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COMPARATIVE ANALYSIS OF EPISTEMOLOGICAL ATTITUDE IN STUDENTS FROM LATVIA AND THE NETHERLANDS TOWARDS THE SOURCES OF KNOWLEDGE

The tendencies and aspects of the quality of knowledge sources and its content, the cognition of the subject, may be reflected in the use of a socio-psychological phenomenon such as epistemological attitude. The concept of epistemological attitude reflects on the student's cognitive orientation model, which is based on evaluative aspects of knowledge sources or psychological reactions – cognitive, emotionally prognostic, action / behavioural and pragmatic. Based on this model, the Epistemological Attitude Questionnaire (EAQ) was developed to determine the formal and substantive aspects of the assessment of five sources of knowledge, namely, scientific literature and articles, a lecturer in a higher education institution, popular science journals and newspapers, popular science television broadcasts, Internet resources, and significance of the sources of knowledge. The aim of the article is to study the content of student epistemological attitude towards the sources of knowledge and its relation to the study programmes in Latvia and the Netherlands. Results reflected that the content of the epistemological attitude depends on the type of source of knowledge to be studied and evaluated. As well as, peculiarities of source cognition and evaluation among the students of Latvia and the Netherlands have been identified, finding statistically significant differences in the epistemological attitude towards all sources of knowledge to be evaluated. It was found that the study programme was related to the epistemological attitude towards several sources of knowledge in Latvia and the Netherlands. In general, the results of this study show that the peculiarities of cognition of the source of knowledge are related to the type of the source of knowledge, a socio-cultural factor of the student's academic environment and student's study direction or study programme.

Key words: epistemology, social cognition, attitude, sources of knowledge, knowledge, students, study programme.

Latvijas un Nīderlandes studentu epistemoloģiskās attieksmes pret zināšanu avotiem salīdzinoša analīze

Zināšanu avotu un tā satura kvalitātes, subjekta izziņas tendences un aspekti var būt atspoguļojami, izmantojot sociālpsiholoģisko fenomenu tādu kā epistemoloģiskā attieksme. Epistemoloģiskās attieksmes jēdziens atspoguļo studenta izziņas orientācijas modeli, kura pamatā ir zināšanu avotu vērtēšanas aspekti jeb psiholoģiskās reakcijas – kognitīvās, emocionāli prognostiskās, uzvedības / darbības, pragmatisma. Uz šī teorētiskā modeļa pamata tika izstrādāta epistemoloģiskās attieksmes aptauja (EAA), kas ļauj noteikt piecu zināšanu avotu, zinātniskās literatūras un rakstu, pasniedzēja augstākajā mācību iestādē, populārzinātnisko žurnālu un avižu, populārzinātniskās televīzijas raidījumu, interneta resursu, formālos un saturiskos vērtējuma aspektus un zināšanu avotu nozīmību. Raksta mērķis ir izpētīt epistemoloģiskās attieksmes saturu pret zināšanu avotiem un tās saistību ar studiju programmu Latvijā un Nīderlandē studējošiem. Rezultāti parādīja, ka epistemoloģiskās attieksmes saturs ir atkarīgs no izzināmā un vērtējama zināšanu avota tipa. Latvijas un Nīderlandes studentiem konstatētas avotu vērtēšanas īpatnības, konstatējot statistiski būtiskas atšķirības epistemoloģiskajā attieksmē pret visiem zināšanu avotiem. Tika konstatēta studiju programmas saistība ar epistemoloģisko attieksmi pret vairākiem zināšanu avotiem gan Latvijā, gan Nīderlandē studējošiem. Kopumā

šī pētījuma rezultāti ļauj secināt, ka zināšanu avotu izziņas īpatnības ir saistītas ar zināšanu avota tipu, studenta akadēmiskās vides sociāli kulturālām īpatnībām, studenta studiju programmu.

Atslēgas vārdi: epistemoloģija, sociālā izziņa, attieksme, zināšanu avoti, zināšanas, studenti, studiju programma.

Сравнительный анализ эпистемологического отношения к источникам знаний у студентов Латвии и Нидерландов

Оценка студентами источников знаний, их содержания может быть осуществлена на основе социально-психологического феномена – эпистемологического отношения. Понятие эпистемологического отношения отражает модель познавательной ориентации студентов, в основе которой лежат оценочные аспекты источников знаний в форме психологических реакций – когнитивных, эмоционально-прогностических, деятельных/поведенческих, прагматических. На основе этой теоретической модели был разработан опросник эпистемологического отношения (ОЭО), посредством которого можно определять формальные и содержательные оценочные аспекты и значимость пяти источников знаний: научной литературы и статей, преподавателей в высшем учебном заведении, научно-популярных журналов и газет, научно-популярных телевизионных передач, Интернет-ресурсов. Целью данной статьи является изучение содержания эпистемологического отношения у студентов Латвии и Нидерландов в зависимости от источника знаний и учебной программы студента. В результате исследования было установлено, что содержание эпистемологического отношения зависит от типа познаваемого и оцениваемого источника знания. Были выявлены статистически значимые различия в содержании эпистемологического отношения в отношении всех типов источников знаний у студентов Латвии и Нидерландов. Общие результаты исследования позволяют сделать вывод о том, что особенности оценки источника знания студентами связаны с типом источника, социально-культурными особенностями академической среды студента, его учебной программой.

Ключевые слова: эпистемология, социальное познание, отношение, источники знания, студенты, учебная программа.

Introduction

The problem of knowledge and cognition is one of the most relevant in philosophy, however the epistemology is the main problem in its branch (Lektorsky 2018). The problem is multifaceted, for example, some of the disciplines in the humanities and social science studies showed the different sides and aspects of knowledge and cognition highlighting a certain element of the whole cognition system. The disciplines of the social science and the humanities in the study of cognition in its context of the epistemology link an issue about cognition and knowledge to objects, subjects, relations, interrelations, etc. within the framework of these scientific disciplines. This approach as the result reveals and provides methodological possibilities and objects of research through which fundamental issues of knowledge and cognition can be studied implicitly or explicitly, such as the sources of knowledge. In general form the source of knowledge is the source of cognition, an instrument and a result as knowledge. From the viewpoint of epistemology, the source of knowledge is a form of knowledge that contains certain types of knowledge of definite quality. Knowledge is formed by organized structures

according to laws of logic and a certain ontological approaches and methodology; and their function is to describe a particular object, a group of objects, interactions and sphere of it. From the perspective of the humanities, the source of knowledge is a certain nature and a form knowledge that describes reality, language, history, culture of human and social life. However, from the perspective of the social sciences, the source of knowledge is a reflection of cognition and experience of a person or group of people about some aspects of internal and external life, interaction and environment organized in a particular structure and form of social knowledge. Potentially “the source of knowledge” may reflect knowledge and its qualities, i.e. knowledge of knowledge or meta-knowledge, aspects of object being studied and described, current and historical aspects in context of social situation, as well the social psychological processes and interactions of the person, group and society. In this way, the problem of the sources of knowledge could be examined using systems of categories and objects of philosophy, epistemology and social psychology.

Based on this, it is proposed to study the source of knowledge and the qualities of its content through psychosocial phenomena such as attitudes. The phenomenon of attitude in the context of cognition research, being a priori as a form of interaction (Kokorin 2009), is one of the most important and studied, reflected as a cognitive technique and as a mediator of cognition at the same time. According to the social cognition approach the attitude includes aspects and features of both-the person being the subject of cognition and cognizable and interacting object, as well as the specific units of knowledge reflecting and characterising them (Fazio, Olson 2003; Hogg, Vaughan 2005). Hence, the concept of epistemological attitude proposed by the authors (Sivoronova 2015; Sivoronova, Vorobjovs 2016) is a socio-psychological model based on the basis of philosophy and epistemology which allows in social psychology from another perspective to evaluate the source of knowledge and the knowledge in its content.

Theoretical foundations of epistemological attitude

Epistemological attitude is an epistemological psychosocial phenomenon that allows to reflect some part of the interaction processes between the subject and the object, and subject's cognition and knowledge acquisition processes, using the source of knowledge in the context of social cognition. The concept and model of epistemological attitude is constructed as a structurally functional model and is based on a three-level methodology – philosophical, general scientific, and specific scientific (Iudin 1997). Philosophically (formally and substantively) model is based on “epistemological approaches” (Lektorskii 2010; Lektorsky 2018) and “epistemological strategies” (Spirkin 2002), principles of philosophical approaches – “functionalism” (Dewey 1916; Mead 1938; Schiller 1907) and “pragmatism” (James 1907; Peirce 1923). The principle of the structure of a general scientific methodology serves as a basis for the structure of the attitude model, constituting its formal aspect. In particular, the scientific psychological methodology of social cognition of attitude model is based on the attitude structure approach – “tripartite model of attitude” (Ajzen 2005; Breckler 1985; Rosen-

berg, Hovland 1960; Fazio, Petty 2007; Hogg 2006; Van den Berg et al. 2006; Schiffman, Kanuk 2004) and attitudes theories of “functional” approach (Herek 1987; Katz 1960; Prentice 1987; Smith 1947; Shavitt 1989). The structure of epistemological attitude consists of four psychological reactions, based on a three component structure (Rosenberg, Hovland 1960) – cognitive, emotional, behavioural (action as well), and the fourth psychological reaction constituted and named as pragmatic, mainly based on the idea of philosophical pragmatism. In psychosocial context, pragmatic psychological reaction reflects the personality reactions of an individual in his/her interaction with or attitude to an object. As pragmatic psychologically or personal reaction was distinguished on the basis of the functional theories of attitude (Gregory et al. 2002; Greenwald 1989; Katz 1960; Prentice 1987; Schade et al. 2016; Wang 2009) and according to its statement that the main function of attitudes is related to the needs of personality of individual. The emotional reaction in the context of model of epistemological attitude was complemented by the prognostic aspect, grounding on the concept of “epistemological strategy” (Spirkin 2002) substantially and the concept of strategy in psychology (Bors et al. 2006; Chang 2001; Pereira-Santos et al. 2019; Vermunt, Donche 2017; Vermunt, Vermetten 2004). Cognitive reaction content is based on epistemological approaches (Lektorskii 2010; Lektorsky 2018).

On this basis, the concept and model of epistemological attitude reflects a student’s cognitive orientation model based on evaluative responses in structured form – cognitive, emotionally prognostic, action or behavioural, and pragmatic. It allows to identify and assess aspects of student’s cognition and evaluation as well as tendencies of cognition and significance of the source of knowledge and its mechanisms that have to be identified.

Methodology

Participants. 202 respondents participated in the present research. These were students from different study programmes and different higher education institutions of Daugavpils city (Latvia) ($n = 102$) 19–53 years old ($M = 23.08$ years, $SD = 5.87$ years), 48 men (47.1%, $M = 21.5$ years, $SD = 4.36$ years) and 54 women (52.9%, $M = 24.48$ years, $SD = 6.68$ years). Also the participants were students from different faculties and study programmes from Rotterdam Erasmus University (the Netherlands) ($n = 100$) 18–44 years old ($M = 21.52$ years, $SD = 3.75$ years), 49 men (49%, $M = 22.08$ years, $SD = 4.18$ years) and 51 women (51%, $M = 20.98$ years, $SD = 3.24$ years). Distribution of respondents by age among students from Daugavpils were 68.6% whose age ranged from 19–22, from which 31.4% were over 22 years and among students from Rotterdam were 81% whose age ranged from 19–22 and 19% were over 22 years old. Distribution of respondents according study programmes and study levels among students from Daugavpils were 26 (25.5%) from Business Administration, 26 (25.5%) from Information Technology, 20 (19.6%) from Psychology, 14 (13.7%) from Law, 8 (7.8%) from Sociology and 8 (7.8%) were from Engineering, Mechanics and Mechanical Engineering; 92 (91.2%) Bachelor’s study programme, 9 (8.8%) Master’s study programme and 1 (1%) Doctoral study programme; among students

from Rotterdam – 13 (13%) were from Media and Communication, 16 (16%) from International Business Administration, 13 (13%) from International Business and Management, 16 (16%) from Financial Economics, 34 (34%) from International Psychology, 6 (6%) from Law and 2 (2%) were from other study programmes; 90 (90%) Bachelor's study programme, 8 (8%) Master's study programme and 2 (2%) Doctoral study programme.

Instrumentation. The Epistemological Attitude Questionnaire (EAQ) (Sivoronova 2015) method was applied in the present research, allowing to evaluate student's attitude towards the source of knowledge and its content, knowledge and source cognitive tendencies, aspects of evaluation. Attitude was determined towards five sources of knowledge: 1) scientific literature and articles (including those in electronic format); 2) a lecturer in a higher educational institution; 3) popular science journals and newspapers; 4) popular science television broadcasts; 5) Internet resources (all sources on the Internet, except the above mentioned). A survey included respondent's socio-demographic data to be filled in: study programme and level, gender and age.

EAQ ($k = 44$) is composed from 4 scales and 11 subscales. In compliance with the EA theoretical pattern *scales* reflect four different attitudes or *evaluation reactions* towards the source of knowledge and its knowledge, which reflects the *formal aspect* of respondent's evaluation of the source. Respectively subscales reflect eleven EA characteristic features (and content categories), which reflect the substantive aspect of respondent's evaluation of the source. The cognitive scale formally determines cognitive evaluation or reaction towards the source of knowledge and its content features, and determines, in terms of content, the presence and expression of four features on a scale – criticism, fundamentalism and normativism, subjectcentrism, science centrism. The emotionally prognostic scale formally determines the respondent's emotionally prognostic evaluation or reaction and determines the existence and intensity of three characteristics of the scale – optimism, scepticism, agnosticism. Action / Behavioural scale formally determines the nature of behavioural manifestations and activities with the source of knowledge and its content, and determines the content aspect by typical interaction situations with the source or behavioural / operational conditions, assessing the quality of two characteristics – academic and personal situation. The pragmatism scale formally determines the practical significance of the respondent's choice of the source of knowledge or the pragmatism of the source for the respondent's personality, and in substance determines the direction and expressiveness of the pragmatism through its two features – functionalism and adaptivism. EA formal and substantive aspects reflect the formal and substantive significance of source of knowledge and its content in an integrated and descriptive manner, determines the significance of every source of knowledge – essence, the importance of qualities and their severity in a descriptive and statistical way.

The overall reliability coefficient of the EAQ ranges from $\alpha = .86$ to $\alpha = .89$. Internal consistency of the questionnaire separately in evaluation of every source – α ranges from .59 to .82, in separate scales and subscales satisfactory ($> .65$) and inadequate ($< .60$), finding statistically significant correlations between subscales. Insufficient and low indices α are designed according to a theoretical model implied

by their emotionally prognostic scale containing polar signs, with low concordance, and the scales vary depending on the source of knowledge being evaluated, indicating the specificity of the source of knowledge evaluation.

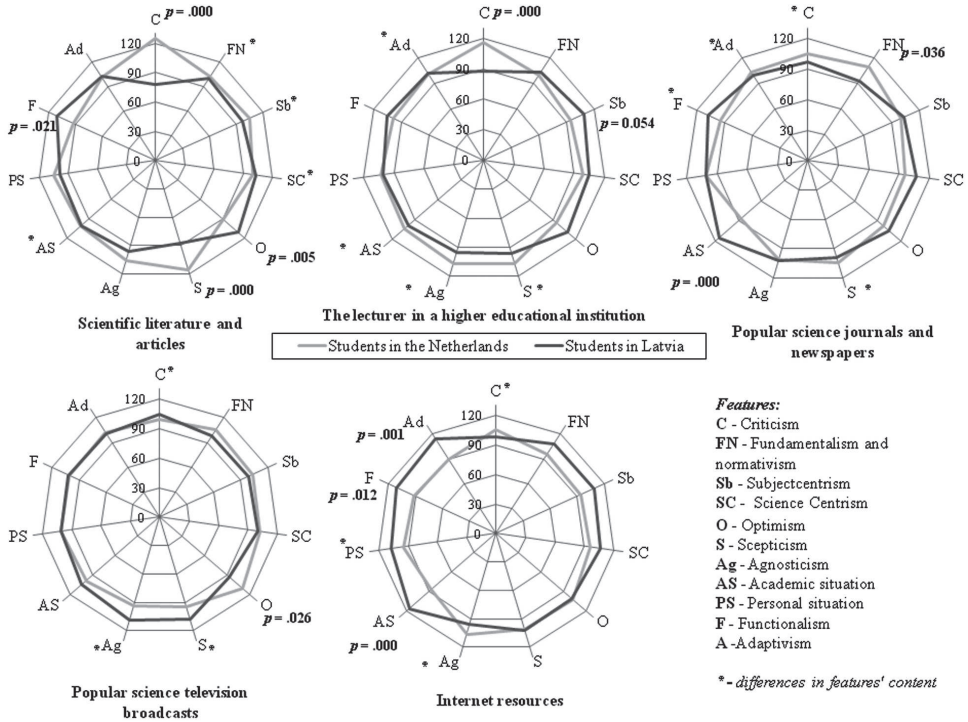
Procedure. Two surveys were conducted. The first one participating students from different higher education institutions of Daugavpils (n = 102) in December 2014, the second one was from Erasmus University in Rotterdam in March 2017 (Sivoronova 2019). From both samples, survey content and socio-demographic data – gender, age, level of study and programme – were collected through EAQ. The selection of both samples was random and the students' participation in the survey was voluntary. In both selections, the questionnaire was completed face-to-face, both individually and by organizing student groups before and after lectures and in groups.

Results and findings

Research on the content of student' epistemological attitudes towards the sources of knowledge in Latvia and the Netherlands showed that the content of the epistemological attitude depends on the type of source of knowledge to be studied and evaluated. This was evidenced by statistically significant differences in all epistemological attitudes (content) between the five sources in both – the student sample in Latvia and the student sample in the Netherlands. Students in Latvia and the Netherlands likewise rated scientific sources – scientific literature and articles, scientific literature and articles, and a lecturer in an educational institution, as having the highest potential to meet their knowledge needs. Also, these sources are at the core of academic communication and scientific cognition and inquiry. Using sources in the study process to acquire knowledge in depth has shown two tendencies. The tendency of students in the Netherlands is oriented to scientific cognition using scientific literature and articles, and a lecturer in an educational institution as a further cognitive and study scheme, while students from Latvia tend to use for same reasons scientific literature and articles as well as Internet resources. In general using scientific sources is less pronounced in personal situations in both student groups, but between students are some identified groups who associate inquiry in context of personal situations with study goals. Popular scientific sources, for example, journals, newspapers, television broadcasts, Internet resources, are related to psychological needs such as emotional. Therefore, the epistemological quality is not the primary factor in the content of these sources. These sources are considered to be highly psychologically significant they are associated with leisure time inquiry and less useful for academic purposes. Inquiry with communicative function, serves for realization of my own goals etc.

Comparative analysis of epistemological attitude towards the sources of knowledge between students from Latvia and the Netherlands showed the peculiarities of evaluation of sources of knowledge, finding statically significant differences in formal and substantive aspects. Figure 1 shows a comparison of epistemological attitude profiles in the assessment of five sources of knowledge between students from Latvia and the Netherlands.

Figure 1
Comparison between epistemological attitude profiles towards the sources of knowledge in students from Latvia and students from the Netherlands



Note: the significant results of a Kruskal-Wallis test and chi-squared test.

Source: elaborated by the authors.

Scientific literature and articles. Statistically significant differences in the cognitive scale ($U = 3656^{***}$) were found in the evaluation of formal aspect of scientific literature and articles (including those in electronic format), according to the comparison of the means rank values of the cognitive scale students from the Netherlands formally tend to be more cognitive in the evaluation. According to EA profiles (see Figure 1) statistically significant differences were found in content aspect of epistemological attitude, in criticism ($\chi^2 = 34.96^{***}$), in optimism ($\chi^2 = 7.76^{**}$) and scepticism ($\chi^2 = 13.13^{***}$), in functionalism ($\chi^2 = 5.31^{**}$) and four characteristics' content. The general mechanisms of evaluation and cognition of these sources are vastly epistemological (quality of methodology, capacity for evidence, credibility, cultural significance, high prognostic potential to satisfy knowledge needs, reflect the true knowledge, readiness to trust) and psychological used for academic communication, source for creative (productive) thinking, related to study conditions and purposes, importance in the system of personal meanings, targeted cognition).

The lecturer in a higher educational institution. In the assessment of the knowledge provided by the teacher students in Latvia and the Netherlands have formally equal tendencies, there were no statistically significant differences were found in EA reactions between students. In the terms of content there are statistically significant differences in criticism ($\chi^2 = 12.9^{**}$) and subjectcentrism ($\chi^2 = 3.71^*$), and in the content of four features, also the tendency to the difference in optimism characteristic was found. Students have general cognitive mechanisms such as epistemological (knowledge create a meaningful representation, quality of the methodology provided, highly scientific, relationship between theory and practice) and psychological (importance in academic communication, listening to the lecturer is required by a social and academic situation).

Popular science journals and newspapers. According to the results, the sources are statistically significant and differences were found in the activity / behavioural scale ($U = 4786^*$), formally students from Latvia tend to use source more intensively than students from the Netherlands. Comparison of EA profiles (see Figure 1) show statistically significant differences in two characteristics – fundamentalism and normativism ($\chi^2 = 4.42^*$), academic situation ($\chi^2 = 12.69^{***}$), and in the content of the four characteristics. The source and its content cognition mechanisms are moderate among all sources as journals and newspapers are either used or unused by students. For those students who tend to use sources the significance of the source is balance between epistemological quality (moderate criticism, controversial points on scientific base, successful style of presentation of material, creativity of author's approach) and their psychological importance (leisure, personal interests, popularity, positive expectations of using in comfortable conditions).

Popular science television broadcasts. The source formally is evaluated in an analogous tendency with students in Latvia and in the Netherlands; there are no statistically significant differences between the reactions of attitude among the students. In contrast, statistically significant difference was found in optimism ($\chi^2 = 4.92^*$) and in the three-feature content. The general cognitive mechanisms of the source are principally psychological (source of leisure time, cognition in comfortable conditions) and associated with high source of pragmatism. Overall, reflecting low epistemological value of the source content (lack of qualitative methodology, evidence and scientific justification; doubtful knowledge), but finding positive aspects in successful presentation of information and creative authors' approaches.

Internet resources. The cognition of the Internet sources (all sources on the Internet, except the above mentioned) formally is more intensive in activity and pragmatic in students from Latvia, indicating statistically significant differences in two formal aspects of attitude, action ($U = 3663^{***}$) and pragmatic ($U = 3718^{***}$). According to the EA profile (see Figure 1) there are statistically significant differences in the content aspect – academic situation ($\chi^2 = 34.96^{**}$), functionalism ($\chi^2 = 7.76^*$) and adaptivism ($\chi^2 = 13.13^{***}$), and in content of four characteristics.

The general mechanisms of the Internet cognition are predominantly psychological (cognition in personal situations and purposes, personally valuable content), but epistemological quality has several shortcomings (one-sided responses to problems, expressed criticism towards knowledge quality and scientific basis, an inadequate fundamental

basis, represent more subjective opinions). The choice of the internet by students' is more pragmatically adaptive of all sources in general, because source is acknowledged as highly popular knowledge acquisition method. Also, it is convenient for achievement of student's goals and objectives, allowing to gain knowledge easily and quickly, and it is used for leisure almost by all students.

In relation to the second part of the aim to study relationship between student's epistemological attitudes towards the sources of knowledge and study programme, firstly, was examined the impact of the study programme on difference in content of epistemological attitude in students in Latvia and the Netherlands, secondly, a comparison was implemented.

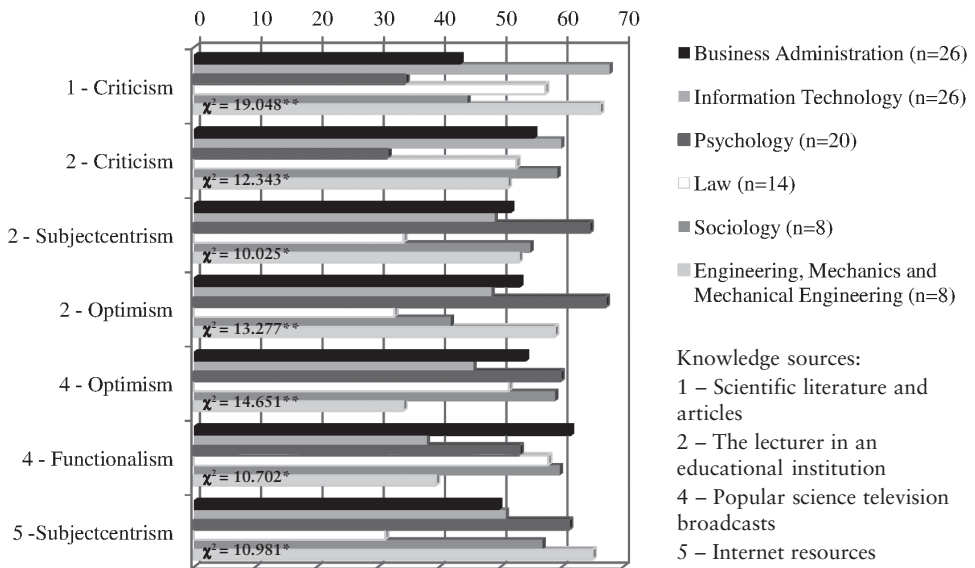
Comparison was conducted between students of six different study programmes from Latvia ($n = 102$): Business Administration ($n = 26$), Information Technology ($n = 26$), Engineering, Mechanics and Mechanical Engineering ($n = 13$), Sociology ($n = 8$), Psychology ($n = 20$), Law ($n = 14$). The following result was found: the study programme does not have relation formally to the emotionally prognostic reactions of students in any assessment of the sources of knowledge. Furthermore, the relationship of the study programme and other reactions of epistemological attitude of students have been found in the evaluation of individual sources. Statistically significant differences were found in the cognitive reaction in the assessment of the Internet resources ($F = 3.21^*$). According to the comparison of mean ranks of cognitive scale it is formally more pronounced among students of Engineering, Mechanics and Mechanical Engineering programme, but overall Business Administration programme students value epistemologically lower. The assessment of popular science television broadcasts showed statistically significant differences in activities ($\chi^2 = 11.9^*$) and pragmatism ($\chi^2 = 10.9^*$), formally the use of the source and the overall pragmatic value are more pronounced for social science students, studying Business Administration, Psychology and Law.

The results showed that the students' orientation on a particular subject to study influences differentiated in the content aspect of epistemological attitude, finding statistically significant differences in several features of epistemological attitude in the assessment of four knowledge sources of knowledge. The relationship of the study programme is more prominently observed in criticism, subjectcentrism, optimism and functionalism (see Figure 2).

In general, students in the Business Administration programme have a moderate criticism of epistemological quality of content of scientific literature and articles, and lecturer's knowledge. The importance of the lecturer as a source is formed by both epistemological and psychological qualities, high prognostic value and subjective significance, but its subjective meaning is approved equally in assessment of the Internet resources. The popular science television broadcasts are seen by them as a more functional ones, an objectively valuable and targeted inquired sources. Students in the Information Technology programme are the most critical in their assessment, the content of the lecturer's knowledge and the Internet resources as well are highly valued in average. Generally they are optimistic that the need for knowledge needs can be met and the true knowledge can be obtained both by listening to the lecturer and by using popular science television, nevertheless the perceived functionality of television

is inferior compared to all. In a similar tendency the students' assessment is expressed in another natural science programme such as Engineering, Mechanics and Mechanical Engineering. However, there are differences assessing the lecturer's knowledge, for example, reflecting less criticism of overall epistemological quality, valuing knowledge provided in depth and subjectively more valuable with high prognostic potential. Students in this programme have been valued with significance of content of popular science television broadcasts at the lowest compared to others, and on the other hand, subjective meaning of content value of the Internet resources is the highest.

Figure 2
Comparison of content of epistemological attitudes towards the sources of knowledge among students of different study programme from Latvia



Note: indicated only statistically significant results.

Source: elaborated by the authors.

Students in the Psychology programme are the least critically minded towards scientific types of sources. Above all they are acknowledging epistemological quality and importance of content of the scientific sources. The lecturer's knowledge is rated as highly significant in comparison to students of other programmes, and generally the high emotionally prognostic value and high functionality of popular science type sources – both television and the Internet is appreciated. Other social science programmes show different tendencies of cognition. Despite the similarities with the subject of psychology programme, sociology students are more critical to the lecturer's knowledge criticizing the credibility and provision of one-sided view of the issues, but they recognise the subjective value of content for personal and study purposes. Students'

assessment reflects an interesting tendency that the reliability of knowledge and a higher prognostic potential to satisfy needs of knowledge are attributed to a social sources such as the popular science television and the Internet resources rather than the lecturer in a higher educational institution. Students of the *Law* science programme underestimated the epistemological potential of the lecturer's knowledge, possibly due to the fact that the evaluation of the lecturer's personality possibly carrying out through the specific prism of the study subject. The content of the popular science television broadcasts was comparatively more highly valued, because of prognostic value in the sense of optimism and pragmatic meaning. The Internet resources were rated as moderately important.

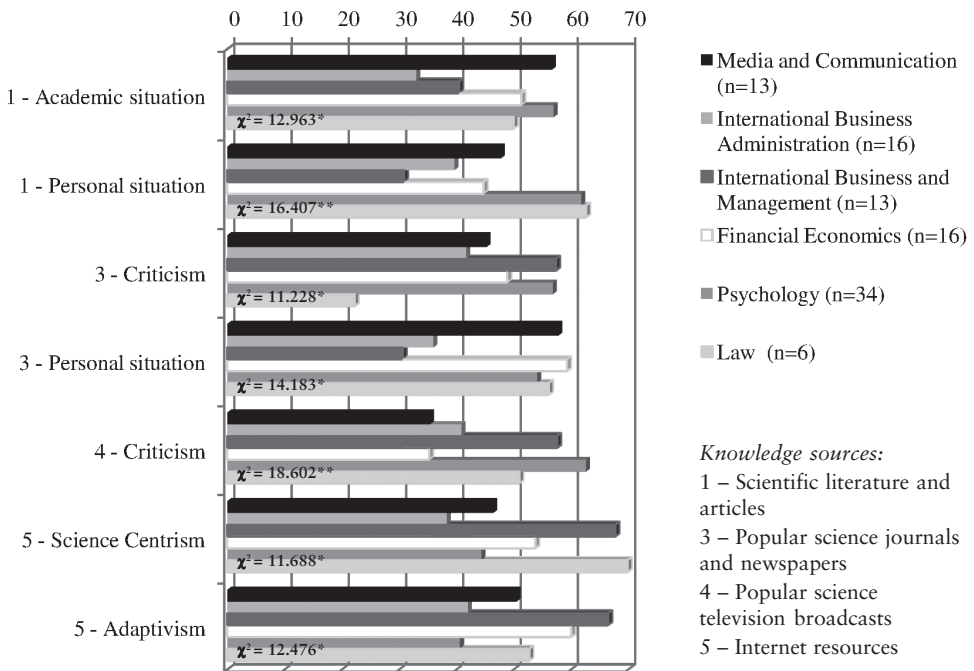
Students' sample from the Netherlands ($n = 98$), excluding two respondents, includes also six study programmes for comparison – Media and Communication studies ($n = 13$), International Business Administration ($n = 16$), International Business and Management ($n = 13$), Financial Economics ($n = 16$), Psychology ($n = 34$) and Law ($n = 6$). The results revealed that the study programmes do not have influence on differences in formal aspect of epistemological attitudes among students in the Netherlands in cognitive and emotionally prognostic evaluation of the sources. Whereas the impact of the study programme on differences in action scale ($\chi^2 = 22.076^{**}$) was observed in the evaluation of scientific literature and articles. According to the mean rank values of the scale of activity, the comparison between students' groups of different study programmes has been shown that the students of Psychology studies formally are more intensive in use of the scientific literature and articles, whereas sources are less intensely used by students of programmes of Law, Media and Communication, and Financial Economics programmes, at least by students studying subjects related to business. The impact of the study programme has been observed on different pragmatic evaluation of the Internet resources ($\chi^2 = 11.475^*$). The results of the comparison of mean ranks on the scale showed that cognition of the Internet resources are more pragmatic in general for students of Financial Economy and International Business Management studies. Students of the Psychology programme valued choice of the Internet as less personally meaningful in the comparison to others.

According to the obtained results, the impact of the study programme factor on differences in the content aspect of the epistemological attitude in the evaluation of four sources of knowledge was determined. The relation of the study programme factor has been observed in the use of the sources in academic and personal situation, in the features such as criticism, science centrism and adaptivism (see Figure 3).

Students of the Communication and Media study programme preferred acquiring the scientific literature and articles, used it intensively and especially in study-related conditions and purposes, and also were tend to use in personal situations outside of study circumstances in a lesser extent. The popular science journals and newspapers are useful for personal purposes as well. This tendency of cognition could be related to the specific nature of the subject of the study programme of mass media, reflecting the students' personal interest, which is also related to the moderate criticism of the epistemological quality of content of social sources such as journals, newspapers and television. Compared to students from other programmes students' in the International Business Administration programme assessment of the scientific literature, articles

and popular science type sources were not reflected to be highly psychologically significant, there was not observed a high usage among students. Students evaluated the Internet resources as lacking of epistemological quality for a low level of scientific base and substantiation. Students of the International Business and Management programme are most critical in the assessment of quality of knowledge of popular science journals and newspapers, expressed very low usage of the sources in personal circumstances. The quality of knowledge of the Internet resources has been evaluated as highly relevant to scientific criteria, also indicating the role of external factors in choice and use of the Internet. A particular attitude to some extent has been determined by students of the professional orientation possibly since the business and management have been implemented primarily through platforms on the Internet. Students in the Financial Economics programme tend to use intensively the scientific literature and articles in the context of academic cognition and communication. In turn, the popular science journals and newspapers are prioritized in the everyday personal cognition and are less criticized by epistemological qualities than the popular science television broadcasts.

Figure 3
Comparison of content of epistemological attitudes towards the sources of knowledge among students of different study programmes from the Netherlands



Note: indicated only statistically significant results.

Source: elaborated by the authors.

Students of the Psychology programme highly value the sources of scientific type as significant ones showing the tendency of actively using it in both situations even using is more pronounced in personal situations. Overall, the tendency points out on future psychologists as both personally interested in theory and research of scientific psychology and maintain in a high level of motivation in the study process. Popular journals and newspapers have been criticized for low credibility and reflection of one-sided point of view, in terms of the quality the most critical is content of popular science television, but the Internet resources have been ranked the lowest at its scientific quality and adaptability of choosing. Students of the Law science actively use the scientific literature and articles and value them as suitable for both situations with emphasis on the cognition for personal goals. In general, a positive attitude has been identified towards popular science sources such as the epistemological quality of journals and newspapers and using them in daily cognition. In addition, the content of the Internet resources evaluated as a highly substantiated with scientific content, but the choice of the Internet less was exposed to the influence of adaptive factors.

For examination of the differences between the epistemological attitudes of students in Latvia and the Netherlands towards the sources of knowledge in relation to the study programme has been applied only three comparable study programmes by equal subject for comparison and analysis: students in Latvia ($n = 60$) from the relevant programmes of different higher education institutions of Daugavpils city – Business Administration (hereafter as Business Management) ($n = 26$), Psychology ($n = 20$), Law science ($n = 14$); students in the Netherlands ($n = 69$) from the relevant programmes of Rotterdam Erasmus University – Business Management ($n = 29$) (combining two similar programmes by study subject as International Business Administration and International Business and Management), Psychology ($n = 34$) and Law ($n = 6$). Students of other study programmes were excluded from the analysis.

The results showed that there are differences between the formal aspect of epistemological attitude of students in the Netherlands and Latvia in the Business Management and Psychology programme in the assessment of several sources of knowledge. No statistically significant differences were found among students of Law science, possibly because the sample of the Netherlands was statistically too small.

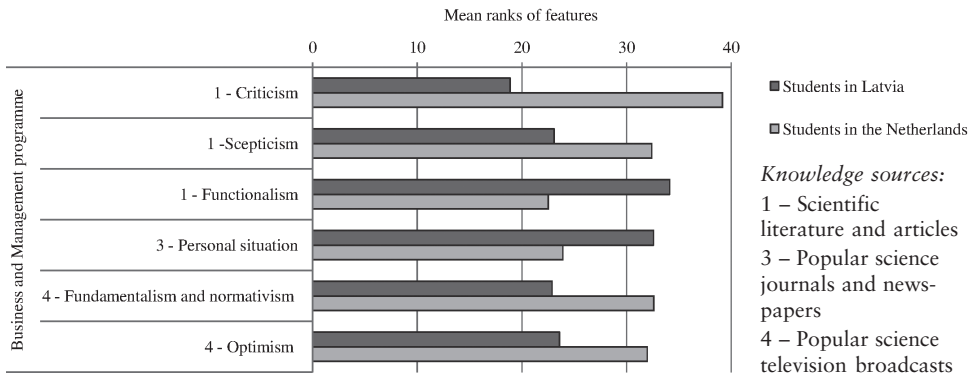
Cognitive evaluation formally is more intensive and significant in the assessment of scientific literature and articles ($U = 183^{**}$) for Psychology students from the Netherlands, while pragmatic value of these sources ($U = 243$) are more pronounced for Psychology students from Latvia. In its turn, the meaning of cognitive valuation of the Internet resources ($U = 221.5^*$) is more marked in students of Psychology programme from Latvia. Concerning the use of the Internet resources ($U = 178^{**}$), the intensity of actions is more pronounced among Psychology students from the Netherlands. Students of the Business Management in Latvia formally use more and notably popular science television broadcasts, indicating statistically significant differences in action / behavioural scale ($U = 253^*$). In Latvia students of Business Management programme reflect a higher pragmatism of choosing Internet resources ($U = 221.5^*$).

In terms of content, the peculiarities of cognition of students in the Business Management programme among Latvia and the Netherlands were identified. Statistically

significant differences were found in the epistemological attitude towards three sources, the scientific literature and articles, popular science journals, newspapers, and television broadcasts. The results of the comparison of mean ranks of the features were reflected (see Figure 4).

Figure 4

**The comparison of content of epistemological attitude
in the assessment of three sources of knowledge between students
in Latvia and the Netherlands of Business and Management programme**



Note: * indicated only statistically significant results.

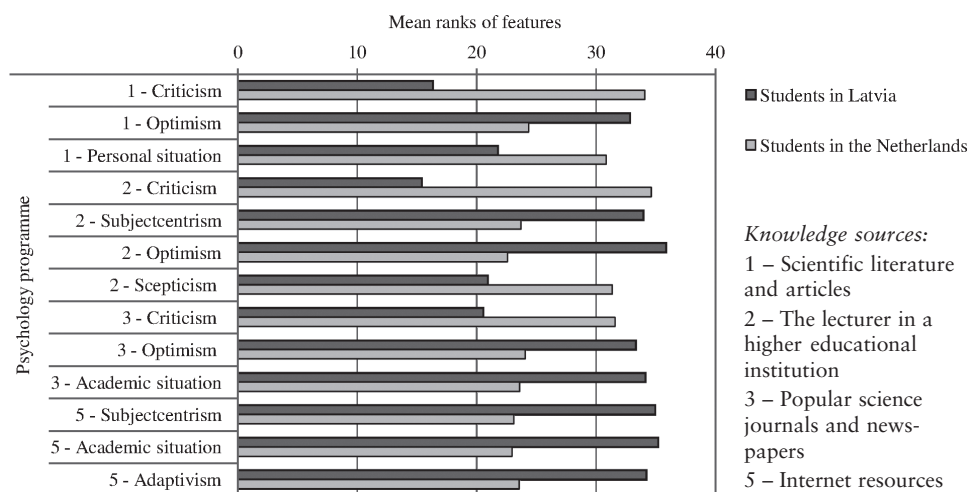
Source: elaborated by the authors.

According to the results the students of the Business Management programme in the Netherlands are more critical ($U = 139.5^{***}$) and sceptical ($U = 249^*$) in the assessment of the epistemological quality of scientific literature and articles. However, in Latvia students are more expressive in functionalism in the choice of scientific literature and articles ($U = 218^{**}$), as well as popular science journals and newspapers are used in personal circumstances and purposes more actively ($U = 258^*$). Students in the Netherlands value the content of popular science television broadcasts as more epistemologically significant, emphasizing pronounced feature of fundamentalism and normativism ($U = 244^*$) and are more prognostic in the sense of optimism ($U = 262^*$) towards knowledge potential.

In terms of the content, specificities of cognition were also found among students of the Psychology programme in Latvia and the Netherlands. Statistically significant differences were found in the epistemological attitude towards the four sources, scientific literature, articles, the lecturer in a higher educational institution, popular science journals, newspapers and Internet resources (see Figure 5).

Figure 5

**The comparison of content of epistemological attitude
in the assessment of four sources of knowledge between students
in Latvia and the Netherlands of Psychology programme**



Note: indicated only statistically significant results.

Source: elaborated by the authors.

An analysis of the content of epistemological attitudes among students of Psychology programme shows that students in the Netherlands have more solid critical position in evaluation of quality of scientific literature and articles ($U = 117^{***}$), of lecturers' knowledge ($U = 98.5^{***}$), and of content of popular science journals and newspapers ($U = 291.5^{**}$). Students from the Netherlands have been more sceptical about prognostic potentiality of the lecturer's knowledge ($U = 209^*$), and reflecting psychological significance of scientific literature and articles in personal situation ($U = 226^*$) they tend to use sources for personal purposes and circumstances more intensive than students of Psychology programme in Latvia. However, Psychology students in Latvia have pronounced subjectcentrism valuating the epistemological quality of the lecturer's knowledge ($U = 211^*$) and of the content of the Internet ($U = 191^{**}$). In addition, in Latvian students of Psychology studies are more optimistic about the potential of scientific literature and articles ($U = 233^*$), lecturer's knowledge ($U = 171^{**}$), and popular science journals and magazines ($U = 223.5^*$) to meet their needs of knowledge. As well as the high epistemological significance of popular science journals and newspapers being accepted by students in Latvia that promotes the use of that source in academic situations ($U = 207.5^*$). Also the higher psychological significance was identified in using the Internet resources in study-related conditions and purposes ($U = 186^{**}$), but the pragmatic value is more adaptive ($U = 206^*$) in choosing of the Internet.

Conclusions

The comparison of the content of epistemological attitude in students from Latvia between five sources of knowledge revealed statistically significant differences between all sources in all features of content ($p < .001$). Statistically significant differences were also found between five sources of knowledge in all features of content of epistemological attitude among students in the sample of the Netherlands.

Statistically significant differences were found between the epistemological attitude of students in Latvia and the Netherlands, in the formal and content aspects, in the importance of sources in the assessment of all five sources of knowledge: in the evaluation of scientific literature and articles in the formal aspect – in cognitive reaction ($U = 3656^{***}$), in the content aspect – in criticism ($\chi^2 = 34.96^{***}$), in optimism ($\chi^2 = 7.76^{**}$) and scepticism ($\chi^2 = 13.13^{***}$), in functionalism ($\chi^2 = 5.31^{**}$) and content of four features; in the assessment of the lecturer in a higher educational institution in the content aspect – criticism ($\chi^2 = 12.9^{**}$) and subjectcentrism ($\chi^2 = 3.71^*$), and in the content of four characteristics; in the evaluation of popular science journals and newspapers in the formal aspect – in the action/behaviour ($U = 4786^*$), and in terms of content – in fundamentalism and normativism ($\chi^2 = 4.42^*$) and academic situation ($\chi^2 = 12.69^{***}$), and content of four characteristics; in the assessment of popular science television broadcast in the content aspect – optimism ($\chi^2 = 4.92^*$), and content of three features; in the evaluation of the Internet resources in the formal aspect – in the action/behavioural ($U = 3663^{***}$) and pragmatism ($U = 3718^{***}$), and in the content aspect – in the academic situation ($\chi^2 = 34.96^{***}$), in functionalism ($\chi^2 = 7.76^{**}$) and adaptivism ($\chi^2 = 13.13^{***}$), and content of four features.

The results revealed the relationship between the study programme and the content of epistemological attitude of students in Latvia and in the Netherlands. Statistically significant differences were found in the formal and content aspects of epistemological attitudes among students of different study programmes from Latvia in the assessment of four sources of knowledge. Formally in cognitive scale of the assessment of the Internet resources ($F = 3.21^*$); in the assessment of popular science television broadcasts, in action/behaviour ($\chi^2 = 11.9^*$) and in pragmatic reaction ($\chi^2 = 10.9^*$). In terms of content, evaluating criticism ($\chi^2 = 19.048^{**}$) of scientific literature and articles; in valuation of criticism ($\chi^2 = 12.343^*$), subjectcentrism ($\chi^2 = 10.025^*$), optimism ($\chi^2 = 13.277^*$) towards the lecturer's knowledge; in the assessment of popular science television broadcasts in optimism ($\chi^2 = 14.651^{**}$) and functionalism ($\chi^2 = 10.702^*$); valuating subjectcentrism ($\chi^2 = 10.981^*$) towards the Internet resources.

Related to the Netherlands sample were revealed statistically significant differences in the formal and content aspects of epistemological attitude between students of different study programmes in the assessment of four sources of knowledge. Formally in the assessment of scientific literature and articles in action/behaviour ($\chi^2 = 22.076^{**}$) scale; evaluating the Internet resources by the pragmatism ($\chi^2 = 11.475^*$) scale. In content aspect assessing the scientific literature and articles in terms of academic situation ($\chi^2 = 12.963^*$) and personal situation ($\chi^2 = 16.407^{**}$); in the assessment of popular science journals and newspapers in criticism ($\chi^2 = 11.228^*$) and personal

situation ($\chi^2 = 14.183^*$); valuating criticism ($\chi^2 = 18.602^{**}$) of popular science television broadcasts; in the assessment of the Internet resources in terms of science centrism ($\chi^2 = 11.688^*$) and adaptivism ($\chi^2 = 12.746^*$).

The results revealed the relationship between study programme and differences between students' epistemological attitude in Latvia and the Netherlands towards the sources of knowledge in particular – Business Management and Psychology. Statistically significant differences were found between the students of the Business Management programme in formal aspect in action/behaviour ($U = 253^*$) scale evaluating popular science television broadcasts; in pragmatism ($U = 221.5^*$) evaluating the Internet resources. Statistically significant differences have been found among students of the Psychology programme in cognitive ($U = 183^{**}$) scale in the assessment of scientific literature and articles and of the Internet resources ($U = 229^*$); in action/behaviour ($U = 178^{**}$) scale in the assessment of the Internet resources; in pragmatism ($U = 243^*$) evaluating scientific literature and articles. In terms of content statistically significant differences were found between students of the Business Management programme in criticism ($U = 139.5^{***}$), in scepticism ($U = 249^*$) and functionalism ($U = 218^{**}$) in the assessment of scientific literature and articles; in personal situation ($U = 258^*$) evaluating popular science journals and newspapers; in fundamentalism and normativism ($U = 244^*$) and optimism ($U = 262^*$) in the assessment of popular science television broadcasts.

Significant differences in the content of the following sources were found among the students of the Psychology programme: in terms of the criticism ($U = 117^{***}$), optimism ($U = 233^*$), personal situation ($U = 226^*$) evaluating scientific literature and articles; in criticism ($U = 98.5^{***}$) and subjectcentrism ($U = 211^*$), in optimism ($U = 171^{**}$) and scepticism ($U = 209^*$) in the assessment of lecturer's knowledge; evaluating popular science journals and newspapers in criticism ($U = 291.5^{**}$), optimism ($U = 223.5^*$) and academic situation ($U = 207.5^*$) in the evaluation of popular science journals and newspapers; in terms of subjectcentrism ($U = 191^{**}$), academic situation ($U = 186^{**}$) and adaptivism ($U = 206^*$) in the assessment of the Internet resources.

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