

TRENDS IN CULTURAL INTELLIGENCE RESEARCH IN THE CONTEXT OF INTERCULTURAL MANAGEMENT

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Abstract: Cultural intelligence (CQ), expressing a capacity to effectively function in a cultural or culturally diverse environment (professional and otherwise), has great importance not only for the success of individuals who operate professionally in an intercultural environment, but also for the competitiveness of companies or organizations operating in international markets. For this reason research about CQ abroad is given the high level of attention, however this is not the case in the Czech Republic. This review uses the relatively new method of systematic quantitative literature review to provide a detailed mapping of cultural intelligence research in the years 2015–2019. The results of the analysis indicate that CQ is a global multidisciplinary phenomenon that has become established in intercultural management as a compelling area of research. The concept of CQ is well conceptualized and operationalized; the research at present is focused on the known relationships of new mediators or moderators and other correlations between CQ and new variables are being sought at the level of international economics and management. From the number of published research outcomes it can be seen that interest in CQ is growing, primarily among authors from multicultural countries. Researchers in the years 2015–2019 tested (predominantly in empirical studies) far more hypotheses related to CQ than they did in a comparable previous period; the studies took place in 33 countries, however mostly in the USA. European countries nonetheless fall somewhat behind in this area. Building on previous literature reviews, the nomological network of CQ has been supplemented for the years 2018 and 2019. From the classification of research outcomes it is evident that researchers are most interested in topics oriented on psychology of work. Our study brings entirely new information about CQ research pertaining to the methods used in quantitative analysis and the characteristics of respondents and localization of research.

Keywords: Cultural intelligence (CQ), literature review, systematic quantitative literature review, CQ nomological network.

JEL Classification: M21, M54.

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Introduction

Cultural intelligence (CQ) is the ability to effectively function in a culturally diverse environment and succeed in such environment (Ang et al., 2007). CQ gives people and organizations a competitive advantage in international markets (Ang & Inkpen, 2008;

Groves & Feyerherm, 2011) and is seen as a prerequisite for the success of any subject in an international environment (Elenkov & Manev, 2009; Creque & Gooden, 2011; Groves & Feyerherm, 2011; Livermore, 2015). Present success or failure in an international and intercultural environment is strongly affected by

intercultural sensitivity, cultural intelligence, and 'cross-cultural competencies' as an overarching way of thinking (Johnson et al., 2006). These competencies make people more capable of making important global strategic decisions and communicating better on an intercultural level.

It logically follows that significant attention has been given to the issue of CQ, as well as scientific research. The ProQuest database currently records approx. 3,000 articles in scholarly journals devoted to this issue. CQ ranks among one of the most important and most frequently investigated cross-cultural competencies (Leung et al., 2014; Thomas et al., 2015; Andresen & Bergdolt, 2017; Qi et al., 2018; Lorenz et al., 2018). Any research on CQ should therefore be based on existing knowledge, which must nevertheless be organized and systematically processed (Mareš, 2013). Systematic Quantitative Literature Review (SQLR) is one of the current methods that enable such processing (Pickering et al., 2015).

The main goal of our article is to systematically analyze the current state of knowledge of CQ using the SQLR method. Our survey builds on previous studies with the same or similar objectives (Solomon & Steyn, 2017; Ott & Michailova, 2018; Fang et al., 2018). Because these papers mostly cover the period from 2002 to 2015, we selected the period from June 2015 to June 2019 (at the time of our research, the most recent articles available were from mid-2019). Our study uses the same variables as a study by Fang et al. (2018); the nomological network of CQ has been developed for the years 2018 and 2019. The importance of our study consists in the creation of a list of current and high-quality empirical studies that have been published in prestigious academic journals on the topic of CQ. In addition, our study is the first of its kind to demonstrate in a quantified and factually substantiated format that CQ is a global phenomenon with interdisciplinary reach. Among other things, we are looking for answers to the following questions, some of which have not been addressed in previous surveys: Where and by whom (in terms of geographical location and affiliation) has research into CQ been conducted? How intensive was interest in the topic among researchers in the years 2015–2019? What methods are most often implemented in this research? What are the

demographic characteristics of respondents (in terms of age, gender, nationality, education, profession)?

The article is structured as follows: the first chapter identifies previous (existing) survey literature in accordance with the recommendations of Petticrew and Roberts (2008). It then briefly introduces the method of SQLR, which lies between two other forms of literature review: narrative and meta-analysis. The second chapter describes the methodological process using the SQLR method that has led to the creation of our database of technical articles discussing CQ. The results in the parameters monitored are mentioned and discussed in the third chapter. The conclusion summarizes our main findings, our proposals for future research, and the limitations of the study.

1. Theoretical Background

There are three basic types of literature reviews: narrative, meta-analysis, and systematic quantitative. The traditional narrative review is "a summary review relying on the most expansive set of studies for the given topic and selected time period. [...] The quality of the review depends on the selection of the sources from which the author draws, the technical erudition of the author, and the author's experiences with this type of study" (Mareš, 2013). This method of conducting a literature review is more suited for specialists in the field than beginners who thus far do not have sufficient familiarity with the topics.

Meta-analysis applies statistical processes with the goal of summarizing the outputs of a number of quantitatively oriented research studies that address the same or a similar topic. This type of literature review (typical e.g. of medical research) is relatively time-consuming and performed as a rule by teams of interdisciplinary researchers.

Systematic literature reviews rely on "if possible on complete, i.e. exhaustive set of articles on the given topic for the selected time period. The author very thoroughly analyzes the quantitative focused research studies, both published and unpublished (e.g. research reports) and describes their methods in detail. The author then evaluates the individual research studies from various perspectives and typically presents the results of this assessment in similar summary tables. The conclusions

the author reaches are formulated in the format of a generalization. The author points out unaddressed aspects of the given topic, conflicts in the empirical findings, and methodological problems of previous studies” (Mareš 2013). This type of literature review is suitable for doctoral students and researchers beginning work in a new topic (Pickering et al., 2015).

The following Tab. 1 summarizes the different approaches to three of the above types of literature reviews.

A special type of literature review is the relatively new method used in this study, the Systematic Quantitative Literature Review – SQLR, which was developed and propagated on a large scale by the Australian researchers from Griffith University Pickering and Byrne (2014). ‘Systematic’ means that the review and selection of articles for analysis takes place entirely explicitly and the process is easily replicable; ‘quantitative’ means that the number (quantity) of articles is measured on the basis of a certain specified criteria; the ‘complexity’ of the method is reflected in evaluation of various variables of research such as the localization of research, respondents, variables, and outcomes; ‘structured’ relates to the processing of what is known and the determination of what

is unknown with regard to various categories and subcategories. Moreover, the collection and analysis of data takes place in writing and on the basis of a fixed, clear process. According to Pickering and Byrne (2014), this method has a wide range of advantages: it submits a structured summarization of existing research in a given field that can be later published. The set of studies can be easily updated, the method helps map specific research topics and identify gaps in the research. The SQLR method may serve as preparation for a traditional narrative review or meta-analysis.

The creation of a certain system in the selection of literature from which the review is created is important for all types of literature reviews. Only when the researcher is certain that he or she is familiar with all relevant sources of literature on the given topic or research problem, may he or she state that he or she is investigating a certain gap in knowledge or an important question aligned with a certain subject of interest. The systematicity of selection of articles for a quantitative literature review takes place in the following steps: 1. definition of the topic; 2. formulation of the research questions; 3. identification of the keywords; 4. searching in the specified databases (i.e. definition of the process for searching in databases);

Tab. 1: Overview of three different methods of literature review

	Traditional narratives	Meta-analysis	Systematic quantitative
Who commonly does the review?	Experts & new PhD students	Team of experts	PhD students & others
Who can usually publish it?	Experts	Team of experts	PhD students & others
How are papers selected?	Rarely systematic	Systematic	Systematic
How are data on papers compiled?	Rarely systematic	Systematic	Systematic
How are papers compared?	Expert evaluation	Expert evaluation	Quantitative or expert evaluation
Is there statistical analysis?	NO	YES	YES, if desired
What kind of gap analysis is used?	Descriptive	Descriptive	Quantitative
What is the structure of the papers?	Narrative	Standard	Standard
What are updating possibilities during the ongoing research project?	Limited	Easy	Easy

Source: Pickering et al. (2015)

5. specifying the criteria on which the articles and research reports will be selected for further analysis or eliminated.

Definition of the topic is very important for the entire research process. Systematic quantitative literature review is focused solely

on one part of the entire study. At the beginning it is necessary to precisely define what will be investigated and sought. In certain research projects the key words contain everything (or the majority) of what will be conducted. Use of the SQLR method is appropriate in the case of

Tab. 2: Summary of three reviews on CQ

		Solomon & Steyn, 2017	Ott & Michailova, 2018	Fang et al., 2018
THEME		CQ truths	CQ and expatriates	Complex and up-to-date evaluation of CQ research, suggestions for further research
RESEARCH QUESTIONS		What do the CQ truths (confirmed hypotheses) demonstrate?	1. CQ conceptualization; 2. Interdisciplinarity of the CQ topic; 3. CQ as indep., dep. variable, moderator, mediator	What are direct and indirect effects of CQ?
TYPE of review		Qualitative (thematic analysis)	Descriptive	Quantitative
KEY WORDS		'Cultural intelligence'	'Cultural intelligence'	'Cultural intelligence' + 'CQ'
PROCESS OF SEARCHING		Databases EBSCO, PROQUEST, Google Scholar, SAGE (84 journals)	1. Impact factor journals; 2. Searching in EBSCO host, PROQUEST, PSYCINFO, OVID	Web of Science
INCLUSION CRITERIA	Language	English	English	English
	Period	2002 – 5/2015	2002–2015	2002 – 4/2018
	WHAT?	Peer-reviewed articles in academic journals	Peer-reviewed studies published in academic journals focused on education; samples used: students and expats	Articles in academic journals
	OUTPUTS	Tested hypotheses (relationship between two variables); CQ measurement and thematic analysis	CQ as dependent, independent variable, moderator, mediator + only individual level of analysis	Theoretical and empirical articles: quantitative measurement of CQ; CQ as dependent, independent variable, mediator, moderator, aggregated CQ + qualitative research (interview, content analysis, case study methodology)

Source: Fang et al. (2018), Ott and Michailova (2018), Solomon and Steyn (2017)

new interdisciplinary research topics, provided that it is not possible to carry out a meta-analysis review due to the significant diversity of the methods used.

The SQLR method is in our article applied to the area of research associated with questions of cultural intelligence (CQ), which is relatively well defined and described abroad. The direction of research in this area has begun to be defined by a collective of authors grouped around two research centers: the Michigan State University and Nanyang Business School in Singapore. In accordance with the recommendation by Pickering et al. (2015), recently published literature reviews were identified (Ang et al., 2015; Bovornusvakool et al., 2015; Solomon & Steyn, 2017). In the newest literature review from 2018 (Ott & Michailova, 2018), in which a comparison may be found with other literature reviews (Leung et al., 2014; Ng et al., 2012; Sternberg & Kaufman, 2011), the authors do not concentrate solely on the antecedents and outcomes, but also on CQ in the function of moderators and mediators.

In Tab. 2 they are briefly described and in the points three basic literature reviews concerning CQ are characterized (Fang et al., 2018; Ott & Michailova, 2018; Solomon & Steyn, 2017), which have become the jumping-off point for our investigation and which we are building on to a large extent.

2. Research Methodology

The SQLR method requires the definition of inclusion criteria, which will enable later replication of the study of Pickering and Byrne (2014). Our studies are subject to four basic and three supplemental (clarifying) inclusion criteria. First, the research concentrates, based on another literature review (Solomon & Steyn, 2017) on the concept of cultural intelligence; the terms 'cultural intelligence' or 'CQ' had to appear both in the title of the article and in the keywords. As a part of this criteria it was assessed whether or not the article applies to the study problem and the extent of its relevance. Second, the specification of the period in which the studies were published (June 2015 – June 2019). Third, where the studies were published; in accordance with the recommendations (Babbie & Mouton, 2001), attention was focused solely on reviewed academic journals, other types of publications such as books, textbooks, monographs, chapters of

monographs, reviews, dissertation and diploma work, publicist articles were not included in the selection. The fourth criterion related to the language in which all the articles analyzed were published (only articles published in English were chosen). Another criterion was specified following the example of another study (Leung et al., 2014): fifth, the database in which the search took place (Google Scholar, Web of Science, Science Direct, Scopus, PROQUEST, SAGE Psychological Collection, Emerald, Wiley Online Library, EBSCO). Sixth, only work based on empirical research. Seventh, only work based on a quantitative approach (i.e. specification and testing of hypotheses must be present in the study). Eighth, only work in which the processes used were clearly described. Ninth, only work in which the investigated sample of persons is precisely described (also the method of their selection). The units of analysis were only outputs that met all of the above inclusion criteria.

First the Google Scholar database was searched. All studies and outputs of the literature containing the key words in the title of the article were included in the initial analysis. The search was constrained to 'after 2015' and to technical (academic) journals. In the first phase, all publications in non-English languages were also eliminated. The search was completed when 5 sequential pages (each containing 10 results) did not contain a relevant record.

In the second phase the appearance of selected identifiers ('cultural intelligence' and 'CQ') in the abstract and keywords in search results were examined. All outputs for which the term 'cultural intelligence' or 'CQ' appeared either in the title, abstract, or key words of the article were registered and marked for further analysis. The programs Zotero, Mendeley, and Excel were used for this purpose. At the same time all 'grey literature' titles were categorized (dissertation and diploma work, submissions to conference symposia, etc). All publications older than 2015 were also eliminated. Only technical research articles were included in the selection. Other, above mentioned, databases were then similarly examined with the goal of creating a complex list of literature.

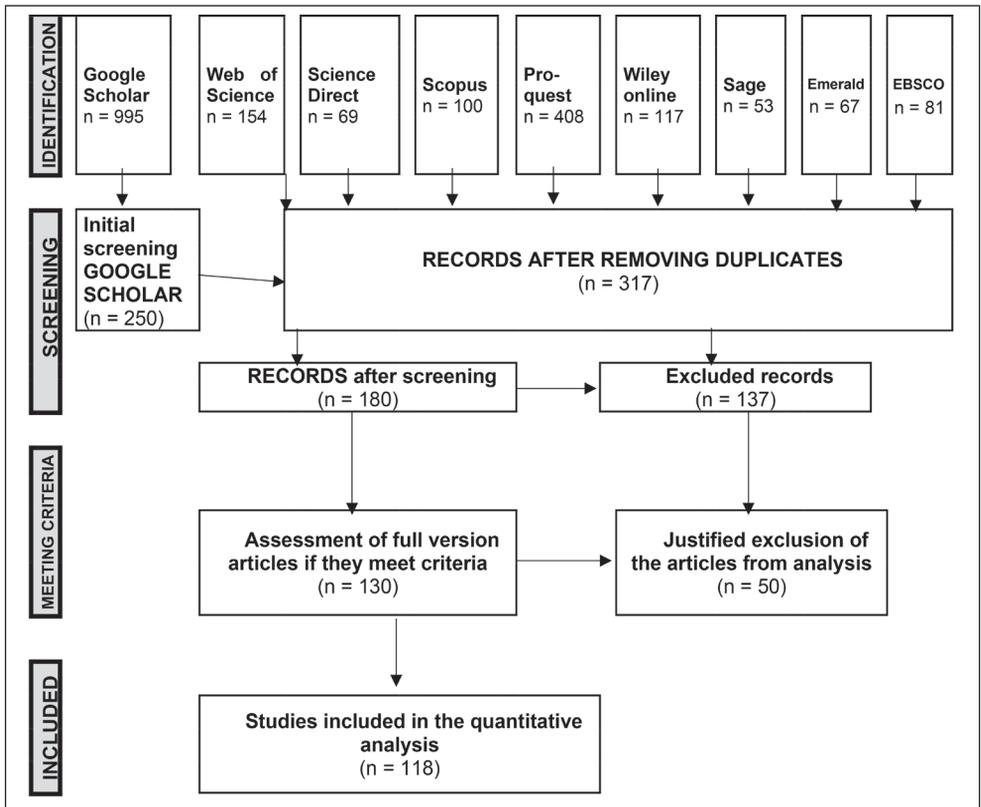
The search results were carefully recorded into a precreated Excel spreadsheet using a system of ones (= presence of markers of observed features) and empty fields

(= absence of markers of observed features). The information of the articles were classified into the following categories and subcategories, which created the structure of the review. These categories and subcategories related to hypotheses (number of hypotheses, number of confirmed hypotheses), CQ as an independent variable (antecedents), dependent variable (output), mediator, moderator, CQ development, then the data analysis method, respondents (number, nationality, gender, profession, country of interaction, age) and type of outcome (psychological, behavioral, performance). In accordance with the studies Solomon and Steyn (2017) our studies were coded in terms of content according to the following criteria: 1. cross-cultural adjustment; 2. training, experiential learning; 3. job performance, satisfaction, involvement;

4. international experience; 5. team knowledge share, performance, development of shared values, trust; 6. leadership – effectiveness, styles; 7. cross-cultural effectiveness, negotiation styles; 8. organization: adaptive capability, engagement; 9. cross-cultural collaborative dealings; 10. personality; 11. discrete intelligence type; 12. self-efficacy; 13. psychological capital; 14. other. Apart from this, the causality of relationships was tracked between the studied variables, if the study design allows it.

In the next round of screening all articles and studies that were not published in prestigious academic journals measured by the SJR indicator were eliminated (González-Pereira et al., 2009). Upon more detailed analysis of the identified units of the analysis, all outputs that did not meet the specified

Fig. 1: Record info for PRISMA statement



Source: Moher et al. (2009), own research

criteria were eliminated from the database of articles and studies created, namely the ones that 1) negated the specified inclusion criteria, e.g. one study (Cramer, 2018) did not analyze the relationship between two variables, while another (Alkhyeli & Van Ewijk, 2018) was empirical but qualitatively oriented or did not test the hypothesis (Alshaibani & Bakir, 2017; Lin et al., 2016; Velez-Calle et al., 2018; Zhang et al., 2017); one study (Rockstuhl & Van Dyne, 2018) was eliminated for not being empirical, i.e. it did not perform its own research (data collection, etc); 2) represented other genres such as editorials, essays, letters to the editor, criticism, conference proceedings; 3) related only marginally to cultural intelligence (Friedman et al., 2018; Wilson et al., 2017); 4) were characterized by human factor errors, where articles were included in the database that did not meet the inclusion criteria, e.g., were outside the specified time period; 5) where the full text of identified sources was not available (Kubicek et al., 2019; Richter et al., 2020; Teimouri et al., 2016).

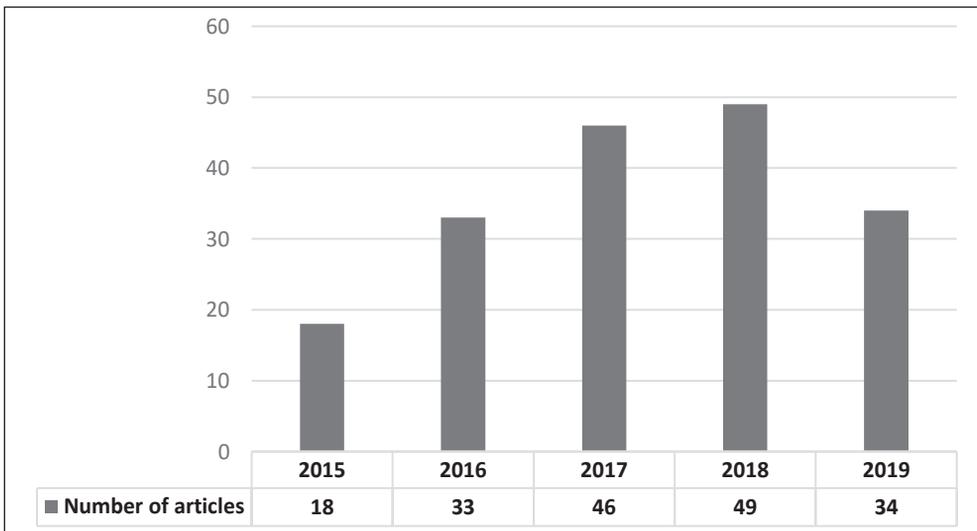
Fig. 1 shows the process of searching and eliminating publishing outcomes according to their relevance in relation to the selected inclusion criteria.

3. Research Results and Discussion

As indicated after the initial screening, the topic of cultural intelligence is attracting global attention. Of the 180 identified (relevant) records, the topic of CQ was published most frequently in the Anglo-Saxon world (92 articles in Great Britain, 56 in the USA, 3 articles in Canada, 2 articles in South Africa, 1 article in New Zealand, and in Australia also 1 article). In other European countries (apart from Great Britain) the topic was published most frequently in the Netherlands (8), Switzerland (6), and Germany. One to two articles were published in Greece, Sweden, Spain, Romania, Serbia, and Italy. In non-European countries this topic was covered in Turkey, Malaysia, and Iran.

The multidisciplinary of research associated with cultural intelligence is evidenced by the focus of prestigious journals identified during the initial screening. Articles with the topic of CQ were published in journals specializing in language and linguistics, behavior in organizations and HRM, communications, strategy and management, economics, education, psychology (applied, social, developmental, educational), tourism, cultural study, social and humanitarian science, marketing, political science and international

Fig. 2: Authors and number of articles published in the years 2015–2019



Source: own

relations, sociology, business and international management.

Fig. 2 presents the **number of articles** that were published on the topic of CQ in the individual years of the selected time period (2015–2019). In total, 180 studies were identified. In this context it is necessary to realize that the years 2015, 2019 are not complete, but only articles published by the midpoint of these years were registered.

Fig. 3 depicts the number of authors (including their gender) who have contributed to all published studies. These authors to a certain extent represent a global academic community on the topic. From the results of the Fig. 3 it can be seen that the topic of cultural intelligence is significantly more attractive (interesting) for men than for women, $\chi^2(1; n = 470) = 5.75; p < 0.05$. As the blue line shows, there was an increase in the number of researchers involved in the CQ research during the years in the period 2016–2018 (without the years 2015 and 2019 that measure outcomes, i.e., the number of published articles, only in the six month periods). It can be expected that this positive trend will be continuing in the future and will be increasingly reflected in the amount of published articles. Although the topic of CQ is still more interesting for male researchers, data from the half of the year 2019 might be implying that the male prevalence in the CQ research is over.

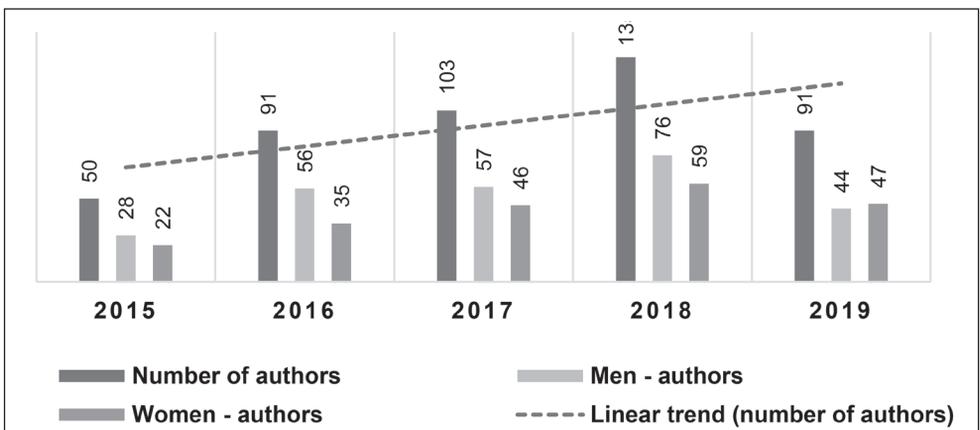
470 researchers have been involved in studies of cultural intelligence with affiliations

in 49 countries. The topic of cultural intelligence is addressed most in the USA (110 authors of articles worked at a university in the USA), the topic is then abundantly studied in Australia (52 affiliations of study authors), China (33 author affiliations), Great Britain (23 affiliations), India (18 author affiliations), Iran (16 affiliations), Germany (13 affiliations), Spain (15), Canada (12), the Netherlands (11), Malaysia (10), Indonesia (10), South Korea (8), South Africa (8).

From the Fig. 4 it can be seen that the topic is most often addressed in Asian countries, then in Europe, followed by North America and Australia. In South America and the African continent this topic is more of a marginal area of interest. If we disregard the three continents placing last, the question remains of whether the three remaining continents (Asia, Europe, North America) contribute equally to the research topic. The result of the test for goodness of fit shows that the research is distributed more or less equally across the three dominant continents, none of them plays a statistically significant role in cultural intelligence research. It can therefore be stated that the topic of cultural intelligence is a global phenomenon (it is given equal attention in Asia and in Europe and in North America), $\chi^2(2; n = 390) = 3.37; p > 0.05$.

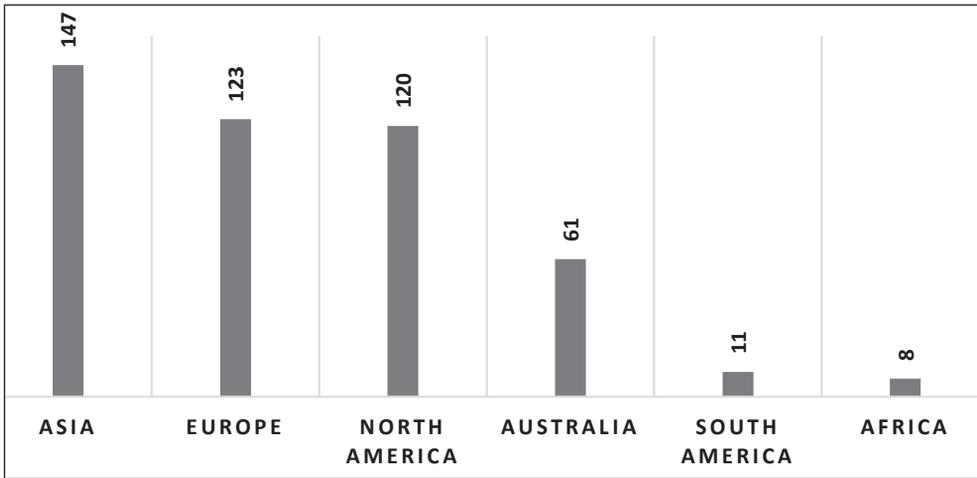
CQ research in the years 2015–2019 took place in 33 countries, however mostly in the USA. As shown in the Tab. 3, strong attention is given to the topic of CQ in the Asian continent,

Fig. 3: The authorship of published articles (the number and gender of authors)



Source: own

Fig. 4: Authors' affiliations by continents



Source: own

Tab. 3: Localization of research (by countries and continents)

Continent	Country	IN TOTAL
Europe	France (3), Poland (2), Croatia (2), Spain (2), Portugal (1), Denmark (1), Cyprus (1), Germany (1), Serbia (1), the Netherlands (1)	15
Asia	China (7), Vietnam (5), Thailand (5), Malaysia (5), the Philippines (5), India (4), Indonesia (3), Iran (3), South Korea (3), Japan (2), Turkey (2), Taiwan (2), Jordan (1), Pakistan (1), Singapore (1)	49
North and South America	USA (26), Canada (3), Colombia (1), Brazil (1)	31
Oceania	Australia (13), New Zealand (1)	14
Other	South Africa (1), not specified (8), multinational company (3)	12

Source: own

however relatively little in Europe. The number of studies performed in the given countries is shown in parentheses.

Fig. 5 shows studies on CQ published in the years 2015–2019. According to the methodological approach from the total number of 180 studies, 130 (72% of all published studies) were of a quantitative character, in 7 (4%) cases authors selected a qualitative approach (Aldhaferi, 2017; Bergh & Plessis, 2016; Cray et al., 2018; Kaufman & Hwang, 2015; Qi et al., 2018; Thompson, 2018; Yalçinkaya & Özer, 2017), in 4 (2%) articles (Li et al., n.d.; Lorenz

et al., 2018; Mayer et al., 2016; Nguyen et al., 2018) mixed methods appeared, in 5 (3%) cases the authors performed literature reviews (Andresen & Bergdolt, 2017; Clark & Polesello, 2017; Fang et al., 2018; Ott & Michailova, 2018; Solomon & Steyn, 2017), the conceptualization and definition of CQ was the focus in 7 (4%) cases (binti Hamzah et al., n.d.; Hong, 2017; Patel & Salih, 2018; Pekerti & Thomas, 2016; Ramsey et al., 2016; Rao, 2017; Sharma & Hussain, 2017), in 15 (8%) cases the subject of research was CQ measurement (AL-Dossary, 2016; Almutairi & Dahinten, 2017; Alon et al.,

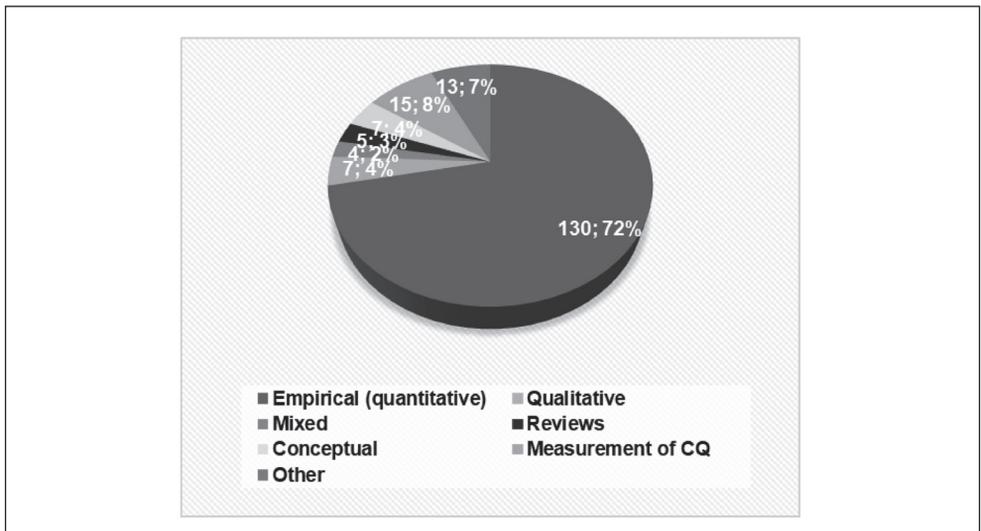
2016, 2018; Boštjančič et al., 2018; Bücken et al., 2015, 2016; Chungheng et al., 2018; Gozzoli & Gazzaroli, 2018; Lima et al., 2016; Menon & Narayanan, 2015; Richter et al., n.d.; Rockstuhl & Van Dyne, 2018; Thomas et al., 2015; Varela, 2019); in 13 (7%) studies the methodological approach could not be identified. In certain cases studies fall into two categories (e.g., quantitative research and CQ measurement).

Studies that did not meet the specified criteria were eliminated from the analysis. In the end, 118 empirical studies were analyzed in detail. Two of these studies (Alon et al., 2018; Bucker et al., 2015) instead had a conceptual/validational character, nonetheless they carried out their own empirical research, and for this reason were kept in the list of analyzed outcomes. In 73 out of 118 cases (Camargo et al., 2019; Dibble et al., 2019; Haniefa & Riani, 2019) the authors graphically (in the form of a figure or conceptual, research schema) indicated potential causality between the study variables. While investigation of **causality** is facilitated by certain statistical techniques (such as PLS-SEM), nonetheless it is necessary to reach only very careful conclusions in the matter of causality, as an experimental (or quasiexperimental) study design was not used in most analyzed studies.

In the collected empirical studies the study authors worked with 696 **hypotheses**. Not only explicitly specified hypotheses were included, but also the results (e.g. correlations) that appeared in the studies. E.g., the hypotheses applied solely to overall CQ, but the authors reported their conclusions for individual dimensions of CQ as well. In their analysis they frequently reached the partial mediation of a certain relationship, for this reason it was necessary to consider the overall structure of CQ with which the authors were working in the given study. It clearly seems that CQ research is dynamically accelerating, because Solomon and Steyn (2017) in their literature review, from which our study draws to a certain extent, identified 590 hypotheses in the period of January 2002 (i.e., the beginning of CQ research) – May 2015, which is substantially longer than the period specified in our study. Of the formulated **hypotheses** a total of **472** were confirmed (67.82%), which is not a significantly higher number than in the study by Solomon and Steyn (59.66%).

For the years 2018–2019 the **CQ nomological network** was updated, consisting of the following categories: CQ as dependent variable (antecedents), CQ as independent variable (output), mediator, moderator, and

Fig. 5: Type of research



Source: own

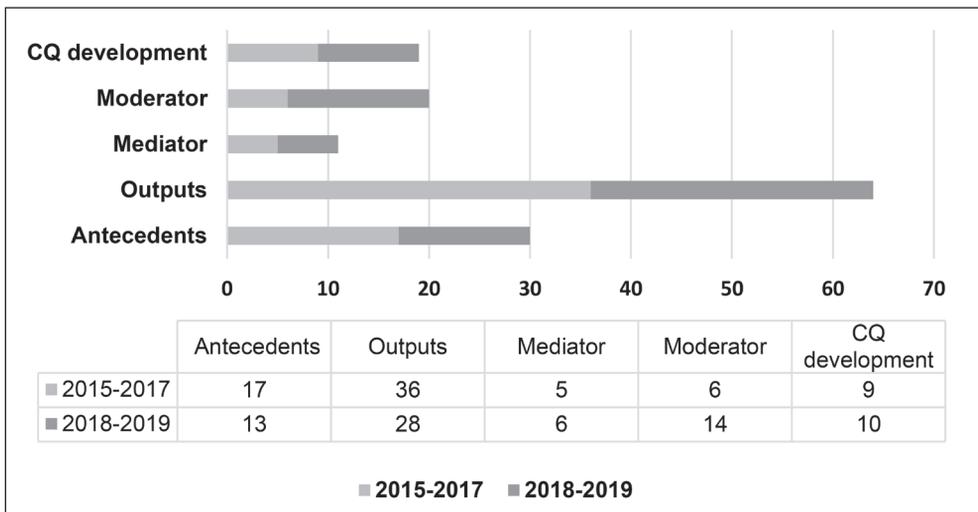
development of CQ. For the years 2015–2018 a nomological network was created in the study (Fang et al., 2018), where the authors also monitored the direct and indirect effect of CQ and aggregated CQ. If we compare the identified units of analysis according to the individual criteria, it can be seen that our study is more detailed and more complex than the study of Fang et al. (2018). This may, however, be caused by the fact that in our case there is a certain overlap of outcomes in the specified categories. In other words, CQ often does not have only a direct but also an indirect influence on a certain variable; for this reason it is not possible to assign observed relationships solely to one category and duplicity must result. If we take into consideration absolute numbers and compare the order according to the frequency of the individual units of analysis in the given categories, the outcome of our study and that of Fang et al. (2018) is almost identical.

Fig. 6 visualizes the nomological network of CQ in numbers of empirical studies published from 2015 to 2019. As it can be seen, the researchers mostly focused on outputs of CQ; they strived to explore CQ as an independent variable in various contexts. Dividing the amount of published outcomes into two more or less equally long periods is not meaningless:

certain trends towards the CQ research can be observed. It must be noticed that mediators and moderators were implemented more frequently into the theoretical models exploring earlier studied (and well examined) direct relationships or new ones. This division has also another purpose: the results of our SQLR can be compared to one study (Fang et al., 2018) whose authors described the nomological network of CQ from 2015 to 2017. Specifically, they identified CQ antecedents in 8 studies, outputs of CQ in 16 studies, CQ as a mediator in 5 studies, CQ as a moderator in 7 studies and CQ development in 7 studies.

Tab. 4 concretizes the individual outputs of the **CQ nomological network in the years 2018 and 2019**. Certain outputs were assigned to more categories. 33 studies were identified in 2019; 2 studies had to be eliminated from the analysis due to inaccessibility. Empirical studies focused primarily on outcomes, i.e. CQ appeared as an independent variable, which in some way acted on another variable. In certain of these studies the **types of outputs** (psychological, behavioral, or performance) and various motifs overlapped, or rather multiple types of outputs appeared (Leung et al., 2014). These outputs related to the voice behavior (Afsar et al., 2019; Ng et al., 2019) or interaction

Fig. 6: Nomological network of CQ (number of empirical studies)



Source: own

involvement (Puyod & Charoensukmongkol, 2019), adjustment and employee turnover (Akhal & Liu, 2019), expatriate career intentions, expatriate willingness (Camargo et al., 2019; Lee et al., 2019), service recovery performance, job performance (Costers et al., 2019; Nam & Park, 2019; Puyod & Charoensukmongkol, 2019), leadership styles (Crowne, 2019), psychological safety (Dibble et al., 2019) or satisfaction of psychological needs (Ramalu & Chandrakantan, 2019), work engagement (Gabel-Shemueli et al., 2019; Ramalu & Chandrakantan, 2019), customer perceived value and satisfaction (Han & Yoon, 2019), creative performance (Hu et al., 2019), adaptive selling behavior (Pandey & Charoensukmongkol, 2019), sociocultural and

psychological adaptation (Sharma & Hussain, 2019), adaptation to new work conditions (Kaleramna et al., 2019), quality of relationships to surrounding community and institutional success (Sharma, 2019), and knowledge transfer (Vlajcic, Caputo, et al., 2019; Vlajcic, Marzi, et al., 2019).

28 studies were identified in 2018; 1 study (Rockstuhl & Van Dyne, 2018) was eliminated from the analysis because it consisted of a meta-analysis. Empirical studies focused primarily on outcomes, i.e., CQ appeared as an independent variable, which in some way acted on another variable. In certain of these studies the **types of outputs** (psychological, behavioral, or performance) and various motifs overlapped, or rather multiple types of outputs

Tab. 4: Nomological network of empirical studies (2019–2018)

	2019	2018
CQ as a dependent variable (Antecedents)	Kang et al., 2019; Lee et al., 2019; Mahasneh et al., 2019; Miele & Nguyen, 2019; Tharapos et al., 2019	Alexandra, 2018a, 2018b; Alon et al., 2018; Bernardo & Presbitero, 2018; Lee et al., 2018; Roux et al., 2018; Sharma & Singh, 2018; Young et al., 2018
CQ as an independent variable (Outputs)	Afsar et al., 2019; Akhal & Liu, 2019; Camargo et al., 2019; Costers et al., 2019; Crowne, 2019; Dibble et al., 2019; Gabel-Shemueli et al., 2019; Han & Yoon, 2019; Hu et al., 2019; Kaleramna et al., 2019; Lee et al., 2019; Nam & Park, 2019; Pandey & Charoensukmongkol, 2019; Puyod & Charoensukmongkol, 2019; Ramalu & Chandrakantan, 2019; Sharma & Hussain, 2019; Sharma, 2019; Vlajcic, Marzi, et al., 2019; Vlajcic, Caputo, et al., 2019	Coves Martínez et al., 2018; Frías-Jamilena et al., 2018a, 2018b; Iskhakova, 2018; Jianga et al., 2017; Le et al., 2018; Presbitero & Toledano, 2018; Putranto et al., 2018; Suthatorn & Charoensukmongkol, 2018
Mediator	Azevedo & Shane, 2019; Caputo et al., 2019; Lee et al., 2019; Pawlicka et al., 2019	Awan et al., 2018a; Presbitero, 2018
Moderator	Cui et al., 2019; Haniefa & Riani, 2019; Ng et al., 2019; Paparoidamis et al., 2019; Presbitero & Teng-Calleja, 2019; Sharma & Hussain, 2019	Awan et al., 2018b; Caputo et al., 2018; Cerdin et al., 2018; Coves Martínez et al., 2018; Darvishmotevali et al., 2018; Henderson et al., 2018; Pesch & Bouncken, 2018; Presbitero & Attar, 2018
CQ development	Azevedo & Shane, 2019; Kang et al., 2019; Miele & Nguyen, 2019	Alexandra, 2018a, 2018b; Bernardo & Presbitero, 2018; Gustomo et al., 2018; Presbitero & Toledano, 2018; Roux et al., 2018; Young et al., 2018

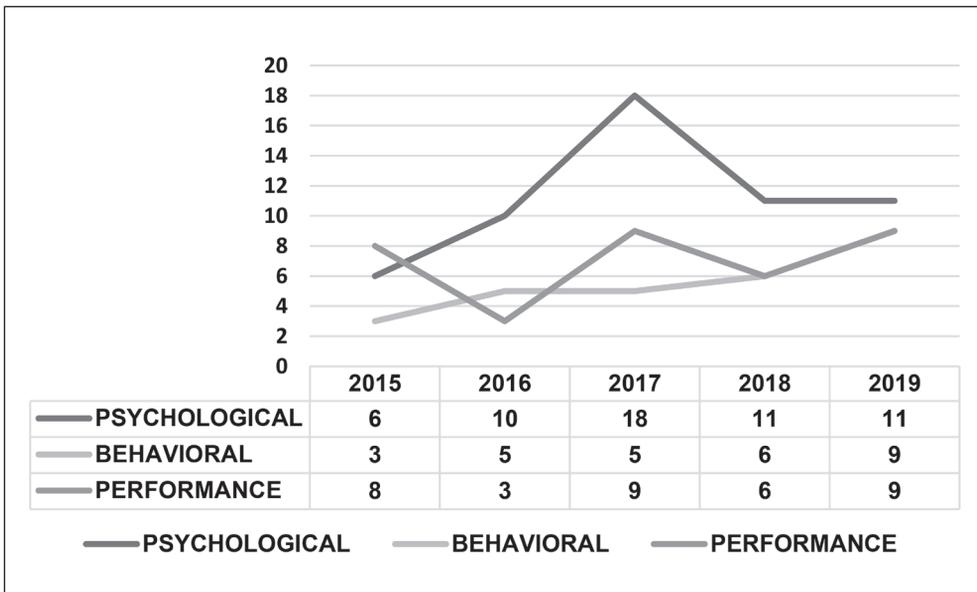
Source: own

appeared (Leung et al., 2014). These outputs related to academic performance (Iskhakova, 2018; Putranto et al., 2018), social performance improvements (occupational safety, working conditions, etc) (Awan et al., 2018a), global career intention (Presbitero, 2018), adjustment (Iskhakova, 2018), commitment to sustainable development in the social sphere (Awan et al., 2018b), technological adoption, internet use (Coves Martínez et al., 2018), service attentiveness, cabin crew anxiety (in reference to customers of airlines) (Suthatorn & Charoensukmongkol, 2018), life satisfaction (Le et al., 2018), openness of communication within the organization (Jiang et al., 2018), work performance measured in terms of tasks (Presbitero & Toledano, 2018), perception of the value (quality) of a given tourist destination from various perspectives such as quality of services provided, invested funds, risk profile of the area, or emotional experiences (Frias-Jamilena et al., 2018a), managerial approach to conflict resolution (Caputo et al., 2018), creativity at work (Darvishmotevali et al., 2018), trust between alliance partners and increased performance as a result (Pesch & Bouncken,

2018), factors such as subconscious perception of a certain brand (in the sense of a tourist destination), brand loyalty, quality, image, and values (Frias-Jamilena et al., 2018b), clarity of roles, trust and satisfaction within a given work team (Henderson et al., 2018). It can be stated that cultural intelligence has some impact or influence on all of the quantities referenced.

Three types of CQ outputs were identified in the literature: psychological, behavioral, and performance (Leung et al., 2014). The following Fig. 7 states the numbers of individual outputs according to this classification in the period of 2015–2019. In total, 56 studies related to psychological themes, 28 studies related to behavioral themes and 35 studies concerned performance. Certain studies pertained to multiple thematic areas, and for this reason were assigned to multiple categories. Other studies (in particular those that related to CQ as a dependent variable or CQ development) were not assigned even to a single category. From Fig. 7 it can be seen that the greatest attention in the years 2015–2019 was paid to investigation of topics with a psychological context.

Fig. 7: Number of classified outputs – the studies published in 2015–2019



Source: own

Tab. 5: Classification of outputs of empirical studies published in 2018–2019

	2019	2018
PSYCHOLOGICAL	Akhal & Liu, 2019; Azevedo & Shane, 2019; Camargo et al., 2019; Dibble et al., 2019; Han & Yoon, 2019; Haniefa & Riani, 2019; Kaleramna et al., 2019; Lee et al., 2019; Pawlicka et al., 2019; Ramalu & Chandrakantan, 2019; Sharma & Hussain, 2019	Alexandra, 2018a, 2018b; Cerdin et al., 2018; Frías-Jamilena et al., 2018a; Henderson et al., 2018; Iskhakova, 2018; Le et al., 2018; Pesch & Bouncken, 2018; Presbitero, 2018; Presbitero & Attar, 2018; Suthatorn & Charoensukmongkol, 2018
BEHAVIORAL	Afsar et al., 2019; Caputo et al., 2019; Crowne, 2019; Cui et al., 2019; Gabel-Shemueli et al., 2019; Nam & Park, 2019; Ng et al., 2019a; Pandey & Charoensukmongkol, 2019; Presbitero & Teng-Calleja, 2019	Awan et al., 2018b; Caputo et al., 2018; Coves Martínez et al., 2018; Iskhakova, 2018; Jiang et al., 2018; Presbitero & Attar, 2018
PERFORMANCE	Azevedo & Shane, 2019; Costers et al., 2019; Hu et al., 2019; Nam & Park, 2019; Paparoidamis et al., 2019; Puyod & Charoensukmongkol, 2019; Sharma, 2019; Vlajcic, Caputo, et al., 2019; Vlajcic, Marzi, et al., 2019	Awan et al., 2018a; Darvishmotevali et al., 2018; Frías-Jamilena et al., 2018b; Pesch & Bouncken, 2018; Presbitero & Toledano, 2018; Putranto et al., 2018

Source: own

Tab. 5 specifies the individual studies according to the classification of outputs (psychological, behavioral, performance) in the years 2018 and 2019.

Identified outcomes were also coded in the qualitative analysis according to 14 topics defined by Solomon and Steyn (2017) in their review. Certain topics were spotted multiple times in one study. Unlike the article by Solomon and Steyn, however, our article were not limited typically to the categorization of the studies in which CQ somehow influenced the dependent variable at the level of the outcome, but also included studies that mediated, moderated the relationship of two variables, or where CQ emerged as a dependent variable. Where it made sense, all studies of the CQ nomological network from the years 2015–2019 were thematically categorized. A study was included in the total, if CQ appeared in some fashion and was studied. In certain cases the topic of study was relatively unambiguous and direct, in other cases it required subjective assessment and decision by the researchers.

As can be seen from Tab. 6, even recently the greatest attention in connection to CQ is given by researchers to work performance, satisfaction at work, and work engagement.

High cultural intelligence represents important psychological capital for individuals coming into contact with foreigners or operating in a culturally different setting. For international companies, cultural intelligence of the entire organization or its managers represents a competitive advantage. For this reason it is not surprising that a number of studies have directed their attention in this way. Adaptation to a culturally new (professional) environment remains an ever important topic to which CQ contributes.

The following statistical **techniques** were used in the individual articles for **analysis of data**: SEM (numbering 34), hierarchical regression linear modeling (39), simple regression analysis (18), mediation/moderation analysis (49), PLS-SEM (11), correlation (15), t-test or z-test or ANOVA (21). The researcher must be very familiar with these analytical tools if he or she wishes to properly understand the issues of CQ. In this respect it is necessary to understand above all mediation/moderation analysis and hierarchical regression linear modeling.

In 118 studies 35,991 **respondents** were subjected to empirical testing. In 21 studies, the authors (Aboali et al., 2016; Alon et al.,

Tab. 6: Thematic categorization of studies on CQ

THEMEs	NUMBER (2015–2019)	EXAMPLES OF STUDIES (2018–2019)
1. Cross-cultural adjustment	18	Akhal & Liu, 2019; Iskhakova, 2018; Kaleramna et al., 2019; Sharma & Hussain, 2019
2. Training, experiential learning	11	Alexandra, 2018a, 2018b; Azevedo & Shane, 2019; Kang et al., 2019; Presbitero & Toledano, 2018
3. Job performance, satisfaction, involvement	24	Cerdin et al., 2018; Costers et al., 2019; Darvishmotevali et al., 2018; Gabel-Shemueli et al., 2019; Haniefa & Riani, 2019; Henderson et al., 2018; Iskhakova, 2018; Le et al., 2018; Nam & Park, 2019; Presbitero & Toledano, 2018; Puyod & Charoensukmongkol, 2019; Ramalu & Chandrakantan, 2019; Suthatorn & Charoensukmongkol, 2018
4. International experience	14	Frías-Jamilena et al., 2018a; Gustomo et al., 2018; Han & Yoon, 2019; Lee et al., 2019; Miele & Nguyen, 2019; Pawlicka et al., 2019; Putranto et al., 2018
5. Team knowledge share, performance, development of shared values, trust	7	Awan et al., 2018a; Jiang et al., 2018; Presbitero & Attar, 2018; Vljajic, Caputo, et al., 2019; Vljajic, Marzi, et al., 2019
6. Leadership – effectiveness, styles	12	Afsar et al., 2019; Caputo et al., 2018, 2019; Crowne, 2019; Jiang et al., 2018; Nam & Park, 2019; Presbitero & Teng-Calleja, 2019
7. Cross-cultural effectiveness, negotiation styles	15	Frías-Jamilena et al., 2018b; Pandey & Charoensukmongkol, 2019; Papparoidamis et al., 2019; Presbitero & Attar, 2018; Sharma, 2019
8. Organization: adaptive capability, engagement	9	Afsar et al., 2019; Awan et al., 2018b; Coves Martínez et al., 2018; Ng et al., 2019
9. Personality	7	There were no identified studies on this theme between 2018–2019.
10. Cross-cultural collaborative dealings	5	Awan et al., 2018; Cui et al., 2019; Hu et al., 2019; Pesch & Bouncken, 2018
11. Discrete intelligence type	3	Putranto et al., 2018; Sharma & Singh, 2018
12. Self-efficacy	4	Camargo et al., 2019; Haniefa & Riani, 2019
13. Psychological capital	20	Azevedo & Shane, 2019; Dibble et al., 2019; Le et al., 2018; Presbitero, 2018; Suthatorn & Charoensukmongkol, 2018
14. Other (not classified in accordance with the themes above)	2	Alon et al., 2018; Mahasneh et al., 2019

Source: own

2018; Azevedo & Shane, 2019; Bernardo & Presbitero, 2017; Camargo et al., 2019; Collins et al., 2016; Han & Yoon, n.d.; Kaleramna et al., 2019; Mahasneh et al., 2019; McClinton & Schaub, 2017; Ng et al., 2019; Pandey &

Charoensukmongkol, 2019; Papparoidamis et al., 2019; Pekerti & Arli, 2017; Presbitero, 2016a, 2016b, 2017; Ramsey & Lorenz, 2016; Schlägel & Sarstedt, 2016; Sousa & Gonçalves, 2017; Zhang & Oczkowski, 2016) worked with

Tab. 7: Number of studies by nationality of respondents

Anglophone world	Asia	Europe
the USA (12), Australia (4), Great Britain (1), South Africa (1), Canada (1)	India (8), China (8), Indonesia (4), Turkey (3), Vietnam (2), Thailand (2), Tchaj-wan (2), South Korea (2), Pakistan (2), Jordan (2), Iran (2), Japan (1), Hongkong (1), the Philippines (1)	Portugal (4), France (3), Poland (2), Germany (2), Serbia (1), Spain (1), Austria (1), Cyprus (1), Greece (1), Croatia (1)
17	40	17

Source: own

Tab. 8: Profession profile of respondents

Sample TYPE	SPECIFICATION of the sample	Number of studies	Examples of studies (2018–2019)
Students		57	Camargo et al., 2019; Crowne, 2019; Dibble et al., 2019; Pawlicka et al., 2019
Employees	Government sector (1), organization (31), migrant workers (2), unskilled laborers (1), salespersons (1), business professionals (5)	41	Alon et al., 2018; Hu et al., 2019; Le et al., 2018; Nam & Park, 2019; Pandey & Charoensukmongkol, 2019
Teachers	Educators (2), university (1), high school (2), school principals (2), expatriate (2)	9	Kang et al., 2019; Mahasneh et al., 2019; Ramalu & Chandrakantan, 2019; Tharapos et al., 2019
Managers	Expatriate (5), in service sector (1), key informants (1), top management (1), bank (1), in general terms (2)	11	Kaleramna et al., 2019; Ng et al., 2019; Pesch & Bouncken, 2018; Sharma, 2019; Sharma & Singh, 2018; Vljajic, Marzi, et al., 2019
Expatriates	In general terms (6), religious expatriates (1), inpatriates (1)	8	Akhal & Liu, 2019
Others	Tourists (3), customers (1), SME (1), mixed and not identified samples (3)	8	Coves Martínez et al., 2018; Frías-Jamilena et al., 2018a, 2018b; Paparoidamis et al., 2019; Sharma & Hussain, 2019

Source: own

multiple study samples or performed several empirical tests as part of one published output. In one study (Gölgeci et al., 2017) the number and characteristics of respondents were not stated. Polish companies (without any further identification) participated in the questionnaires.

According to the **gender of participants** in the CQ studies, 15,848 (44.03%) of the

respondents were men and 20,143 (55.97%) were women. As regards the **nationality of respondents**, this was not specified in 28 cases, while in 43 study samples the nationalities of the respondents the authors worked with were mixed, i.e. the respondents came from multiple countries. Tab. 7 shows the distribution of respondents by continent and

nationality. In the parentheses the number of studies is given in which the sample selection of respondents was homogeneous in terms of nationality. In Tab. 7, the nationality (country of origin) of the respondents is aggregated into three categories: the anglophone world and two continents (Asia and Europe). The representatives of South America do not figure into the table, as only two studies were identified (Alon et al., 2016; Robledo-Ardila et al., 2016), in which the hypotheses were tested on a sample of respondents from Columbia. From the last line of Tab. 7 (the sum of the number of studies with respondents from individual countries according to the three selected criteria) it can be seen that the majority of CQ research takes place on the Asian continent. American respondents participated the most in the testing of CQ hypotheses. A certain correlation may be observed between the interest in CQ research and the multiculturalism of the countries the participants of the individual studies come from.

As shown in Tab. 8, a total of 5 main **respondent groups** were identified: students, teachers, managers, employees moved across borders by their countries from the local head office to foreign branches (or vice versa), and others not specified (e.g. mixed study samples, tourists, customers). It can be seen that students participate the most in such research (45.24% of all cases), followed by the sample of employees 41 (35.54%), supervisors and managing employees (8.73%) and teachers (7.14%). It has been shown that the most frequent research center is the academic environment (45.24 + 7.14 = 52.38%), which is understandable if we consider that a number of authors of studies themselves come from the academic environment.

The **average age of respondents** is associated with the **profile of respondents**. Three age categories were observed: young (18–30 years), middle (31–50 years), and older (51 and older). In several studies, age was not a controlled variable. 70 studies (58.12% of all cases) were carried out on younger respondents, while in 46 studies (38.66%) the study sample was from the middle age group and only in 3 cases (2.52%) the average respondent was older than 51 years.

Conclusions

The result of this study is the creation of a database of empirical studies addressing a phenomenon of the modern era, cultural intelligence (CQ), which expresses and measures the capability of individuals to effectively function in a culturally new (foreign) environment. The subject of the aggregated analysis are the preselected parameters of 118 empirical studies on CQ that were detected using the method of systematic quantitative literature review. The results indicated that the topic of CQ is a compelling research area. The interest in CQ (primarily on the part of scientists operating in or coming from multicultural countries) is growing, more studies on CQ are being published, and ever more researchers are participating in them. Even despite certain innovative attempts to operationalize CQ in another way, for example, through changing proposals for its measurement, researchers are focusing primarily on empirical testing of the relationship between CQ and other variables. Frequently previously verified and confirmed relationships are tested in new situations, e.g., using the engagement of certain moderators. Researchers are also to a greater extent attempting to explain (using mediators) the relationships between CQ and other variables (whether in the position of dependent or independent variables).

The significance of our text consists of creating a list of empirical studies published in the years 2018 and 2019 and their subsequent categorization in the CQ nomological network according to the type of output, followed by the thematic categorization of these identified units of analysis. Moreover, this review investigates parameters of CQ that researchers have hitherto neglected: the quantifying of the number of (preferred or suitable) statistical techniques for data analysis used. In connection with CQ research it is good to know the methods of structural equation modeling, hierarchical regression modeling, and PLS-SEM, as well as to know how to perform mediation and moderation analysis, which was used relatively frequently in the collected empirical studies.

This study entirely uniquely offers information about respondents in a quantified and clear format, which can contribute to improving research designs of future CQ studies and increasing the validity and reliability of the results obtained. For example, it has

been shown that conclusions about CQ are formulated on the basis of student (often conventional) samples with relatively small involvement of higher age groups. It is also necessary to expand the validation of the CQ concept into other European countries (e.g., to the Czech Republic, where cultural intelligence is not currently a topic of broad interest).

CQ research has not stopped. It is necessary to continually update the CQ nomological network (e.g., to add missing studies for the second half of 2019 to the present, or to change the inclusion criteria specified for this literature review and to examine the publishing outputs of 'gray literature' such as dissertation work on the topic of CQ or texts published in non-English languages). Given the fact that performing systematic quantitative literature review is relatively time-consuming (lasting several months to a year), this will result in a certain time delay. Understandably, when working on such a long-term research project (in connection with the creation of a research database), researchers cannot avoid a certain monotony, stereotypification of the essays, resulting in burnout and human factor error. Moreover, results can be biased due to used classification coming from the previous literature review. However, potential errors can be, at least partially, eliminated by other research, careful examination of the existing tests and other methods. Our study proves that SQLR can be seen as one of the methods that contribute to systemize and structure human knowledge. It must be, of course, critically evaluated, but its use helps researcher to collect appropriate base for other research.

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Appendix: Complete reference can be found at <http://wawi68.pise.cz/1-trends-in-cultural-intelligence-research-in-the-co.html>