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SCIENTIST ORGANIZATIONAL IDENTITY ORIENTATIONS

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ABSTRACT. Researchers' professional pathways can be characterized by the multidimensionality of decisions and internal reasons for them. That is why we asked ourselves a question relevant to this problem: *Do scientists have different identity orientations in organizational scientific professions?* We prepared an EDA (exploratory data analysis) online questionnaire (n=109). The target respondents consisted of scientists with the Polish academic scientific titles of *dr, dr hab., Professor Assistant, Professor*. We have developed a measuring instrument for the various model constructs by adapting validated questionnaires established in management and cognitive psychology. Pioneering typology grid was created: six types of scientist organizational identity orientations – prestige, economic, carrier, science, power and human variables. The results of the analysis were statistically significant for the "science" variable. Scientists in the field of humanities achieved significantly higher results on the "science" orientation scale than those involved in social sciences. The results of the analysis were also statistically significant for the "power" variable. The results of the analysis were also statistically significant for the "power" variable, although the group of 31-40-year-olds achieved lower scores than the group of respondents aged 51 and over. The results, therefore, reflect the importance of fields and age differences in organizational meanings scientists' identity orientations.

JEL Classification: M12, M14, O15

Keywords: scientist organizational identity, scientist motivation, scientist profession.

Introduction

Literature review points to three dominant metatheories of organizational identity: social constructionist, social identity and social actor theorizing (Haslam et al., 2017 p. 318) Organizational identity as a social construct is used to infer common meanings in the context of a collective understanding of the characteristics of an organization (Haslam et al. 2017 p. 321 after Gioia et al., 2000 p. 64). Organizational identity can be viewed as a social identity and self-categorization derived from social psychology that refers to internalized organizational group membership (Haslam et al., 2017 p. 322). Organizational identity as a social actor metatheory refers to a symbolically constructed organization based on specific contracts and

networks (Haslam et al., 2017 p. 326). The concept of organizational identity was first introduced in the works of Selznick (Haslam et al., 2017 p. 324 after Selznick, 1949, 1957) and Stinchcombe (Haslam et al. 2017 p. 324 after Stinchcombe 1965), while B.G. King, T.Felin and D.A. Whetten (Haslam et al., 2017 p. 325 after King et al. 2010) explored this problem in depth.

Organizational identity in the academic field is a much-contested topic for discussion because scientific work goes beyond the academic profession. This concept applies to many issues, such as expectations for professionals' values and explorations of deep thought structures of self-perception in the academic and non-academic reality. The subject of in-depth scientific issues may be coupled with scientists' potentials, personalities, and even sensitivity. Treating this area of inquiry as a cultural dimension that provides information about the multiple introspections of the "scientific self" provides conceptual tools to distinguish between the processes of transmitting knowledge about ourselves in an organizational context that may be associated with establishing identities. They exemplify deontological reflection, which allows revealing the flow of information between deeply rooted thought structures of scientists about themselves and their perception of themselves in the context of social process interactions. Moreover, scientists' organizational identity could direct self-attention to the processes of managing their knowledge and shaping their research intelligence.

It is an issue that can be analyzed from many research perspectives, which include the concepts of behavioral and humanistic management. They allow raising the following issues: the relationship of a scientist involved in social processes, becoming an actor in the world of changes in the field of knowledge; psychological aspects of organizational university life; professional internships influencing the formation of scientists' opinions about themselves and the academic environment; distinguishing between the sphere of own values and organizational ideas; and finally, specific professional well-being adequate to the postulated attitude towards this profession. Consequently, it allows noting specific beliefs about one's participation in the world of academia and the choices of apprenticeships, which are an exemplification of the potentials and characteristics of an individual scientist.

Efforts to understand what constitutes one's own scientific identity and collective identity as a scientific community highlight these mental phenomena' synergy. It allows for diagnoses that bring to mind numerous associative references for scientific work. On the one hand, they are a close synthesis of all the features that make up a scientist's personality structure. On the other hand, it is far from highly individual judgments about oneself - treating as - a common culture of the professional environment, and as a *sine qua non* condition for participation in the academy's life. From this perspective, it seems important to understand what desires and motivations drive scientists and what they consider sensible in creating their professional participation in the academic area.

In the face of scientists' numerous professional practices and the possibility of choosing what they consider the most important, there are distinctions between their scientific life positions. It is impossible to avoid certain ideas of meaning in the perception of these phenomena, which outline the scope of contemplating one's participation in the world of science. It is related to the aspects of socialization of work processes and the tradition of science philosophy. Important from the point of view of the analysis below will be determinisms that establish scientists' judgments about scientific life and the intuitive dimension of participation in the academy's life. They bring decisions concerning the division of scientists' identity orientations and reveal the sense of meaning in the academic space. In these identifications, numerous crises create the psychological structures of organizational potentials and contribute to creating alleged images of scientists. Therefore, this research attempts to grasp the potentials, meanings, and values hidden in life's scientific matter. However, it is impossible to approach

the issue in an integrated way because it would be necessary to create interdisciplinary studies on this subject, using various cultures, knowledge, and minds. The epistemological path of diagnosis emphasizes the cultural identity studies of management sciences concerning organizational processes.

1. Literature review

The literature review included selecting search criteria targeted for a specific research problem that addressed this question: *Do scientists have different identity orientations in the organization's context and make sense of (themselves) the scientist's existence?*

The search strategy was based on searching for previous thematic analyses in journals that deal with literature review in management science. The best journals in the management discipline are literature-research and review journal, Academy of Management Annals, and International Journal of Management Reviews. Besides, the search also included two bibliographic and bibliometric databases: Web of Science and Scopus. Besides, searches were also based on a book review of the research problem in English and Polish literature. The literature review also included an analysis of book publications published at the turn of 2018-2020 and the free search for related topics on the Research Gate and Google Scholar. Besides, the search criteria concerned the two top review journals in the management science discipline: Academy of Management Annals and International Journal of Management Reviews. The searched phrases concerned the following issues: scientist organizational identity, scientist motivation.

The literature review also included a review of highly scored journals in the field of psychology: Annual Review of Psychology (Annual Reviews), Psychological Bulletin (PB), Psychological Review (APA), Psychological Science (APS). Also in personality psychology: Journal of Personality and Social Psychology (JPSP), Journal of Personality (JP), Journal of Research in Personality (JRP). Apart from the indicated journals in the field of management, the review also included the journal: Academy of Management Learning and Education.

Research work on the identity issues of scientists is associated with multiple views on this subject. It is impossible to identify trends in the world of science in organizational psychology from the organizational culture in which its members are a part of knowledge and science management systems. Scientists do not live in a vacuum, but function in relationships, stimulating them from many different segments of the cultural, economic, and social environment.

A scientist's life revolves around an academic organization that influences the motivation to undertake research and development activities. Therefore, motivational factors are closely related to the categories of professional prestige, which consists of several aspects of assessing scientists' skills and achievements. Stimulation in the form of the possibility of increasing prestige may be a determinant influencing scientists' work processes. Their well-being, in turn, can also be linked to directing their careers towards research excellence. There are measurable factors of this quality, such as the Hirsch index, which makes it possible to identify the assessment of scientists' individual achievements and the universities themselves.

There is a discourse on criticism of the parameterization of scientific achievements, which may increase the dysfunction of the environment in focusing on points, not on the true ambitions and scientific work goals. The motivation system is associated with an increase in scientific reputation. In this context, there are also numerous crises and problems. One of them may be excessive enforcement of publication obedience and a growing feeling of competition and pressure of results among scientists (Shore & Wright, 2015 pp. 569-572). This idea also applies to factors such as the importance of money, fame creation, fame building, and authority

creation that relate to scientists' internal motivations (Johnson & Dieckmann, 2019). This intrinsic motivation translates into research results and scientists' belief in the value of the work they perform (Ryan 2014). In the case of the scientific profession, intra-controllability is very important in increasing the need to conduct reliable research and translate it into work results. Achievement by scientists of the intended results from the degree of advancement of their work (Iyer & Kamalanabhan, 2006, p 19). The research effects and commitment level are related to the greatest extent to internal motivation factors, especially among young apprentices (Ommering et al., 2019).

The literature shows a discourse on research integrity and scientists' skills (Büyükgöze & Gun, 2017, Leith & Vanclay, 2015). Research in this direction was conducted by Samuel V. Bruton, Mary Medlin, Mitch Brown, and Donald F. Sacco, pointing to many problems that affect the scientific community. Among those noted by scientists, some irregularities result from the fact that scientists do not want to publish negative research results (Bruton et al., 2020, p. 547). The reliability of research and scientific workshop translates into the professional identity of scientists. Research exists within the limits of science, determined by qualitative research procedures (Kligyte et al. 2008). A critical look at scientists' organizational life results from the work culture and problems resulting from the rigidity of bureaucratic solutions in science. This theme is particularly worrying in the context of the innovative potential of scientific practices (Martin-Rios, 2016).

Thus, science is subject to public evaluation and is associated with social trust in authority, which gives rise to a certain informal power structure based on the universal recognition of scientists' status. Endowed with social trust and respect, they constitute a kind of informal elite that goes beyond organizational walls. Therefore, science is public, and the social trust of scientists' professional groups may allow them to conduct their research and access research groups (Turney 1996). Therefore, authors Uma Iyer and T.J. Kamalanabhanindicates this scientific community's elitism when writing about this professional group (Iyer & Kamalanabhan, 2006). It is also associated with mental productivity, creativity, and intellectual leadership (Blackmore & Kandiko, 2011). This elitism discourse and a certain symbolic archetype of scientists are deeply rooted in social consciousness, as shown by research carried out among children. From the perspective of the reception of idiomatic myths of the scientist's image, this problem was investigated by Pekdoğan and Bozgun (2019). It turned out that 5-year-olds and 6-year-olds perceive scientists as people from the laboratory, working on inventions and conducting experiments. However, what is particularly important in analyzing their social perception is that they are assessed positively by children.

As in any professional environment, scientists also find it important to support staff to pursue the desired effectiveness. Besides, how the researcher functions also depend on the way the organization in which he works. This view allows us to create the legitimacy of the concept of scientist organizational identity because it leads us towards the diagnosis of personal prestige in the academy's prestige, which is an aspect of the researcher and the university (Brown 2016). Thus, a kind of feedback and mutual need for parameterization can be discerned. The better the results a scientist achieves, the more valuable he is for the university. The better the university's rankings, the higher its prestige, and the best scientists want its members. Marek Kwiek draws attention to the scientific environment's disproportions, which indicate significant differences in researchers' achievements (Kwiek, 2019).

Researchers also analyze external motivational factors that influence the work process of scientists. Analyzes are made to build their brand outside the organization, cooperate with the private sector, and collaborate between scientists and commercial activity issues. External recognition can also influence retention in the profession, and a kind of autonomy can foster an informed career in research. It turns out that in the context of scientists' commercial activity,

rewards for reputation and internal satisfaction are more important than financial gratification (Lam 2015). This point of view shows how strong the need for prestige and recognition is in this professional environment. This profession, therefore, goes beyond the organization itself, and its analysis, to a large extent, may also address issues related to the development of opportunities for the relationship between scientists and the world of technology, industry, and business. Therefore, it is inevitable for scientists to move beyond the sphere of a scientific institution because the transfer of knowledge to the economy is a contemporary natural phenomenon and impacts research funding processes (Saradindu, 2013).

Interestingly, the literature review also showed that research on the perspective of the scientific environment in the context of identity and motivational problems is conducted in medical science. Analyzes of the medical community concern, for example, research work and the possibility of creating research by scientists related to a favorable work environment and the need for results (Tan et al., 2020, Ommering et al., 2018). Research conducted among physician-scientists focuses on research success issues in the context of professional identification or shaping professional identity (Cianciolo et al. 2020).

Olga Ya. Gerasimova and Viktoriya I. Kryachko analyzed the key motives of doctoral students to assume a specific professional role (Gerasimova & Kryachko, 2019 p. 83). They indicated an individual set of motivations, specified the: role of a researcher (creative motivations, lower focus on prestige and competitive position in the market); the role of the administrator (professional motivations, reasons for interactions); the role of the tutor (they follow the career-building strategy, stable and flexible work) (Gerasimova and Kryachko 2019 p. 83). Such an approach makes it possible to point out that at the master's level, one can notice tendencies favoring future doctoral theses based on various motivational functions. Małgorzata Tan, Jonathan S. Herberg, Niebiański Yap, Dujeepa D. Samarasekera & Zhi Xiong Chen examined the factors that motivate young scientists to stay in work (Tan et al., 2020, pp. 25-45). They wanted to understand the factors that could drive scientists' results and their expectations to stay on research career paths. They found evidence of an indirect relationship (through research commitment) between the need for cognition and professional performance and the impact of research commitment on a research career's life expectancy. They highlighted features such as the need to know, the need for closure, and the intrinsic motivation in determining professional performance. According to the construct proposed by them constructions, "need-for-cognition" and "need-for-closure" are an integral part of the motivation to seek knowledge.

The meaning of the motivational factors of scientists is an inexhaustible source of research inspiration. Already in the first work on this subject one can see the ambiguity of the analytical boundaries of this phenomenon. As the influence of money, fringe benefits and even early childhood indicates (French 1966 p.155). As indicated by the literature review in the area of the scientific community's identity, internal and external motivations affect scientists' aspirations to develop research competencies. There are problems with work ethics and the standardization of scientific activities. An important task in this context is the idea of professional prestige, which emerges from many diagnoses of scientists' work.

Intellectual position and participation in the "intelligence of excellence" can be greater motivators than finances in choosing research work and making decisions during the working life. Initiating ideas and intellectual leadership beyond university personnel management theories may also play an important role (Blackmore & Kandiko 2011).

Research on scientists' identity is developing towards academic entrepreneurship, even bringing recognition that can be directly included in the term "business identity of scientists". The academic entrepreneurship problems were dealt with, among others, by Martin Obschonka, Julia Moeller, Maximimilian Goethner; Rachel Balven, Virgil Fenters, Donald S. Siegel,

William P. Racine (Obschonka et al., 2019, Balwen et al., 2018). Orienting these and other researchers on the entrepreneurial quality of scientific work are related to cooperation between science, industry, and business. Guo Feng, Simon Lloyd D. Restubog, Lin Cui, Bo Zou, and Yoona Choi researched this correlation, showing that role integration mediates a positive relationship between scientists' identification by entrepreneurship and the results of academic entrepreneurship (Feng et al., 2019). Moreover, Hassan and Lashari (2021) emphasize that it is scientist who are the source of cultivating the entrepreneurial culture and creating an entrepreneurial orientation.

Research is also being conducted into organizational behavior, motivational, and leadership processes in scientists' academic entrepreneurship involvement. Due to their high specialization, scientists are also becoming leaders in various industries, which affects their business identity. William P. Racine tried to under-researched engineers to succeed in leadership. The data has concluded that in the evolution of representatives of scientific circles towards leaders, a new social engineering identity is being adapted in performative practice (Racine 2015).

Rachel Balven, Virgil Fenters, Donald Siegel, and David Waldman focused on how academic entrepreneurship is shaped in the context of identity and motivational processes, leadership, organizational justice, work-life balance, and educational efforts (Balven et al., 2018 p.21; Fauzi et al., 2021). The authors conclude that attention should be focused on micro-processes, rather than focusing on institutions, strategies, and public policy, to increase the dimension of human behavior analysis in this context towards justice and identity issues. Targeting such research trends may allow for a better understanding of academia's organizational climate and entrepreneurship (Balven et al., 2018 p. 38).

Researchers also refer to the term "prestige economy", reflecting specific research productivity and alchemy of gratification (Blackmore & Kandiko, 2011 after: Bascom, 1948, Grinev, 2005, Herskovits, 1948, Burris, 2004). Scientific prowess is part of the economy that does not fall into a mere analogy to market mechanisms. Its products stand out above the average analysis of products and reduce it to many other non-economic factors, such as social influence and culture-making. M. Rhodes, S.J. Leslie, K.M. Yee, and K. Saunders conducted an experiment that brought interesting conclusions about the scientist profession's communication processes. Interesting research has shown that girls show stronger persistence in science tasks when they are asked to "do science" rather than "be scientists" (Rhodes et al. 2019). Therefore, it turns out that at the linguistic level, influences shaping self-awareness in the context of the scientist's profession's identity are also observed. This is an important thread that also reflects linguistic interactions on the predisposition of professional self-determination in the context of scientific activity (Rhodes et al. 2019).

Multiculturalism, intercultural management, and organizational identity in the context of diversity are interesting directions of research interests, also present in the discourse of science and scientists (Cobern & Loving, 2001). Cultural, organizational aspects of the university environment also affect the issue of diversity. It concerns this diversity in the context of the characteristics of culture itself, members of the organization, and research topics that deal with diversity (Nunnally 2019, Stallings et al. 2013). This sphere also applies to the philosophical course of increasing the diversity of identity contexts (Nunnally, 2019, Iyerand Kamalanabhan, 2006, Stellings et al., 2013, Kim 2017). The diversity issue concerns women scientists' equality, f.e. in parenting (Kim 2017). It also determines the value of putting diversity policy into context organizational science (Child et al. 2011). In a broader perspective, the discourse of diversity refers to the subject of science itself in the postcolonial scientific reality (Harding 1998).

Other studies also concerned the threads of women in scientific activity, but from a strict identity perspective. Research by Isis H. Settles, William A. Jellison, and Jennifer S. Pratt-Hyatt examined the change in identity centrality as a moderator of interference between the woman and scientist identities and subsequent negative outcomes in a longitudinal study of 128 women-scientists (Settles et al. 2009). From the point of view of this analysis, it is worth pointing to two significant results. First, women who became more identified with their gender did not experience the usual higher level of depression and lower level of woman satisfaction concerning difficulties in combining their woman and scientist identities (Settles et al. 2009). Second, the self-esteem was buffered from identity interference only for women who became more identified with as scientists (Settles et al. 2009). Research has shown an important relationship between femininity and science, which shows psychological benefits from group identification and group validation (Settles et al. 2009). The value of social support in the sense of belonging and participation in women's organizations in science was also indicated.

2. Methodological approach

In the study, we asked ourselves a research question: Do scientists have different identity orientations in organizational and meaningful scientific professions?

We prepared an EDA exploratory data analysis online questionnaire (hosted on google forms), which took respondents about 35 minutes. The online survey was conducted over three months.

The target respondents consisted of scientists with degrees of – in the polish academic scientific titles: dr, dr hab., Professor Assistant, Professor. Administrative staff independent of the researchers sent individual e-mails to public and private university faculties for approval to distribute the survey. The survey was also distributed through “word of mouth marketing” and partnership scientist relationships to researchers interested in the idea. The survey was also posted on social media for researchers.

We have developed a measuring instrument that measures the various model constructs by adapting validated questionnaires established in the management and cognitive psychology. The questionnaire consists of two parts: i) 33 closed questions on a 10-point Likert scale, ii) 33 closed questions on a 10-point Likert scale, and iii) demographic section. For all scale questions, participants indicate their answers on a 10-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (10).

Based on the literature review and the pilot research, which consisted of conducting an initial survey and open interviews with scientists, a network of the most important scientific orientations began to form, which can be attributed to scientists' organizational identities. The research is pioneering. A created typology grid created the designated models of identity and organizational orientation: The six types of organizational-meanings scientists identity orientations. Below is a description of the orientations.

TYPE 1: Prestige-oriented: Respecting the scholar environment's status quo allows for direct participation in it. The key to a scientist's work is the values of the university. The emotions that accompany scientific work allow maintaining strong internal motivation. The values of occupation impact private life, such as the lifestyle of a respected intellectual and high private and public status. Projects with people and coexistence in an elite group give a feeling of fulfillment. Being a scientist feels like a part of something bigger. That means that pursuing a scientist's profession allows participation in a kind of subculture of intelligence that is not available to everyone. The elitism of this profession is permanently inscribed in the professional code. The tradition of academic philosophy and academic work recognition by societies gives privileges to the scientific caste. That is significant, especially on the non-material level, and is

expressed through universal social respect. Therefore, this profession can be included in the most respected ones, such as doctors or lawyers.

TYPE 2: Economic-oriented: Earning is an important value for a scientist's profession. There are some stereotypes of a poor scientist, and nowadays, the university profession should be treated as highly specialized and well-rewarded in the case of this. The economic status of scientists' work indicates the status of power and ray of life. The key to creating ourselves as an expert is to understand that our professional career's next steps will be rewarding. Style of academic values means that there is a clear growth rate. In science, necessary action is to follow grant information and research funding opportunities because it is difficult to move forward without it. The important thing is to be interested in university policies and governments' actions towards the scientific community. It is also worth adopting a financial strategy in science. After all, it allows people to live in the scientific environment and participate in the life of transnational science because it also brings lucrative opportunities. There is nothing wrong with treating the scientist's profession through the prism of earning money.

TYPE 3: Carrier-oriented: Own ambitions are an important motivation for everyday scientific practice. Following individual development, the path allows for achieving goals. Putting on personal beliefs and own views is the main motto of everyday professional practice. Maintaining constant internal motivation helps to deepen personal intellectual life. Concerning other areas of life, a career ranks very high in the hierarchy of life needs. Personal beliefs and values are more important than those that can be considered collective. Personal development is strongly related to focus on a scientist's career. These, in turn, can translate into choices of research areas and academic practices. Research directions that can be considered fashionable and desirable are important in this regard. Research policy is strongly related to grant motives and the possibility of obtaining the best possible research funding.

TYPE 4: Science-oriented: The ethics of scientific work is strongly related to the context and purpose fullness of research. Scientific practices are the most important in academic work. A good university employee is one who is very active in research. Academic work is related to the possibilities offered by analyzing the complex phenomena of the world. Resolving them can have various meanings: reflective, cognitive, revealing hidden phenomena, applying, giving meaning, providing systemic solutions, and provoking reflection (depends on the adopted paradigms). Active participation in academic life ensures no foreclosure from the circulation of scientific information. Access to databases for scientists and the ability to navigate the world of vast amounts of knowledge information, to which open access is available, gives opportunities for better scientific practice. Media presence in industry social networks, forums, and discussion groups for scientists, brings the desired opportunities for participation and information access.

TYPE 5: Power-oriented: Each university is hierarchical, and this status quo is a proven form of academic life. The practice of obtaining new degrees and progressing through scientific levels is important for the appropriate acquisition of knowledge and building influence. Every scientist must have time to gain new professional experience and should have his master. Therefore, the process of entering the profession slowly is natural. A specific type of professional initiation begins at the stage of doctoral studies. The profession of a scientist is highly responsible, and only conscious people should influence its shaping. Therefore, power in science exemplifies government exercised over a community of people and influences others. Persons in power and with the highest degrees of recognition should be treated with due respect and esteem. Respect for knowledge in general and professors' positions should be made aware of young scientists.

TYPE 6: Human and social-oriented: The quintessence of academic life should believe that people are the most important and are at the epicenter of all scientists' activities.

Scientific work should, therefore, be treated as an activity for the benefit of people. Therefore, scientists should take responsibility for their research and understand that it can benefit and harm other people. Moreover, in scientific work, coexistence with people and creating positive cooperation forms are equally important. Cooperation may bring the most expected benefits for one's development. There is tremendous strength in people. The exchange of knowledge, information, and experiences are, therefore, invaluable. Any cooperation, collaboration, and participation in a professional group are also of great importance. Belonging to research teams, cooperation at the national and international level provides great growth opportunities. It is also important to share knowledge and educate the next generations of people responsible for others and treat knowledge as an important factor of influence. Therefore, interpersonal relationships are the essence of academic work.

3. Conducting research and results

Presentation of research results. Analysis of "The six types of organizational-meanings scientists identity orientations" *n=109*. The basic descriptive statistics for the whole sample are shown in Table 9. The reliability factor (Cronbach alpha) was satisfactory for all scales created. One observation was excluded from the analyses due to results deviating from themean by more than 3 standard deviations.

Table 1. Basic descriptive statistics of the indicators analysed

	M	*Me*	*SD*	*Gr.*	*Kurt.*	*Min.*	*Max.*
Prestige	72,37	73,00	16,46	-0,52	-0,09	21,00	100,00
Economic	67,09	68,50	14,56	-0,33	0,15	25,00	105,00
Carrier	71,26	71,00	12,51	-0,12	-0,30	40,00	98,00
Science	76,66	80,50	15,28	-0,77	0,10	30,00	103,00
Power	55,06	55,50	18,78	0,15	-0,03	14,00	108,00
Human	78,66	81,00	14,05	-0,50	0,66	34,00	107,00

Source: *own study*

Table 2. Reliability statistics – alpha Cronbacha

	Number Position	Alfa Cronbacha
Prestige	11	0,84
Economic	11	0,75
Carrier	11	0,75
Science	11	0,82
Power	11	0,84
Human	11	0,81

Source: *own study*

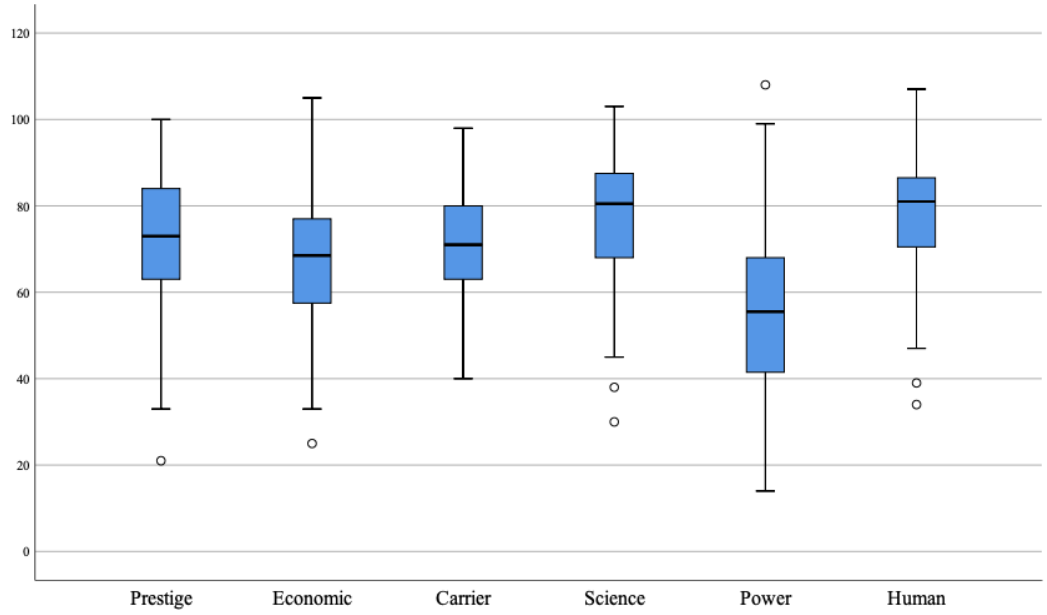

Figure 1. Basic descriptive statistics for all research orientations
Source: *own study*

In order to check the variation in the level of the variables tested according to the degree of science (excluding the habilitated doctor due to too small *number n* = 3), a series of Kruskal -Wallis tests were performed. The results of the analysis were found to be irrelevant for all variables.

Table 3. Differences in the level of variables tested depending on the degree of study – Kruskal-Wallis test results –

	Master's / PhD student *(No.* 16)		Doctor *(No.* 45)		University professor *(No.* 25)		Professor *(No.* 19)			
	Me	*IQR*	*Me*	*IQR*	*Me*	*IQR*	*Me*	*IQR*	*H*	*p*
Prestige	72,50	20,25	70,00	19,50	77,00	29,00	83,00	21,00	3,42	0,332
Economic	70,00	10,00	68,00	26,50	63,00	17,00	73,00	19,00	2,33	0,507
Carrier	74,50	22,50	70,00	13,50	71,00	21,00	75,00	16,00	3,66	0,301
Science	81,50	25,25	79,00	18,50	79,00	20,00	84,00	13,00	3,00	0,391
Power	57,50	21,25	51,00	31,50	54,00	26,50	61,00	23,00	3,38	0,337
Human	81,00	14,25	79,00	16,50	83,00	20,00	80,00	19,00	1,61	0,657

Source: own study

A series of Student t-tests for independent trials were performed to check the variation in the level of gender variables tested. The results of the analysis were statistically insignificant for all variables analysed.

Table 4. Differences in the level of variables tested according to gender – *student t-test* results for independent trials

	Women (*No.* 56)		Men (*No.* 51)				95% *CI*		
	M	*SD*	*M*	*SD*	*t*	*p*	*LL*	*Ul*	*d* Cohen
Prestige	71,77	16,25	73,37	16,79	-0,50	0,617	-7,94	4,73	0,10
Economic	67,13	14,29	66,86	15,07	0,09	0,927	-5,37	5,89	0,02
Carrier	71,84	12,34	70,49	12,86	0,55	0,581	-3,48	6,18	0,11
Science	78,89	13,79	73,96	16,57	1,67	0,099	-0,95	10,81	0,32
Power	52,63	18,27	57,57	19,32	-1,36	0,177	-12,15	2,26	0,26
Human	77,54	14,82	80,04	13,29	-0,92	0,361	-7,92	2,91	0,18

Source: *own study*

In order to check the variation in the level of variables tested depending on the type of university, a series *of U* Mann -Whitney tests were performed. The results of the analysis were statistically insignificant for all variables analysed.

Table 5. Differences in the level of variables tested depending on the type of university – U Mann – Whitney test results

	Public University (*No.* 84)			Private university (*No.* 21)					
	average rank	*Mdn*	*IQR*	average rank	*Mdn*	*IQR*	*Z*	*p*	h2
Prestige	55,36	74,00	24,00	43,57	68,00	18,50	-1,59	0,113	0,02
Economic	55,40	71,00	19,00	43,40	59,00	23,50	-1,62	0,106	0,03
Carrier	52,85	71,50	17,00	53,62	71,00	15,00	-0,10	0,917	0,00
Science	52,08	80,00	18,50	56,69	84,00	33,00	-0,62	0,534	0,00
Power	55,05	58,00	27,75	44,81	55,00	29,00	-1,38	0,168	0,02
Human	53,93	81,00	14,75	49,29	79,00	32,00	-0,63	0,532	0,00

Source: *own study*

In order to check the variation in the level of variables tested according to the scientific field (for the two most diverse fields), a *series of Tests was* conducted on Mann-Whitney. The results of the analysis were statistically significant for one variable. Scientists in the field of humanities achieved significantly higher results on the Science scale than those involved in social sciences. The strength of this effect was small.

Table 6. Differences in the level of tested variables depending on the branch of science – U Mann – Whitney test results

	Humanities (*No.* 30)			Social Sciences (*No.* 61)					
	average rank	*Mdn*	*IQR*	average rank	*Mdn*	*IQR*	*Z*	*p*	h2
Prestige	49,83	74,50	27,50	44,11	70,00	23,50	-0,97	0,331	0,01
Economic	38,60	66,00	24,75	49,64	72,00	21,00	-1,88	0,061	0,04
Carrier	46,37	71,00	17,25	45,82	71,00	16,00	-0,09	0,926	0,00
Science	55,10	83,50	20,00	41,52	79,00	19,00	-2,31	**0,021**	0,06
Power	46,33	58,00	33,50	45,84	52,00	25,00	-0,08	0,933	0,00
Human	43,18	75,00	19,25	47,39	81,00	14,50	-0,71	0,475	0,01

Source: *own study*

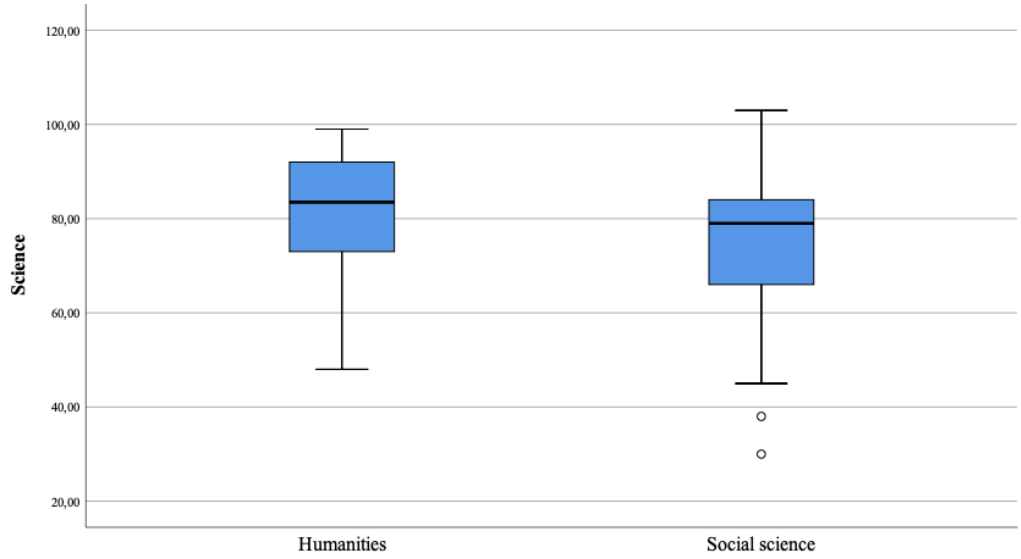

Figure 2. Differences in the level of variables tested depending onthe branch of science

In order to check the variation in the level of the variables tested according to age (excluding the group below 30 due to too small *number n* = 4), a series of Kruskal-Wallis tests were performed. The results of the analysis were statistically significant for the Power variable. Further exploration, comparisons in pairs with Bonferron's amendment showed that this effect consisted in a difference in the level of results between groups 31 – 40, which achieved lower scores than group 51 and above.

Table 7. Differences in the level of variables tested depending on age – Kruskal - Wallis test results

	31 – 40 years old *(No.* 25)		41 – 50 years old *(No.* 32)		51 and up *(No.* 47)			
	Me	*IQR*	*Me*	*IQR*	*Me*	*IQR*	*H*	*p*
Prestige	70,00	19,00	70,00	27,25	82,00	22,00	5,47	0,065
Economic	68,00	18,50	72,00	21,75	68,00	19,00	0,40	0,818
Carrier	69,00	13,50	71,00	18,00	73,00	17,00	5,83	0,054
Science	81,00	27,50	77,00	23,75	83,00	18,00	5,43	0,066
Power	51,00	34,00	52,00	23,75	61,00	24,00	6,31	**0,043**
Human	77,00	18,00	81,50	22,00	82,00	19,00	4,60	0,100

Source: *own study*

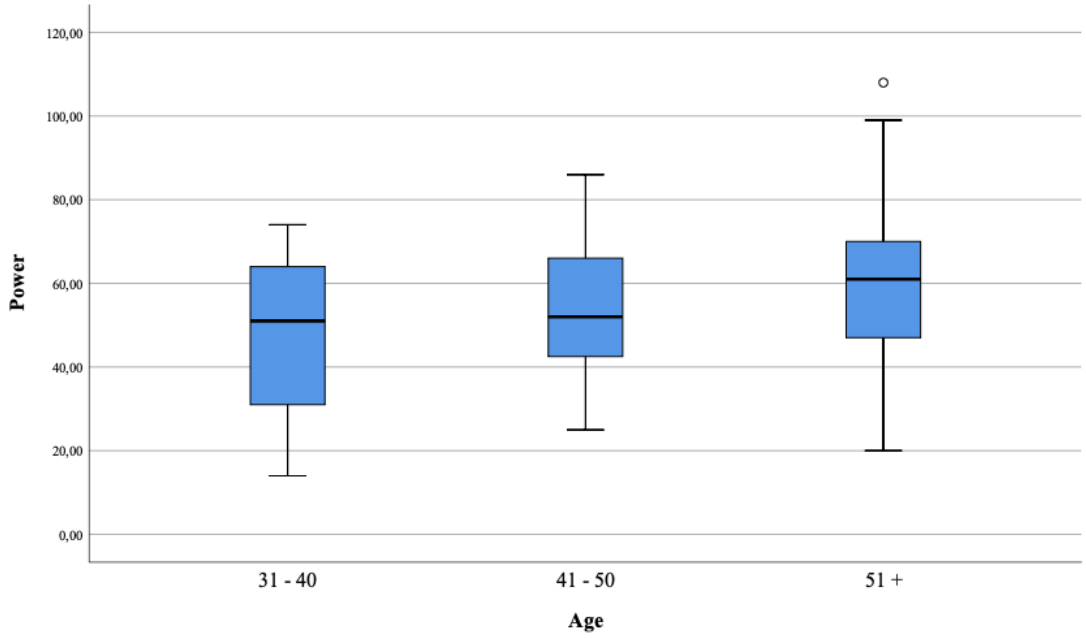

Figure 3. Differences in the level of variables tested depending on age

Conclusion

The multitude of problems shaping scientific identity brings to mind associations with scientists' critical influences on various ideological, political, and social manifestations. It should be recognized that it is worth creating conditions favorable to a debate that exposes the negative influences that limit the possibilities of talents and scientific potentials. While assessing a scientist in the context of his features, shaped in the social, state, and social system, which can be considered his own, it is also worth looking at the issues of cultural processes of giving meaning to professional life in the organizational dimension of the academy and the context of the outstanding representatives of the knowledge profession. It seems important to expose how many organizational factors influence scientists, such as political technologies, bureaucratic systems, technological implications, power agencies, and knowledge development directions. Nevertheless, scientists' self-determination in the face of their predispositions, which have been presented in this study in the face of several dimensions of identity orientations, which may be strengthened or lead to change during socialization of work, should be considered crucial. Therefore, in these transformations, one should consider many determinisms that shape the scientific community's life. This does not operate in a vacuum but is under many influences of numerous sense-makers of everyday professional practices and self-determination processes specific to individual scientists.

The results of the analysis were statistically significant for the Science variable. Scientists in the field of humanities achieved significantly higher results on the Science orientation scale than those involved in social sciences. The results of the analysis were also statistically significant for the Power variable. This effect consisted of a difference in performance between a group of 31 to 40 years of age that achieved lower scores than a group of 51 years and over. The results, therefore, reflect on the importance of fields and age indifferences in organizational-meanings scientists' identity orientations.

The work of scientists should be decided in managing the scientific potential, which should be an inherent attribute of the high standards of this profession. Its measurability should

be treated from the perspective of psychological studies. However, we can conclude that autonomous cognitive motivation is supported by other external motives that constitute several general-academic factors. A scientist's identity should be understood in the context of the creative process, which should take place in conditions favorable for creative work. For further recommendations, we present research directions in managing scientific potential, management of motivation to intellectual work, and personal processes to knowledge organization management.

Limitations

The review of research methods and their conduct led to the conclusion that the research should be exploratory because the reviewed literature did not indicate possible working hypotheses, which also coincided with the inference process that came from the pilot studies. The fact of the pioneering nature of the research forced numerous transformations of work. The sample selection was also a problem; it turned out during the research process that we met with resistance from scientists involuntarily filling in the questionnaire, which limited the research sample. Our results cannot be considered representative of the entire research population.

The limitation of this research is that the sample sizes are small. In the questionnaire studies, only the perceived research results and the declared orientation on the parameters of identity orientations were used. However, we believe that this is the first pioneering study in Poland to investigate scientists' predicted identity orientations.

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