Veganism and Its Effects on High School Students

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Introduction

With the influx of obesity and proliferation of fast-food transnational corporations, numerous people have questioned their dietetic choices: some people argue that their typical meat diet provides them with significant amounts of protein and valuable nutrients while others argue for veganism as a solution to obesity. In our modern-day age, nevertheless, the growing care for the treatment of animals has become a concern. Vegans postulate that animals are brutally harmed and slaughtered in captivity, thereby making the vegan diet a solution to the violation of animal ethics. On the other hand, meat-eaters claim that animals are not harmed to the extent vegans claim; in fact, the data of animal harm is vastly overrepresented and skewed. Vegans accentuate that cattle grazing and the utilization of land for animals promotes deforestation, thereby augmenting climate change. Meat-eaters, however, maintain that a plant-based diet induces deforestation, too, because growing crops requires a significant amount of land as well. As such, in our modern-day world, the growth of healthy practices to combat the plethora of obesity has created questions about how feasible certain solutions are, like veganism.

Currently, 325,000 American lives are lost each year due to cardiac arrest, around 40 percent of Americans are considered obese. Research has confirmed that the reason for a great deal of cardiac arrests is due to an unhealthy diet, one without sufficient vegetables, one with which the quality of meat is immensely poor. This is a huge problem not just in the US but really globally, and there has been tremendous research in this field of veganism as it relates to these broader issues. While research has shown that veganism can clearly solve these issues, the fact is that there is a significant gap in the research of veganism as it relates to high school students. Studies have proven that a vegan diet is more beneficial to the environment, to maintaining animal rights, and to aiding humans overall. However, current research has not shown if

veganism will benefit high-schoolers or if it will simply make them worse overall in terms of productivity.

This research paper seeks to address this question as to whether or not high-school meat-eaters will benefit from the vegan diet with respect to their productivity and their emotional well-being, or if these factors will deteriorate. In the research a survey was utilized to obtain high-schoolers for the interview, and the interview was employed to explain the benefits and drawbacks of veganism to those high-schoolers, and then see if they would partake in a one-week vegan diet or if they would be willing to be part of the control group (in which they continue their meat-eating diet).

Literature Review

Veganism Effect on Animals

Presently, the growing care for the treatment of animals has become a concern. Carlo Alvaro, author of various animal ethics books and philosophy teacher at the New York City College of Technology, argues that the vegan diet ensures that thousands of animals are not inhumanely killed in factory farms by eliminating the widespread use of intensive animal agriculture. After talking to Pachirat, a Ph.D. student at Yale University who was employed at a slaughterhouse in Omaha, Alvaro recognized that intensive animal agriculture violates the aesthetic principles in that meat-eaters "typically avoid acknowledging from where the meat comes" (Alvaro, 2019, p. 635) because of their repugnance toward the slaughterhouses: for, "the conditions in factory farms and slaughterhouses are objectively ugly," (Alvaro, 2019, p. 635). Moreover, Alvaro alludes to MLK and Mohandas Gandhi's principles of nonviolence in that intensive animal agriculture fundamentally violates their beliefs because of the violence involved.

However, according to Andy Lamey and Bob Fischer, authors for the *Journal of Agricultural and Environmental Ethics,* although animals are harmed in production, the scale they are is vastly overrepresented. In a 2004 study of the effect of wheat and corn harvesting on mice, "changes in the number of field animals were the consequences of movement and not higher mortality of crops" (Fischer & Lamey, 2018, p. 415). Furthermore, in a second study conducted in South Dakota, the mice were found to appear missing due to migration reasons, not due to deaths. The data that shows animals dying due to agriculture is mistaken, and while there are a specific number of deaths, they can be solved with practical solutions. The fact is that "no-till agriculture has more positive outcomes than conventional till systems" (Fischer & Lamey, 2018, p. 415). Essentially, Fischer and Lamey highlight Alvaro's exclusion of predation and wild animal suffering that reduce animal survivability and acknowledge that instead of blaming the farmers, society needs practical solutions like no-till methods, indoor agriculture, and the use of contraception as a form of pest control. But Alvaro accentuates that he is referring to commercial farming and mechanization as a means in slaughterhouses, not the actual environment. Nonetheless, all researchers agree that there is indeed violence in this industry that happens to animals.

Veganism Effect on Humans

According to Bradley McEwen and Maddie Bingham, eminent authors with Masters Degrees in Health Science and Nutrition, the vegan diet significantly reduces people's chances of getting chronic diseases by "[tending] to be higher in fruits, vegetables, carbohydrates, [and] fiber" (2019, p. 77) and lower in artificial ingredients such as chemicals, preservatives or added sugars. However, Jocelyne Benatar and Ralph Stewart, researchers for Green Lane Cardiovascular Service, counter this perspective by highlighting their numerous studies: vegans

took in on average less mean daily energy, less total fat, less mono-saturated fat, and "consumed less protein" (2018, p. 5). Moreover, in their data analysis, the researchers found that in Asian countries, people were more likely to have negative effects by undergoing the vegan diet than in European countries. For, "Asian studies reported smaller or no difference in cardiometabolic risk factors between vegans and omnivores" (Benatar & Stewart, 2018, p. 11). Essentially, Benatar and Stewart argue that considering location and the economic and social development of a given country is a necessity before asserting the benefits of veganism. Yet, a 2015 study done by the World Health Organization (WHO), verified there is a positive association between eating meat and having different types of cancer, such as stomach and prostate cancer; however, "those who followed vegan diets are protected from such diseases" (Alvaro, 2019, p. 636). In fact, the vegan diet will reduce daily sluggishness and allow people to get their daily dosage of nutrients while maintaining proper health (McEwen & Bingham, 2019, p. 66). Vegan-based proteins like rice, peas, and hemps will not only allow people to meet the daily requirement of carbohydrates and proteins, but since they contain less saturated fats, "vegans have been found to have lower risks for cardiovascular disease, metabolic syndrome, ischaemic heart disease stroke, and type 2 diabetes" (McEwen & Bingham, 2019, p. 78). The researchers evince that people can still get enough protein even by not eating meat. However, Benatar and Stewart's studies found that a vegan diet has less energy and saturated fat compared to omnivorous control diets and is associated with favorable cardiometabolic risk profiles. Nonetheless, Richard Bloomer and Alexander Toline conducted an ethnography to determine the effects of two different diets: a traditional Christian Daniel Fast diet (which includes the same foods as the vegan diet) and a modified Daniel Fast (traditional with one serving of meat). The researchers had two different groups: one being a control group that "were assigned to a traditional DF" (Bloomer & Toline,

2014, p. 91) and one being an experimental group assigned to a “modified DF... inclusive of one serving of meat” (Bloomer & Toline, 2014, p. 91). After 6 months, the researchers discovered that not only did both the kilocalorie intake of participants in the traditional DF Group (Vegan Group) and modified DF Group decrease significantly but also that compliance to the diets was “remarkable for both dietary plans and [did not] differ significantly from one group to another” (Bloomer & Toline, 2014, p. 92).

Researcher Marcus Hunt, however, claims that the vegan diet is harmful to a child’s well-being because the diet is deficient in “iodine, calcium, iron, and various fatty acids” (2019, p. 271). For instance, being deficient in vitamin B-12 can cause irreversible cognitive damage; iodine deficiency during pregnancy “and the first years of life is linked to a range of neurological disorders” (Hunt, 2019, p. 271). Hunt also recognizes how the vegan diet affects a kid emotionally: there is a huge possibility of “a child facing overt hostility or bullying from their peers for being a vegan” (2019, p. 276). Yet, Ed Winters argues, in his Ted Talk, that even the American Dietetic Association claims that the “vegan diet is healthy, safe, and nutritionally adequate for all stages of life, including pregnancy, lactation, and infancy” (TEDx Talks, 2019). Winters postulates that eating meat is not a necessity for survival; in fact, it contributes to heart disease, certain forms of cancer, type 2 diabetes, and strokes (TEDx Talks, 2019). However, critics maintain that vegans will resort to eating meat if they must to survive (Hunt, 2019, p. 275). But, Winters urges the critics to differentiate morally justifiable and survival: although survivors of the Andes Plane Crash “cannibalized on the flesh of the dead passengers... [thereby making] cannibalism a justifiable act in that moment,” (TEDx Talks, 2019) cannibalism is still immoral. Moreover, even if people do not convert fully to veganism, significant benefits can be achieved (Bloomer & Toline, 2014, p. 94).

While researchers like Bradley McEwen accentuate the necessity of the conversion to the vegan diet, researchers like Phillips employ data from the EPIC-Oxford Cohort to encapsulate that vegans "have similar... energy intakes than meat-eaters in the same population, for both adults and children" (Phillips, 2005, p. 138) due to the fact that "vegetarians consume similar proportions of [many nutrients including] monounsaturates to meat-eaters" (Phillips, 2005, p. 140). Nonetheless, while energy intakes might be constant, the vegan diet drastically reduces chances of getting diseases (McEwen & Bingham, 2019, p. 70). Yet, the diet contains "less saturated fatty acids, animal protein, and cholesterol... [so vegans] have low intakes of vitamin D, calcium, and iodine" (Phillips, 2005, p. 147). Phillips also manifests that the elderly should be cautious about veganism because it lacks "good sources of folate, or folic acid fortified foods" (2005, p. 152). Thus, while there are immense benefits to the vegan diet, the diet can still be detrimental to social and physical well-being, as well as in terms of nutrient intake.

Veganism Effect on Environment

With the growth of deforestation and environmental degradation, researchers manifest the vegan diet as a feasible solution by reducing a significant amount of farmland usage. For, the vegan diet "could substantially reduce the cost of meeting a stabilization target of 450 ppm CO2-eq" (Bryngelsson et al., 2017, p. 183). However, Richard Gray argues that while meat does contribute to environmental harm, numerous vegan foods also significantly increase carbon emissions. For instance, asparagus "has the highest carbon footprint compared to any other vegetable eaten in the country... because much of it is imported by air from Peru" (Gray, 2020). Moreover, in an Italian study Gray conducted, two vegans who exclusively ate fruit "were found to have an environmental impact considerably higher than many meat-eaters," (2020) recognizing that intensive farming for certain crops can hurt the environment and be

counterintuitive. Additionally, small animals sometimes die in the production of crops, and therefore, one can't even be 100 percent vegan (Henderson, 2018). Yet, Winters explains the distinction between buying an animal product and plant product by characterizing it as "intentionally paying for someone to cause the suffering and death of an animal versus doing it accidentally" (TEDx Talks, 2019). Yet, according to Andy Lamey and Bob Fischer, raising thousands of animals for agriculture makes up the heart of our economy. But, Carlo Alvaro refutes this by recognizing that intensive animal agriculture catalyzes "global warming, deforestation, pollution, and other problems that affect the ecosystem" (2019, p. 637). While Alvaro's claim is plausible, Henderson argues that veganism's positive effects are overrepresented because many vegan ingredients pose an economic impact to the source country if the good is exported. Nevertheless, the more animals raised in farms, the more land taken up, which hurts the environment (Bryngelsson et al., 2017, p. 190), though it is essential to consider the source country of the vegetables. Since the number of vegans has almost doubled over the past ten years, people should be curious as to where their fruits and vegetable in the shops come from because "eating lamb chops that come from a farm a few miles down the road is much better for the environment than eating an avocado that has travelled from the other side of the world" (Henderson, 2018). The reason that it is better to eat locally-grown food than outsourced food is that the exported vegetables' prices become vastly inflated, increasing problems for the source country. Moreover, a study conducted by Bryngelsson found that a shift of diets to reference (beef, lamb, and dairy) from vegan or non-ruminant (pork and chicken) "contributes to the possibility to emit more CO2 for a given temperature limit" (2017, p. 187), increasing global temperatures at a faster rate. The amount of livestock cultivated causes more air pollution in the world than all cars, buses, planes, ships, trucks, etc, combined (Bryngelsson et al., 2017, p. 187).

Opponents, however, assert that veganism contributes to immense environmental degradation. For example, the Kenyan avocado contributes to deforestation in order to fulfill the Western demand, which not only hurts the environment but also obstructs the economics of the source country: "the average price of a 90kg-bag of avocados has reached 2560 Kenyan shillings, the highest since May 2014" (Henderson, 2018). Benjamin Goldstein, though, implores contrarians to consider the impact of beef: increased water consumption, land usage, and greenhouse gases. But, Goldstein demonstrates a viable solution: in his study, researchers found that substituting "10%, 25%, and 50% of total protein in American diets, with [plant-based] protein" (2017, p. 4) can instrumentally improve the American diet's performance. Goldstein asserts that the substitutions made are equivalent to "removing 1.1-2.2 million cars from American roads annually (4000 kg CO2), eliminating the direct water consumption of 10.5-19.3 million Americans, and freeing up an area equal to 1-1.6 times that of the State of New Hampshire" Goldstein et al., 2017, p. 7). Therefore, the vegan diet has tremendous positive environmental benefits while also having negative effects since there are so many examples of crops that are in high demand that hurt the environment, like Cacao, avocados, and asparagus. However, research still needs to be done to determine if nonvegan high-school students would try the vegan diet after being informed of both its advantages and disadvantages and find it to have positive benefits on their academics, productivity, and emotional well-being.

Methodology

The methodology that was employed in this study addresses the following question: *will high school students be compelled to try the vegan diet after hearing both its advantages and disadvantages, and then find it to improve their lives in terms of a variety of factors, including grades, health, and productivity*? The researcher hypothesized that the vegan diet would boost

grades, productivity, and health due to the fact that the vegan diet contains less artificial ingredients and has a significantly less risk of obtaining specific types of cancer as a consequence. This study employed the use of a mixed-method: a survey, interview, and experiment. Using a best-fit method allows me to narrow down my experimental group from all the students in our high school. By starting with all the students and seeing if they are vegan or not and if they would be willing to do a brief interview, I will have narrowed my research down to people who are not currently vegan but willing to talk about their feelings about the actual vegan diet. Then I will conduct an interview to see how they feel about the diet and then educate them on the diet's advantages and disadvantages. After hearing a detailed description of the nuances of the diet, the students will be given a choice of whether they would like to participate in the experiment by trying the vegan diet for two weeks, or whether they would just like to report back after their normal omnivorous diet for two weeks and answer some questions. This will have narrowed the experiment down to two distinct groups of people: one experimental and one control.

Survey

The foremost step in my methodology was designing a survey, which was intended to get a baseline idea on people's views on veganism, and as such, determine the impression others have on veganism. The survey method was chosen because surveys are relatively easy to administer and are not time consuming compared to other data-collection research methods. Additionally, surveys provide numbers directly, and quantifiable data can tremendously help with validity and precision in the data. If researchers use google forms to conduct their surveys, google forms create spreadsheets with the data, charts, and graphs all for them. Participants were obtained through a survey sent out on social media and the school database. Ensuring that I had

the surveyees' consent and that all legality-related obligations were fulfilled, I got others to fill out the survey. I asked a variety of different questions (Appendix A), whether the person was or was not vegan, whether they eat eggs, dairy, fruits and vegetables, unweighted GPA, how many times the they have been ill this respective year, how many part-time jobs they have, hours that they study, hours of sports they play each day, whether they eat out per week and whether they bring their lunch to school(before or after COVID-19), and whether they go to any fast-food restaurants. Through this survey, my goal was to get a baseline idea of certain factors and questions (examples of factors referenced below):

- ❏ *Do vegan students have higher GPAs?*
- ❏ *Are vegan students more productive and do vegan students eat out less?*
- ❏ *Do non-vegan students eat out more and do they get sick more times per year?*
- ❏ *What type of people are more likely to eat canned foods?*

In relation to my methodology as a whole, the survey was intended to yield data as to the baseline productivity of the high school populace in conjunction with their health, and emotional well-being. They were a sample distribution in order to see what percentage of high-schoolers were already vegan, and if those students have advantages from being vegan. As a short-term aid to my methodology, the survey was intended to get people for the interview, students who would be willing to have a phone interview to discuss veganism and its advantages and disadvantages.

Interview

In the survey, I asked the respondents to include their phone number, so that with each prospective candidate, I could conduct a brief, ten-minute phone interview. In this phone interview, I wanted to determine people's preconceived notions on veganism, and explain to them the benefits of veganism (Appendix B). The reason why I chose the interview was because interviews are a great source of information, and any misinterpretations in people's words can be

easily clarified. Researchers can clearly see what questions make an interviewee nervous and what make them excited, which aid in further determining veganism's preconceived notions within high schoolers. In addition, I also created *Vegans4Earth*, an equitable learning website which details these benefits. I gave users the website so that they could themselves read about veganism. After both explaining the benefits and negatives to veganism as well as showing the interviewee this website, I asked each of them if they were open to the vegan diet now. If the interviewee said he or she was open to trying veganism now, I gave them a doctor-approved vegan diet plan, and they would be a part of the experimental group. If the interviewee said they were not open to the diet still, they would be part of the control group. After, each person would then join a Google Classroom, moderated by a Capstone Instructor. Here, they could receive documents and forms in a more equitable and organized fashion. I wanted to answer the following types of questions in my interview:

- *Do people know what veganism is?*
- *Do people think that the vegan diet entails only plants?*
- *Do people think that the vegan diet would weaken their bodies and/or not get them enough protein?*

The interview was beneficial to my methodology because it not only gave me non-numerical feedback on people's views of the vegan diet, but it also directly allowed me to see if high school students would be compelled to go vegan after the interview, if they were intrigued at the idea that they could help the environment.

Experiment

I chose this experimental method because experiments allow for Researchers to get results after narrowing down the search: they will get great numbers, data, and statistics. These numbers will come automatically because, unlike qualitative research, experiments are easily

quantifiable. Also, researchers can have control over specific variables (which could be a disadvantage as well in terms of bias).

Now that the experimental group (non-vegan high school students who were going vegan) and control group (non-vegan high school students who were continuing their normal diet plan) were arranged, and all members were part of a Google Classroom, I began recording data.

All members would first fill out a form answering several questions, like how their grades were, if they had been sick, etc. Then, the experimental group would go vegan and follow a doctor-approved diet plan (Appendix D), while the control group continued their quintessential diet. After 3 days, each group would fill out the same form. Consequently, I could then measure and recognize if veganism was boosting students' academic, physical, and emotional productivity based on these factors. Once the three weeks had surpassed, students who went vegan could then see for themselves the benefits and then determine if they wanted to stay vegan or go back to their normal diet.

Overall, the experiment is significant to the study because it allows the researcher to truly see the quantifiable effects of veganism on the experimental group and then determine if veganism produced more benefits for the experimental group (the non-vegan high schoolers who went vegan) in terms of health, productivity, etc, rather than the control group's normal diet.

Results

Data Collected: A Brief Synopsis

For the purposes of the data, 21 students total participated in the experiment: 11 in the experimental group, and 10 in the control group. Of those who participated in the survey, 21 agreed to do the interview, ten of which agreeing to partake in the experimental group. My hypothesis before conducting the experiment was that veganism would indeed boost high

schooler's productivity and increase their emotional health. The experimental group participated in a doctor-approved vegan-diet that lasted one week (Appendix C). The experimental group went vegan for the week (and consisted of only prior meat-eaters) and the control group continued their carnivorous or omnivorous diet.

The results from my experimental group can be categorized into two different sectors: productivity and emotional well-being. As a whole, these factors augmented for the experimental group and showed overall higher rates for the experimental group than the control group. The data not only supports my hypothesis but also was obtained from a survey that was filled out at the conclusion of the one-week experiment (Appendix D).

Data Collected: Net Productivity

The table below shows the variance in productivity between the experimental and control groups respectively.

	Experimental Group	**Control Group**
Morning Energy Levels	63% report higher energy levels	20% report higher energy levels
Morning Energy Levels	27.3% report constant energy levels	60% report constant energy levels
Morning Energy Levels	9.1% report decrease in energy levels	20% report decrease in energy levels
Tasks Accomplished Compared to Previous Week	54.5% report more tasks accomplished	20% report more tasks accomplished
Tasks Accomplished Compared to Previous Week	36.4% report the same amount accomplished	80% report the same amount accomplished

Focus in School	54.5% report focus improved	30% say focus improved

This above data indicates that, with respect to the 21 participants and two distinct groups, going vegan improved the productivity of the experimental group.

Data Collected: Emotional Well-Being

The below table references both the experimental and control group variance in regard to happiness and sleep. The table indicates higher percentages for the experimental than the control group.

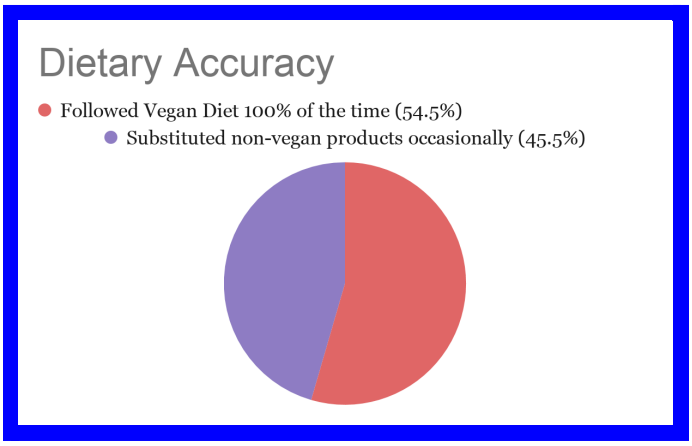
	Experimental Group	**Control Group**
Happiness	63.6% report that they felt happier	50% report that they felt happier
Happiness	36.4% report no change in emotional levels	50% report no change in emotional levels
Sleep	90.9% report that they slept nicely	80% report that they slept nicely
Sleep	9.1% report disturbances in sleep	20% report disturbances in sleep

The above table displays 13.6% more of the experimental group feeling happier and 11.9% less reporting disturbances in their sleep. Both one's happiness and sleep are paramount to the well-being of the high-school individual, and the data manifests the higher percentage of the experimental group feeling happier and sleeping nicer. These findings suggest that it is plausible that veganism benefits the overall happiness and emotional state of the high-school student;

however, a larger sample size would need to be tested. From a chi-square test of the data, the difference is not statistically significant to corroborate the research hypothesis.

Data Collected: Overall Findings

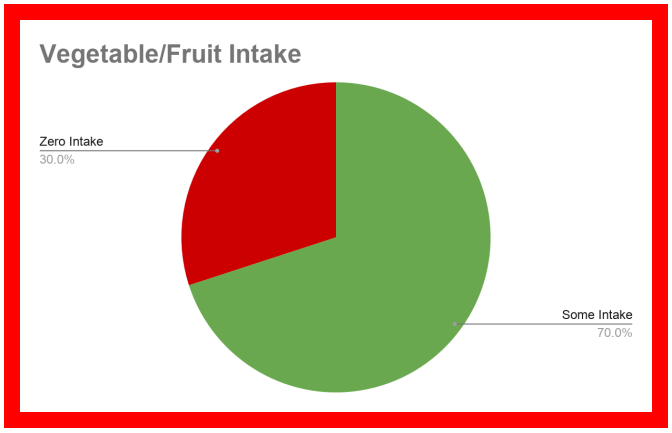
However, there are indeed some caveats to the data as a whole, as referenced in the chart below with respect to the experimental group.



The above chart insinuates that perhaps the data could be skewed either toward the upward or lower bound due to the fact that only 54.5% of the high school students in the experimental group went completely vegan. It is unknown whether if 100% of the students went vegan, the overall numbers in terms of productivity and emotional well-being would be higher or lower.

Beyond this, with regard to the motives behind going vegan, 70 percent of the experimental group chose to go vegan because of the benefits toward animals and humans, while only 30 percent went vegan because of the environmental benefits. This implies that high schoolers care about animals and their own health a great deal.

Contrarily, one beguiling factoid the data indicates is that 30 percent of the control group had no fruit or vegetable intake whatsoever in their diet, as referenced in the chart below.



The fact that 30 percent of the control group reported zero intake of vegetables and fruits, and 70 percent only reported "some" intake suggests another reason for the gap in percentages across the groups in terms of the productivity and emotional state. The data could have been more closely related, if not higher numbers for the control group, had close to 100 percent of the control group ate a great deal of fruits and vegetables.

Conclusion

Based on the data engendered from my research, it is evident that the vegan diet does indeed possess tangible benefits for high-schoolers as a whole. My specific research was on veganism's effect on high school students, and from the data, it can be deduced that veganism boosts productivity and increases emotional happiness, thereby contributing positively to the individual as a whole. It's plausible that veganism can ameliorate human distress, and it's plausible that veganism can refine the way humans work. As such in a world where obesity rates skyrocket, where health crises are apparent, where depression is overbearing, veganism is a solution, albeit not a perfect one, to the multitude of conflicts that society faces.

Limitations and Delimitations

One limitation for my experiment was that I could not monitor the experimental group (the people who went vegan) and so therefore, I do not know how honest they were being with

respect to the diet; I do not know if they were following the diet judiciously or if they were not making an effort to go vegan. Another limitation I had was my sample size. I had 22 high school students, and so therefore, the results I found are in a sample size too small to be correlative to the overall populace. If my experiment had been done in more high schools, across different states and regions, then the sample size would be more applicable to the overall population, and a generalization could have been made based on the results. Aside from the potential bias due to arising dishonesty and the small sample size, I feel a third limitation could be the vegan diet itself limiting people to not only no meat and fish, but also no milk and eggs. Some people whom I interviewed were in football, and they said they needed the protein from meat and milk to stay in shape, this despite the fact that I told them that veganism does indeed provide enough protein through legumes, nuts, and other such ingredients. Beyond these, the majority of the people in my study were males, and so this gender discrepancy could have skewed the data as well.

Furthermore, one delimitation that I had in my research was that I constrained my study to only high school students in LISD, which could have created bias in that since LISD is more upper middle class students, veganism could have had a more inflated opinion, rather than have a deflated opinion potentially if I had tested it on a school district with underprivileged or under resourced children. Although restricting these factors to my specific school district proved to be a more feasible study as it was easier to conduct, this did indeed create some tremendous delimitations. I also limited my study to non-vegans at the start of the data, people who had not already been vegan or vegetarian, and I feel this was a delimitation as well because by choosing to only have meat-eaters (and not vegans or vegetarians), I removed any potential bias in terms of having any preconceived notions about the plant-based diet.

Implications

My study would entail that high-schoolers are more productive and emotionally happy when they are vegan; from a chi-square test on the data, the null hypothesis was rejected. This correlates with Ed Winters, as he argues in his Ted Talk that the vegan diet is "healthy, safe, and nutritionally adequate for all stages of life." According to Bradley McEwen and Maddie Bingham, he vegan diet will reduce daily sluggishness and allow people to get their daily dosage of nutrients while maintaining proper health (McEwen & Bingham, 2019, p. 66). This was confirmed by my study in which 63 percent of my experimental group (non-vegans who went vegan) report higher energy levels each morning.

However, Phillips employs data from the EPIC-Oxford Cohort to encapsulate that vegans "have similar... energy intakes than meat-eaters in the same population, for both adults and children" (Phillips, 2005, p. 138). Yet, my study proved this factually incorrect since 63% of vegans report higher energy levels, whereas only 20% of non-vegans report higher energy levels, and 60% of meat-eaters state that their energy levels remain constant week-to-week.

Additionally, the data I gathered is applicable to a broader spectrum. The experimental group reported higher energy levels, tasks accomplished, and happiness. This validates my thesis that high-school students will find benefits from going vegan, and it suggests that high-schoolers' overall mental health and productivity could improve from going vegan. A great deal of teenagers are engulfed with procrastination and a barrage of physical changes, and a vegan diet would help them with that by catalyzing an increase in productivity and their emotional health. In our world in which teenagers suffer from depression and anxiety, my research clearly shows that the vegan diet would make students happier and more productive, thereby ameliorating their lives.

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Appendix

Appendix A: Initial Experiment Survey

Questions:	Answer Choices:
How old are you?	Free Response
What grade are you in?	Free Response
Are you male or female?	❖ Male ❖ Female ❖ Other/Prefer not to say
What race/ethnicity are you?	Free Response
Do you have any allergies?	Free Response
Are you currently a vegan (someone who does not eat any animal/milk products)? *Note that the survey then puts the responder in a different page based on the response to this question, a vegan page, a vegetarian page, and a non-vegan page. Each page contains the same exact questions, the only difference being for the surveyor in which he or she can determine the factors for the respective diet the person is currently undergoing.	❖ Yes ❖ No, I am not vegan. I consume meat. ❖ No, I am not a vegan but I am vegetarian.

This table contains the questions that were asked for all three sections: ***vegans, non-vegans, and vegetarians.***

Questions:	Answer Choices:
Do you eat organic food?	❖ Yes ❖ No
What type of meat do you eat?	❖ Chicken ❖ Fish ❖ Pork ❖ Beef

	❖ Other:
Do you eat eggs?	❖ Yes ❖ No
Do you eat dairy products?	❖ Yes ❖ No
Do you drink milk?	❖ Yes ❖ No
Do you eat vegetables and fruits?	❖ Yes ❖ No
Do you eat canned foods?	❖ Yes ❖ No
In the last one year, how many times have you been sick?	❖ 0 ❖ 1-3 ❖ Greater than 3
Please select the appropriate unweighted GPA that applies to you.	❖ 4.0 ❖ 3.0 and above ❖ 2.0 and above ❖ Less than 2.0 ❖ Do not want to disclose
How many part-time jobs are working?	❖ 0 ❖ 1 ❖ 2 ❖ 3+
How many hours do you study per-day?	❖ 0 ❖ 1-2 ❖ 2-4 ❖ 4+
How many hours of sports do you play each day?	❖ 0 ❖ 1-2 ❖ 3-4 ❖ 5+
How many times do you eat out per week before/after covid?	❖ 0 ❖ 1-2 ❖ 3-5 ❖ 6+

Do you bring your lunch to school every day before/after covid?	❖ Yes ❖ No
What fast-food restaurants do you go to each week before/after covid?	❖ McDonald's ❖ Burger King ❖ Sonic ❖ Wendy's ❖ I do not go to any fast-food joints. ❖ Other
What day of the week works best for you for a brief phone interview?	❖ Monday ❖ Tuesday ❖ Wednesday ❖ Thursday ❖ Friday ❖ Saturday ❖ Sunday

Appendix B: Interview Questions:

1. Do you consent to this interview?
2. What are your thoughts on the vegan diet?
3. Do you think veganism is beneficial?
4. Did you know that the world's strongest man is vegan? What are your thoughts?
5. Did you know that the vegan diet reduces deforestation and greenhouse gas accumulation because it culminates in less farmland usage and therefore would entail less trees being cut down in order to graze cattle? What are your thoughts?
6. Did you know that the vegan diet discourages factory farming by mitigating the amount of profit factory farmers make from their meat by providing a healthy alternative? What are your thoughts?
7. Did you know that veganism is actually more healthy because factory farming induces a poorer meat quality since animals are packed tightly and crammed into small spaces in order to secure more profits? What are your thoughts?

8. Did you know that the reason Tom Brady is playing at such an elite level being in the NFL despite his age is because he partially follows the vegan diet, is incredibly healthy, and frequently implements vegan foods into his diet? What are your thoughts?
9. Did you know that veganism has been clinically proven to reduce risks of arrays of different types of cancer, as well as diabetes and heart disease? What are your thoughts?
10. After hearing all these benefits, would you like to go vegan and be part of the experimental group?

Appendix C: Experimental Diet Plan

Hello all, ***if you are part of the experimental group****, here is a doctor-approved vegan diet plan. Please note that this diet plan does NOT include any meat product (****Chicken, Beef, Fish, etc****) AND does NOT include any dairy product (****milk, cheese, eggs, etc****). Again, these are foods that you CANNOT eat as a part of this diet plan. We will start this diet plan* ***WEDNESDAY*** *(February 24) morning, and you will be continuing this diet plan until the following* ***WEDNESDAY****.*

Please note that you may substitute your own vegan-food for any foods below, so long as you make an effort to follow the diet.

Breakfast:

1. Smoothie with blueberries, blackberries, strawberries (or any berry of your choice), and you MAY add a plant-based milk like ALMOND MILK or OAT MILK.
2. You can also eat pancakes and waffles as well, so long as they do not contain dairy or contain a plant-based dairy.
3. Or Toast and vegan butter, peanut butter, vegan jelly.
4. You could even have cereal, so long as the cereal is non-dairy/meat, and the milk is PLANT-based

Lunch:

1. Sandwiches, there is a plethora of different options and toppings, like veggies and pesto sauce sandwiches, but NO meat-based toppings!
2. You could also eat apples with peanut butter and drizzles of maple syrup

Dinner:

1. Rice and beans with a side of veggies.
2. Grilled tofu and asparagus with rice
3. Pasta of any kind (you could add nutritional yeast, which would make everything cheesy)

Appendix D: Post-Experimental Dietary Survey (Includes both Experimental and Control)

Questions:	Answer Choices:
Were you part of the experimental or control group? (Please refer the Top section if you are confused as to what group you were in)	❖ I was in the Experimental Group ❖ I was in the control group
Were you able to accomplish more tasks during the 1 week vegan diet?	❖ I accomplished more tasks ❖ I did not accomplish more tasks ❖ Nothing changed because of my diet
How was your mood during the 1 week vegan diet period?	❖ Happier ❖ Angrier ❖ Depressed/Sad ❖ NO change in mood at all
Did your focus in school improve with your diet?	❖ Yes ❖ No ❖ Stayed the same
Did your grades improve as a result of a vegan diet?	❖ Yes my focus was better ❖ No I couldn't concentrate ❖ Grades stayed the same
Did your sports improve as a result of your diet?	❖ Yes ❖ No ❖ Stayed the same
Did you experience any allergic reactions to the vegan diet?	❖ Yes ❖ No
If you did have allergic reactions, briefly explain below what your allergic reaction was?	Free Response

If you had an allergic reaction, did you continue the vegan diet with different food?	❖ Yes ❖ No ❖ Other:
Did you wake up many times in the night unable to sleep?	❖ I woke up multiple times. ❖ I slept nicely ❖ I couldn't sleep at all
Did you fall sick at any time during the 1 week Vegan diet period?	❖ Yes ❖ No
If you answered Yes to above, then How many times you felt sick?	❖ 1 ❖ 2 ❖ 3 ❖ 4 ❖ 5+
Did you stay Vegan the entire 1 week period?	❖ Yes I followed it 100% of the time ❖ No I substituted meat and dairy into my diet on occasion
Did you take dietary supplements to complement your vegan diet?	❖ Yes ❖ No
If your answer was Yes then how many times a day you took supplements?	❖ 1 ❖ 2 ❖ 3 ❖ 4 ❖ 5+
How many times did you substitute meat and dairy into your vegan diet?	❖ 0 ❖ 1 ❖ 2

	❖ 3 ❖ 4 ❖ 5 ❖ Greater than 5
What did you like about being Vegan? Choose any of the below?	❖ Felt More energetic ❖ Helping the environment ❖ Helping the animals ❖ All of the above
Are you going to continue the Vegan Diet?	❖ Yes ❖ No
How were your energy levels every morning?	❖ High ❖ Low ❖ Stayed the same as previous week
Describe your productivity levels during the week?	❖ Accomplished more tasks ❖ Accomplished fewer tasks ❖ Stayed the same as previous week
Describe your mood during the week?	❖ Happy ❖ Angry ❖ Depressed/Sad ❖ Stayed the same as previous week
How was your focus in school during the week?	❖ Good ❖ Bad ❖ Stayed the same as previous week
How were your grades during the week?	❖ Normal ❖ Better than normal ❖ Didn't notice any difference
Did your sports improve this past week compared to the previous week?	❖ Yes ❖ No

	❖ Stayed the same
Did you wake up many times in the night unable to sleep?	❖ I woke up multiple times. ❖ I slept nicely ❖ I couldn't sleep at all
Did you fall sick at any time during the last week?	❖ Yes ❖ No
Do you take dietary supplements to complement your meat diet?	❖ Yes ❖ No
Did you eat a lot of vegetables and fruits?	❖ Yes ❖ No
Did you eat dairy products during the week?	❖ Yes ❖ No