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The Relationship Between Chess Thinking and Financial Competence: Cognitive and Behavioral Aspects

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Abstract. *The article examines the relationship between chess thinking and financial competence through cognitive and behavioral perspectives. The relevance of the topic is determined by the growing need for educational tools that develop not only academic knowledge but also forecasting ability, self-control, strategic planning, and responsible decision-making. The purpose of the study is to provide a theoretical justification of the mechanisms through which chess practice may contribute to the development of prerequisites for financially competent behavior. The methodological framework includes an interdisciplinary approach, logical and analytical methods, comparison, systematization, and generalization of scholarly sources on cognitive development, financial literacy, self-control, and behavioral economics. The study demonstrates that chess thinking has a functional affinity with several components of financial competence, including the evaluation of alternatives, forecasting consequences, impulse control, decision-making under uncertainty, planning, and responsibility for outcomes. It is shown that chess can shape cognitive and behavioral prerequisites for financially literate behavior, although it does not replace direct financial education. Based on the analysis of the literature and the synthesis of statistical evidence, the paper proposes a model of transition from chess-related cognitive practices to elements of financial competence. The practical significance of the findings lies in the possibility of integrating chess-based methods into financial literacy programs, economic education, and self-management skills development. Prospects for further research are associated with the empirical testing of the proposed model on different age groups.*

Keywords: *chess thinking, financial competence, financial literacy, cognitive development, self-control, strategic thinking, behavioral economics, financial behavior.*
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Introduction. In the contemporary educational and socio-economic context, financial competence is increasingly regarded as one of the core life competencies. Its importance has intensified under the conditions of financial digitalization, the spread of online payments, marketing pressure, information overload, and the growing risks of impulsive and irrational choices. According to the OECD, in the 14 OECD countries and economies that participated in the PISA 2022 financial literacy assessment, an average of 18% of students did not reach the baseline level of financial proficiency. At the same time, around 60% of fifteen-year-olds already have a bank account or payment card, while more than 85% reported making online purchases during the previous 12 months (OECD, 2024).

Against this background, increasing attention is being paid to educational practices capable of developing not only knowledge about finance but also the cognitive and behavioral mechanisms required for responsible decision-making. One such tool may be chess. Traditionally, chess is associated with the development of logic, concentration, memory, strategic thinking, emotional discipline, and self-regulation. These characteristics are of particular interest in the context of financial competence because financial decisions also require the analysis of alternatives, risk evaluation, impulse control, and long-term planning.

At the same time, the relationship between chess thinking and financial competence remains insufficiently conceptualized in the contemporary academic literature. There are separate strands of research on the cognitive effects of chess instruction and a substantial body of work on financial literacy, self-control, and financial behavior. However, these strands are rarely connected within a single analytical framework. This gap creates a need for a theoretical model that can explain how chess practice may contribute to the formation of the prerequisites of financially competent behavior.

Literature Review. Chess thinking can be interpreted as a complex form of intellectual activity that combines abstract and concrete reasoning, the analysis of alternatives, forecasting, planning, attention control, emotional restraint, and self-management. In this sense, chess is not merely a game but also a structured cognitive environment in which an individual constantly evaluates positions, considers possible consequences, adjusts decisions, and takes responsibility for the outcome.

A number of studies support the idea that chess instruction is associated with measurable cognitive benefits. A meta-analysis by Sala and Gobet (2017), which synthesized findings from 24 studies and 40 effect sizes, found that chess instruction had a positive effect on mathematical achievement, with an average effect size of $d = 0.38$, and on overall cognitive ability, with an average effect size of $d = 0.34$. At the same time, the authors emphasized that these findings should not be overstated and that the field still requires

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more rigorous research designs and active control groups (Sala & Gobet, 2017).

This cautious interpretation is also relevant to the present topic. Chess should not be treated as a universal mechanism that automatically develops all transferable skills. Rather, it may be regarded as an environment in which specific cognitive operations and regulatory qualities are intensively trained and may later be transferred, at least partially, to other domains of activity.

Financial competence, in turn, is not limited to knowledge about money. In contemporary scholarship, it is commonly understood as a multidimensional construct that includes cognitive, behavioral, and value-regulatory components. The cognitive dimension covers the understanding of percentages, inflation, risk, time value of money, and contractual conditions. The behavioral dimension includes budgeting, saving, comparing prices, prudent credit use, and resisting impulsive purchases. The value-regulatory dimension concerns self-control, responsibility, future orientation, and the ability to delay gratification (Lusardi & Mitchell, 2014; Hastings et al., 2013).

The PISA 2022 findings demonstrate that stronger financial literacy is associated with more responsible financial behavior. Students with higher levels of financial literacy were 72% more likely to save money and 50% more likely to compare prices before making a purchase than those with lower performance (OECD, 2024). These findings are important because they indicate that financial competence cannot be reduced to the possession of information alone. Instead, it depends on the ability to apply knowledge through reflective and self-regulated behavior.

In this regard, self-control occupies a particularly significant place. Strömbäck et al. (2020) showed that subjective self-control is a strong predictor of healthy financial behavior and financial well-being, whereas objective executive-function measures were less consistent in their explanatory power. Similarly, van Raaij et al. (2023) concluded that self-control and future time perspective have both direct and indirect effects on financial well-being. These findings suggest that financial competence depends not only on formal literacy but also on behavioral regulation and future-oriented thinking (Strömbäck et al., 2020; van Raaij et al., 2023).

From this perspective, the conceptual bridge between chess thinking and financial competence becomes clearer. If chess practice develops concentration, forecasting, alternative evaluation, responsibility for decisions, emotional control, and patience, then these qualities may function as prerequisites for more competent financial behavior. This assumption is partially supported by the study of Islam et al. (2021), which provided field experimental evidence that intensive chess instruction may affect not only academic outcomes but also selected non-cognitive characteristics, including risk preferences and time inconsistency. Although some results became less robust after multiple-testing corrections, the findings remain important

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because they point to possible links between chess practice, risk behavior, and intertemporal decision-making, all of which are highly relevant for the financial domain (Islam et al., 2021).

Thus, the literature review suggests that chess may be theoretically understood not as a substitute for financial education but as a potential developmental tool that strengthens the cognitive and behavioral foundations of financial competence.

Aims. The aim of this article is to provide a theoretical justification for the relationship between chess thinking and financial competence and to identify the cognitive and behavioral mechanisms through which this relationship may operate.

To achieve this aim, the study addresses the following objectives: to conceptualize chess thinking as a cognitive and behavioral construct relevant to decision-making; to characterize financial competence as a multidimensional phenomenon that includes cognitive, behavioral, and self-regulatory components; to identify the functional intersections between chess-related skills and the components of financially competent behavior; to propose a theoretical model explaining how chess practice may contribute to the development of financial competence.

Methodology. The study is theoretical in nature and is based on an interdisciplinary methodological approach that combines concepts from cognitive psychology, educational studies, behavioral economics, and financial literacy research. The main methods used in the article are logical analysis, comparison, systematization, generalization, and conceptual synthesis.

The logical analysis method was applied to identify the structural components of chess thinking and financial competence. The comparison method made it possible to reveal the similarities between the cognitive operations required in chess and those involved in financially responsible behavior. Systematization was used to classify the relevant findings from scholarly literature and international reports. Generalization and conceptual synthesis allowed the author to construct a theoretical model that explains the transition from chess-based cognitive practices to elements of financial competence.

The empirical basis of the paper is not original fieldwork but previously published scholarly studies and international statistical evidence, especially OECD reports and peer-reviewed articles on financial behavior, self-control, and chess instruction. Therefore, the study does not claim direct causal proof but rather offers a theoretically grounded interpretive framework for future empirical testing.

Results. Based on the theoretical analysis and synthesis of the literature, it is appropriate to move from general conceptual observations to a structured comparison of the key components of chess thinking and financial competence. Such a comparison allows the argument to be made

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more explicit and demonstrates that the relationship between the two constructs is not merely metaphorical. Instead, it can be described in terms of functional similarities between the cognitive and behavioral mechanisms involved.

Table 1. Functional correspondences between components of chess thinking and financial competence

Component of chess thinking	Content characteristics	Corresponding element of financial competence	Practical financial manifestation
Concentration of attention	Sustained focus on position and details	Attention to the conditions of financial decisions	Reading contracts, checking fees, monitoring expenses
Forecasting	Anticipating the consequences of a move	Assessing future financial consequences	Budget planning, evaluating credit burden
Alternative analysis	Comparing several lines of play	Comparing financial alternatives	Choosing among financial products, comparing prices
Combinational vision	Recognizing hidden connections and scenarios	Identifying risks and hidden conditions	Detecting financial traps and manipulative offers
Self-discipline	Consistency and regularity of actions	Regularity of financial behavior	Budgeting, building savings reserves
Emotional self-regulation	Control of reactions under pressure	Resistance to impulsive decisions	Limiting spontaneous spending, remaining calm in crisis
Strategic thinking	Relating a move to an overall plan	Long-term financial planning	Setting financial goals, saving, investing
Responsibility for a move	Awareness of cause-and-effect relations	Financial responsibility	Understanding consequences of debt, arrears, and risky transactions

Source: developed by the author

Table 1 demonstrates that the relationship between chess thinking and financial competence has a functional rather than superficial character. Chess thinking does not simply resemble financially prudent behavior. Rather, it includes operations that are structurally close to the mechanisms involved in economic choice, risk assessment, and impulse regulation. This interpretation is especially important because it shifts the discussion from generalized claims about the "benefits of chess" to a more precise understanding of which specific skills may be relevant for the development of financial competence.

To strengthen this interpretation, it is useful to consider empirical and statistical indicators that support the proposed logic. The point is not to claim that chess automatically produces financial literacy. Instead, the purpose is to show that the skills fostered through chess practice have already been identified in the literature as important for financial behavior and self-regulation.

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Table 2. Empirical and statistical markers relevant to the interpretation of the relationship between chess and financial competence

Indicator / finding	Value	Interpretation for the topic
Effect of chess instruction on mathematics achievement	$d = 0.38$	Chess is associated with the development of analytical skills relevant to financial calculations
Effect of chess instruction on general cognitive ability	$d = 0.34$	Supports the link between chess and the development of decision-related cognitive abilities
Students who do not reach baseline financial literacy in OECD PISA 2022	18%	Indicates the scale of the financial education problem
Students who have a bank account or payment card	about 60%	Shows that young people enter financial practices early
Students who reported online purchases	more than 85%	Strengthens the need for behavioral financial awareness
Higher financial literacy and greater likelihood of saving	+72%	Highlights the behavioral value of cognitive preparation
Higher financial literacy and greater likelihood of comparing prices	+50%	Confirms the importance of alternative evaluation
Experimental effect of chess instruction on risk preferences	lower risk aversion	Suggests a possible relationship between chess practice and behavior under uncertainty
Experimental effect of chess instruction on time inconsistency	reduction	Relevant to planning and delayed gratification

Source: developed by the author based on OECD (2024), Sala and Gobet (2017), and Islam et al. (2021).

The evidence summarized in Table 2 suggests that financial competence has not only an informational but also a cognitive-behavioral dimension. If financially competent behavior is associated with saving, comparing alternatives, being less impulsive, and showing stronger future orientation, then chess may be interpreted as a supplementary pedagogical tool for developing such prerequisites. This does not imply a direct causal equation between chess and financial literacy. However, it does support the theoretical plausibility of the relationship.

The synthesis of the reviewed literature and the structured comparison presented above makes it possible to formulate a general model of how chess practice may be connected with financial competence.

The proposed scheme does not claim universal explanatory power. Its value lies in demonstrating the indirect rather than direct nature of the influence of chess on financial competence. This is especially important for a balanced academic interpretation that avoids overgeneralization and acknowledges the complexity of skill transfer across domains.

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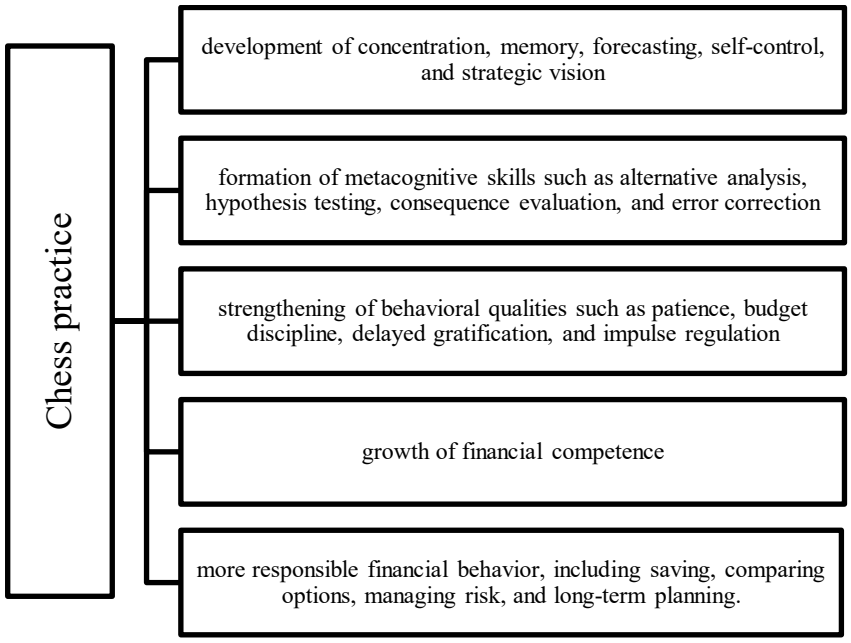

Figure 1. Logic of the transition from chess thinking to financial competence

Discussion. The theoretical results obtained in this study allow for several important discussion points. First, chess thinking and financial competence are not identical phenomena. Financial competence requires specific knowledge of budgeting, savings, credit, investment, inflation, interest, and risk. Chess does not automatically provide such content knowledge. However, it may foster the cognitive and behavioral foundations without which even a substantial amount of financial information may fail to translate into responsible financial behavior.

Second, self-control appears to be one of the most significant connecting categories between the two constructs. The literature shows that financially responsible behavior is strongly associated with self-regulation, the ability to delay gratification, and future-oriented thinking (Strömbäck et al., 2020; van Raaij et al., 2023). Chess, in turn, is built around disciplined attention, emotional restraint, patience, and responsibility for one's move. From this perspective, chess may be seen as a practice that habituates individuals to forms of self-regulation that later become relevant in financial decision-making.

Third, the findings should be interpreted without romanticizing the educational role of chess. Research on the cognitive effects of chess instruction does demonstrate positive links, but it also emphasizes the limits of transfer. Not every skill trained in one domain is easily transferred to another. Consequently, chess is best understood as a supplementary developmental resource within broader educational models rather than as a self-sufficient means of cultivating financial competence (Sala & Gobet, 2017).

e-ISSN 2733-2039 print-ISSN 2733-2144

Fourth, the educational potential of chess seems especially promising when combined with financial case-based learning. If students move from chess-related exercises to practical activities such as building a budget, comparing prices, evaluating credit offers, or identifying manipulative financial proposals, then the transfer of skills becomes more explicit and pedagogically grounded. Such integration would unite the cognitive discipline of chess with the practical content of financial education.

The theoretical novelty of this paper lies in combining chess pedagogy, cognitive psychology, behavioral economics, and financial literacy research within a single analytical framework. Its practical significance lies in the possibility of using chess-based methods in financial literacy programs, economic education, and self-management training.

Conclusion. The article has theoretically substantiated that there is a meaningful relationship between chess thinking and financial competence, mediated by cognitive and behavioral mechanisms. These mechanisms include concentration of attention, analysis of alternatives, forecasting of consequences, strategic vision, emotional self-regulation, self-discipline, and responsibility for decisions.

It has been shown that chess may be regarded as a supplementary educational tool for the development of prerequisites for financially literate behavior. Its value lies not in directly teaching financial concepts but in shaping a type of thinking and self-regulation that strengthens an individual's capacity to act more prudently, consistently, and strategically in the financial sphere.

The practical significance of the results lies in the possibility of integrating chess-based methods into financial literacy programs, economic education, critical thinking development, and self-management training. Future research should focus on the empirical testing of the proposed model with schoolchildren, university students, and adult learners, as well as on the design of integrated educational courses that combine chess exercises with financial case studies.

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References:

1. Bai, R., Ali, S., Wang, J., & Ma, Y. (2023). Impact of financial literacy, mental budgeting and self-control on financial well-being: Mediating impact of investment decision-making. *PLOS ONE, 18*(11), e0294466. https://doi.org/10.1371/journal.pone.0294466
2. Dare, S. E., van Dijk, W. W., van Dijk, E., van Dillen, L. F., Gallucci, M., & Simonse, O. (2023). How executive functioning and financial self-efficacy predict subjective financial well-being via positive financial behaviors. *Journal of Family and Economic Issues, 44*(2), 232–248. https://doi.org/10.1007/s10834-022-09845-0
3. Fernandes, D., Lynch, J. G., Jr., & Netemeyer, R. G. (2014). Financial literacy, financial education, and downstream financial behaviors. *Management Science, 60*(8), 1861–1883. https://doi.org/10.1287/mnsc.2013.1849
4. Greben, S., & Mihus, I. (2025). Building a Financially Literate Generation: Policy Innovations for Post-War Ukraine. Public Administration and Law Review, (3(23), 15–27.
5. Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2013). Financial literacy, financial education, and economic outcomes. *Annual Review of Economics, 5*(1), 347–373. https://doi.org/10.1146/annurev-economics-082312-125807
6. Islam, A., Lee, W.-S., & Nicholas, A. (2021). The effects of chess instruction on academic and non-cognitive outcomes: Field experimental evidence from a developing country. *Journal of Development Economics, 150*, 102615.
7. Stable publisher page: https://www.sciencedirect.com/science/article/abs/pii/S0304387820301905
8. Jerrim, J., Lopez-Agudo, L. A., Marcenaro-Gutierrez, O. D., & Shure, N. (2017). What happens when econometrics and psychometrics collide? An example using the PISA data. *Economics of Education Review, 61*, 51–58. Stable indexed page: https://ideas.repec.org/a/eee/ecoedu/v61y2017icp51-58.html
9. Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature, 52*(1), 5–44. https://doi.org/10.1257/jel.52.1.5
10. Mihus, I.(2024). Innovating Education for Financial Specialists: The Digitalization Imperative. In M.Denysenko, L. Khudoliy & S. Laptiev (Eds.), *Digital Skills in a Digital Society: Requirements and Challenges*. 394 p. (pp. 58-86). Scientific Center of Innovative Research. Estonia. DOI: https://doi.org/10.36690/DSDS-58-86
11. OECD. (2023). *OECD/INFE 2023 international survey of adult financial literacy*. OECD Publishing. https://www.oecd.org/en/publications/oecd-infe-2023-international-survey-of-adult-financial-literacy_56003a32-en.html
12. OECD. (2024). *PISA 2022 Results (Volume IV): How financially smart are students?* OECD Publishing. https://doi.org/10.1787/5a849c2a-en
13. Sala, G., & Gobet, F. (2017). The effects of chess instruction on pupils' cognitive and academic skills: State of the art and theoretical challenges. *Frontiers in Psychology, 8*, Article 238. https://doi.org/10.3389/fpsyg.2017.00238
14. Spivak, I., Mihus, I., & Greben, S. (2024). Financial Literacy And Government Policies: An International Study. Public Administration and Law Review, (2(18), 21–33. https://doi.org/10.36690/2674-5216-2024-2-21-33
15. Strömbäck, C., Skagerlund, K., Västfjäll, D., & Tinghög, G. (2020). Subjective self-control but not objective measures of executive functions predicts financial behavior and well-being. *Journal of Behavioral and Experimental Finance, 27*, 100339. https://doi.org/10.1016/j.jbef.2020.100339
16. van Raaij, W. F., Riitsalu, L., & Põder, K. (2023). Direct and indirect effects of self-control and future time perspective on financial well-being. *Journal of Economic Psychology, 99*, 102667. https://doi.org/10.1016/j.joep.2023.102667
17. Willis, L. E. (2011). The financial education fallacy. *American Economic Review, 101*(3), 429–434. https://doi.org/10.1257/aer.101.3.429
18. Xiao, J. J., & Porto, N. (2017). Financial education and financial satisfaction: Financial literacy, behavior, and capability as mediators. *International Journal of Bank Marketing, 35*(5), 805–817. https://doi.org/10.1108/IJBM-01-2016-0009