledge of an embodied experience provides for a consideration about different phenomena, starting from a conception of corporeality that involves the lived experience and the existential meaning (Merleau-Ponty, 1968).

In the phenomenological practice of Husserl, the distinction between *Liebe* and *körper* clarify the significance of the unity in the lived experience. Il hermeneutical process of interpretation not only of the part (*körper*) but also of the livable unity (*Lieb*) and of the medical intervention provides in terms of Body Memory (Fuchs, 2000; 2012), are all horizontal conceptions in line with a view available to a global health. Our experience reports the encounter between two

methods, the purpose of which is the promotion of an internalization of this complex logic.

A method that promotes the self-knowledge of the subject in our case is referred to the learning styles suggested by D. Kolb and to the personality types suggested by the analytical psychology of C.G.Jung. We can consider the learning experience and the medical education ahead of everything as a human experience, that on par with receiving cures produces psychological inner sedimentations that take place in the mind of the subject.

We mean that from both points of view, the modalities though which the human relationships will be established, will always be filtered by the traces of the previous education and cure experiences. This apperceptional optic of projection and internalization of lived experiences is always related to the good order of previous learning courses and educational practices, always based on the knowledge content by scientific literature.

The structuring of an exsistential path that considers the declination of the inner dynamics to the objects and the learning styles, provides choices, propensities and the attitudes of a young doctor may be relied upon the basis of the known and the still unknown desires (Sommantico, De Rosa, & Parrello, 2017).

Our experience produced evidence about the directions of the studied phenomena, that converge and diverge significantly in reference to the polar dimension expressed by the theories. The extravert and the introvert experience, even if different in their articulation of desire, respond to the theories on the base of which the knowledge is based.

At the same time the attitude to the judging and the perceiving functions, directs the desire of the subjects, but not in an optic in which with the irrationality couldn’t have a common path with knowledge.

It happens with reference to the ways of the knowledge about attitudes of a physician and of a future patient to provide information about objects, with particular reference in those situations when the only way of expression of a damaged organ is based on inner images and phantasmatic expressions (Settineri et al., 2018), well known by psychosomatic medicine.

The clinical practice drives us the possibility to comprehend the lived experience and the pathological dynamics of patients; it could not be correctly performed just on the base of an execution of tasks and concepts. The occasion of comprehension of the inner lived experience of each other may consist in perceiving functions related to a lot of conditions, from a malajustment to a medical emergency never untied from the existential terms. The psychic functions related to the narration of facts, in their articulation provide for an open and retroactive involvement (Bourlot, 2018). With a particular reference to the clinical relation, in the narration of a symptomatic experience that becomes a narrator itself, the comprehensive contact is central in the study of the subsequent health condition (Settineri et al., 2018). With this we mean that the practice, the training and the consideration of everyone's functions, learning styles and the integration of the opposite style of existence, represent one necessity of the medical education that this research wanted to highlight.

Conclusions

This research has been based on the experience of students and professionals of our university. The will to work on University counselling and orientation has been provided by our approach based on the comprehension and knowledge present in literature (Amodeo et al., 2017). The envisaged purpose was that to implement the possibilities to reach the desire, declinable to the Self-realization. It was in line with the necessity to understand everyone's modality to transfer the

desire to the world, and to the content of an incoming knowledge related to the medical field. The points of view of the testing exploration are different, well considered in the psychological literature, with a strong tradition and history. The path taken into consideration it's not without difficulties related for example both to the study and to the nature of the subject of study. In our experience we think that none may be distant to the developments of science and multidisciplinary approaches. The research carried out through the chosen methodology highlighted the presence and the dynamics of different functions and adjustment modalities, in order that the data provided can be taken in consideration to help the medical educational process to get in close relation with the purpose of realisation.

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