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SOCIAL MEDIA SCREEN TIME, HEMOGLOBIN LEVEL, FOOD INTAKE, SOCIAL ECONOMY WITH STUDENTS' READING ABILITY AMONG SENIOR HIGH SCHOOL STUDENTS IN JAKARTA

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ABSTRACT

Based on the result of Programme fot International Student Assessment (PISA) 2018, Indonesia's academic achievements among students are still below the global average score. The low academic achievements reflect low-quality human resources, which will affect the difficulty of competing with other countries. There are two factors affecting students' academic achievement, internal and external factors. To determine the relationship between social media screen time, hemoglobin level, food intake, and social economy to students' reading ability among Senior High School students in Jakarta. This study used a cross-sectional study design with a quantitative method involving 109 respondents from grade X and XI. Purposive sampling was the sampling method that is used in this study. A relationship was found between students' reading ability with hemoglobin level and energy intake (p-value = 0.000 and 0.033). No relationship has been found between social media screen time and social-economic with students' reading ability. Students' reading ability had a relation to hemoglobin level and food intake. It is recommended for students and schools to always monitors their hemoglobin levels and always take an adequate amount of food to support their academic achievement.

Keywords: Food intake, hemoglobin level, PISA, social economy, social media screen time, students' reading ability

Introduction

Adolescents are one of the national investments in human resources. The value of adolescents can be reflected by their academic achievement. Based on *Programme for International Student Assessment* (PISA) 2018 report, Indonesia was ranked 79 out of 82 countries that participated. PISA is a program dedicated to observing students' abilities and skills in their academics. This report shows that Indonesian students' abilities and skills are one of the lowest among all. A study by Syafi'i, Maffiyanto, and Rodiyah[1] stated that there are two factors affecting students' academic achievements, which are internal factors (physical, psychological, and physical maturity) and external factors (family, school, and the surrounding environments).

Based on the study done by Pratama and Sari[2], around 80% of adolescents spend their spare time accessing the internet, whereas 20% of them use the Internet to access social media. Social media is a platform used to access information that is related to students' academics. There is also another kind of content for entertainment that is accessible through social media such as YouTube,

Instagram, and TikTok that could distract students from their school work. A study that is done by Rustiyanti[3] shows that there is a relationship between social media screen time and students' academic achievement.

Anemia in adolescents in Indonesia is still at a high prevalence at 32%[4]. Adolescents with anemia can affect their concentration on studying which will decrease their academic achievement. Hemoglobin level is the indicator of anemia. When the hemoglobin levels are low, it indicates that the oxygen levels in the blood are low, which will then interfere with students' concentration. This statement is in line with the study done by Djajaningrat, Chairlan, and Mardiana[5] showing that a relation is found between hemoglobin levels and students' academic achievements.

A study done by Mokoginta, Budiarso, and Manampiring[6] stated that 97,5% of adolescents' energy intake is lower than the *Angka Kecukupan Gizi* (AKG). Energy can affect academic achievement as energy consumption could increase blood sugar levels which would increase acetylcholine production used to transport nerve signals in the brain[7]. A study done by Sety and Paeha[8] stated that there is a relationship between energy intake with students' academic achievements. Both statements between the studies are in line with each other.

Socioeconomic conditions have an important role in child development. The high and low family's social and economic status has a strong effect on academic achievement as it is related to fulfilling family needs, both primary, secondary, and tertiary needs, including child's academic needs. It is supported by the study conducted by Jatmiko[9] that there is a positive relationship between social economics with students' academic achievements.

In 2022, there are 413 schools in Indonesia that participated in PISA. SMA Budhi Warman II Jakarta is one of the 67 schools in Jakarta that have participated in PISA 2022. Based on the description above, researchers want to know the relationship between social media screen time, hemoglobin level, food intake, and social economics with students' reading ability among Senior High School students in Jakarta.

Methods

This study used a cross-sectional design with a quantitative method to determine the relation between dependent and independent variables. The sampling technique used in this study is purposive sampling technique, a non-probability method. Purposive sampling was used in this study because the respondents are picked by a specific category which was the participants of PISA 2022. There were 693 students as the population in this study from grade X, XI, and XII with 109 students as the respondent from grade X and XI. This study was done at SMA Budhi Warman II Jakarta as one of the schools that participated in PISA 2022.

There were two kinds of data collected in this study, primary and secondary data. The primary data in this study including the characteristics of the respondents (age and sex), social

media screen time, and social economic are collected using a questionnaire; respondents' food intake was calculated using Food Recall 2x24 Hour questionnaire; and respondents' hemoglobin level was measured by using Easy Touch GCHb.

Data analysis in this study includes univariate and bivariate analysis. Univariate analysis is used to see the data distribution in each variable. Bivariate analysis is used to determine the relationship between independent variables (social media screen time, hemoglobin level, food intake, and social economics) and dependent variable (students' reading ability). In this study, the relationship between variables was tested using the Chi-Square test.

Results

Respondents' characteristics (age and sex) and reading ability distribution as the results of the univariate analysis can be seen in Table 1.

Table 1. Respondents' Distribution on Characteristic and Reading Ability

Variable	Distribution	
	Frequency	Percentage
Respondent Characteristic		
Age		
15	10	9.2
16	99	90.8
Total	109	100
Sex		
Male	54	49.5
Female	55	50.5
Total	109	100
Reading Ability		
High	60	55
Low	49	45
Total	109	100

The results on respondents' social media screen time, hemoglobin level, food intake, and social economic can be seen in Table 2.

Table 2. Respondents' Distribution on Independent Variables

Social Media Screen-Time		
Medium	28	25.6
Long	81	74.3
Total	109	100
Hemoglobin Level		
Normal	77	70.6
Low	32	29.4
Total	109	100
Energy Intake		
Adequate	9	8.3
Inadequate	100	91.7
Total	109	100

Table 2. Respondents' Distribution on Independent Variables

Protein Intake		
Adequate	18	16.5
Inadequate	91	83.5
Total	109	100
Fat Intake		
Adequate	9	8.3
Inadequate	100	91.7
Total	109	100
Carbohydrate Intake		
Adequate	4	3.7
Inadequate	105	96.3
Total	109	100
Father's Education		
High	96	88.1
Low	13	11.9
Total	109	100
Mother's Education		
High	96	88.1
Low	13	11.9
Total	109	100
Father's Occupation		
Occupied	102	93.6
Not Occupied	7	6.4
Total	109	100
Mother's Occupation		
Occupied	41	37.6
Not Occupied	68	62.4
Total	109	100
Parents Income		
High	75	68.8
Low	34	31.2
Total	109	100

Bivariate analysis results for the relation between independent and dependent variables can be seen in Tables 3, 4, 5, and 6 below.

Table 3. Relationship between Social Media Screen-Time with Students' Reading Ability

Social Media Screen-Time	Students' Reading Ability				Total		p-value
	High		Low				
	n	%	n	%	n	%	
Medium	14	12.9	14	12.8	28	25.7	
Long	35	32.1	46	42.2	81	74.3	0.534
Total	49	45	60	55	109	100	

Results in Table 3 showed that students with longer social media screen time have lower reading ability (42.2%) and students with medium social media screen time have the same rate with high and low reading ability (12.8%). Table 3 also showed that there was no relationship between social media screen time with students' reading ability (p value: 0.534).

Table 4. Relationship between Hemoglobin Level with Students' Reading Ability

Hemoglobin Level	Students' Reading Ability				Total		p-value
	High		Low				
	n	%	n	%	n	%	
Normal	26	23.9	51	46.8	77	70.7	
Low	23	21.1	9	8.2	32	29.3	0.000
Total	49	45	60	55	109	100	

Results in Table 4 showed that there was a relationship between hemoglobin level with students' reading ability (p value: 0.000).

Table 5. Relationship between Food Intake with Students' Reading Ability

Energy Intake	Students' Reading Ability				Total		p-value
	High		Low				
	n	%	n	%	n	%	
Adequate	1	1	8	7.3	9	8.3	
Inadequate	48	44	52	47.7	100	91.7	0.040
Total	49	45	60	55	109	100	
Protein Intake							
Adequate	6	5.5	12	11	18	16.5	
Inadequate	43	39.5	48	44	91	83.4	0.278
Total	49	45	60	55	109	100	
Fat Intake							
Adequate	3	2.8	6	5.5	9	8.3	
Inadequate	46	42.2	54	49.5	100	91.7	0.510
Total	49	45	60	55	109	100	
Carbohydrate Intake							
Adequate	1	1	3	2,7	4	3,7	
Inadequate	48	44	57	52,3	105	96,3	0.626
Total	49	45	60	55	109	100	

Results in Table 5 showed that students with inadequate food intake (energy, protein, fat, and carbohydrate) have lower reading ability (47.7%, 44%, 49.5%, and 52.3%). There was a relationship between energy intake with students' reading ability (p value: 0.040). Table 5 also showed that there was no relationship between protein, fat, and carbohydrate intake with students' reading ability (p-value: 0.278, 0.510, and 0.626).

Results in Table 6 showed that students with mothers who aren't occupied have higher reading ability (32.2%) with p-value of 0.078. Table 6 also showed that there was no relationship between fathers' and mothers' education, fathers' occupation, and parents' income with students' reading ability (p-value: 0.492, 0.492, 0.455, and 0.476).

Table 6. Relationship between Social Economics with Students' Reading Ability

Father's Education	Students' Reading Ability				Total		p-value
	High		Low				
	n	%	n	%	n	%	
High	42	38.5	54	49.5	96	88	
Low	7	6.5	6	5.5	13	12	0.492
Total	49	45	60	55	109	100	
Mother's Education							
High	42	38.5	54	49.5	96	88	
Low	7	6.5	6	5.5	13	12	0.492
Total	49	45	60	55	109	100	
Father's Occupation							
Occupied	47	43.1	55	50.4	102	93.5	
Not Occupied	2	1.9	5	4.6	7	6.5	0.455
Total	49	45	60	55	109	100	
Mother's Occupation							
Occupied	14	12.8	27	24.7	41	37.6	
Not Occupied	35	32.2	33	30.3	68	62.4	0.078
Total	49	45	60	55	109	100	
Parents' Income							
High	32	29.4	43	39.4	75	68.8	
Low	17	15.6	17	15.6	34	31.2	0.476
Total	49	45	60	55	109	100	

Discussion

The characteristics of the respondents in this study included the age and sex of the respondents. In this study, there were 109 respondents who were students of grade X and XI at SMA Budhi Warman II Jakarta. The results showed that most of the respondents were 16 years old (90.8%) and were female (50.5%). 60 respondents (55%) had a low-level reading ability as the result of the analysis done by using SPSS.

Analysis of the questionnaire used to discover the average social media screen time showed that most of the respondents (51.4%) use social media for a long duration (more than 4 hours per day). Related research on adolescents aged 15-16 years done by Syamsoedin, Bidjuni, and Wowiling[10] showed that the majority of adolescents had a moderate duration (3-4 hours per day) of social media usage (50%). The social media screen time for the majority of respondents was long, which could be because students were allowed to bring gadgets to school, therefore, allowing students to access social media at any time.

Normal hemoglobin levels were found in most of the participants reaching up to 70.6%. Another study conducted at SMAN 1 Bolangitang Barat by Sukarno, Marunduh, and Pangemanan[11] showed that the majority of respondents had normal hemoglobin levels (90%). Hemoglobin is an important molecule in the body that functions in transporting oxygen throughout the body. Low hemoglobin levels indicate low oxygen saturation in the blood which will circulate throughout the body, including the brain, which is one of the causes of silent cerebral infarction and also affects cognitive and motor development.

The questionnaire that was used showed that most of the respondents has inadequate food intake. Respondents with inadequate energy intake were at 91.7%; respondents with inadequate protein intake were at 83.5%; respondents with inadequate fat intake were at 91.7%; and respondents with inadequate carbohydrate intake were at 96.3%. Another study conducted by Syafei and Badriyah[12] showed that 52.1% of respondents had a deficit in energy intake. Based on the results of the Food Recall 2x24 Hour interview, the majority of respondents on the weekend start eating at lunchtime, and not a few only eat at lunchtime. On weekdays, the majority of respondents also only eat once daily, either at breakfast or lunch. In addition, food intake on weekdays is less than on weekends, this happens because, after school, students immediately use their spare time to rest hence why they tend to skip meals.

The majority of respondents in this research had fathers and mothers with higher education (88.1%) with the overall respondents with working fathers were 93.6% and working mothers were 62.4%. Respondents with parents who had high incomes were 68.8%. The differences in parents' education differentiate the attitude that will be formed in each individual. The higher level of parents' education, the wider their insight towards the world of education, and this could encourage children's interest in continuing their education[13]. Occupation and income of parents are one of the factors that can affect students' academic achievement. Parents who work with high incomes can help their children facilitate and meet their children's educational needs[14].

The statistical test results in Table 2 show that there was no relationship between social media screen time and reading ability in adolescents aged 15-16 years at SMA Budhi Warman II Jakarta (p-value = 0.534). The use of social media unwisely can have a negative impact on student academic achievement, including in the field of reading. In the research of Navarro-Martinez and Peña-Acuña[15], social media use was categorized again for social media use in general and for playing games. The results obtained were also different, for students who used social media to play games had a negative direction, where the longer they use social media, the lower the PISA score.

There was a relationship between hemoglobin levels and reading achievement in adolescents aged 15-16 years at SMA Budhi Warman II Jakarta (p-value = 0.000). This is shown based on the results of the statistical test done from Table 3 which is also in line with the research by Sungthong, Mo-suwan, and Chongsuvivatwong[16] on students which showed that students with anemia had lower IQs and reading and spelling achievements than students who were not anemic. Low hemoglobin levels caused oxygen in the lungs to be obstructed from flowing so that the oxygen levels needed by every cell of the body and brain will not be fulfilled. Inadequate oxygen level will also cause neurological problems and behavioral disturbances such as physical motoric activity, social interaction, and concentration problems[17].

Based on Table 4, the statistical test results showed that there was a relationship between energy intake and reading ability in adolescents aged 15-16 years at SMA Budhi Warman II

Jakarta (p-value = 0.040). However, there were no relationship between protein intake, fat intake, and carbohydrate intake with reading ability in adolescents aged 15-16 years at SMA Budhi Warman II Jakarta (p-value = 0.278, 0.510, 0.626).

Research conducted by Bleiweiss-Sande, Chui, Wright, Amin, Anzman-Fasca, et al.[18] showed that there was a relationship between energy intake and academic achievement in language and mathematics (p-value = 0.001). Energy is needed in the body as a substance for energy to carry out organ functions properly such as temperature regulation, thinking, physical and motor activities, and others[19]. The brain requires a total of 20-30% of energy to carry out its functions including thinking and concentration in learning. Physiological and biological needs, especially good and balanced nutritional intake, help with brain development, prevention and treatment of diseases that affect intelligence development, and provide physical skills to carry out daily activities including learning[20].

Statistical test results in Table 5 showed no relationship between the fathers' and mothers' education with reading ability in adolescents aged 15-16 years at SMA Budhi Warman II Jakarta (p-value = 0.492). This contradicts the previous studies whereas a father's education has a role in educating children. Fathers with higher education have broader knowledge and can monitor their children's learning achievements to be better[21]. The statement is then supported by Chiu, Economos, Markson, Raicovi, Howell et al.[22] saying a relationship was found between father's education and students' academic achievement. Mother's education is also studied to have an influence on children's academic achievement. Mothers with higher education tend to have better knowledge of learning materials at school than mothers with lower education. Research conducted by Crede, Wirthwein, McElvany, and Steinmayr.[23] supports the statement by showing that there was a relationship between mothers' education and students' academic achievement. Mothers with a high educational background are able to provide education to their children from an early age when at home. The statements mentioned in previous studies all contradict the result of the research conducted in SMA Budhi Warman II Jakarta.

Statistical test results of Table 5 also showed that there was no relationship between fathers' and mothers' occupations with reading ability in adolescents aged 15-16 years at SMA Budhi Warman II Jakarta (p-value = 0.455, 0.078). This also contradicts previous studies. Parents' occupation was found to have a direct effect on parental income. Working fathers tend to have a higher income than non-working fathers. Despite having less time to care for and help children in the learning process and monitoring children's learning outcomes, mothers who work and have income can help the family's economic needs which can support the student learning process[24].

Parents with high incomes can meet family needs including the needs of their children in pursuing their education, while parents with low incomes will meet primary needs first and find it difficult to meet their children's educational needs[25]. Research conducted by Hadiyanto[26] showed

that there was a relationship between parental income and student achievement (p = 0.001). The statement also contradicts the statistical test results based on Table 5, showing that there was no relationship between parental income and reading ability in adolescents aged 15-16 years at SMA Budhi Warman II Jakarta (p-value = 0.476).

There were some limitations in this study, such as food intake in this study was calculated using Food Recall which didn't reflect students' long period dietary habits, also social media screen-time it didn't categorize by how they use their social media. In the social economic variable, writers didn't include how many are the family members so it didn't capture the family's food security.

Conclusion

Most of the students in Senior High School spend their time on social media for a long time (more than 4 hours) per day and also didn't take an adequate amount of food. It has been found that there was a relationship between hemoglobin level and energy intake with students' reading ability (p-value = 0.040, 0.016). However, there was no relation between social media screen time, protein intake, fat intake, carbohydrate intake, and social economics with students' reading ability. It is recommended that student always take an adequate amount of food and always monitors their hemoglobin level as an effort to increase their academic achievement. School is expected to help students monitor their hemoglobin level, provide the student with iron supplement or Tablet Tambah Darah (TTD), and educate students regarding balanced dietary habits. For further study, it is recommended to see how different use of social media can affect students' academic achievement.

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Conflict of Interest

The authors declare that they have no conflict of interest.

Reference

1. Syafi'i A, Marfiyanto T, Rodiyah SK. Studi Tentang Prestasi Belajar Siswa Dalam Berbagai Aspek Dan Faktor Yang Mempengaruhi. Jurnal Komunikasi Pendidikan [Internet]. 2018 Jul 31 [cited 2022 Jun 1];2(2):115–23. Available from: http://journal.univetbantara.ac.id/index.php/komdik/article/view/114
2. Pratama BA, Sari DS. Dampak Sosial Intensitas Penggunaan Media Sosial Terhadap Kesehatan Mental Berupa Sikap Apatis di SMP Kabupaten Sukoharjo. Gaster [Internet]. 2020 Feb 12 [cited 2023 Jun 27];18(1):65–75. Available from: http://45.32.115.94/index.php/gaster/article/view/487
3. Rustiyanti D. Penggunaan Media Sosial Dan Lingkungan Sosial Dampaknya Terhadap Prestasi Belajar Pada Mata Pelajaran Ekonomi Kelas X Di Smk Sudirman 1 Wonogiri. 2022;
4. Kementerian Kesehatan Republik Indonesia. Hasil Utama RISKESDAS 2018. 2018.
5. Djajaningrat H, Chairlan C, Mardiana M. Analisis Hubungan Kadar Hemoglobin Dengan Prestasi Belajar Mahasiswa Penghuni Asrama Poltekkes Jakarta III. Jurnal Ilmu dan Teknologi Kesehatan [Internet]. 2014 Mar 3 [cited 2023 Jan 13];1(2):93–100. Available from: https://www.poltekkesjakarta3.ac.id/ejurnalnew/index.php/jitek/article/view/40
6. Mokoginta FS, Budiarso F, Manampiring AE. Gambaran pola asupan makanan pada remaja di Kabupaten Bolaang Mongondow Utara. eBiomedik [Internet]. 2016 [cited 2023 Jun 27];4(2). Available from: https://ejournal.unsrat.ac.id/v3/index.php/ebiomedik/article/view/14618
7. Ningsih LW. Hubungan Asupan Energi, Asupan Protein Dan Status Gizi Dengan Prestasi Belajar Siswa Di Sdn Depok Baru VI [Internet]. UPN Veteran Jakarta; 2016 [cited 2023 Jan 13]. Available from: https://repository.upnvj.ac.id/5040/1/AWAL.pdf
8. Sety LM, Paeha D. Tingkat Asupan Energi, Protein, Kebiasaan Makan Pagi Dan Prestasi Belajar Siswa Smp Negeri 7 Kendari. Jurnal Kesehatan [Internet]. 2016 Jan 25 [cited 2023 Jun 28];4(2). Available from: https://ejurnal.poltekkes-tjk.ac.id/index.php/JK/article/view/75
9. Jatmiko RP. Status Sosial Ekonomi, Gaya, Dan Prestasi Belajar. Jurnal Penelitian dan Pendidikan IPS [Internet]. 2017 [cited 2023 Jan 13];11(1):38–53. Available from: https://ejournal.unikama.ac.id/index.php/JPPI/article/view/1727
10. Syamsoedin WKP, Bidjuni H, Wowiling F. Hubungan Durasi Penggunaan Media Sosial Dengan Kejadian Insomnia Pada Remaja Di Sma Negeri 9 Manado. Jurnal Keperawatan. 2015;3(1).
11. Sukarno KJ, Marunduh SR, Pangemanan DHC. Hubungan Indeks Massa Tubuh Dengan Kadar Hemoglobin Pada Remaja Di Kecamatan Bolangitang Barat Kabupaten Bolaang Mongondow Utara. JKK (Jurnal Kedokteran Klinik) [Internet]. 2016 Dec 20 [cited 2023 Jun

26];1(1):29–35. Available from: https://ejournal.unsrat.ac.id/v3/index.php/jkk/article/view/14360

12. Syafei A, Badriyah L. Literasi Gizi (Nutrition Literacy) dan Hubungannya dengan Asupan Makan dan Status Gizi Remaja. Jurnal Ilmu Kesehatan Masyarakat [Internet]. 2019 Dec 4 [cited 2023 Jun 28];8(04):182–90. Available from: https://journals.stikim.ac.id/index.php/jikm/article/view/402
13. Suciningrum NP, Rahayu ES. Pengaruh Status Sosial Ekonomi Orang Tua Dan Motivasi Belajar Tehadap Minat Melanjutkan Studi Ke Perguruan Tinggi Pada Kelas Xi Di Sma Pusaka 1 Jakarta. Jurnal Pendidikan Ekonomi Dan Bisnis (JPEB) [Internet]. 2015 Mar 31 [cited 2023 Mar 9];3(1):1–21. Available from: https://journal.unj.ac.id/unj/index.php/jpeb/article/view/1956
14. Nurwindah A. Deskripsi Status Sosial Ekonomi Keluarga Dalam Meningkatkan Prestasi Belajar Siswa Di Madrasah Ibtidaiyah Negeri 3 Banyumas Desa Karangsari Kecamatan Kembaran Kabupaten Banyumas. [Purwokerto]: IAIN Purwokerto; 2020.
15. Navarro-Martinez O, Peña-Acuña B. Technology Usage and Academic Performance in the PISA 2018 Report. Journal of New Approaches in Educational Research [Internet]. 2022 [cited 2023 Jun 27];11(1):130–45. Available from: https://doi.org/10.7821/naer.2022.1.735
16. Sungthong R, Mo-suwan L, Chongsuvivatwong V. Effects of haemoglobin and serum ferritin on cognitive function in school children. Asia Pac J Clin Nutr [Internet]. 2002 Jun 1 [cited 2023 Jun 28];11(2):117–22. Available from: https://onlinelibrary.wiley.com/doi/full/10.1046/j.1440-6047.2002.00272.x
17. Kusmiyati Y, Meilani N, Ismail S. Kadar Hemoglobin dan Kecerdasan Intelektual Anak. Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal) [Internet]. 2013 Oct 1 [cited 2023 Jun 28];8(3):109–14. Available from: https://journal.fkm.ui.ac.id/kesmas/article/view/353
18. Bleiweiss-Sande R, Chui K, Wright C, Amin S, Anzman-Frasca S, Sacheck JM. Associations between Food Group Intake, Cognition, and Academic Achievement in Elementary Schoolchildren. Nutrients 2019, Vol 11, Page 2722 [Internet]. 2019 Nov 9 [cited 2023 Jun 28];11(11):2722. Available from: https://www.mdpi.com/2072-6643/11/11/2722/htm
19. Fadillah NA, Marhal R, Rahayu A, Rahman F. Hubungan Asupan Energi, Asupan Protein, Dan Status Asi Eksklusif Dengan Prestasi Belajar Siswa Sdn Palem 2 Banjarbaru. Jurnal Publikasi Kesehatan Masyarakat Indonesia [Internet]. 2018 Apr [cited 2023 Jan 13];5(1):35–9. Available from: https://pdfs.semanticscholar.org/e2c3/02c6b58a1fcd091d4204ca0c115813bd3031.pdf
20. Irawan R. Nutrisi Molekuler dan Fungsi Kognitif. Airlangga University Press; 2020.

21. Hines EM, Holcomb-Mccoy C. Parental Characteristics, Ecological Factors, and the Academic Achievement of African American Males. Journal of Counseling & Development [Internet]. 2013 Jan 1 [cited 2023 Jul 2];91(1):68–77. Available from: https://onlinelibrary.wiley.com/doi/full/10.1002/j.1556-6676.2013.00073.x
22. Chiu J, Economos J, Markson C, Raicovi V, Howell C, Morote ES, et al. Which Matters Most? Perceptions of Family Income or Parental Education on Academic Achievement. New York Journal of Student Affairs [Internet]. 2016 Jan 1 [cited 2023 Jun 28];16(2). Available from: https://touroscholar.touro.edu/gse_pubs/32
23. Crede J, Wirthwein L, McElvany N, Steinmayr R. Adolescents' academic achievement and life satisfaction: The role of parents' education. Front Psychol. 2015 Feb 3;6(FEB):120333.
24. Muola JM. A study of the relationship between academic achievement motivation and home environment among standard eight pupils. Educational Research and Reviews [Internet]. 2010 [cited 2023 Jun 28];5(5):213–7. Available from: http://ir.mksu.ac.ke/handle/123456780/4809
25. Poon K. The impact of socioeconomic status on parental factors in promoting academic achievement in Chinese children. Int J Educ Dev. 2020 May 1;75:102175.
26. Hadiyanto H. Pengaruh Pendidikan, Pekerjaan Dan Pendapatan Orang Tua Terhadap Prestasi Belajar Ekonomi Pada Siswa Sma. Jurnal Ekonomi Pendidikan Dan Kewirausahaan [Internet]. 2014 Mar 18 [cited 2023 Jun 28];2(2):171–85. Available from: https://journal.unesa.ac.id/index.php/jepk/article/view/728