

Eating Breakfast has a Positive Impact on Student Learning

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The importance of breakfast consumption has been researched and analyzed for many years. It has been termed the most important meal of the day based on the extended length of time between an evening meal and the time of breakfast the next day, in which valuable nutrients for the mind and body are not being consumed (Mahoney, Taylor, Kanarek, & Samuel, 2005). Skipping breakfast, after this prolonged period overnight, may consequently result in metabolic changes that interfere with aspects of cognitive functioning and school performance (Widenhorn-Muller, Hille, Klenk, & Weiland, 2008). This literature review will determine if the statement that eating breakfast has an impact on academic achievement is supported by research.

Widenhorn-Muller et al. (2008) designed a cross-sectional trial consisting of 104 boarding school students between the ages of 13 and 20, which was used to determine whether breakfast had an influence on the cognitive performance and mood of high school students. Over a period of 7 days, half of the randomly assigned students received a standardized breakfast, and the remaining half received no breakfast at all. The boarding school setting was selected because the researchers could control the study conditions, such as breakfast composition, consumption, and sleep duration. More importantly it allowed students to remain in their familiar environment (Widenhorn-Muller et al., 2008). This cross-sectional method potentially helped eliminate extraneous variables between the groups of students. Standard test methods were used to test various aspects of cognitive functioning, including concentration, learning capacity, and immediate memory (spatial and verbal). Additionally, a short

questionnaire (mood assessment scale) was used to assess the mood of the students (Widenhorn-Muller et al., 2008). Analyses of the data were performed for the entire group and were also evaluated by gender. The most significant findings for the positive effect of breakfast on cognition were based on the results of the visuospatial memory tests, especially for males. The results and scores for concentration and attention showed no real significance, but the impact of breakfast was evidenced by the increase in positive mood and alertness, and a decrease in negative feelings (Widenhorn-Muller et al., 2008).

Phillips (2005) examined the effect of eating breakfast on the performance of college students on Biology exams. In this study, 1,259 community college students, who were enrolled in General Biology I, were asked at the beginning of the exam whether they ate breakfast or not. Phillips chose the second exam in the class term to minimize the effects of students adjusting to a new class and professor. This study took place over the course of 11 years. The results showed that 72.7 percent of the students receiving a C or better had eaten breakfast. Only 50.8 percent of the students who had not eaten breakfast passed the test. One limitation of this study is that the students were not asked what they ate for breakfast. Also, self-reporting as the main method of gathering data is not the most reliable method.

In a study by Kim et al. (2003), the effect of dietary behaviors and physical status on academic performance was examined. In this study, 6,643 students ranging in ages from 10 to 17 answered a questionnaire and food frequency form. Kim et al. (2003) gathered information on socio-demographic status, food frequency, and dietary behaviors by distributing questionnaires to students in the classroom. To compare

academic achievement, grade point averages were noted from the school record of the previous semester. Measurements such as height and weight were noted from the annual physical examination records. In addition to assessing the association between eating breakfast and academic performance, this study also examined food frequency, socioeconomic factors, and overall physical condition. Among these variables, the regularity of breakfast, lunch, and dinner had the strongest relationship with academic performance. Because of these relationships, the regularity of breakfast, lunch, and dinner were chosen to represent the broader spectrum of dietary behavior. By using multiple regression analysis, researchers found that regularity of breakfast and lunch was associated with academic performance across the entire age range of participants. The regularity of meals was related to higher grade point average. More specifically, breakfast had a positive effect on academic performance. Kim et al. (2003) found students who ate breakfast regularly had a grade point average .15 to .28 points higher than students who did not eat breakfast regularly. The limitations of this study are similar to those limitations of the Phillips (2005) study. Both studies used self-reporting and did not use random assignment. There was no control group established or intervention manipulated by the researchers.

To further analyze the positive effect of breakfast on learning, researchers have narrowed their focus even more to the composition of breakfast that most greatly affects cognitive functioning. It has been demonstrated that consuming breakfast is associated with better school performance, but many researchers agree that the reason for contradictory results across these similar studies may be related to the differences in breakfast composition (Mahoney et al., 2005).

In the study performed by Mahoney et al. (2005), researchers examined the effect of breakfast composition on elementary school children. This experimental design used 9 to 11 year-olds for one group and younger children (6 to 8 years) for the second group. The experiment was conducted by assigning the children to one of two conditions: eating instant oatmeal or ready-to-eat cereal for breakfast or consuming no breakfast. Similar cognitive tests, including those for spatial memory, short term memory, and questionnaires for the assessment of mood were used for each of the experimental groups (Mahoney et al., 2005). The results of this study paralleled results from similar research conducted in the past, in which performance was enhanced by breakfast consumption. The impact that this particular experimental research had was shown by the effect of composition of breakfast on cognitive functioning and performance. The cognitive tasks of spatial, memory, short-term memory, and auditory attention were the most positively impacted by the more nutritious oatmeal breakfast and the effects were more pronounced in the younger experimental group of 6 to 8 year-olds (Mahoney et al., 2005).

Wesness, Pincock, Richardson, Helm, and Hails (2003) examined whether breakfast reduces the declines in attention and memory throughout the morning in school-aged children. They also wanted to examine whether the specific type of breakfast showed a correlation. Whereas Phillips (2005) utilized college students with a mean age of 20.6 years, Wesness et al. (2003) used volunteers between the ages of 9 and 16 years. Wesness et al. (2003) performed a true experiment including random assignment and a four-way cross-sectional design. Fifteen female and fifteen male volunteers came to the library on five consecutive days. Wesness et al. (2003) set up

three groups. The control group received no breakfast, one treatment group received a breakfast consisting of Shreddies with semi skimmed milk, and the other treatment group consumed a glucose drink. Each morning at 8:00 a.m., the subjects participated in a selection of tests from the Cognitive Drug Research computerized assessment system. These results were used as a daily baseline for performance in attention, working memory, and episodic secondary memory. After completing the assessments, subjects were then given their assigned breakfast. At 9:00 a.m., 10:00 a.m., 11:00 a.m., and 12:00p.m., the subjects repeated the testing process. The results showed a pattern of decline in cognitive performance over time if the participants did not receive breakfast. The glucose drink had no positive effects. These results have strength due to the method and design of this experiment. Random assignment adds strength to the interpretation of the results.

Many of the researchers in this review provided adequate support for why this topic needs to be addressed and researched further. Mahoney et al. (2005) found through the results of a survey, that only 58 percent of children reported that they regularly eat breakfast. Limitations to these studies may be related to the methods used to collect data on the assessment of mood, alertness, and interest levels. The questionnaires used in some of the studies were self-reporting which may have affected the validity of some of the data. Based on the review of current research, it can be concluded that eating a healthy breakfast has a positive effect on student performance and learning. In order to gain a clearer, more complete understanding of the impact of breakfast on student learning, additional research must be done to distinguish the

specific types of breakfast foods and their corresponding nutritional composition which may lead to these differences.

References

- Kim, H.Y., Frongillo, E.A., Han, S.S., Oh, S.Y., Kim, W.K., Jang, Y.A., Won, H.S., Lee, H.S., & Kim, S.H. (2003). Academic performance of Korean children is associated with dietary behaviours and physical status. *Asia Pacific Journal of Clinical Nutrition, 12*(2), 186-192. doi:
- Mahoney, C., Taylor, H., Kanarek, R., & Samuel, P. (2005). Effect of breakfast composition on cognitive processes in elementary school children. *Journal of Physiology and Behavior, 85*, 635-645. doi: 10.1016/j.physbeh.2005.06.023
- Phillips, G.W. (2005). Does eating breakfast affect the performance of college students on biology exams? *Bioscene, 30*(4), 15-19. doi:
- Wesnes, K.A., Pincock, C., Richardson, D., Helm, G., & Hails, S. (2003). Breakfast reduces declines in attention and memory over the morning in school children. *Appetite, 41*, 329-331. doi: 10.1016/j.appet.2003.08.009
- Widenhorn-Muller, K., Hille, K., Klink, J., & Weiland, U. (2008). Influence of having breakfast on cognitive performance and mood in 13 to 20 year old high school students: results of a crossover trial. *Pediatrics, 122*, 279-284. doi: 10.1542/peds.2007-0944