Prospects For Using Artificial Intelligence in Interpreting the Study of Student's Values*

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Abstract

This publication is devoted to the consideration of the possibilities of using artificial intelligence for qualitative analysis of value orientations of students. The authors substantiate the expediency of using the ChatGPT resource as an interpretative tool for the obtained factor analysis data when determining the system of value orientations of higher education applicants. The specified chat-bot becomes an effective analytical tool that helps the researcher to come up with clustering algorithms, which, in turn, serves for a thorough analysis, further description and interpretation of search results in the field of personal values. The obtained data become the basis for improving modern methods of studying the axiosphere of the student populace at the individual level.

Keywords

axiogenesis, axiosphere, value orientations, artificial intelligence, ChatGPT.

1. Introduction

The problem of the formation and functioning of the axiosphere of the personality as a significant psychological construct is very relevant today, especially in the context of the emergence of the younger generation, its vector of constant behavioral self-regulation and self-realization in general. The value orientations of the individual outline the milestone principles of appropriation and further relay of the spiritual potential of humanity, the transformation of cultural heritage into motives and strategies of one`s own behavior, activity, and actions. The axiosphere is one of the central individual formations that systematizes a human's conscious attitude to the world and denotes the personified horizons of his self-realization, considering the urgent requirements of social reality. In this functional role, values determine the pervasive life demands (intentions, motives, hopes, aspirations, dreams) of the individual, which become the foundations of their manifestation in activity and deeds.

In the context of studying the value orientations of higher education applicants, it is precisely the qualitative assessment of empirical data that seems problematic, which is associated with: 1) the lack of research that synergistically combines the scientific achievements of modern psychology with the technological capabilities of artificial intelligence; 2) insufficient involvement in the field of psychological research of existing generative transformers (for example, ChatGPT), which allow the searcher to more broadly describe the problem field of empirical search and carry out a diverse, qualitative analysis of its results. Therefore, in this area, the task of finding new ways and means of optimizing and improving the procedure for qualitative analysis, description and interpretation of the functioning of the axiological sphere of personality has arisen.

This work consists of an introduction, literature review, problem statement, dataset, methods and research results, qualitative data analysis using LLM (large language model) and conclusions.

The object of the study is the potential of artificial intelligence on the example of ChatGPT's work in analyzing the axiosphere (sphere of values) of higher education applicants.

The subject of the study is a qualitative characterization of the value orientations of student youth, carried out on the basis of artificial intelligence's interpretation of the results of factor analysis of empirical data.

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The purpose of the publication is to analyze the results of the ChatGPT generative transformer as an interpretative tool for assessing the value system of students of higher education institutions.

2. Literature review

In the work of Z. Karpenko [1], considerable attention is paid to the theoretical, methodological and experimental study of axiogenesis (development of the value-orientation sphere), the features of the behavioral manifestation of the worththemselves and their transformational and retranslational manifestations. The formation of value priorities at different stages of ontogenesis occupies an important place in the research of the scientist. The systematic coverage of the conceptual foundations of cognition of the human axiosphere (greek άξιος – value, worth, appreciation) is investigated by her in the dimensions of value-orientation priorities, attitudes, aspirations, motives, conscious aspirations and dreams.

In the author's next work [2], personality is interpreted as a transcendental spiritual (noumenal) subject of axiological origin, capable of self-actualization and vital affirmation of its individual semantic essence in the world of phenomena, where the latter, acquiring personified significance, become attractors in understanding the essential purpose of man himself.

The author [3] of the work testifies that the awareness of one's own Self is the existential core of personal existence and in this functional role it is the inner world of an individual that causes his constant movement-progress towards self-improvement and self-realization. A human in the process of active joint activity transforms nature into the world of his own existence, because the surrounding reality is reflected through the prism of appropriated interests, goals, thanks to which the person himself becomes able to transform reality in accordance with his own inclinations, motivations, desires, beliefs. The general vision of the picture or image of social reality appears in consciousness as an individual system of representations – as a personal world, which causes human self-realization.

The axiosphere of the person in the analytical-reflective context [4] is the central conscious formation that testifies to an individual's full comprehension of himself and reality and constitutes the existential center of his personified existence. The senses and meanings adopted by a human determine the horizons of his life activity and influence all aspects of his everyday activity. Therefore, it is natural that the comprehension of the milestones of being determines the emergence of life-orienting principles and guidelines, which are formed in cyclical-actional action as a model of permanent representation of a person in the world. The emergence of a human as a subject with a stable system of meaningful life aspirations is a systematic everyday realization of an individual's potential opportunities, gifts and talents, conscious self-improvement in clearly defined dimensions of subjective reality, as well as an original worldview, a way of life based on the comprehension of one's own target guidelines, semantic landmarks, personified aspirations and life purpose.

The aim of the interdisciplinary search [5] is to argue the four basic groups of foundations of the emergence of the axiological psychology of the individual, which is analyzed on the basis of five components (options, modules) of the post-non-classical methodology. In the article, a human is defined as a personality in its ontogenetic environment – the formation of axiology as an original, value-oriented, intentional and semantically enriched sphere of the being of an individual. The subject field of the study is the value-semantic sphere, which contains the developmental picture of axiogenesis, constitutes the unique world of axiology and essentially characterizes its level of conscious maturity.

The author's developments [6] allow us to conclude that the system of modern semantic coordinates is conditioned by socio-economic, political and legal changes and, most importantly, the aggression of an external enemy. This is what caused the emergence of personally oriented principles of human interaction, capable of ensuring the socio-cultural and moral development of subjects of life activity on the basis of a new methodology and the potential of effective socio-psychological technologies. Therefore, in his formation, a person should focus on understanding, designing and experimentally implementing his own spiritual foundations, despite external pressure, negative experiences, distress and crisis states.

The monographic study [7] contains the works of representatives of the scientific school of Professor A.V. Furman, which are centered around the vita-cultural methodology in the complementarity of its four fundamental components: a scientific research program of professional methodologization, a cyclical-action approach in the humanities, innovative forms, methods, means and instruments of thinking and thought-making, an author's thesaurus of theorizing and intellectual

practice. At the same time, the methodological position advocated is a balanced system of fundamental strategies and applied aspects of nationally oriented cultural formation.

In the author's analytical research [8] it is noted that pre-trained language models use the entire baggage of factual knowledge on a certain scientific problem and show significant effectiveness in the accurate description and interpretation of materials of search tasks. Their ability to accurately use the necessary knowledge in the analysis of a psychological problem increases the effectiveness of the research itself. Pre-trained models with a differentiated mechanism for considering an array of empirical data allow meaningfully and qualitatively enriching the interpretative capabilities of scientific search. The article proposes methods to improve the model used for a wide range of psychological NLP tasks.

P. Olson in his reflections [9] addresses the horizons of humanity's realization of the ambitious goal of creating artificial intelligence as a self-developing system that would be able to bring continuous benefit to our planet. When analyzing the above-mentioned issues, the author describes in detail the rivalry between two giant companies – OpenAI and DeepMind, which are trying to realize this dream of humanity. He also analyzes how innovations in the field of artificial intelligence are aimed at improving life and become a source capable of harmonizing the relationship between human and the world.

3. Problem statement

The theoretical and methodological basis of the study was the fundamental provisions on the development and formation of the personality; the concept of the individual as a subject of one's own life creation; the ideas of a systemic approach to the study of mental phenomena; the principles of the acmeological approach to the problems of self-determination and self-realization of the person; general and socio-psychological ideas of the structure and development of the value and meaningful life spheres of the personality; existential manifestations of human self-realization.

Active involvement of a human in social institutions involves rethinking the scenario of his relations with the environment based on a system of generally accepted values and the emergence of his own life guidelines. But modern psychological research does not fully reveal the specifics of the functioning of the value system of today's youth, the problem of a comprehensive approach in the study of the axiosphere of the personality and the use of the technological potential of artificial intelligence remains unresolved.

4. Dataset

The study of the axiosphere of applicants was carried out on the basis of the departments of psychology and social work of the West Ukrainian National University, psychology and social work of the Odessa Polytechnic National University. The respondents were students of two specialties: 231 Social Work and 053 Psychology, the total sample was 146 people. During the research, the psychologists-researchers used standard empirical tools: diagnostics of personal orientation, which reveals a holistic system or hierarchy of value priorities of the individual, research of life goals, level of awareness of life and semantic guidelines of applicants – a test for determining the system of value orientations of Milton Rokeach. Statistical data processing and their graphic presentation were carried out on the basis of the SPSS statistical program package using factor analysis.

5. Materials and research methods

To experimentally confirm the model of multilevel organization of the system of value orientations in the current search, the method of multifactor analysis was used, which allows to identify the «hidden» variables of its internal structure. In this case, a factor is understood as a mathematically constructed value that meets the requirements of the theoretical model of the factor structure. The procedure for determining the main axiopsychological factors itself requires a complex theoretical and

methodological justification based on the results of a psychodiagnostic study. The obvious advantage of multifactor analysis is the identification among the set of conditions-factors of those defining parametric indicators (determinants) that cause a gradual transition from values declared to society to internally perceived values that determine the strategic milestones of a person's behavior, activity and actions. The reliability of the results obtained was checked using mathematical statistical methods. The representativeness of the sample was assessed according to the Wilcoxon, Mann-Whitney criterion. All three main factors turned out to be bipolar, each of which has two fairly well-defined groups of interconnected values that are clearly opposed to each other.

Parameters of factor 1 and their factor loadings in the analysis of terminal and instrumental values according to the method of M. Rokeach

Rank	Values	Factor loading
1	Active life	-0,48
2	Education	-0,42
3	Independence	-0,41
4	Responsibility	-0,39
5	Strong will	-0,37
6	Health	-0,36
7	Courage in defending one's opinion	-0,34
8	Efficiency in business	0,31
9	Development	0,32
10	Love	0,35
11	Cognition	0,42
12	Neatness, tidiness	0,45
13	Creativity	0,46
14	Happy married life	0,51

The positive pole of the first factor is focused on the values of «personal freedom», which are opposed by socially approved values, which can also be rightly called «traditional».

Table 1
Parameters of factor 2 and their factor loadings in the analysis of terminal and instrumental values according to the method of M. Rokeach

Rank	Values	Factor loading
1	Materially secure life	-0,67
2	The presence of loyal and good friends	-0,55
3	High demands	-0,51
4	Social recognition	-0,41
5	Creativity	0,46
6	Responsiveness	0,49
7	Beauty of nature and art	0,52
8	Happiness of others	0,54

The positive pole of the second factor is egocentrically oriented, characterized by the «lower» values of material well-being, social recognition, the presence of loyal and good friends, and high life demands. The opposite pole contains the values of creativity, the beauty of nature and art, orientation to the happiness of others, and sensitivity.

Table 2
Parameters of factor 3 and their factor loadings in the analysis of terminal and instrumental values according to the method of M. Rokeach

Rank	Values	Factor loading
1	Entertainment	-0,55
2	Independence	-0,43
3	Strong will	-0,38
4	Cheerfulness	-0,32
5	Development	0,32
6	Love	0,35
7	Tolerance	0,39
8	Cognition	0,41
9	Productive life	0,44

The third factor, at its positive pole, encompasses an orientation towards the values of entertainment, cheerfulness, independence and strong will, which in this context can be interpreted as "freedom from restrictions". On the opposite side are values that represent a meaningful strategy for socially significant development of the personality.

Also, according to the results of the factor analysis, a clearly expressed complex of interconnected and interdependent personality traits of future psychologists and social workers is observed, which can be appropriately combined into three main profiles.

Table 3
Orientation of the value system of future psychologists and social workers of the West Ukrainian National University & Odesa Polytechnic National University (sample of 146 people)

Orientation	Value orientations (according to the method of M. Rokeach)
Individualistic	Health, Hobbies, Achievements, Married life, Entertainment, Independence, Self-development, Cheerfulness, Strong will, Married life, Having loyal friends, Preservation of one's own individuality.
Professional	Interesting work, Productive life, Learning and education, Professional self-expression, Financial security, Cognition, Diligence, Responsibility, Education, Creativity.
Social	Active life, Public position, Own prestige, Social contacts, Spiritual satisfaction, High demands, Life wisdom, Educated, Responsiveness.

Thus, the search reveals the fact that the value system of an individual can be very discrete. The essentially highlighted factors indicate only a possible choice of direction of development of value orientations. The three main factors described are bipolar, and the choice of one or another vector of development in each specific case is determined by the contradiction between the orientation to values of a lower plan, or higher levels.

6. Qualitative data analysis using LLM (large language model)

Judging by the factor loadings, the **first factor** (obviously the most significant) can be interpreted as «Personal autonomy and responsibility», but there are some nuances:
Negative loadings (the sign «−») mean that these values have an inverse relationship with the factor. In other words, the more the factor is expressed, the less significant these values become (or vice versa).
Positive loadings indicate a direct correlation with the factor.
Interpretation:
Negative loadings:
Active life (−0.48), Education (−0.42), Independence (−0.41), Responsibility (−0.39), Strong will (−0.37), Health (−0.36), Courage in defending one's opinion (−0.34),
This is a group of values associated with activity, responsibility, willpower, professional efficiency and health.

A negative relationship with the factor may mean that people who attach great importance to development, love, cognition, and creativity are less focused on discipline, pragmatism and rationality.
Positive loadings:
Efficiency in business (0.31) Development (0.32), Love (0.35), Cognition (0.42), Accuracy (0.45), Creativity (0.46), Happy married life (0.51)
The indicated system of value preferences is associated with personal and spiritual growth, intellectual development, harmonious relationships, and love.
Conclusions:
The first factor is correctly called «Harmonious development and relationships».
High values of this factor indicate an orientation toward self-development, emotional well-being, family, and creativity.
Low values of this factor indicate a person's emphasis on rationality, discipline, efficiency, and independence.
Thus, this factor tends to reflect the conflict between the pragmatic, disciplined approach of youth to life and the orientation toward personal and spiritual growth, relationships, and creativity.

The **second factor** has a clear bipolar structure, which facilitates its interpretation.
This factor can be appropriately called «Altruism and Spiritual Values» versus «Material Well-Being and Social Status».
Negative loadings (sign «−»):
Materially Secure Life (−0.67), Presence of Faithful and Good Friends (−0.55), High Demands (−0.51), Social Recognition (−0.41)
High negative values mean that this factor is associated with a decrease in the importance of material goods, social status, and friendly ties.
Obviously, this indicates that people who have high values for this factor are less oriented towards consumer values, prestige, and even personal relationships.
Positive loadings (sign «+»):
Creativity (0.46), Sensitivity (0.49), Beauty of nature and art (0.52), Happiness of others (0.54)
A positive relationship with the factor indicates the presence of an orientation towards intangible, humanistic values: creativity, art, nature, empathy and happiness of other people.
Conclusions:
High values of the specified factor characterize people oriented towards altruism, aesthetic and spiritual values, who are less interested in material wealth and social recognition.

Low values of the **third factor** correspond to individuals for whom financial stability, friendship, career ambitions and status are important.
Presumably, there is a contrast between the humanistic/creative intentionality of the individual and his/her materialistic/pragmatic orientation.
Interpretation:
This factor can be called «Purposefulness and Self-Development» versus «Hedonism and Independence».
Negative loadings (sign «−»)
Entertainment (−0.55), Independence (−0.43), Strong will (−0.38), Cheerfulness (−0.32)
This group of values is associated with hedonism, freedom of choice, independence and positive emotions.
A high negative correlation means that people with high values of this factor attach less importance to pleasure, independence and joy.
Positive loadings (sign «+»)
Development (0.32), Love (0.35), Tolerance (0.39), Cognition (0.41), Productive life (0.44)
This is a set of values related to self-improvement, intellectual growth, efficiency and harmonious relationships between people.
Individuals who gravitate towards this factor tend to be more focused on purposeful development, cognition and productivity than on simply obtaining pleasure or freedom.
Conclusions:
High values of this factor indicate an orientation towards personal development, productivity and deep relationships, even if this means less entertainment, independence or spontaneous cheerfulness.
Low values may indicate a life based on the principle of «have fun and be free», with an emphasis on hedonism, independence and ease.

In other words, this factor reflects the balance between an individual's desire for their own psychospiritual development and the desire to live easily and freely.

As for the generalized **three-level typology** of the orientation of the value system of applicants – psychologists and social workers (individualistic, professional and social), there are grounds to conclude the following.

Individualistic orientation reflects the balance between personal well-being, autonomy and self-development of the human. An important place here is occupied by health and satisfaction with life, significant attention is paid to independence and internal control over events and situations of self-realization. Within the framework of the existential approach, applicants with such an orientation are oriented towards harmony with themselves, the ability to express themselves and emotional sensitivity.

Key vector: personal well-being, freedom of choice, self-expression.

Professional orientation indicates an orientation towards work, achievement and self-realization. For socio-humanitarians with this orientation, intellectual development, learning, responsibility and professional status are important.

Internal locus of control emphasizes self-confidence and the ability to manage one's life. Creativity and flexibility as important personality traits allow one to adapt and develop in professional activities.

Key vector: career, self-realization, intellectual growth.

Social orientation focuses attention on communication, interaction of a person with society and promotes moral principles of coexistence.

Social contacts, public activity and wisdom are of great importance here.

External locus of control may indicate the belief that events in life depend not only on one's own efforts, but also on external factors.

Representatives of socionomic professions with this orientation have high empathy, openness and a tendency to synergy in interaction with other people.

Key vector: social activity, humanism, moral values, altruism.

General conclusions:

The value system of psychologists balances three main orientations: individualistic – focus on self-development, autonomy and personal well-being; professional - orientation on self-realization, career and intellectual development; social - focus on humanism, communication and public benefit. This indicates that the profession of a psychologist or social worker involves a combination of individual development, professional fulfillment and social responsibility.

5. Declaration on Generative AI

The study used classical methods of psychological diagnosis of the value-orientation sphere of applicants, one of them is Milton Rokeach's questionnaire for identifying terminal and instrumental values. Artificial intelligence in this case plays the role of a reflexive-technical means of interpreting empirical material, which enhances the analytical work of the researcher, who can subsequently formulate quite effective conclusions.

With the help of sophisticated language structures, LLM is able to innovatively (originally) interpret the results of any research (including socionomic ones). Generative pre-trained transformer (GPT) as part of LLM is an adaptive language converter that is able to modify the architectonics of scientific conclusions, thereby expanding the interpretative horizons of research. Thus, directly used ChatGPT makes the achievements of empirical research transparent and makes possible the «parallax of cognition» – methodological justification of various focuses, optics, modalities of considering a scientific problem. Here, the generator plays the role of an outside (reflexively oriented) observer-researcher who changes (moves the angle or point of view) his own contemplative position in relation to the object of scientific explorations. This procedure includes the modalities of perception of an array of empirical data, the features of their lexical coverage, the intellectual component as a synergistic combination of human thinking (on the examples of direct achievements of scientists) and a precise algorithm of machine computing, a sign system (eclectic mathematical and lexical), principles and approaches, features of settings and, finally, instrumental optics (the focus of consideration of the problem). The specified settings allow us to consider all parts of the input data simultaneously, and not only linearly (sequentially).

Conclusions

On the basis of scientific and psychological reflection, the article analyzes modern approaches to the use of artificial intelligence as an effective tool for interpreting the results of statistical processing of psychodiagnostic methods. In this subject, the value orientations of applicants for the specialties of social work and psychology, who were involved in the study of the specifics of the formation and functioning of the axiosphere as a holistic system, are analyzed. The use of the generative transformer ChatGPT as an interpretative tool has shown the prospects for the use of artificial intelligence in psychosocial research. A person's comprehension of his own life aspirations and target requests involves the implementation of a certain way of orientation in the categories of values, which is an internal psychological mechanism that forms certain prerogatives of behavior, activity, and actions of a person, by the nature and direction of which it is appropriate to determine the features of his general life aspirations. Artificial intelligence in this case serves as a means that broadens horizons and outlines the prospects for expanding research thought to various aspects of understanding, describing, and interpreting the human axiosphere, and increases the researcher's capabilities in qualitative interpretation of empirical material.

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