

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University

Faculty

Faculty of Social Studies

Applicant

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Habilitation thesis

Cross-cultural similarities and differences in perception of tasks of varying complexity

Reviewer

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The cumulative habilitation thesis of Ing. Mgr. Jiří Čeněk, Ph.D., Researcher II at the Interdisciplinary Research Team on Internet and Society, Faculty of Social Studies at Masaryk University, Czech Republic, includes eight original papers, including one review article and seven empirical research papers published between 2019 and 2025. All contributions have been published in nationally and internationally renowned peer-reviewed journals with, in some cases, high impact factors (e.g., *Journal of Experimental Psychology – General*; *Scientific Reports*). Dr. Čeněk is the first or lead author of four of these publications. Regarding the other publications, he contributed significantly to the planning, execution, analysis, and/or writing of the studies. In a chapter preceding the main works, Dr. Čeněk introduces the research objectives and methods, develops the theoretical framework of his thesis, and discusses the empirical findings in a clear and well-elaborated manner.

Thematically, the habilitation project falls within cross-cultural psychology, specifically focusing on the origins and extent of cultural differences in perception and cognition. Against the backdrop of the still regrettably limited state of research on culture-specific and universal aspects of human experience and behavior, Dr. Čeněk's habilitation thesis addresses the pressing questions: When do cultural differences in (visual) perception and cognition emerge, how significant are they, what predicts them, and how coherently do different measures converge?

With his work, Dr. Čeněk has contributed to the development of a highly interesting, empirically grounded, and academically recognized research program on perception and cognition across diverse cultural contexts. The studies demonstrate his high degree of originality as a researcher. The presented cumulative habilitation thesis convincingly shows that he is capable of publishing in so-called flagship journals of psychology, which vividly attests to the high quality of his work in methodological and theoretical terms, as well as the strong scholarly interest in his findings.

Before I will comment on Dr. Čeněk's remarks in the introductory chapter, I would like to briefly review the published papers.

Part A (I – III)

Čeněk, J., & Urbánek, T. (2019). Adaptace a ekvivalence testových metod: Inspirace pro psychologické testování minorit v ČR. *Československá psychologie*, 63(1). [The adaptation and equivalence of test methods: An inspiration for psychological assessment of minorities in the Czech Republic]

Lacko, D., Čeněk, J., & Urbánek, T. (2021). Psychometric properties of the independent and interdependent self-construal questionnaire: Evidence from the Czech Republic. *Frontiers in Psychology*, 12, 564011. <https://doi.org/10.3389/fpsyg.2021.564011>

Lacko, D., Čeněk, J., Točík, J., Avsec, A., Đorđević, V., Genc, A., ... & Subotić, S. (2022). The necessity of testing measurement invariance in cross-cultural research: Potential bias in cross-cultural comparisons with individualism–collectivism self-report scales. *Cross-Cultural Research*, 56(2-3), 228-267. <https://doi.org/10.1177/10693971211068971>

The first three papers, comprising a methodological review paper and two empirical studies, center on the topic of construct equivalence and measurement invariance in cross-cultural research. In the review paper, Dr. Čeněk provides a comprehensive overview of the specific challenges faced by research endeavors conducted across diverse cultures to generate meaningful findings. He covers a broad spectrum, from discussions of emic/etic approaches and translation procedures to considerations of response styles, and further explains statistical analyses used to detect biases at various levels. The subsequent two empirical studies demonstrate how the measurement invariance criteria discussed in the review paper can be successfully implemented in practice, thereby strengthening the validity of cross-cultural comparisons.

The first study (Lacko et al., 2021) assesses the psychometric properties of the Czech version of the self-construal scale (SCS; Vignoles et al., 2016). It demonstrates that the scale shows inadequate psychometric validity in the Czech sample and discusses broader issues regarding the individualism/collectivism construct, questioning the East-West dichotomy and arguing for the cautious use of such instruments in cross-cultural research. The second study (Lacko et al., 2022) analyzes data from 1,386 participants across six Balkan countries (IISS; Lu & Gilmour, 2007). It highlights the importance of measurement invariance by comparing 'invariant' and 'traditional' approaches. The results reveal differential item functioning, with the majority of items and Czech data needing exclusion to achieve a valid configural model. In summary, findings indicate that without an examination of measurement invariance meaningful findings cannot be derived in cross-cultural research.

Block B (IV – VIII)

Lacko, D., Čeněk, J., Arıkan, A., Dresler, T., Galang, A. J., Stachoň, Z., ... & Šašínská, Č. (2024). Investigating the geography of thought across 11 countries: Cross-cultural differences in analytic and holistic cognitive styles using simple perceptual tasks and reaction time modeling. *Journal of Experimental Psychology: General*, 154(2), 325–346. <https://doi.org/10.1037/xge0001685>

Čeněk, J., Tsai, J. L., & Šašínská, Č. (2020). Cultural variations in global and local attention and eye-movement patterns during the perception of complex visual scenes: Comparison of Czech and Taiwanese university students. *Plos one*, 15(11), e0242501. <https://doi.org/10.1371/journal.Pone.0242501>

Čeněk, J., Halámková, D., Caha, J., Lacko, D., Kalenská, P., Stachoň, Z., ... & Šašínská, Č. (2025). Cross-cultural analysis of eye-movement patterns in visual scene perception: a comparison of seven cultural samples. *Scientific Reports*, 15(1), 28574. <https://doi.org/10.1038/s41598-025-12724-x>

Šašínská, A., Čeněk, J., Ugwitz, P., Tsai, J. L., Giannopoulos, I., Lacko, D., ... & Šašínská, Č. (2023). Exploring cross-cultural variations in visual attention patterns inside and outside national borders using immersive virtual reality. *Scientific Reports*, 13(1), 18852. <https://doi.org/10.1038/s41598-023-46103-1>

Lacko, D., Šašínská, Č., Čeněk, J., Stachoň, Z., & Lu, W. L. (2020). Cross-cultural differences in cognitive style, individualism/collectivism and map reading between Central European and East Asian University students. *Studia Psychologica*, 62(1), 23-43. <https://doi.org/10.31577/sp.2020.01.789>

The studies IV to VIII, which systematically investigate cultural differences in perception and cognitive processes, are excellent examples of well-designed and methodologically rigorous research. By implementing innovative and carefully developed methods, the studies demonstrate a prominent level of expertise. Additionally, they exemplify meticulous data analysis and thoughtful discussion of the scope and generalizability of findings to other (cultural) contexts. In studies IV–VIII, empirical comparisons were made across minimal perceptual tasks using multilevel reaction-time (RT) modeling, eye-tracking during free viewing of complex 2D scenes, immersive 3D virtual reality (VR), and categorization of multivariate map symbols. In total, findings are based on data from over 4,000 participants recruited in Central and Eastern Europe, East Asia, the Western Balkans, and Turkey. Dr. Čeněk highlights three main findings:

- a) cultural differences are specific and task-dependent, with significant differences in eye-tracking data (e.g., attention to backgrounds in East Asian samples), but these effects vary across measures and are not universal.
- b) Methods show limited convergence. Eye-tracking indices and hierarchical figure tasks do not consistently relate within individuals, and latent profile analyses do not support a single analytical–holistic style, with observed associations being partial.
- c) Predictors vary widely. Self-construal measures show weak cross-national invariance and limited behavioral links. Similarly, macro-level indices like Hofstede's dimensions produced rather inconsistent results. Thus, findings emphasize the importance of measurement equivalence and multi-method approaches to understand cultural influences on perception.

Introductory chapter

In the very well-crafted introductory chapter, Dr. Čeněk provides an excellent overview of the topic of his habilitation thesis. Against the backdrop of changing communication channels in recent years, understanding the mechanisms of visual attention and perception has become even more crucial, especially as studies indicate that culture shapes how people allocate attention and interpret visual input. Understanding these similarities and differences across cultures is essential not only for advancing theories of cognition and culture but also for developing practical applications in education, cross-cultural communication, and human–computer interaction.

After an introduction to (early) theories (e.g., Gestalt theory) and methods of cross-cultural perceptual research, he particularly addresses the theory of holistic and analytic cognition, as well as findings related to presumed predictors of cross-cultural and cognition. This introduction, as well as the review paper, provides the framework for the subsequent studies, which are briefly summarized (e.g., methods, main findings) in the next section. In the concluding section, Dr. Čeněk critically discusses the conclusions that can be drawn from the findings, refers to limitations of the approach, and indicates directions for future research.

Evaluation of the work

From the sobering findings regarding the validity of scales for individualism/collectivism and self-construals, Dr. Čeněk draws the right conclusions and asks: Is there something wrong with scales of individualism and collectivism when used outside of the countries for which they were originally constructed? Based on his own findings as well as findings reported in the literature, he concludes that “individualism–collectivism” is not a single latent dimension that can be used without question to predict differences in perception and cognitive styles: “self-reported self-construal and cognitive styles travel on separate tracks.” Based on this observation, he rightly concludes that alternative ways of looking at differences between cultures/countries, such as behavioral measures of cultural orientations and norms, could be promising solutions to overcome the psychometric fragility of self-report measures. Furthermore, the advantages of combining etic (how well can they do our tricks) and emic

approaches (how well can they do their tricks) for research on perception and cognition are discussed to capture universal as well as culture-specific facets.

Overall, Dr. Čeněk's cross-cultural work employs an impressive arsenal of methods (tasks at various levels of complexity, lab vs. online) and analytical procedures (level-oriented analyses), demonstrating his methodological and thematic breadth. His approach is consistently guided by whether the findings, conjointly considered, support existing theoretical assumptions or suggest a reorientation in the field. In sum, although some findings are in line with the analytic-holistic framework, his results globally point to the need for a recalibration of the concept. Dr. Čeněk convincingly argues that the field might look for new procedures that have greater potential to explain cross-cultural differences in cultural samples beyond the often implemented East/West dichotomy.

Although the thesis possesses many significant strengths, a number of limitations should be noted. To mention a few, the generalizability of the findings is clearly limited, as most studies recruited university students from cultural contexts mainly located in Central Europe and East Asia (see also the absence of samples from the US). In this context, equating region and culture (e.g., study VII) is problematic without providing further evidence for this approach. It would be interesting not to compare regions based on assumed cultural differences, but rather to analyze effects of the strength of certain cultural markers at the individual level on perception and cognitive processes. Often, the variance in cultural markers within a cultural group exceeds the variance between groups. Due to the cross-sectional nature of the research, causal conclusions cannot be drawn. Moreover, the mixture of online and lab-based data collection procedures (study IV) appears problematic. Further drawbacks concern the sometimes low statistical power to detect small effects and the insufficient sample size to perform analyses according to guidelines set forth in the literature (e.g., testing measurement equivalence). However, Dr. Čeněk and his co-authors are aware of these limitations and critically discuss them in the manuscripts of the thesis. It is highly likely that these limitations will inform and inspire the design of the team's future research efforts in this area.

To conclude, the habilitation thesis merits high recognition for its excellent contribution to the field. Dr. Čeněk demonstrates thoroughness, methodological rigor, and critical insight throughout. The integration of theoretical concepts with empirical findings is executed with clarity and precision, reflecting a deep understanding of the subject. The research not only advances scientific knowledge but also offers valuable practical implications for areas such as education, intercultural communication, and human-computer interaction. Overall, it is a noteworthy and significant scholarly achievement, contributing meaningfully to the discourse in this research domain. As a scientist who does not work in the field of perception and cognition, I hope that Dr. Čeněk and the team he works with will continue their research in this area and increase our knowledge of cultural influences on human cognition, experience, and behavior. Therefore, I recommend to the committee, without any reservation, that the writings submitted by Dr. Jiří Čeněk be recognized as habilitation work.

Reviewer's questions for the habilitation thesis defence

- Ideas for behavior-based measures of individualism/collectivism
- Statement on evaluating effects of cultural markers (self-construal, individualism /collectivism, guiding principles) not at the group level (culture/region), but at the level of individuals (regardless of their culture of origin)
- Culture-fair development of perception/cognitive tasks – procedure, content?
- Study 3: Considering the partly multi-ethnic composition of the population in selected countries, was the (ethnic, religious) homogeneity of the student samples in various research areas checked? What was "wrong" with the Czech sample?

Conclusion

The habilitation thesis entitled "Cross-cultural similarities and differences in perception of tasks of varying complexity" by Ing. Mgr. Jiří Čeněk, Ph.D., **fulfils** requirements expected of a habilitation thesis in the field of Psychology.

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