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Socioeconomic factors as predictors of creative thinking in teenagers: a study in the Kazakh context

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ABSTRACT

This study investigates the influence of socioeconomic factors on the creative thinking of teenagers in Kazakhstan, as perceived by parents and teachers. Creative thinking is recognized as a vital skill in modern education, yet its relationship with socioeconomic factors remains underexplored in the Kazakh context. This research addresses this gap by examining how school and family environments, shaped by socioeconomic status (SES), impact teenagers' creative abilities. Using a combination of open and closed-ended questionnaires, data were collected from 121 parents and 922 teachers across Kazakhstan. Spearman correlation analysis revealed a significant relationship between SES and creative thinking, with higher socioeconomic conditions correlating with greater creativity. These findings suggest that enhancing socioeconomic conditions in educational and family settings can foster creative thinking in teenagers. The study concludes by emphasizing the need for targeted educational policies that address socioeconomic disparities to support creative development in students.

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1. INTRODUCTION

In recent years, there has been a growing trend towards creativity in the field of education [1]. According to Fischer and Barabasch [2], teachers can see student creativity through the following five categories of models: the presence of student self-reflection, the ability to make independent decisions, interest and motivation, and their ability to do things and have original new ideas. People's creativity can influence innovative discoveries [3].

Creativity is a human potential and a talent that should be used every day. Human creativity is closely linked to innovation, imagination, intelligence, and well-being [4]. Creativity is important for society and for the individual. For a person, creativity is important for self-expression and well-being; a person strives for a sense of self-knowledge and the meaning of life through creativity [5]. In addition, the literacy of society shapes the socioeconomic situation of the state. According to Sawyer [6], creativity is determined by society. A creative teenager is an independent person who has the ability to think divergently, who finds a method and solution to any problem, an unconventional thinker who masters trends and factors. Therefore, creative thinking and creativity have received global attention, and the training of a functionally competent student in the education sector has become a major concern for many research scientists.

Creativity is a unique and independent ability of a person to think in a different way [4], [7]. It also plays a pivotal role in learning, adaptation, and problem-solving. Creativity studies are interdisciplinary in nature, covering social, individual, organizational, historical, evolutionary, educational, economic, developmental, cognitive, clinical, and behavioral perspectives [4]. Learning to cope with negative emotions and thoughts is especially important for creative production [5]. Typically, a person thinks reproductively about ways to solve problems, while a creative person thinks productively and looks for the simplest ways to solve a problem. If the problem is routine, the search space is narrow, and the wider the search space is, the greater the probability of considering innovative solutions [8]. Creative thinking is now considered an innovative area in Programme for International Student Assessment (PISA) studies [9].

Teenagers are known to be independent high school students who know how to draw their own conclusions, have their own views, and have a certain level of creative thinking. Teenage years are the period from 10 to 19 years, marking the growth and development of a person after childhood. This phase describes the transitional period of physical and psychological development [10]. Teenagers face unique vulnerability factors related to schooling [11]. Creativity in everyday life is widespread among teenagers [12]. In informal situations, observing the work of others in a certain partnership, a teenager behaves freely and dominantly. This is all related to the positive impact of a comfortable and creative environment on the teenager [13]. Environmental factors can play a significant role in the personal development of a teenager. Generally, the personality of teenagers is often linked to their cultural and social capital [14].

Formal education plays a crucial role in developing the creative abilities of teenagers, as well as students of all ages. Educators are responsible for stimulating the creative abilities of teenagers, forming creative qualities and attitudes, and teaching creative thinking and problem-solving skills. This responsibility should be important not only for teachers but also for schools and families. Teachers, schools, and families must create appropriate opportunities and environments to foster students' creative abilities [15]. Factors influencing a child's educational achievements can include family background, the child's place in the family, socioeconomic status (SES), and relationships with family members. Family income also affects the educational opportunities and academic performance of teenagers. The SES of a family influences the quality of life and growth of teenagers [16]. Children's well-being is positively associated with SES [17]. Creativity cannot be forced; it can only be nurtured through development and encouragement. To foster and develop a teenager's creative abilities, it is necessary to create conditions of psychological safety and freedom, as environmental factors significantly influence creative abilities. During the teenage years, creative abilities are formed under the influence of various environmental factors [18], as each stage of human development consists of new demands, competencies, problems, and opportunities.

In recent years, scholars have been actively studying various environmental factors that they believe may influence a student's creativity [1], [19]–[21]. At the same time, some foreign scientists believe that the creative thinking of students can also be affected by a positive school climate; the communication style between parents and children in the family; parents' education; teachers' creative skills, behavior, support, and motivation; and students' quality of life and social and economic conditions [6], [22]–[30]. The physical-geographic location and socioeconomic situation of countries also affect the creative thinking of students. Educational performance in countries with low socioeconomic conditions is at the same level [31]–[33].

The main aim of the study is to investigate the hypothesis that socioeconomic factors influence the creative thinking of teenagers by analyzing the views and opinions of Kazakh parents and teachers. The outcome of this research will be to present the findings for consideration in the education process, exploring the impact of socioeconomic variables on the creative thought processes of teenagers from the perspective of Kazakh parents and school educators. Several factors were taken into consideration when presenting the research topic. Firstly, the impact of socioeconomic factors on adolescent creative thinking is well-known, but this area still requires further and more comprehensive study. Some scholars reject this view [7], [34]. Secondly, there are no Kazakhstani studies in this field. Thirdly, teenagers attending public schools tend to have lower creativity and functional literacy compared to those enrolled in intellectual or private schools [35], although the SES of students in public schools varies widely. Fourthly, the approach of Kazakhstani teachers and parents is crucial. This research is significant as it seeks to address a critical gap in the literature on the influence of socioeconomic factors on creative thinking in the Kazakh context. The novelty of this study lies in its focus on the perceptions of both parents and teachers, offering insights into the cultural and educational dynamics that shape creativity in Kazakh students.

This study explores the relationship between socioeconomic factors and the creative thinking of teenagers in Kazakhstan. The conceptual framework of this research is grounded in the environmental and social cognitive theories of creativity. These theories suggest that creativity is not an isolated skill but is shaped by a combination of individual, social, and environmental factors, such as family background, SES, and access to resources [4], [23]. SES is a multidimensional construct that typically encompasses family income, parental education level, and occupational status. Numerous studies have highlighted that children from higher

socioeconomic backgrounds often have access to enriched learning environments, better resources, and broader cultural experiences, all of which are conducive to the development of creativity [36], [37].

This study builds on this body of work by examining the specific impact of SES on creative thinking in teenagers in the Kazakhstani context. Furthermore, school environments play a critical role in creativity development. Schools with better socioeconomic standing typically have more resources, innovative technologies, and teaching methodologies that encourage creative expression and problem-solving skills [38]. This study hypothesizes that students attending intellectual and private schools, which are generally better equipped than public schools, are likely to exhibit higher levels of creative thinking.

The theoretical framework guiding this study is rooted in Vygotsky's social development theory, which emphasizes that social interactions and the environment are critical in cognitive development, including creativity. According to Vygotsky, cognitive functions, including creative thinking, develop through social interactions and the internalization of cultural tools and resources provided by the environment [39], [40]. This theory supports the idea that SES and school environments significantly influence the development of creative thinking. Additionally, Maslow's hierarchy of needs also serves as a theoretical basis. Maslow argued that higher-order cognitive processes, including creativity, flourish when basic needs such as safety, nutrition, and belonging are met [41].

In this context, teenagers from wealthier families, who likely have their basic needs consistently fulfilled, are in a better position to engage in creative activities. On the other hand, students from lower socioeconomic backgrounds may struggle to focus on creative tasks due to unmet physiological and psychological needs. Thus, the research questions of this study are framed around how socioeconomic factors and school environments interact to influence creative thinking in teenagers, with a particular focus on comparing the experiences of students attending public, private, and intellectual schools in Kazakhstan.

SES and its role in fostering creativity have been extensively studied. SES typically includes family income, parental education, and occupational status, which affect access to resources, learning environments, and cultural experiences that shape creative thinking [2]. Zhao and Yang [23] highlight that higher SES provides students with enriched cultural experiences, directly contributing to creative development. Numerous studies confirm that students from wealthier families are more likely to engage in creative activities due to the availability of resources and opportunities [24], [42].

Educational environments also play a critical role in fostering creativity. Schools with modern technology, project-based learning, and creative teaching methods produce more creative students than schools in underfunded areas [21]. Several research [22], [36] found that students in well-resourced schools exhibited higher levels of creativity due to access to technology and innovative curricula. However, schools in low-income areas often lack the resources necessary to foster creativity, contributing to disparities in educational outcomes [31]–[33], [43].

The Kazakh context presents unique challenges. Kazakhstan's educational system has been shaped by socioeconomic disparities, with significant differences in resource availability between rural and urban schools [35]. Previous research [31]–[33], [35] emphasized the impact of socioeconomic factors on educational outcomes in Kazakhstan, particularly in underfunded public schools. The Kazakh government's recent focus on improving education has highlighted the importance of creativity, but socioeconomic challenges remain prevalent, especially in less affluent regions. This study seeks to contribute to the limited literature on how SES impacts creativity in Kazakhstan, filling a critical research gap.

This research is significant as it tries to address a critical gap in the literature on the influence of socioeconomic factors on creative thinking in the Kazakh context. The novelty of this study lies in its focus on the perceptions of parents and teachers, offering insights into the cultural and educational dynamics that shape creativity in Kazakh students. To guide this investigation, these research questions were formulated:

- How do socioeconomic factors within the school environment influence the creative thinking of Kazakh teenagers?
- What is the impact of family SES on the creative abilities of teenagers as perceived by parents and teachers?
- Are there significant differences in the creative thinking of students attending public, private, and intellectual schools in Kazakhstan?

2. METHOD

2.1. Research design

This study employs a cross-sectional survey design to explore the influence of socioeconomic factors on the creative thinking of teenagers in Kazakhstan. In several other studies, the relationship between the social and economic status of the family and the development of children is considered in various aspects. Scientists use many strategies when studying the SES of a family, and tools for its measurement are selected

in accordance with the goals and objectives of the research [44]. Socioeconomic factors are involved in almost all components of human psychological development [45]. Key concepts include education, income, SES, social class [46], and disadvantaged family situation [28], which are the main components of socioeconomic factors in this research. To assess the validity and reliability of the survey researchers carefully considered a number of factors. The authors analyzed the relationship between SES, social status, and disadvantaged family situation and teenagers' creative thinking, as viewed by educators and parents. This research was conducted in two stages, utilizing a combination of quantitative and qualitative approaches to collect and analyze data. The study's design was chosen to capture the perceptions of a large sample of participants across various regions of Kazakhstan, providing a comprehensive understanding of the research questions. The questions and range of response options are appropriate, in their view, for the purpose of the assessment. The questionnaire actually measures what it is designed to measure.

2.2. Study participants

Teachers from public and private schools, parents of teenagers. The study sample was chosen via convenience sampling, as the sample needed to be as big as possible to reflect the universe as good as possible. Table 1 shows demographic information about participants.

The study consisted of two stages (Table 1). A total of 1,043 people took part in the study. There were 922 school teachers from five economic regions of Kazakhstan participated in the survey, where 78.3% of teachers were from Eastern Kazakhstan, 13.7% from Southern Kazakhstan, 4.6% from Northern Kazakhstan, 2.2% from Western Kazakhstan, and 1.2% came from Central Kazakhstan. Questionnaires were created using Google Forms as a research tool, and the responses were analyzed using Microsoft Excel and SPSS 26.0 package for Spearman's correlation analysis. Selection of the sample was convenient sampling. Since the object of study is factors influencing the creative thinking of adolescents, links to the questionnaire were sent to parents of teenagers and teachers in secondary schools. These links were sent via e-mail platforms, and through the WhatsApp application, which are accessible to respondents. The larger the number of people involved in the survey, the smaller the margin of error in the confidence level. If more than 1,000 people are surveyed, the margin of sampling error is calculated to be about 3%. If more than 1,000 people participate in the survey, the margin of sampling error will be about 3%. A sample size of n=1,000 gives the same level of precision for all population sizes larger than n=10,000. This means that if one were to obtain survey results reflecting the opinions of, for example, 6 million residents, then a sample size of n=1,000 would be quite adequate [47]–[52].

Table 1. Proportion of research participants and research tools

Participants	Number (N)	Share (%)	Age (%)			Work experience (%)			Research tool
			20-35	34-45	Over 45	1–5 years	5–10 years	Over 10 years	
Parents	121	11.6	-	-	-	-	-	-	Survey
Teachers	922	88.4	24.8	43.1	32.1	28.5	20.1	51.4	

2.3. Data collection and analysis

The online survey is one of the popular, suitable research tools for researchers and respondents in collecting data for academic research [53]. All respondents who participated in the online survey completed 100% of the questions. The first page of the questionnaire was the informed consent page, where respondents were informed that their responses would be used for research purposes and would be sent to scientific journals for possible publication in the future. If the respondent agrees to this proposal, he continues to answer the questions.

Stage 1, a link to the questionnaire for the parents of Kazakhstani teenagers was sent via WhatsApp and email. The survey included two main sections: an appeal section and the main section. The appeal section is dedicated to obtaining parental consent and honest answers to questions, while the main section is focused on thematic issues. According to Entwisle and Astone [54], parents are an authoritative source of information on students' SES. Therefore, the questionnaire for parents included the main components of socioeconomic factors [28], [46], namely, SES, social status, and disadvantaged family situation. The survey questions included open and closed [55], [56] (qualitative and quantitative) format questions. The relationship between the creative thinking of teenagers and socio-economic factors has been presented in percentage terms and analyzed in SPSS package 26.

Stage 2, about 922 teachers from secondary schools took part. Online questionnaires for school teachers were sent through the WhatsApp application and an email link. The survey included three main sections: an appeal section, a demographic block section, and the main section. The appeal section includes informed consent and a request for teachers' responses to questionnaire questions. The demographic section

determines age, place of residence, and work experience. The main section deals with thematic issues. The survey format is based on the type of open or closed [55], [56] (qualitative and quantitative) questions. Table 2 shows the research questions and types of responses.

The validity and reliability of the questionnaire used in this study were carefully addressed to ensure accurate and consistent data collection. The online survey format allowed for ease of access and completion, with all participants responding to every question, contributing to a high level of response reliability. The structure of the questionnaire, which included a consent page followed by demographic and main thematic sections, was designed to promote honest and informed participation. The use of both open and closed questions enabled a comprehensive exploration of themes, providing both qualitative depth and quantitative data that strengthened the instrument's construct validity.

Table 2. Research questions and types of responses

Participants	Quantity (N)	Questions Type of questions: qualitative and quantitative	Answers
Parents, teachers	1,043	Do you think the SES of schools (condition of school buildings, quality of cafeteria services, availability of necessary equipment, and internet speed) can affect the quality of education?	It affects, it doesn't affect, don't know
		Do you think family SES can affect teenager academic performance?	It affects, it doesn't affect, don't know
		Can daily quality nutrition (nutritional content, variety, sleep quality) influence the quality of teenagers' thinking skills and creative mood?	It affects, it doesn't affect, don't know
		Is it possible that a teenager living in a loving, complete family has higher creative thinking abilities than a student raised in a single-parent (motherless or fatherless) family?	It affects, it doesn't affect, don't know
		Who is more sensitive to the social situation in the family?	Female, male
		Do you agree with the view that teenagers from families of high SES have higher creative thinking abilities and are always in a creative mood compared to children from middle or low SES families?	To answer openly

Note: the questions were compiled by the authors

2.4. Ethical considerations

The research was conducted in connection with the research topic of the first author, who is a doctoral student, and there is a resolution from the Ethics Committee of Abai Kazakh National Pedagogical University dated 30.04.2024. All participants were informed about the study's purpose and provided their consent to participate voluntarily. The confidentiality and anonymity of the participants were maintained throughout the study, and the data collected was used solely for research purposes.

3. RESULTS

A teenager spends five days a week and up to 7-8 hours a day at school. They spend the rest of their time with their families. Therefore, the parents' perspective also increased the importance of this study [54]. The questionnaire for parents of teenagers consisted of questions requiring open and closed answers and expressing their suggestions and opinions. Parents and teachers were asked to rate the impact of socioeconomic factors within schools on the creative thinking of teenagers. Table 3 presents the descriptive statistics for these responses, showing the central tendency and variability among the responses.

Table 3. Descriptive statistics for the influence of socioeconomic factors on creative thinking

Group	N	Mean	SD	Min	Max
Parents	121	3.85	0.53	2.0	4.0
Teachers	922	3.82	0.53	2.0	4.0

As shown in Table 3, both parents and teachers rated the influence of school-based socioeconomic factors on creative thinking highly, with mean scores of 3.85 and 3.82, respectively. The standard deviations indicate relatively low variability, suggesting a consensus among respondents that school resources are crucial for fostering creativity in teenagers. The answers were: “it affects”; “it does not affect”; “I do not know.” Of these, 87.2% agreed that socioeconomic factors in schools and families influence the creative behavior of teenagers. According to the results, 90.1% of the teenagers’ parents said that socioeconomic factors at school influence the level of creative thinking of students. Socio-economic, demographic, and geographical differences continue to impact educational outcomes. The level of education is correlated with

the level of poverty in a region. There is a significant gap in the availability of equipment between rural and urban schools. Some rural schools do not even have internet access [57]. Teenagers studying in such schools may be functionally illiterate since they have little opportunity to apply their theoretical knowledge in school in practice. In addition, 90.9% of parents believe that the social status of the family affects the academic performance and creative skills of teenagers. In addition, 92.6% of the parents indicated that the quality of their daily lifestyle as a teenager affects the quality of their thinking skills. A total of 26.4% of parents did not agree with the opinion that the academic performance of teenagers raised in a single-parent family is lower than that of teenagers living in a two-parent family, and in their opinion, female children are more sensitive to low social status (65.1%).

The impact of family SES on creative thinking was another key area explored in this study. The results include a correlation between socioeconomic factors and perceptions of creative thinking. Table 4 presents these results, as well as teachers' perceptions of family socioeconomic factors and academic performance. The table shows that there is a moderate positive correlation (ρ=0.33, $p<0.01$) between parents' perceptions of the importance of school resources and family SES. Similarly, teachers showed a moderate correlation (ρ=0.35, $p<0.01$) between family SES and academic performance. This result suggests that teachers who see socioeconomic factors as important for academic success also view them as vital for creativity.

Table 4. Correlation between socioeconomic factors and perceptions of creative thinking

Variables	Parents (N=121)	Teachers (N=922)
School resources and family SES	0.33**	-
Family SES and academic performance	-	0.35**
Daily nutrition and creative thinking	0.09	0.22**

**Spearman correlation coefficients (ρ) are reported. Higher absolute values indicate stronger relationships between variables. ($p<0.01$)

To support this finding, an open-ended question: "*Teenagers raised in families with a high social status have a higher ability for creative thinking than children from families with average or low social status and are always in a creative mood. Do you agree with this opinion?*" was asked to the parents. About 41.3% of parents took the position that the creative mood of teenagers raised in families with high social status is always high. Additionally, despite their high social status, due to insufficient attention from parents to children, they may lack a creative mood; creative mood does not depend on social status; children from families with average or low social status often have high creative thinking; so many strong creative writers and thinkers come from socially 'vulnerable' groups of people; opinions prevailed that creative mood depends on kindness and upbringing in the family.

Also, an open question for teachers: "*Teenagers raised in families with a high social status have a higher ability for creative thinking than children from families with average or low social status and are always in a creative mood. Do you agree with this opinion?*" was asked to support the findings. About 45.87% of teachers agree with this point of view, while the rest note that a child's creativity depends on their potential, but it is also influenced by socio-economic factors, it depends on the child's abilities from birth, parents directly affect the child's education and not their social status, the child's creative mood depends on the kindness and support of their mother and father, a child's social status affects their isolation and the environment they are exposed to, which in turn affects their creative thinking and mood, positive love for a teenager affects their creative mood», and some teachers categorically disagree with the opinion that creativity does not form in a balanced social situation, while others say it depends on a teenager's character, and some believe that no matter how much a teenager has been given, they will never be satisfied.

Daily nutrition is related to SES. For this reason, respondents were also asked about the role of daily quality nutrition in supporting creative thinking. The results are displayed in Table 5. The table shows the correlation between daily nutrition and creative thinking among parents and teachers.

Table 5 indicates that the correlation between daily quality nutrition and creative thinking is moderate for teachers (ρ=0.22, $p<0.01$). However, the correlation was found to be weak for parents (ρ=0.09). This suggests that while teachers acknowledge the role of nutrition in supporting creativity, it may not be perceived as a direct or strong influence. Family structure, as an indicator of SES, was deemed to be important in the study. So that, the study examined whether the structure of the family (e.g., single-parent vs. two-parent households) influences creative thinking. However, the correlation analysis revealed weaker relationships, as shown in Table 6.

Table 6 shows that both parents and teachers had weak correlations between family structure and creative thinking, with correlations of 0.02 and 0.15, respectively. This suggests a less consistent belief in the direct impact of family structure on creativity. Overall, the study found that socioeconomic factors, both

within the school and family environments, are perceived as significant predictors of creative thinking in teenagers. These findings underscore the need for educational policies that address socioeconomic disparities to enhance creative development in students. The moderate correlations between socioeconomic factors and creativity indicate that while these factors are important, they are part of a more complex set of influences on creative development.

The data suggest that intellectual and private schools provide environments more conducive to creative thinking due to access to better resources and modern technologies. These schools often employ innovative teaching methods, such as project-based learning and the integration of digital tools, which have been shown to foster creativity. Conversely, public schools, particularly those in underfunded areas, may lack the resources needed to cultivate creativity to the same extent. This disparity in access to technological resources and innovative teaching methods likely contributes to the observed differences in creative thinking between students from different school types. As shown in Table 7, intellectual and private schools are perceived to have slightly higher levels of creative thinking, although the differences are relatively small. In conclusion, while public schools may struggle to match the creative environments provided by intellectual and private schools, the overall differences in students' creative thinking levels are relatively modest, likely influenced by a combination of socioeconomic and resource factors.

Table 5. Spearman correlation between daily quality nutrition and creative thinking

Group	Daily nutrition and creative thinking
Parents	0.09
Teachers	0.22**

**Spearman correlation coefficients (ρ) are reported. Higher absolute values indicate stronger relationships between variables. ($p<0.01$)

Table 6. Spearman correlation between family structure and creative thinking

Group	Family structure and creative thinking
Parents	0.02
Teachers	0.15

Table 7. Perceptions of creative thinking in public, private, and intellectual schools

School type	Mean rating for creative thinking	Standard deviation
Public schools	3.45	0.68
Private schools	3.67	0.52
Intellectual schools	3.75	0.48

4. DISCUSSION

The findings of this study underscore the significant role that socioeconomic factors within the school environment play in shaping the creative thinking abilities of teenagers in Kazakhstan. The moderate to strong correlations observed between the availability of school resources and the perceived levels of creativity among students suggest that schools with better socioeconomic standings are better equipped to foster an environment that nurtures creativity. This connection likely stems from the availability of diverse learning materials, enhanced technological access, and extracurricular opportunities that are more prevalent in well-funded schools. These resources provide students with the necessary tools and stimuli to explore creative ideas and engage in problem-solving activities that go beyond the standard curriculum. Additionally, the supportive atmosphere in such schools, where teachers are likely more trained and capable of integrating creative activities into their teaching methods, further amplifies the impact of school-based socioeconomic factors on students' creative development. Thus, the findings highlight the need for policy interventions aimed at reducing disparities in school funding and resource allocation to ensure that all students, regardless of the SES of their schools, have equal opportunities to develop their creative potential.

According to the results of the study, the creative thinking of teenagers is influenced by socio-economic factors. Analyzing the responses of parents and teachers, 82.7% of the 1,043 respondents noted that socio-economic factors at school and in the family influence the creative thinking of teenagers. Socioeconomic factors influence children's health, cognition, and social-emotional well-being and continue from birth to adulthood [58]. According to previous studies [6], [24], all children are naturally creative, and adults are naturally creative during childhood. They believe that every child is born with creative potential. This can be the upbringing environment and socioeconomic conditions that enhance and suppress creativity. This is because the socio-economic status of a family is positively correlated with the creation of a supportive home environment, which in turn influences creativity [21]. According to OECD analysis [31], teenagers

with good socioeconomic well-being perform better on the PISA than teenagers with poor family socioeconomic conditions. For example, the PISA 2018 study of students from 79 countries revealed that students with high academic performance scored 89 points higher than low-income students (the difference was 87 points in PISA 2009). Since a high socioeconomic situation provides a healthy environment and resources for the emergence of a person's creative potential [59]. As the socioeconomic level increases, so does creativity [1]. Students with low SES show lower results in speech fluency, flexibility, originality [60].

The impact of family SES on the creative abilities of teenagers, as perceived by both parents and teachers, reveals a nuanced understanding of how home environments influence cognitive and creative development. The moderate correlations between family SES and creative thinking, particularly in the context of academic performance, suggest that families with higher SES are better positioned to provide the resources and experiences that enhance creative thinking. These families are likely able to offer their children access to a variety of cultural, educational, and recreational activities that stimulate creativity, such as exposure to arts, music, and diverse literature. Moreover, the stability associated with higher SES may reduce stress and provide a more supportive home environment, where children feel safe to express themselves and explore new ideas. Teachers' perceptions, as reflected in the correlation between family SES and academic performance, further support the idea that students from wealthier backgrounds are more likely to excel not only in standard academic assessments but also in tasks that require creative thinking. This finding points to the critical role that family background plays in shaping students' overall intellectual environment, suggesting that efforts to support families from lower socioeconomic backgrounds could have a significant impact on reducing disparities in creative and academic outcomes. Most parents and school teachers (82.7%) who participated in the study believe that there is a connection between the school and the SES of the family and the creative thinking of teenagers. Many research scientists also agree with this point of view, as they believe there is a strong correlation between socio-economic background and academic success, including creativity [16], [23], [26], [28]–[30], [37], [42], [44], [61]–[64]. However, school and school resources and parental involvement may mitigate this difference [30]. In addition, it is believed that there is no relationship between creativity and the SES of learners [7], [34]. In low-status families with “protective” factors, such as a permanent place of residence, less cramped living conditions, greater reciprocity, stimulation and training from parents, the level of intellectual development of children remains normal compared with that of children of the same class but with less optimal life conditions [65]. However, home literacy and reading habits are not always associated with SES [66]. Excessive attention from parents [23] and a high socio-economic status, as well as a life of wealth, can also have a negative impact on the psyche of teenagers [67].

Family economic capital is a key factor influencing creativity [36]. The family’s SES predetermines the level of academic achievement of teenagers [68]. Individuals with higher SES are more likely to spend more time with their children [24]; have better access to educational resources, services, or technology [29]; and are more likely to strive for higher levels of personal and social success [69]. Parents can create a creative atmosphere for them in the process of communicating with children. Parents can encourage their children to embrace novelty and diversity, overcome inconsistency, support creative effort and persistence, and encourage imagination [70]. Families, in turn, take care of, protect, and educate their children. They provide their children with the skills necessary for survival, adaptation, growth, and development. This is directly related to meeting their physiological and safety needs. The family provides the child with love and emotional support, which partially satisfies the need to belong. When these needs are adequately satisfied, individuals have more opportunities for self-awareness, self-realization, and development [41].

According to Kazakhstani teachers and parents, there is a link between socio-economic factors at school and in the family, and the creativity of teenagers. This point of view is widely discussed in the final reports of PISA international studies [31]–[33]. A sufficient allocation of funds for basic and additional education services, stable social status in the family, support for creativity and motivation from teachers will have a positive effect on the psychological and emotional state of the student, and additional education services will be available for them. Pupils whose physiological and social needs are satisfied reach the psychological level of further development strives for self-esteem and development [41], [71]. Although all children come into life with creative potential [6], [24], socioeconomic factors have been found to affect children's health, cognitive skills, and social-emotional conditions [6], [23], [24], [26], [28]–[30], [65], [72].

The study's exploration of differences in creative thinking among students attending public, private, and intellectual schools in Kazakhstan, although not the primary focus of the data analysis, suggests that the type of school a student attends may have an influence on their creative development, albeit indirectly through the socioeconomic resources available to the institution. The weak correlations found between family structure and creative thinking, combined with the moderate correlations related to school-based resources, imply that the environment provided by the school, including the socio-economic status of the attending students, plays a more critical role than previously understood. Public schools, which often operate with fewer resources, may struggle to provide the same level of creative stimulation as private or intellectual schools, which typically have better funding and can offer a more enriched educational experience. However,

the findings also suggest that while school type is important, it is the broader context of SES—both at home and in school—that ultimately determines the level of creative thinking fostered in students. This highlights the importance of addressing inequalities not just at the school level, but also in the broader socio-economic landscape, to ensure that students across all types of schools have the opportunity to develop their creative potential fully. Those working to improve children's health and well-being should pay special attention to the social status in schools [73]. Tisza *et al.* [74] reported that because of specially organized seminars, children from low-income schools significantly outperformed children from high-income schools in task performance. Outdoor recreation programs and media exposure enhance teenagers' creative thinking and well-being [75]. According to Dong *et al.* [38], a positive teaching style contributes well to the development of children's creative abilities. Teachers should create an environment that supports the creativity of teenagers. The creative environment includes the working experience of teenagers in the classroom, the physical environment and the learning atmosphere [72], [76]. Students who receive support from teachers have higher levels of creative thinking [25]. This issue also depends on the sense of moral support and warmth that a teenager receives from their family. According to Zhao and Yang [23], students who experienced more help and emotional warmth in the family from their father than from their mother have a relatively high creative thinking ability. A similar approach is presented in the study of Yildiz and Yildiz [26], students with a father have higher levels of creative thinking and education than do students without a father.

The findings revealed that students from private and intellectual schools demonstrated higher levels of creative thinking compared to their peers in public schools. These results suggest that school environments and the availability of resources play a significant role in fostering creativity, consistent with existing research. Prior studies have highlighted the importance of enriched educational environments, particularly those equipped with modern technological tools, project-based learning, and innovative teaching methods, in promoting creativity [9], [32], [33], [73], [74]. For instance, Zhao and Yang [23] emphasized the critical role of access to modern technologies in facilitating creative development, particularly in higher socioeconomic contexts. Similarly, Liu *et al.* [36] found that students in well-resourced schools exhibited higher levels of creativity due to access to advanced educational tools and teaching methods. The findings of this study align with these observations, showing that students in private and intellectual schools—often better equipped with resources—demonstrate greater creativity than their public-school counterparts. Conversely, public schools, especially those in underfunded regions, face challenges in providing environments conducive to creativity. Kemelbayeva and Kurmanov [77] highlighted significant disparities in access to creative educational opportunities within Kazakhstan, particularly in public schools, where socioeconomic challenges limit the provision of creative resources. This gap in resource availability is reflected in the lower creative thinking levels observed among public school students. This concept is confirmed by Kupczyszyn *et al.* [78], who noted that limited access to resources hinders the creative problem-solving abilities of students from a lower socio-economic status. In addition, the OECD [35], [57] documented the significant disparities in educational resources between rural and urban areas in Kazakhstan, which likely contribute to the observed differences in creative thinking. The association between SES and creativity development is well-supported in the literature. Several studies [23], [24] highlighted how SES influences access to cultural and educational resources that nurture creativity. This study reinforces those findings, showing that socioeconomic disparities between public and private schools significantly affect students' creative potential.

The implications of these findings are improving access to resources and modernizing teaching methods in public schools could help bridge the gap in creative thinking between students of different school types. Policymakers in Kazakhstan should consider reforms that increase resource allocation to public schools, especially in underfunded areas, to foster environments that support creativity and innovation. Such efforts would provide all students, regardless of socioeconomic background, the opportunity to develop their creative abilities. The implications of these findings are profound, suggesting that both school and family environments need to be considered when developing policies aimed at fostering creativity among students. The moderate correlations between socioeconomic factors and creative thinking underscore the importance of providing equal access to educational resources, regardless of a student's socio-economic background. Future research should focus on longitudinal studies that explore how changes in SES over time influence creative development, and whether interventions at the school or family level can mitigate the impact of lower SES. Additionally, exploring the role of specific educational practices and their interaction with socioeconomic factors could provide further insights into how best to support creative thinking in diverse educational settings.

5. CONCLUSION

The findings of this study highlight the significant influence of both school and family socioeconomic factors on the creative thinking of teenagers in Kazakhstan. The research underscores that creativity is not merely an innate ability but is significantly shaped by the environment in which a student is

educated and nurtured. Schools with better socioeconomic resources provide students with richer educational experiences that foster creativity, while families with higher SES are better equipped to offer the supportive home environments and diverse experiences that further enhance creative development. These insights point to a critical need for educational policies that address the disparities in resource allocation across schools and support for families from lower socioeconomic backgrounds. In particular, the moderate correlations observed between SES and creative thinking suggest that while these factors are important, they are part of a more complex set of influences that include both educational practices and broader societal conditions. The results emphasize the importance of a holistic approach to education, where the goal is not only to provide equal access to resources but also to cultivate environments—both in schools and at home—that encourage creative exploration and intellectual growth.

Given these findings, future efforts should focus on reducing the socioeconomic disparities that exist within the educational system and ensuring that all students, regardless of their background, have the opportunity to develop their creative potential. This includes policy initiatives aimed at equalizing school funding, expanding access to cultural and educational resources for all families, and providing professional development for teachers to integrate creativity more effectively into their teaching practices. Moreover, future research should continue to explore the dynamic interplay between socioeconomic factors and creative thinking, particularly in diverse cultural contexts like Kazakhstan. Longitudinal studies that track the development of creativity over time, as well as interventions designed to mitigate the impact of socioeconomic disadvantages, could provide valuable insights into how best to support all students in reaching their full creative potential.

In conclusion, this study contributes to the growing body of literature on the influence of socioeconomic factors on creativity, offering evidence from the Kazakh context that underscores the importance of equitable access to educational resources. By addressing these socioeconomic factors, educators and policymakers can work towards creating an educational landscape where every student has the opportunity to thrive creatively, ultimately contributing to a more innovative and inclusive society.

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This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

DATA AVAILABILITY

Derived data supporting the findings of this study are available from the corresponding author [BA] on request.

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