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Calls to Action Impact: Consumer Behavior and Attitudes Regarding Factory Farming

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By

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Abstract

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This research aims to understand whether what we ask of consumers will impact their understanding of the negative impacts of factory farming and their buying behaviors.

Signature Page for Leadership Studies Honors Thesis

The Impact of Calls to Action Regarding Factory Farming on Consumer Behavior and Attitudes

Thesis presented

by

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Chapter 1

1.1 Introduction

The average American eats roughly 143 pounds of meat each year. This amount of meat-eating is a record high, and over 20 more pounds than the average American ate in 1970. [1] To supply this increasing demand for meat, the United States pumps out around 52 billion pounds of meat, including 26 billion pounds of beef and 25 billion pounds of pork, each year The U.S. produces an additional 48 billion pounds of poultry each year.[2] Yet, how often do we consider the impact of the meat we are eating?

In 2007, The Humane Society sent undercover agents to the Hallmark/Westland cow slaughterhouse in California to secretly observe and record the conditions of the slaughterhouse. This location was chosen at random. These agents quickly uncovered rampant animal abuse and recorded graphic videos of cows being kicked, sprayed with hoses, and pushed with forklifts.[3] They also discovered that this factory was killing and producing meat from downer cows[4], which goes directly against The United States Department of Agriculture (USDA) regulations. [5] These regulations state that downer cows cannot be slaughtered for meat to protect consumers from diseases, as disease or injury causes a cow to be down.[6] These undercover videos and information ultimately led to a recall of 143 million pounds of beef, the largest beef recall in U.S. history. The Hallmark/Westland slaughterhouse often supplied meat to federal programs. Thirty-seven million pounds of the recalled meat went to the school lunch program, and thirteen million pounds went

[1] "USDA ERS - U.S. Per Capita Availability of Red Meat, Poultry, and Seafood on the Rise." Accessed April 27, 2022. https://www.ers.usda.gov/amber-waves/2019/december/us-per-capita-availability-of-red-meat-poultry-and-seafood-on-the-rise/.
[2] "Livestock Slaughter 2020 Summary" (United States Department of Agriculture, April 2021).
[3] Andrew Martin, "Agriculture Dept. Vows to Improve Animal Welfare," The New York Times, February 29, 2008, sec. Business, https://www.nytimes.com/2008/02/29/business/29food.html.
[4] Downer Cows Definition: cows that cannot stand or walk due to illness or injury.
[5] Miriam Falco, "USDA: Reinspection of Downed Cattle Was Key Issue in Beef Recall - CNN.Com," accessed April 27, 2022, https://www.cnn.com/2008/HEALTH/02/20/downer.cattle/index.html.
[6] Andrew Martin, "Humane Society Criticized in Meat Quality Scandal," The New York Times, February 27, 2008, sec. Business, https://www.nytimes.com/2008/02/27/business/27food.html.

to a federal program that feeds the elderly.[7] When issuing the recall, the USDA noted that their investigation has shown the meat to be "unfit for human consumption."[8]

The impact of this incident is debatable. One "industry observer" argued it was a "watershed event that changed the discussion," and "was the first-time activists were able to tie animal well-being to food safety."[9] Depite this, there is no evidence to show that the incident affected consumer behavior or meat demand and sales. Many consumers likely saw it as an isolated incident impacting the meat coming from that factory alone. Unfortunately, this story is one of many more, and rather than an isolated incident, it is an example of the systemic problems of the industrialized factory farming system.

There is little evidence that exists showing that allegations against meat companies regarding issues of animal abuse or human health risk have impacted the purchase of meat. This comes in striking contrast with the change in consumer behavior and demand in response to similar incidents in other food markets. Outbreaks of E. coli, even particularly small ones, often have a large impact on consumer behavior. In 2018, a deadly outbreak of E. coli in romaine lettuce caused millions of dollars in losses as the price of romaine to drop by more than half. The impact of this continued even weeks after all the tainted lettuce had been removed from shelves.[10] The difference in the way these types of incidents impact the market and consumer behavior is telling of the ability of consumers to ignore and disregard information that threatens their ability to consume meat.

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[7] Matthew L. Wald, "Meat Packer Admits Slaughter of Sick Cows," The New York Times, March 13, 2008, sec. Business, https://www.nytimes.com/2008/03/13/business/13meat.html.
[8] Joe Nocera, "A Case of Abuse, Heightened," The New York Times, March 8, 2008, sec. Business, https://www.nytimes.com/2008/03/08/business/08nocera.html.
[9] Donald D. Stull and Michael J. Broadway, Slaughterhouse Blues: The Meat and Poultry Industry in North America (Cengage Learning, 2012).
[10] Jesse Newman and Heather Haddon, "Effects of E.Coli Outbreak in Lettuce Ripple Through U.S. Food-Supply Chain," Wall Street Journal, May 30, 2018, sec. Business, https://www.wsj.com/articles/effects-of-e-coli-outbreak-in-lettuce-ripple-through-u-s-food-supply-chain-1527681604.

A system of industrial factory farming[11] has come to dominate meat production in America and has replaced a long history of meat production coming from small and medium-sized family farms. While this system of farming allows for meat to be produced more efficiently and cheaper than ever before, it poses severe threats to the environment, human health, and animal welfare.

1.2 Call to Actions in the Case Against Factory Farming

The rise in meat consumption in the United States is happening despite a growing movement to decrease meat consumption[12] and the increased public knowledge of the negative health and environmental impacts of meat consumption and production. Researchers, activists, doctors, environmental policymakers, and public health officials have begun calling consumers to reduce meat consumption and look towards a plant based diet, as things like Meatless Mondays and Veganuary (a vegan January) have become popularized. This leads one to ask why we are now eating more meat than ever before? *The Atlantic* author Derek Thompson comments on this phenomenon by noting, "For the past 50 years, Americans have responded to the case against eating animals mostly by eating more animals."[13]

The problem may be that asking the general public to reduce meat consumption and look to a plant based diet is too drastic for most to take on. For a consumer to be readily able to listen to and understand the impacts of factory farming, they can't feel threatened. Americans hold strong protective beliefs regarding eating meat. [14] Meat maintains a vital significance in our culture and our holidays, it plays a prominent role in the way many people absorb protein, and most Americans have come to form a great affinity for meat and meat dishes. What is more American than a burger on the Fourth of July or chicken wings during the Super Bowl? Thus, by marrying the issue of

[11] See bottom of page 5 for more information on factory farming.
[12] See page 17 for further information.
[13] Thompson, Derek. "The Capitalist Way to Make Americans Stop Eating Meat." The Atlantic, January 10, 2020. https://www.theatlantic.com/ideas/archive/2020/01/why-2020s-will-be-peak-meat-america/604711/.
[14] See page 11 for more information and research on the 'meat paradox'

factory farming to reducing meat consumption from the start, consumers will be less receptive. If the goal is to reduce meat consumption in consumers, it will take steps to get there. Most consumers will not become vegans overnight, regardless of the power of any call to action.

The current research and efforts in this field often miss a key step. Researchers should approach the issue of informing consumers of the problems with factory farming without immediately pushing for a reduction in meat consumption, but this is often what is done. When consumers feel they are being asked to make drastic changes in their lives immediately, they will be hesitant. When there is less being asked of a consumer, and they see many alternatives for change such as buying products from local farms or eating less meat rather than getting rid of meat all together, they may be more receptive to the information regarding the issues that come from factory farms.

This has led me to ask, what if we are calling consumers to do the wrong thing? When speaking about incidents such as the Hallmark-Westland slaughterhouse, consumers should know that factory farming is inhumane, dangerous, and costly. But when we ask consumers to change their behavior because of this, instead of focusing our attention on a reduction of meat consumption from the start, would it be more effective to ask them to look for alternative avenues of consuming meat, such as buying from small local farm or farmer's market?

Will consumers be more receptive towards change when the change is less drastic? Most likely, yes. Does this mean consumers will be more receptive to the information about the harms of factory farming and more willing to change their behavior when we ask them to buy more ethical and sustainably produced meat rather than switching to a plant based diet? This paper aims to answer this question.

1.3 Research Questions

Will asking consumers to make a less drastic change in their diet make them more receptive to information regarding the negative impact of factory farming and more willing to change their buying behaviors?

After receiving information on the negative impacts of factory farming, will a call to action telling consumers to eat meat and animal products that are ethically and sustainably produced have more of an effect on behavior than a call to action telling consumers to switch to a plant based diet?

1.4 Significance of Consumer Behavior in a Larger Context

The public's demand for cheap meat and their willingness to buy products from companies using factory farms is often used as justification for the continuation of these practices. Brady Reicks, a pork producer from Iowa, argues, "we're responding to what the market is giving us," when asked about issues of factory farming.[15] But how much of the public's complicity in factory farming is due to a lack of information and understanding. I believe it is not the case that consumers understand the impact of industrialized factory farming and choose to eat meat anyway, but rather their desire to eat meat causes them to look away from the available information. Change in consumer attitudes and behaviors could be influential in signaling the need for industry reform in the animal agricultural industry to business leaders and legislators.

1.5 Background and Literature

Factory Farming

Industrial animal agriculture, more commonly known as factory farming, has come to dominate the way we produce meat and animal products in the United States and, increasingly, in the world. While some form of animal farming has been around for thousands of years, this past

[15] John Flesher, "Factory Farms Provide Abundant Food, but Environment Suffers," PBS NewsHour, February 6, 2020, https://www.pbs.org/newshour/economy/factory-farms-provide-abundant-food-but-environment-suffers.

century has completely changed the way we farm animals. With the rise of industrialization, farmers began to farm using industrialized systems of production in order to maximize output and minimize costs. Factory farming means producing animal products such as meat, dairy, and eggs on confined and concentrated animal feeding operations (CAFOs). CAFOs are large industrial buildings that specialize in producing massive quantities of a specific animal product for low costs.[16]

Enormous amounts of meat can be produced with minimal costs through confined animal systems of farming which has increased accessibility to meat for many Americans and has resulted in increased consumption of meat in the United States. [17] Around 99% of all farmed animals in the U.S. currently come from factory farms.[18] USDA data shows, "In the 1970s, the typical American ate about 120 pounds of meat each year. In the 1990s, she ate about 130 pounds annually. Today, she eats more than 140 pounds a year, or about 2.5 pounds of meat every week," this being a record high.[19]

But, despite the economic advantages that lead to the use of industrial means of production to produce animal products, this practice does come with inherent drawbacks. Crowded confinement of these buildings and lack of eco-diversity in these farms has and will continue to lead to the outbreak of disease. Diseases which will become increasingly antibiotic resistant due to the antibiotics given to the animals on massive scales to deal with the confined spaces. The production of meat at this scale without an efficient means of waste management creates massive

[16] "Animal Feeding Operations." Natural Resources Conservation Service. United States Department of Agriculture, n.d. https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/livestock/afo/.
[17] Anthis, Jacy Reese. "US Factory Farming Estimates," April 11, 2019. https://sentienceinstitute.org/us-factory-farming-estimates.
[18] "99% of US Farmed Animals Live on Factory Farms, Study Shows," Sentience Institute, accessed April 27, 2022, http://www.sentienceinstitute.org/press/us-farmed-animals-live-on-factory-farms.
[19] Thompson, Derek. "The Capitalist Way to Make Americans Stop Eating Meat." The Atlantic, January 10, 2020. https://www.theatlantic.com/ideas/archive/2020/01/why-2020s-will-be-peak-meat-america/604711/.

levels of pollution. The current conditions of these farms also breed animal welfare abuses. Globally, billions of animals are slaughtered each year to keep up with our meat-eating habits. According to the World Economic Forum, "an estimated 50 billion chickens are slaughtered for food every year." Further, approximately 1.5 billion pigs are slaughtered each year, "a number that has tripled in the last 50 years."[20]

Supporting locally produced meat and animal products can be a beneficial alternative to factory farming. These types of farms are becoming more and more scarce due to the domination of large companies that use factory farms. While the national and global demand for meat cannot be supplied by the small number of local farms that currently exist, support for companies using factory farms plays a large role in the shrinking number of small farms. Peaking in 1935, the United States had 6.8 million farms at this time. This number declined rather sharply in the 1970s and has continued to do so. In 2020, there were around 2 million farms in America.[21] Additionally, many family farms that do still exist are being bought out by larger corporations and being put into contracts where they are transformed into factory farms.[22] This system can be extremely determinantal to farmers and is often referred to as modern day share cropping.[23] Small, diversified farms are better for the environment, the welfare of the animal, and human health. As the animals are not living in confined spaces, the risk of disease drops dramatically. This also means that there is no need to give these animals antibiotics, which minimizes human health risk.[24] The waste is more properly managed by small, diversified farms and the air pollution is minimized. Lastly these

[20]Alex Thornton, "This Is How Many Animals We Eat Each Year," World Economic Forum, 2019, https://www.weforum.org/agenda/2019/02/chart-of-the-day-this-is-how-many-animals-we-eat-each-year/.
[21] "USDA ERS - Farming and Farm Income," accessed April 27, 2022, https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/farming-and-farm-income/.
[22] Chris McGreal, "How America's Food Giants Swallowed the Family Farms," The Guardian, March 9, 2019, sec. Environment, https://www.theguardian.com/environment/2019/mar/09/american-food-giants-swallow-the-family-farms-iowa.

[23] Pedro Armando Aparicio, Leighton Akio Woodhouse, and David Zlutnick, "Chicken Farming Is the 21st Century's Sharecropping," The Intercept, accessed April 27, 2022, https://theintercept.com/2021/06/08/chicken-farmers-poultry-debt/.
[24] J. Anomaly, "What's Wrong With Factory Farming?" Public Health Ethics 8, no. 3 (November 1, 2015): 246–54, doi:10.1093/phe/phu001.

types of farms provide more open space and socialization for animals which is vital to the health and well-being of a farm animal.[25]

The Impact of Factory Farming on Human Health

The conditions on factory farms combined with the intensive use of antibiotics on these farms gravely threatens human health. The CDC estimates that 75% of all emerging human diseases originate in animals.[26] Outbreaks such as H1N1, also known as the swine flu, have been tied to overcrowding of pigs on factory farms and the storage of their waste in giant manure lagoons[27]. Because the confined conditions on the farm are ripe for diseases, excessive antibiotics are often used to mitigate this risk. Out of the 25 million pounds of antibiotics that are purchased in the United States each year, over 70% of all these antibiotics go to farm animals.[28] Using antibiotics this way leads to antibiotic resistance among animals and the humans eating these animals. The CDC estimates that antibiotic-resistant infections kill 35,000 Americans every year.[29] As we live through one of the worst global pandemics in history, more attention, and research on the risk that industrialized animal agriculture poses on human health is necessary now more than ever.

Animal Welfare Concerns Surrounding Factory Farming

[25] J. Anomaly, "What's Wrong With Factory Farming?," Public Health Ethics 8, no. 3 (November 1, 2015): 246–54, doi:10.1093/phe/phu001.
[26] Schuck-Paim, Cynthia. "Intensive Animal Farming Conditions Are a Major Threat to Global Health." *Animal Sentience* 5, no. 30 (August 28, 2020). https://doi.org/10.51291/2377-7478.1635.
[27] Ma, Wenjun, Robert E Kahn, and Juergen A Richt. "The Pig as a Mixing Vessel for Influenza Viruses: Human and Veterinary Implications." *Journal of Molecular and Genetic Medicine : An International Journal of Biomedical Research* 3, no. 1 (November 27, 2008): 158–66.
[28] Dall, Chris . "Report: US Pigs Consume Nearly as Many Antibiotics as People Do." CIDRAP, June 6, 2018. https://www.cidrap.umn.edu/news-perspective/2018/06/report-us-pigs-consume-nearly-many-antibiotics-people-do.
[29] CDC. "What Exactly Is Antibiotic Resistance?" Centers for Disease Control and Prevention, March 13, 2020. https://www.cdc.gov/drugresistance/about.html.

Concern for the animal is greatly overlooked in the factory farming system. As consumers in America, we have been able to create a massive disconnect between the act of eating meat and the process in which the meat was produced. Investigations into factory farms have uncovered innumerable atrocities on these farms. It is difficult to fully capture the levels of abuse in these farms with a few examples, but these examples of cruelty can begin to explain the problem. Starting with chickens and hens, there are no federal regulations about the treatment of these animals. As a result of this, the circumstances of their lives on factory farms are rather dire. "95 - 98%" of eggs consumed in America "come from hens raised in tiny wire "battery" cages, which are often "too small for the animals to even spread their wings or lie down comfortably without touching another animal or the sides of their cages."[30]

Hogs and cows often do not fare better than chickens and hens on factory farms. An animal abuse investigation into conditions at pig farm uncovered instances of workers, "beating pigs with metal rods" and "sticking clothespins into pigs' eyes and faces."[31] A separate investigation at a separate farm found instances of "cutting the tails of piglets, punching out parts of the animals' ears, and castrating the males, all without anesthetic."[32] Cows in factory farms suffer not only from poor treatment, but also from simply living in such cramped areas. Even if gifted with the gentlest farmers, the nature of a factorized farming system is detrimental to their wellbeing. These cows often have painful udder infections and illness due to being milked excessively and the confined living conditions. Beyond this, numerous investigations have uncovered instances of cows being

[30] Cheryl Leahy, "Large Scale Farmed Animal Abuse and Neglect: Law and It's Enforcement," Journal of Animal Law & Ethics, May 2011.
[31] Cheryl Leahy, "Large Scale Farmed Animal Abuse and Neglect: Law and It's Enforcement," Journal of Animal Law & Ethics, May 2011.
[32] Cheryl Leahy, "Large Scale Farmed Animal Abuse and Neglect: Law and It's Enforcement," Journal of Animal Law & Ethics, May 2011.

"dehorned and/or having parts of their tails cut off without anesthetic,"[33] as well as being pushed by forklifts, sprayed with hoses, stepped on, thrown, and beaten.[34]

The Impact of Factory Farming on the Environment

Meat production has a significant impact on that environment. In the United States, "Livestock farms generate about 70% of the nation's ammonia emissions," as well as large amounts of methane emissions.[35] Globally, greenhouse gas emissions from animal farms account for 18% of global greenhouse gas emissions, exceeding those from the transportation sector.[36] Factory farming "contributes to numerous forms of environmental degradation," including air pollution, as well as "water pollution and soil depletion." This system depletes "fossil fuels, water, and topsoil at unsustainable rates."[37]

The massive amounts of animals being produced for meat means massive amounts of waste from these animals are produced; waste that the industry and the government have not created proper solutions to deal with. On pig farms, waste is drained into creaks under the floor and channeled to large, man-made lagoons.[38] These lagoons are often called "pink lagoons," as the remnants create a bright pink color. When these man-made lagoons begin to fill up, this waste is often dumped into waterways as well as sprayed into open fields, which eventually drain into our waterways. [39] This dramatically damages waterways, leading to massive fish kills, polluted water,

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[33] Cheryl Leahy, "Large Scale Farmed Animal Abuse and Neglect: Law and It's Enforcement," Journal of Animal Law & Ethics, May 2011.
[34] Andrew Martin, "Agriculture Dept. Vows to Improve Animal Welfare," The New York Times, February 29, 2008, sec. Business, https://www.nytimes.com/2008/02/29/business/29food.html.
[35] "Factory Farms Provide Abundant Food, but Environment Suffers," PBS NewsHour, February 6, 2020, https://www.pbs.org/newshour/economy/factory-farms-provide-abundant-food-but-environment-suffers.
[36] Steinfeld, Henning, Pierre Gerber, T. D. Wassenaar, Food and Agriculture Organization of the United Nations, Vincent Castel, Mauricio Rosales, Mauricio Rosales M, and Cees de Haan. *Livestock's Long Shadow: Environmental Issues and Options*. Food & Agriculture Org., 2006.
[37] Leo Horrigan, Robert S Lawrence, and Polly Walker, "How Sustainable Agriculture Can Address the Environmental and Human Health Harms of Industrial Agriculture.," Environmental Health Perspectives 110, no. 5 (May 2002): 445–56, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240832/.
[38] Wynne Davis, "Overflowing Hog Lagoons Raise Environmental Concerns In North Carolina," NPR, September 22, 2018, sec. National, https://www.npr.org/2018/09/22/650698240/hurricane-s-aftermath-floods-hog-lagoons-in-north-carolina.
[39] Marx, David Jackson, Gary. "Spills of Pig Waste Kill Hundreds of Thousands of Fish in Illinois." chicagotribune.com.

and diminished biodiversity.[40] Further, in times of heavy rains, hog lagoons often overflow, creating dangerous floodwater that contaminates waterways, destroys the land, and threatens humans living in these areas.[41] Factory farming ravages many environmental systems due to ineffective government regulations and wasteful practices focused on economic efficiency. While the public's immediate concerns of saving money dominate our everyday thoughts, influence our behavior, and allow for public complicity, cheap meat's long-term and lasting environmental impact are much more costly.

The Meat Paradox

The scholarly work surrounding the concept of the 'meat paradox' provides more evidence for the argument that calling consumers to stop eating meat or reduce meat consumption can be unsuccessful. The meat paradox is a psychological theory that explains the cognitive dissonance that meat-eaters engage in when eating meat despite their disapproval of the rampant animal abuse, and human's general affection towards animals.[42] It has been established through the work of Loughnan[43], Davies,[44] Bastian,[45] and Bratanova and Puvia.[46]

In attempts to test some of the factors that play into the meat paradox, Loughnan, Haslam, and Bastian created an experiment where people were assigned to eat dried beef or dried nuts and then asked them a series of questions. The researchers found that the participants who were given meat to eat had a decreased moral concern for animals and judged cows' moral and mental status

[40] Leo Horrigan, Robert S Lawrence, and Polly Walker, "How Sustainable Agriculture Can Address the Environmental and Human Health Harms of Industrial Agriculture.," Environmental Health Perspectives 110, no. 5 (May 2002): 445–56, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240832/.
[41] Wynne Davis, "Overflowing Hog Lagoons Raise Environmental Concerns In North Carolina," NPR, September 22, 2018, sec. National, https://www.npr.org/2018/09/22/650698240/hurricane-s-aftermath-floods-hog-lagoons-in-north-carolina.
[42] Steve Loughnan and Thomas Davies, "The Meat Paradox," in Why We Love and Exploit Animals (Routledge, 2019).
[43] Steve Loughnan and Thomas Davies, "The Meat Paradox," in Why We Love and Exploit Animals (Routledge, 2019).
[44] Steve Loughnan and Thomas Davies, "The Meat Paradox," in Why We Love and Exploit Animals (Routledge, 2019).
[45] Bastian, Brock, and Steve Loughnan. "Resolving the Meat-Paradox: A Motivational Account of Morally Troublesome Behavior and Its Maintenance." Personality and Social Psychology Review 21, no. 3 (August 2017): 278–99. https://doi.org/10.1177/1088868316647562.
[46] "The Meat Paradox: How Are We Able to Love Animals and Love Eating Animals.," ResearchGate, accessed April 28, 2022, https://www.researchgate.net/publication/258332248_The_Meat_Paradox_How_are_we_able_to_love_animals_and_love_eating_animals.

to be lower than participants given nuts. This research suggests that it is not that people do not have the desire or capacity to be concerned for animals and see them as moral and intellectual beings, but to deal with the conflict between ideals and actions, people often subconsciously perceive animals as, "unworthy and unfeeling," and "withdraw moral concern from animals and deny their capacity to suffer."[47]

Bain et al. respond to theories of the meat paradox by arguing for the use of basic reminders encouraging consumers to associate meat-eating with animal welfare. They find that these types of reminders can effectively reduce the cognitive barriers that many people have put up to separate meat consumption and animal rights in their minds.

Building Appeals and Calls to Action

As factory farming impacts human health, animal welfare, and the environment, researchers have often attempted to call consumers to change consumer behavior through these lenses. When building my research design, I focused on two factors in this research. First, my research is focused on testing the differences between calling consumers to eat ethically versus eating less or no meat. This was driven by the lack of existing research on calling consumers to eat meat that is produced ethically and sustainably rather than reducing meat consumption. Secondly, I built the treatments to cover the cumulative impact of factory farming because existing research shows benefits to changing consumer behavior by looking at animal welfare, the environment, and human health. While much of the existing research looks at these three lenses separately, I built my research design to incorporate all three and give consumers the most informational possible. The following body of work help build the foundation for these understandings.

[47] *The role of meat consumption in the denial of moral status and mind to meat animals* Bastian, Haslam, and Loughnan

Animal Welfare Arguments

Many scholars argue for appealing to consumers to reduce meat consumption and/or support for factory farming based on arguments regarding the impact on animal welfare. In *Systematic Reviews*, Bain et. al published an article advocating for appealing to consumers regarding factory farming through an animal welfare approach and provides evidence for whether this approach is particularly beneficial and effective. Their main argument is that linking meat consumption to animal welfare will be most effective in connecting behavior to ethical values, self-identity, and existing social movements, which have proven to be "especially potent and long-lasting," compared to other types of appeals such as those focused on personal health. The authors discuss research on childhood obesity which found that ethical and cultural appeals are more effective in increasing physical activities compared to personal health-related appeals.[48]

Work by Cornish, Raubenheimer, and McGreevy further advocates for the benefits of animal welfare-based appeals based on data regarding public knowledge and views on meat consumption and animal welfare. They found that there is a connection between one's concern for the well-being of animals, and their understanding of animal welfare-related issues, "and perceived notions of an animal's intelligence level."[49] The work of Delon further builds off the suggestions of Cornish, Raubenheimer, and McGreevy by focusing on the importance of collective behavior in changing social norms through the lens of animal welfare and meat consumption. This research points to the need for collective behavior to be incorporated in the appeals surrounding meat-eating.[50]

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[48] Maya B. Mathur et al., "Reducing Meat Consumption by Appealing to Animal Welfare: Protocol for a Meta-Analysis and Theoretical Review," Systematic Reviews 9, no. 1 (January 6, 2020): 3, doi:10.1186/s13643-019-1264-5.
[49] Amelia Cornish, David Raubenheimer, and Paul McGreevy, "What We Know about the Public's Level of Concern for Farm Animal Welfare in Food Production in Developed Countries," Animals : An Open Access Journal from MDPI 6, no. 11 (November 16, 2016): 74, doi:10.3390/ani6110074.
[50] Nicolas Delon, "Social Norms and Farm Animal Protection," Palgrave Communications 4, no. 1 (November 20, 2018): 1–6, doi:10.1057/s41599-018-0194-5.

Finally, the work of Dutkiewicz provides further evidence for the benefits of appeals that give consumers information regarding the animal welfare concerns involved with factory farming. She points to the practices of companies using factory farming that mislead the public regarding the treatment of animals on factory farms. She details how in recent years, these companies have tried to counter claims of animal activists and gain good publicity through statements of "transparency," and the creation of a "publicly palatable narrative," through highly mediated public relations stunts. These come through commercial advertisements as well as agrotourism. Dutkienicz suggests these companies' transparency statements help Americans enjoy strategic ignorance, as they can choose to look no further than what a company is telling them.[51]

Environmental Focused Arguments

Sanchez-Sabate's review of papers focuses on how environmental concerns impact consumer behaviors and mindset and looks for overall trends in this data to understand how environmental concerns in the real world have impacted real-world behavior. He finds that the portion of the population that is both aware of the impact of meat consumption on the environment and has begun to change their behaviors to combat this issue is very small.[52] Based on this data, much research is needed on why this is that case and the most effective ways to appeal to more consumers to change their behavior concerning the environmental impact.

Some research that looks at using environmental appeals to reduce meat consumption comes from the work of Tucker. She finds that the environmental factors involved need to be "promoted alongside known influential determinants of purchase decisions."[53] Her work points to

[51] Jan Dutkiewicz, "Transparency and the Factory Farm: Agritourism and Counter-Activism at Fair Oaks Farms," Gastronomica 18, no. 2 (May 1, 2018): 19–32, doi:10.1525/gfc.2018.18.2.19.
[52] Ruben Sanchez-Sabate and Joan Sabaté, "Consumer Attitudes Towards Environmental Concerns of Meat Consumption: A Systematic Review," International Journal of Environmental Research and Public Health 16, no. 7 (January 2019): 1220, doi:10.3390/ijerph16071220.
[53] Corrina Tucker, "Using Environmental Imperatives to Reduce Meat Consumption: Perspectives from New Zealand," Kōtuitui: New Zealand Journal of Social Sciences Online 13, no. 1 (January 2, 2018): 99–110, doi:10.1080/1177083X.2018.1452763.

the idea that appealing to consumers rationally about the long-term impacts of meat consumption can and will be more impactful when complimenting these appeals with known behavioral economic and marketing tactics to influence consumer behavior.

Rather than simply looking at the impact of environmental appeals on reducing meat consumption. Almiron looks at the effectiveness of using an environmental frame when appealing to reducing the oppression of animals through meat production. Her research covers a variety of benefits when using an environmental frame to expand support for reducing the suffering of animals, but she does conclude that environmental arguments have not proven to be highly effective in creating long term change which can be explained by a variety of factors including lack of long-term deep connection to environmental issues.[54]

Finally, Packwood-Freeman provides interesting research to add to this field. She looks at the work of 15 environmental advocacy groups in the U.S. to examine their environmental appeals surrounding meat consumption. She finds that environmental groups will often advocate for a variety of solutions ranging from vegetarianism to replacing factory-farmed products with meat farmed locally or organically to reducing the meat in your diet. These organizations use this kind of range in suggested solutions because they feel this will be easier for consumers to handle. The author believes though that by not focusing on and using language such as dietary preferences rather than choices and needs can slow and stop necessary reform. She also recommends that environmental groups take a more substantial role in advocating against factory farming and directly linking climate change to animal agriculture.[55]

Human Health Arguments

[54] Núria Almiron, "Greening Animal Defense? Examining Whether Appealing to Climate Change and the Environment Is an Effective Advocacy Strategy to Reduce Oppression of Nonhumans," American Behavioral Scientist 63, no. 8 (July 2019): 1101–19, doi:10.1177/0002764219830466.
[55] Carrie Packwood Freeman, "Meat's Place on the Campaign Menu: How US Environmental Discourse Negotiates Vegetarianism," Environmental Communication 4, no. 3 (September 1, 2010): 255–76, doi:10.1080/17524032.2010.501998.

There is a lot of ambiguity regarding the real impact of meat consumption on health issues such as cancer and heart disease.[56] Further, arguments of personal health have not proved to be especially effective in reducing meat consumption long term.[57] In the last few years, though, a new question of the impact of meat consumption on human health has risen to the forefront. This modern concern revolves around the effects of meat production on things like the spread of antibiotic-resistant disease and the cause of the next pandemic.[58] As this field is relatively new, there is a great need for more research on the topic, but some of the current research gives insight into appealing to consumers regarding the impact of meat production on human health.

Despite the emerging scientific data connecting factory farming to an increased risk for pandemic type emerging disease, consumers are not fully ready to accept this connection.[59] Research from Dhont, Piazza, and Hudson shows how consumers' protective beliefs and affinity for meat-eating cause them to underestimate the risk of factory farms and instead overestimate the "wild animal trade and consumption or lack of government preparedness," in causing epidemics. They find this to be especially true among adults "highly committed to eating meat."[60] This research is consistent with work on the meat paradox but points to the implications of regulating the industry to protect human health. This work is built upon by Hobbs when looking specifically at the COVID-19 pandemic's impact on meat production. She finds that these underlying food values held by consumers impacted their response to the pandemic regarding the meat industry.[61]

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[56] Gina Kolata, "Eat Less Red Meat, Scientists Said. Now Some Believe That Was Bad Advice.," The New York Times, September 30, 2019, sec. Health, https://www.nytimes.com/2019/09/30/health/red-meat-heart-cancer.html.
[57] Maya B. Mathur et al., "Reducing Meat Consumption by Appealing to Animal Welfare: Protocol for a Meta-Analysis and Theoretical Review," Systematic Reviews 9, no. 1 (January 6, 2020): 3, doi:10.1186/s13643-019-1264-5.
[58] Jill E. Hobbs, "The Covid-19 Pandemic and Meat Supply Chains," Meat Science 181 (November 1, 2021): 108459, doi:10.1016/j.meatsci.2021.108459.
[59] Kristof Dhont, Jared Piazza, and Gordon Hodson, "The Role of Meat Appetite in Willfully Disregarding Factory Farming as a Pandemic Catalyst Risk," Appetite 164 (September 1, 2021): 105279, doi:10.1016/j.appet.2021.105279.
[60] Kristof Dhont, Jared Piazza, and Gordon Hodson, "The Role of Meat Appetite in Willfully Disregarding Factory Farming as a Pandemic Catalyst Risk," Appetite 164 (September 1, 2021): 105279, doi:10.1016/j.appet.2021.105279.
[61] Jill E. Hobbs, "The Covid-19 Pandemic and Meat Supply Chains," Meat Science 181 (November 1, 2021): 108459, doi:10.1016/j.meatsci.2021.108459.

Cultured meat, also known as in vitro meat, has been created as an ethical and sustainable solution to factory farming by growing meat in a lab with cell cultures of meat. Bryant has created multiple reviews of scholarly work surrounding consumer acceptance of cultured meat products. The review finds evidence that there are "substantial markets" for these products and that consumers will use environmental and animal welfare-based reasons for accepting these products. The research highlights that as consumers are more familiar with environmental and animal welfare based arguments, they can initially accept the concept through this framework. But that once more consumer education on the concept of in vitro meat is achieved they find that arguments highlighting consumer and human safety will prove to be even more salient with consumers and will greatly expand the market. As human health impacts everyone more personally, informing consumers of the benefits of cultured meat on health and safety could greatly expand the demand for these products.[62] This research portrays the need to educate consumers about the implications of factory farming on human health and the potential benefits of doing so.

Changes in Consumer Behavior

Walton advocates for interventions of positive reinforcement to change consumer behavior. He coins the term "wise psychological interventions," to show that psychological interventions aimed at changing behavior do not need to be expansive, long-term activities, but can still have effective long-term results. He finds that new types of psychological interventions can be "more ordinary, briefer, and more precise." These interventions can be long-lasting as they "aim to alter self-reinforcing processes."[63]

[62] Christopher Bryant and Julie Barnett, "Consumer Acceptance of Cultured Meat: An Updated Review (2018–2020)," Applied Sciences 10, no. 15 (January 2020): 5201, doi:10.3390/app10155201.
[63] Gregory M. Walton, "The New Science of Wise Psychological Interventions," Current Directions in Psychological Science 23, no. 1 (February 2014): 73–82, doi:10.1177/0963721413512856.

The work of Carfora, Bertolotti, and Catellani provides evidence of changing behavior through short messaging in the context of eating meat. They looked at appealing to consumers using daily message interventions for two weeks aimed at reducing the red and processed meat consumption (RPMC) of participants. Participants received one of three types of messages, either messages about RPMC impact on health and the environment, messages surrounding regretting decisions of RPMC due to the impact on health and the environment, or control messages about the impact of sugar on health and the environment. They tested the impact of these messages on "attitude, intention, and anticipated regret," as well as through a food diary. The study found that messaging about our behaviors and the regret they caused effectively reduced RPMC and elicited anticipated regret and intention, while the messages focused only on the impact were not. They conclude that personal messaging produced a longer-lasting impact on reducing RMPC.[64]

Ethical Work

Beyond the scientific argument that factory farming is harmful to animal welfare, the environment, and human health, the philosophical arguments for why consumers should change their behavior in order address this problem is relevant as well. Many philosophers have taken on the question of whether the practice of factory farming and/or consuming meat produced on a factory farm is morally justifiable.

The beginning of the philosophical argument comes from a basic utilitarian approach. This approach takes the overall approach that animal's matter because they suffer and as such acting to cause this suffering is wrong. Many philosophers operating under this framework argues for the cruelty-based objection to factory farming to argue that it is morally wrong. Bentham's argues that

[64]Valentina Carfora, Mauro Bertolotti, and Patrizia Catellani, "Informational and Emotional Daily Messages to Reduce Red and Processed Meat Consumption," Appetite 141 (October 1, 2019): 104331, doi:10.1016/j.appet.2019.104331.

when understanding the utilitarian standard for rightness, maximizing the good, you must consider all beings that can feel pleasure and pain. Singer, whose work is considered seminal in the field, builds off the arguments of Bentham and stays within a utilitarian viewpoint but bases his argument for the ethical treatment of animals on the idea of minimizing suffering. He argues as animals are capable of suffering, their interests should be equally considered, and that discrimination based on species is not morally justifiable.[65]

In response to this basic utilitarian approach, some utilitarian scholars argue that while the suffering of animals matters, the suffering of humans matters more because it involves a higher level of self-awareness. Scholars including Frey and Paton take this approach by arguing that that animals should not be considered in the same realm as humans,[66] and that because of this factory farming can be morally permissible.[67] A slightly stronger version of this argument against the basic utilitarian approach comes from scholars like Hsiao, who argues that not all harm is moral harm, and as humans are the only moral subjects and, in his view, as animals have no moral standing, harm posed to these animals is not moral harm and that factory farming is morally permissible.[68]

Gorin sees the basic utilitarian objection to factory farming to be problematic due to the causal inefficacy objection. He finds that because the system of factory farming and all the factors involved with this process are so "vast and complex," individual activity will have little impact on overall animal welfare and limiting cruelty to animals. But importantly, while he finds this objection in cruelty-based arguments, he still finds that consuming factory-farmed meat when knowing it is wrong is immoral due to the principle of self-harm. In this instance, if someone

[65] Peter Singer, Animal Liberation: The Definitive Classic of the Animal Movement, Updated ed., 1st Ecco pbk. ed., 1st Harper Perennial ed (New York: Ecco Book/Harper Perennial, 2009).
[66] R. G. Frey, "Vivisection, Morals and Medicine," Journal of Medical Ethics 9, no. 2 (1983): 94–97, doi:10.1136/jme.9.2.94.
[67] R. G. Frey, "Utilitarianism and moral vegetarianism again: Protest or effectiveness? In S. Sapontzis (Ed.), Food for thought (2004): Amherst, NY: Prometheus Books.
[68] Timothy Hsiao, "Industrial Farming Is Not Cruel to Animals," Journal of Agricultural and Environmental Ethics 30, no. 1 (February 1, 2017): 37–54, doi:10.1007/s10806-017-9652-0.

knows the practice is wrong and chooses to do it anyway, they are endorsing "wrongful practices, " a form of self-harm. He finds that as the self-harm principle holds, the casual inefficacy objection is not enough to justify consuming factory-farmed products.[69]

Given the philosophical framework for the argument against factory farming, we can look to the solutions posed by scholars. Many scholars in the field argue that as factory farming is morally impermissible, other forms of meat production such as in vitro meat production and plant based alternatives to meat, "are the best-justified options."[70] Some scholars have expanded on this argument by building a case for the protected philosophical belief status of ethical and environmental vegetarianism and veganism. In work done by McKeown and Ann-Dunn, they argue this philosophical belief should be protected under law.[71]

Thompson addresses arguments for alternative meat solutions such as in vitro meat and plant based alternatives by arguing that many philosophers do not correctly address the situation of factory farming when they fail to look at reforming the system of factory farming and instead focus solely on vegetarian/ vegan diets and in vitro meat production. He argues that because the lives of animals in factory farms can be improved, "even if this improvement falls short of a full moral justification," philosophers should still address improving the system.[72] This work by Thompson has been foundational for this research as it aims to look at the value of buying meat that is raised more humanely and sustainably, rather than focusing solely on the switch to a plant based diet.

[69] Moti Gorin, "Causal Inefficacy and Utilitarian Arguments Against the Consumption of Factory-Farmed Products," Journal of Agricultural and Environmental Ethics 30, no. 4 (August 1, 2017): 585–94, doi:10.1007/s10806-017-9690-7.
[70] Evelyn B. Pluhar, Beyond Prejudice: The Moral Significance of Human and Nonhuman Animals (Duke University Press, 1995).
[71] Paul McKeown and Rachel Ann Dunn, "A 'Life-Style Choice' or a Philosophical Belief?: The Argument for Veganism and Vegetarianism to Be a Protected Philosophical Belief and the Position in England and Wales," Liverpool Law Review 42, no. 2 (July 1, 2021): 207–41, doi:10.1007/s10991-020-09273-w.
[72] Paul B Thompson, "Philosophical Ethics and the Improvement of Farmed Animal Lives," Animal Frontiers: The Review Magazine of Animal Agriculture 10, no. 1 (January 10, 2020): 21–28, doi:10.1093/af/vfz054.

Chapter 2: Present Research

2.1 Phases and Treatments

Table 1 below gives an overview of the experimental design and the timeline.

Table 1. Experimental Design

Experiment Phases	Timeline	Control (1)	Ethical Group (2)	Plant Based Group (3)
Phase 1: Pre-Survey (drawing for 2 $25 gift cards)	2/1/22 – 2/8/22	X	X	X
Phase 2: Grocery documentation 1	2/10/22 – 2/23/22	X	X	X
Phase 3: Video Treatment	2/28/22 – 3/9/22	X: No CTA	X: Ethical and sustainable CTA	X: Plant based CTA
Phase 4: Grocery documentation 2	3/10/22 – 3/23/22	X	X	X
Phase 5: Post-Survey ($20 payment)	3/24/22 – 3/27/22	X (Survey A)	X (Survey B)	X (Survey B)

The treatment of the research takes place in Phase 3. At this phase, the participants were equally and randomly divided into three groups: Control Group, the Ethical Group, and the Plant Based Group.

1) Control Group: This group received only the three minute video.
2) Ethical Group: This group received the three minute video followed by a call to action asking consumers to purchase goods that were ethically and sustainably produced. For

purposes of the research, we consider ethically and sustainably produced meat and animal products to be products purchased from farmers markets or local farms, as well as products from grocery stores that have labeling depicting ethical and sustainable production.

3) Plant Based Group: This group received the three minute video followed by a call to action asking consumers to purchase plant based alternatives to meat. For the purpose of this research, plant based products are any plant-based alternatives to meat and animal products such as almond milk and Impossible Burgers.

(See Appendix A and Appendix B for images of the treatments and Page 27 for a more detailed description of treatments)

2.2 Hypotheses

I propose the following hypotheses:

H1: Consumers called to eat meat and animal products that are ethically and sustainably produced (Group 2) will be more likely to change their buying behavior than consumers called to switch to a plant based diet (Group 3) and consumers that receive no call to action (Group 1/Control).

H2: Being called to switch to a plant based diet (Group 3) will have a negative impact on behavior change, meaning consumers in the control group will have more of a change in behavior than those in Group 3.

H3: Participants in the Ethical Group (Group 2) will retain more from the informational video than participants in the Plant Based Group (Group 3).

These hypotheses build off current research surrounding the meat paradox and the impact of appealing to consumers to change their meat consumption. Based in the idea that calling on consumers to switch to a plant based diet will threaten their protective and strongly held beliefs, Hypothesis 1 theorizes that consumers will be more willing to switch to meat that is ethically and sustainably produced rather than stop eating meat. Hypothesis 2 is based in the idea that consumers will be turned off by the ask to switch to a plant based diet and this will cause the change in behavior from the video alone (the Control Group) to be greater than with the plant based call to action. Hypothesis 3 comes from the idea that consumers will be more willing and able to retain the information from the video with the ethical ask because they will feel less threatened by it and may be more readily able to accept the harms of factory farming if the solution to the problem is more realistic in their everyday life and less threating to their long held behaviors and attitudes.

2.3 Methodology

The purpose of the research is to test the impact of the calls to action on grocery buying behavior as documented with the pre-treatment and post-treatment grocery tracking periods, and the impact of the video and the treatment on participant attitudes and retention of information, as studied through answers to the pre-survey and post- survey.

The population of this study was University of Richmond staff, faculty, undergraduate students, and professional students. For this study, 253 participants were recruited to participate by filling out a preliminary survey. Based on their responses to the pre-survey, 213 participants were asked to continue in the study. The reasoning for excluding participants based on the pre-survey is explained below. Due to participant drop out, 74 people participated in the entire study. The mean age of participants was 24.9 years old. 79.73% of participants were undergraduate students, 2.7% were continued studies or law students, 14% were University staff, and 2.7% were

University faculty. 82% of participants were females, 16% of participants were male, and 1 participant identified as non-binary. It is something to note that the vast of participants are females, as this could impact the generalizability of the results. 66% of participants describe their political ideology as left of leaning left. 22% of participants identify as moderate and about 11% of participants describe their ideology as right or leaning right. On average, participants go grocery shopping 3.6 times per month and spend $166 on groceries each month. Participants responded they spend on average, $467 each month on leisurely purchases.

The experimental design is broken into five phases. Phase 1 was the preliminary survey used to select participants. The survey was advertised through university email and GroupMe messaging, and posters placed around the University with a Q.R. Code that linked users to the pre-survey. Potential participants were incentivized to take this survey to determine their eligibility as everyone who filled out the survey was entered to win 1 of 2, $25 Amazon Gift Card. They were also informed that if they were selected to participate in the study and completed it, they would receive $20 cash compensation. The preliminary survey collected the relevant information, including demographics, food consumption, and spending habits (including where and how often they go shopping for food, how much they spend on food, and how they describe their diet). The survey also collected information that was irrelevant to the study (including how much they spent on things like clothing, travel, and entertainment and where and how often they shopped for these things). These questions were asked in an attempt to hide the intent of the study from the participants, so this did not impact their behavior before they received treatment. The University ID number of every participant was also collected as a confidential way to collect and organize data. University emails were collected to communicate with participants.

The preliminary survey contained three questions that were used to exclude participants that would not have been eligible for the research either because their behavior could not have been effectively tracked or they did not eat meat. The survey asked how many times the participants went grocery shopping each month. Participants who responded with zero or one time a month were excluded, as we need participants to go shopping at least once during two different, two-week periods as this is how behavior is being tracked in the study. Twenty respondents went grocery shopping 0 or 1 time a month and were excluded. Two questions were used to exclude participants who do not eat meat because we are looking to change meat-eating and buying behavior, and there would be nothing to change for participants who do not eat it. Participants were asked if they ate meat and then were later asked to describe their diet with various choices. Only 20 participants responded that they did not eat meat or described themselves as vegetarian, vegan, or pescatarian and were excluded. After the exclusions, the study has a total of 213 eligible participants.

These 213 participants were given random numbers from 1-3000. Then the 165 participants with the lowest number were selected to participate in the study. We originally decided to select 165 participants based on the amount of funding available to pay participants for completion. Four days after the selection email was sent out, the remaining 48 participants were added to the study based on initially low response rates in a form sent to participants with study instructions and a consent form. Because of this, 213 total participants were informed that they were selected to participate in the study. Out of this group, 74 total participants completed the entire study, and they were each paid $20 in cash.

The second phase of the study consisted of participants tracking their grocery-related activity, and this is how behavior in the study was tracked. The participants were instructed to track any

trips to the grocery store, Farmers Market, or convenience store when food is purchased over a two-week period. They were told to track these trips by submitting a picture of a receipt and any food that would go in the refrigerator or the freezer and were given example image instructions. (See Appendix C for the instructions and examples given to participants). While we are only looking for meat and animal products such as milk and eggs, by asking them to send images of everything perishable, we attempted to hide the aims of the research from participants in some ways.

The tracking of behavior through real-life grocery trips is an essential aspect of the study because this allows for an understanding of actual buying behaviors, not just the thoughts or attitudes of a participant that would be collected through a survey. This way to track behavior is more complicated than getting information from a survey, but it is more representative of real-world behavior. While participants can say they want to shop in a certain way without seeing their buying behavior, it is impossible to know if they would.

After the initial grocery shopping period, participants were treated in Phase 3. Participants were equally and randomly divided into three groups: Control Group, the Ethical Group, and the Plant Based Group. All three groups received a Qualtrics survey with instructions to watch a video and a question at the end asking them to briefly summarize what the video said. This question acted as a reading check. They could not advance to the question and submit it until the video was completed. All groups received the same video with a different ending. They all got a three-minute informational video featuring two stories from a documentary called Eating Animals by Christopher Quinn[73] that discusses some of the impacts of factory farming on human health, the

[73] "Eating Animals - Official Movie Site," Eating Animals - Official Movie Site, accessed April 28, 2022, http://eatinganimals.com.

environment, and animal welfare. The treatment aspect of the video came as a call to action for consumers at the end of the video. The Control Group received no ending, just the three-minute video. The Ethical Group received a call to action asking them to eat meat and animal products that were ethically and sustainably produced. The call to action was on three black slides and as follows. (See Appendix A and Appendix B for screenshots of the calls to action from the video).

1) It doesn't have to be this way, there are farmers and companies that truly care about their impact.
2) Use your voice as a consumer to demand change.
3) Eat meat and animal products that are ethically and sustainably produced. Shop for better products at your grocery store or a farmer's market.

The Plant Based Group received a call to action asking them to switch to a plant based diet. The call to action was on three black slides and as follows.

1) 99% of meat and eggs produced in the U.S. come from a factory farm.
2) Use your voice as a consumer to demand change.
3) It's time to switch to a vegetarian or vegan diet. Shop for plant based substitutes and more vegetable products at your grocery store.

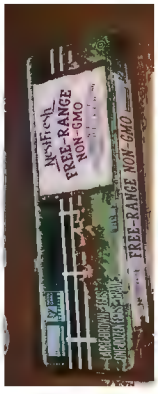
Following the video, participants were asked to summarize the video they watched. This question was used to test Hypothesis 3. Summaries from all three groups were coded with a binary 0 or 1 code based on whether there was proper summary. All 74 participants sufficiently summarized the video and were coded with a 1. Both treatment groups were also coded based on whether they mentioned the correct treatment in the summary. These answers were coded with a 0 if they did not mention it, a 1 if they did, and a 0.5 if their answer implied the treatment without explicitly mentioning it. This data was used to compare against a question from the post-survey asking participants to self-identify their treatment group.

We also engaged in pre-testing of the treatment slides of the video before running the study. Using the Amazon Mechanical Turk Software, a cloud computing service which is a widely accepted and validated participant tool, we tested the treatments with 100 participants who were paid $0.35 to read the treatment slides and answer two questions. The pre-test was used to ensure that participants saw the treatment in the intended manner. These participants were asked to identify what the treatment was asking. The results of this question confirmed that the manipulation of the message works, and participants were able to know what the treatment was asking of them. While this was the purpose of the pre-testing, we also asked a question about whether participants would comply with the message. The results from this question were not statistically significant, but directionally it was in pattern of the hypothesis.

Participants who completed Phase 3 were instructed to begin two more weeks of grocery tracking for Phase 4 with instructions identical to Phase 2. To compare the grocery data from the first and second grocery phases, I coded the groceries by counting the amounts of products and assigning the products into categories. Each participants' groceries were coded with the number of groceries purchased, the amount of meat products, the amount of animal products (such as eggs and milk), the amount of ethical and sustainably produced products, and the amount of plant based meat and animal product alternatives. The number of products was coded simply by counting the number of products. In order to place the products into the groups of ethically and sustainably produced or not and plant based or not, I categorized them based on the product and the packaging. To remain objective, I did not get into deciding how ethical or sustainable something was, if it had any labeling regarding ethical or sustainable production, it was considered in the category of ethically and sustainably produced. Table 2 below gives examples of how the data was categorized.

The images in the table are all taken from real submissions by participants in the research. The table contains information on why the products were coded that way.

Table 2. Grocery Coding

	Ex. 1: Milk	**Ex. 2: Meat**	**Ex. 3. Eggs**
Not ethically/sustainably produced	 No labeling	 No labeling	 No labeling
Ethically/sustainably produced	 'Organic' and 'pasture-raised' labeling	 'No antibiotics ever' and 'humanely raised' labeling	 'Free range,' and Certified Humane sticker

Plant Based Alternative	 Non-dairy cashew milk alternative	 "Meatless plant-based Bolognese"	No plant based alternative for eggs submitted by participants

The final phase, Phase 5 began after the competition of Phase 4, and consisted of a post-survey. The post-survey was used to understand the changes in attitude that may exist. If the grocery tracking does not show a shift in behavior for some participants, the survey will still help show if there is a change in attitude that was not represented in the grocery tracking. The post-survey included three scenario questions that were also in the pre-survey. All three questions asked participants how their buying behavior would change if a favorite clothing company was exposed for doing something wrong. The first question included a scenario where the brand was exposed for using child labor. For purpose of the study, the child labor question was meant to understand the role that ethical concerns play in their buying attitudes to relate to consumers attitudes on animal welfare abuses in factory farming. The second question exposed the company for using materials that are harmful to the environment. This question showed the role that environmental concerns play in their buying attitudes. The third question exposed the company for using materials that may lead to an increased risk of cancer. This question was used to relate to consumers attitudes on the ways factory farming impacts human health and the role that human health concerns play in their buying attitudes. As these questions were used in both the pre-survey and the post-survey, they could not explicitly give away the treatment by talking about factory farming and animal

welfare, but we found these questions to draw on similar consumer attitudes. The post-survey also asked a variety of questions to participants about their attitudes on factory farming and specifically it's impact on the environment, human health, and animal welfare before and after the study. It also included questions on the impact of the study on current and future behavior of participants.

Chapter 3

3.1 Results

Due to the research design of this study, there was a copious amount of data collected from participants and many different types of data. The data was analyzed using Stata software. The major way to test the hypotheses was through paired t-tests of means of grocery buying behavior, but the survey data provides supplemental data for Hypothesis 1 and Hypothesis 2 and is used exclusively to test Hypothesis 3. Hypothesis 1 and Hypothesis 2 looked at the difference in buying behaviors between each treatment group. Hypothesis 1 theorizes that the group asked to buy ethical and sustainable products (The Ethical Group) will be more likely to change their buying behavior compared to the Control Group and the group asked to buy plant based products (The Plant Based Group). Hypothesis 2 theorizes that the treatment will have a negative impact on the buying behavior of the Plant Based Group, meaning that the Control Group will have more change than the Plant Based Group. Essentially, these hypotheses represent the theories that the group asked to eat ethically and sustainably will have the most change. To test these hypothesis, we looked at means of goods purchased using a paired t-test. The table below depicts the change in grocery buying behavior from the first grocery tracking (pre-treatment) to the second grocery tracking (post-treatment).

Table 3. Change in Buying Behavior Per Treatment Group

Buying Behavior Difference	Control Group (1)	The Ethical Group (2)	Plant Based Group (3)
Ethically/Sustainably Produced Products	*p value* = 0.328	*p value* = 0.802	*p value* = 0.328
	Directionally more	Directionally more	Directionally less
Plant Based Products	*p value* = 0.043**	P-Value = 0.057*	*p value* = 0.017**
	Increase in plant based	Increase in plant based	Increase in plant based
Meat Consumption	*p value* = 0.069*	*p value* = 0.652	*p value* = 0.537
	Decrease in meat	Directionally less	Directionally less

p values for T-Test of means between pre-treatment and post-treatment. **p>0.05, *p>0.10

Based on the grocery tracking data, buying behavior can be examined through changes in the amount of meat purchased, the ethically and sustainably produced products purchased, and the plant based products purchased. Table 3 depicts the change in grocery behavior in the three categories of the amount of ethically and sustainably produced products, the amount of plant based products, and the amount of meat purchased for all three treatment groups.

Hypothesis 1 and Hypothesis 2

In response to Hypothesis 1, there is no clear answer. Hypothesis 1 theorized that the Ethical Group, the group asked to shop for ethical and sustainable meat, would be most likely to change their behavior in accordance with their ask. The Ethical Group did not increase their purchase of ethically or sustainably produced goods in a manner that was statistically significant which is inconsistent with the hypothesis. The Ethical Group did see a statistically significant change in the purchase of plant based products, as did the control group and the Plant Based Group. While directionally, the Plant Based Group had a decrease in the purchase of ethically or

sustainably produced goods and directionally, and the Ethical Group had an increase, this was not statistically significant. Also inconsistent with Hypothesis 2, the Plant Based Group, had an increase in the purchase of plant based goods at the 98% statistical significance level. But while the Plant Based Group had an increase in plant based products purchased, they did not decrease their purchase of meat products at a statistically significant level while the control group did, which is more in line with Hypothesis 2.

Supplemental Survey Data in Support of Hypothesis 1 and 2

There are a few supplemental points from the survey data that can be used to explain some of the inconsistent results for Hypothesis 1 and 2. Most importantly, a survey question from the post-survey finds that 49% of participants believe that meat and animal products with ethical and sustainable labeling do not follow these practices. Another 32% say that they may or may not follow the practices depicted on labeling. This leaving only the remaining 19% of participants who believe products to be ethically and sustainably produced based on product labeling which depicts these messages. When there is a lack of trust in a product to be ethical or sustainable, buying a plant based product can deal with this problem. Another data point that speaks to the factors which caused participants to purchase plant based products instead of buying ethically and sustainably produced goods is the concern for price in buying decisions shared by many participants. 65% of participants ranked price or available discount as #1 factor in buying decisions. Ethically and sustainably produced meat is often more expensive than meat without humane labeling or plant based products. Additionally, when asked what products they would most likely seek out, a majority of participants say they would seek out ethically and sustainably produced meat and animal products compared to plant based alternatives.

When analyzed these data points in unison, it seems that while participants would prefer ethically and sustainably produced meat over plant based products, the combination of a lack of trust in the labeling of these products and a concern for price, overwhelms any desires of the consumer to buy ethically and sustainably produced products. When a consumer doesn't trust the labeling on a piece of chicken that claims to be grass feed and to have come from humane farmers, they are not going to spend more money to buy it compared to products without such labeling. In this instance, plant based products can be a better alternative for many consumers.

Hypothesis 3

Consistent with Hypothesis 3, participants from the Ethical Group were more likely to retain information from the treatment video than participants from the Plant Based Group. This was tested through two, two sample t-tests. Directly after being treated, there was no statistical difference between the two groups, the Ethical Group, and the Plant Based Group, in whether they mentioned the correct treatment in their summaries of the treatment video. Three week later, the ability for participants in the Ethical Group and the Plant Based Group to recall what treatment they received was statistically significantly different at the 95% level. Participants in the Ethical Group recalled their correct treatment from the video 83% of the time, compared to the Plant Based Group which recalled the correct treatment only 46% of the time. These two t-test show that directly after the treatment, there was not a difference between the two groups in their ability to identify their treatment. Yet three weeks later, participants in the Ethical Group were much more likely to recall the correct treatment.

Survey Data

Data from the preliminary survey and the post-survey also add to the results of the paper and speaks to the impact of the treatment in ways not perfectly captured by looking only at the

hypotheses. While the major aims of this research were to test the differences in behavior and attitudes regarding the different calls to action to consumers, general goals of the study also looked to analyze the impact of providing consumers information on factory farming on their attitudes and behaviors. In the post-survey, participants were asked their opinions on the treatment of animals in the factory farming system, the impact of the factory farming system on the environment, and the impact of factory farming on human health. All three questions showed that participants were much more likely to believe factory farming has a negative impact on the environment, human health, and animal welfare than they did before watching the video. Paired t-tests comparing means for each question showed the difference to be statically significant at the 99% level. This high level of change in answers from participants shows that their attitudes on factory farming changed from the video and their belief in the negative impacts of factory farming on the environment, human health, and animal welfare increased greatly.

The differences in self-identified beliefs from the three questions detailed above is consistent with results from the scenario questions on the pre- survey and post-survey. The pre-survey included three scenario questions looking to assess the levels in which ethical concerns, environmental impact, and human health impacts affect buying behavior of the participants.

The first scenario question focused on ethical decision making and asked about a scenario in which a favorite clothing company is exposed for using child labor. The difference in which consumers would continue to shop from this company in the pre-survey to the post-survey was statistically significant at the 90% level. In the second scenario question regarding a favorite clothing company exposed for using materials that harm the environment, the difference in which consumers would continue to shop from this company in the pre-survey to the post-survey was statistically significant at the 95% level. The third scenario question regarding a favorite

clothing company exposed for using materials that may lead to an increased risk of cancer did not change in a statically significant manner, but this can be explained by in the pre-survey results, as from the beginning most participants would stop shopping from the company, meaning there was not much room for answers to change. These scenario questions, particularly the questions focused on the environmental impact and ethical concerns, show these factors play a larger role in the mindset of consumers when making buying decisions after watching the video than they did before.

Results Overview

Overall, the results of the study show that the largest change in behavior came as an increase in plant based products across all treatment groups. The Control Group had the most change, showing the impact of the video rather than the call to action. For behavior, the Ethical Group had directionally an increase in ethical and sustainably produced and directionally a decrease in meat purchased, but neither of these results were statistically significant. The Ethical Group also had a statically significant increase in plant based products purchased. The directional change corresponds with Hypothesis 1 but the change in behavior in the Plant Based Group goes against Hypothesis 1 and Hypothesis 2. The Plant Based Group had a directional decrease in ethical and sustainable products purchased but a statistically significant increase in plant based products purchased and a directional decrease in meat purchased. Lastly, consistent with Hypothesis 3, the Ethical Group was more likely to retain information from the treatment video than the Plant Based Group and this difference was statically significant at the 95% confidence level. The survey data shows across all groups an increase in understanding of the impact of factory farming on human health, the environment, and animal welfare as a result of watching the video. It also shows that the video caused a decrease in a participant's willingness

to by a product based on ethical implications and environmental ramifications of the production of goods.

3.2 Discussion

There are a few main conclusions to be drawn from the data. First, consumer education is a powerful tool to impact behavior. This research has encouraging results showing that a short, one-time, informational message can be an impactful consumer educational piece. This research also points to the benefit of showing first-hand testimonial style videos. This is evident by the change in behavior across all treatments as well as the greatest change coming in the Control Group. Additionally, across all treatments, the tabulations from certain questions on the survey show positive results regarding the impact of the informational video on consumer attitudes. The majority of participants, 56%, responded that they would either switch to a vegetarian or vegan diet or would likely do so in the next 1-5 years. Additionally, 71% of participants responded that it is either extremely likely or somewhat likely that the treatment will impact their future buying behavior. Lastly, 73% of participants strongly agree that the factory farming system should be reformed and 25% of the remaining participants somewhat agree, meaning 98% of participants agree in some manner that the system should be reformed. These results are indicative of the impact of the video treatment and are promising for researchers and leaders looking to change buying behavior in this manner. The results also speak to the value and potential effectiveness of documentary style pieces and videos on the topic in changing behavior.

Secondly, this data points of a problem of trust. As explained in the results section of the paper, many participants are skeptical of the truth behind ethical and sustainable labeling on meat and animal products. Humane and environmentally friendly labels like “cage-free” and “free-range,” can be confusing and unconvincing to consumers. When consumers distrust labeling and

value price, plant based alternatives are a safer option for many consumers. We believe this played a large role in the results of this study; specifically, the great increase in plant based alternatives purchased compared to sustainable and ethical products. In the post-survey when asked the types of products they would seek out, a majority of participants said that they would rather seek out ethically and sustainably produced meat and animal products compared to plant based alternatives. Yet the grocery buying behavior shows the opposite of this. This speaks to the idea that, while in a perfect world, consumers were preferring to buy ethically and sustainably produced products, the often cheaper plant based alternatives are a better buying bet for consumers looking to reduce support for factory farming meat and animal products.

It is clear though, that the control group had the most change. This speaks to the idea that when we just give people information on an issue and leave them to decide to change behavior or not on their own, they are more likely to do so because it is a more personal decision. People can be resistant to change and resistant to persuasion because this impacts their views of their own self-image and can threaten positive self-images. The work of Kalla and Broockman finds evidence that these exclusionary attitudes can be reduced through the use of personal narratives.[74] This research supports the data of this study very well. They look at the issues of immigration and transgender people and find that the most effective forms of persuasion with these issues come from just having people tell personal narratives about their lives as immigrants or transgender people. In this research, we used personal narratives as well to show the stories of factory farming and we found that the control group, the group that only received these stories and was not asked to change their behavior had the most change. This showing support for the arguments of Kalla and Broockman in the context of factory farming.

[74] Joshua L. Kalla and David E. Broockman, "Reducing Exclusionary Attitudes through Interpersonal Conversation: Evidence from Three Field Experiments," American Political Science Review 114, no. 2 (May 2020): 410–25, doi:10.1017/S0003055419000923.

Additionally, as we saw the biggest change in behavior across all treatment groups was an increase in plant based products purchased, it's important to discuss the role that managing self-image plays into this decision. Plant based diets have taken on a life as a social movement themselves and being a vegetarian or a vegan can be a signal to many people of ethical decision making and buying behaviors. People may feel that by buying plant based purchases, they are more easily able to identify with growing social movements and show other people that they are acting in an ethical manner. This idea of what different types of purchases represent in terms of self-image is very important and played a role in the results of this study.

Plant based alternatives are a great option to reduce support for factory farming, but this must come with a reduction in meat consumption. While we saw some of this in the results, only the Control Group had a statistically significant decrease in meat consumption. For consumer who continue to purchase meat, the lack of trust in labeling will often lead consumers to rely on products they have heard of before, as familiarity can be a sign of safety for consumers. This can lead to continued demand for the largest brand names in meat and animal products. Unfortunately, it is often these large brands that engage in the largest forms of factory farming. Another factor that plays into this discussion is the concept of moral licensing, and this is something to be aware of. Moral licensing is the idea that when someone does something good, they take this to mean that it is okay to also do something that they would consider to be bad.[75] The classic example of this is when someone works out, so they reward themselves with a tub of ice-cream. As mentioned above, plant based alternatives are a great option to reduce support for factory farming, but this must come with a reduction in meat consumption. Moral licensing plays a role in this discussion as it is a concern that, for example, someone could buy a plant based product and feel good about this, and

[75] Philipp Simbrunner and Bodo B. Schlegelmilch, "Moral Licensing: A Culture-Moderated Meta-Analysis," Management Review Quarterly 67, no. 4 (August 1, 2017): 201–25, doi:10.1007/s11301-017-0128-0.

then reward themselves by ordering a steak at a restaurant, minimizing the impact of the plant based purchase in some ways. Work in this field must keep this concept in mind as it's important to ensure that positive changes in behavior are not always followed by negative ones.

There are some limitations of this study. The largest limitations of the study stem from the basis of population. Given the small population size of University of Richmond students, staff, and faculty, the number of participants that completed the study was limited. The generalizability of the data is limited by the small population size as well. While we are happy to have 74 participants in an undergraduate study that took a considerable amount of time to participate in, the results of the study would be more valid and reliable with a bigger sample size. With 74 total participants, there were no more than 26 people per treatment group. Additionally, as many participants in the study were students (79.73%), this may have limited the behavior of participants. Many students purchase their groceries from the on campus convivence store. While this connivence store has many options for plant based products such as vegan chicken nuggets, almond milk, and plant based breakfast sausage, there are many less options for ethical and sustainably packaged meat products. A study containing participants with more diversity in where they are purchasing groceries from may be more successful in dealing with some of these limitations.

Further, there are a few questions that would have been useful to add to the preliminary and post-surveys that were only conceived of in hindsight. Two additional questions would have been helpful in the pre-survey. First, the surveys did not ask participants whether they live on or off of the University campus. Additionally, the question that asked participants where they do buy groceries from did not specify beyond general categories of grocery store, farmers market, etc. In future studies, getting this type of information would be useful in understanding buying

behavior. In the post survey, we would have gained a lot of insight into the issue of trusting labeling if we asked more than one question on the topic. Specifically, it would have been helpful to ask participants which types of labeling they are more likely to trust or not to trust, as well as what could make them more trusting in labels such as things like more government regulations, or more company transparency. Another way to get more insight into participants opinions regarding labeling could have been through including different images of labels and having participants rank which they would be most likely to trust. Some of the things that would have been helpful to add to the study can be incorporated into future research.

Future research expanding on these topics is necessary and would be quite useful. While this study focused on testing the calls to action that followed the informational video, the control group, the group that had no call to action, had the most change. This shows the impact of the informational video itself. In future research, it could be extremely beneficial to test the informational video and have a control group that does not watch anything. This could help add validity to the claims of the impact of the informational video. Further, a study conducted with a larger population that can get a larger number of participants could allow for bigger treatment groups and more treatments. A study like this could test a variety of treatments and provide more information about what types of videos and what information is most effective to create change in consumer behavior.

Another way to build off this data in future work is to look at the impact of encouraging a 'flexitarian diet.' A flexitarian diet can take many forms but focuses on mixing more types of vegetables and plant based products in one's diet while reducing meat consumption. Two popularized ways to engage in a flexitarian diet or lifestyle are 'Meatless Mondays," when people do not eat meat on Mondays, or Veganuary, where people eat vegan for the month of

January. Encouraging these types of diets could be more effective in limiting meat consumption and could help consumers slowly eliminate meat from their diets overtime. Additionally, this type of change could be easier for consumers to take on, while still encouraging them to make conscious decisions about their purchases of meat and animal products.

Another avenue in which future research could be explored could come from looking at the psychological concept of reactance. This is a negative psychological reaction that comes when someone feels they are being told what to do or someone is limiting their choices.[76] It could be interesting to look at these results through this theory, specifically if this concept had any impact on why the control group had the most change, as they were the group that received only the information on factory farming but were not asked to change their behavior. This research could give insight into the ways to motivate behavior change. Maybe it is the case that allowing consumers to just hear the information and not directing their behavior is more effective because it is more of a personal and self-guided decision, not something they were told to do. Lastly, the results of this study indicate the need for more research on ethical and sustainable labeling on buying behavior and the relationships and levels of trust between consumers and producing companies. This type of research could take many avenues but would be extremely beneficial in understanding ways to better encourage consumers to shop ethically and sustainably.

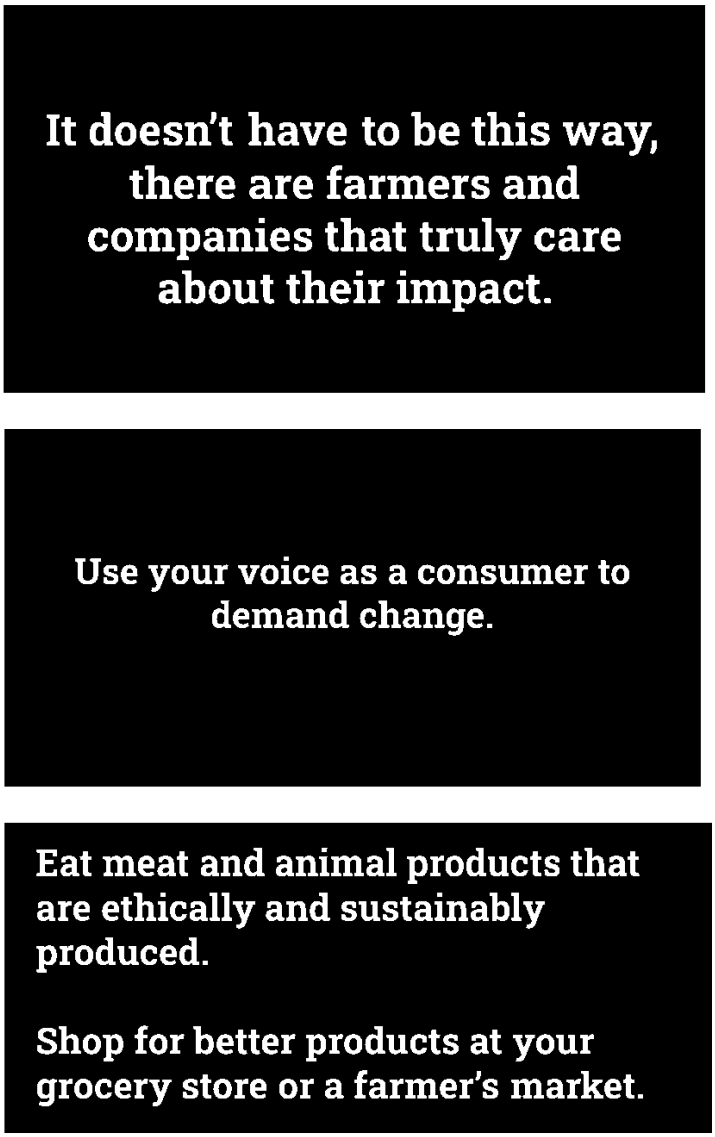
It is often assumed that consumers do not often prioritize ethicality and sustainability in their buying decisions due to ignorance and carelessness. This research points to an explanation more complicated than this pessimistic view on human nature provides. Trust, price, availability, familiarity, and many other variables create a complicated scenario that goes into every buying

[76] Christina Steindl et al., "Understanding Psychological Reactance," Zeitschrift Fur Psychologie 223, no. 4 (2015): 205–14, doi:10.1027/2151-2604/a000222.

decision. This research points to the need to better understand the complicated dynamic of decision making regarding the purchase of meat and animal products.

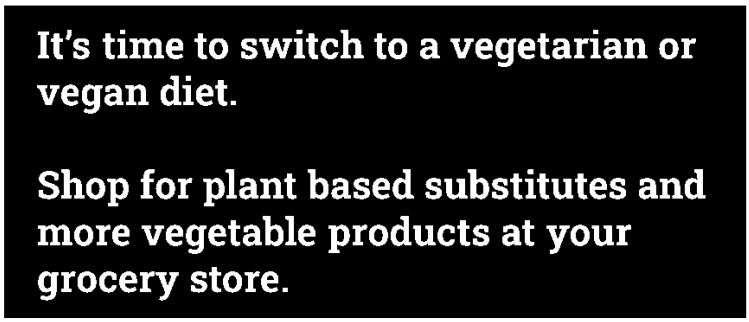
Appendix A

Treatment Ethical Group



Appendix B

Treatment Plant Based Group



Appendix C

Grocery Tracking Instructions and Example

For two weeks, you will track any grocery trips by submitting pictures.

Specifically, you will send an **email to jepsonresearch@richmond.edu and include your UR ID number:**

1. Submit an image/images of **all food items you buy that go in the refrigerator or the freezer.** (Photo examples below)

2. Submit a photo of a receipt from the purchase, if available.

You must ensure that the label on the food item is clear in the picture/pictures. Participants who fail to submit these photos or submit photos that do not clearly show labels will be disqualified from the study. You can submit multiple pictures to make sure that all food items are clearly displayed.

During this two week period, you must submit at least 1 grocery trip, **however there is no limit of submissions,** if you go food shopping multiple times.

We will send a copy of these detailed instructions for your reference to your email. We will also send reminder emails throughout the 2 week period.

Grocery Image Submission Examples

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