



THE BENEFITS OF POSITIVE JOURNALISM AND STRATEGIES TO PRESENT IT

HEADLINES THAT HELP



**NAOKI HEGINBOTHAM, EDWARD JACOBY V,
HARSH PATEL, AND OLIVIA RAISBECK**

WPI



Good News Magazin

Advisors

Dr. Gizem Arslan
Dr. Sarah Stanlick

Sponsor

David Gaedt
Florian Vitello

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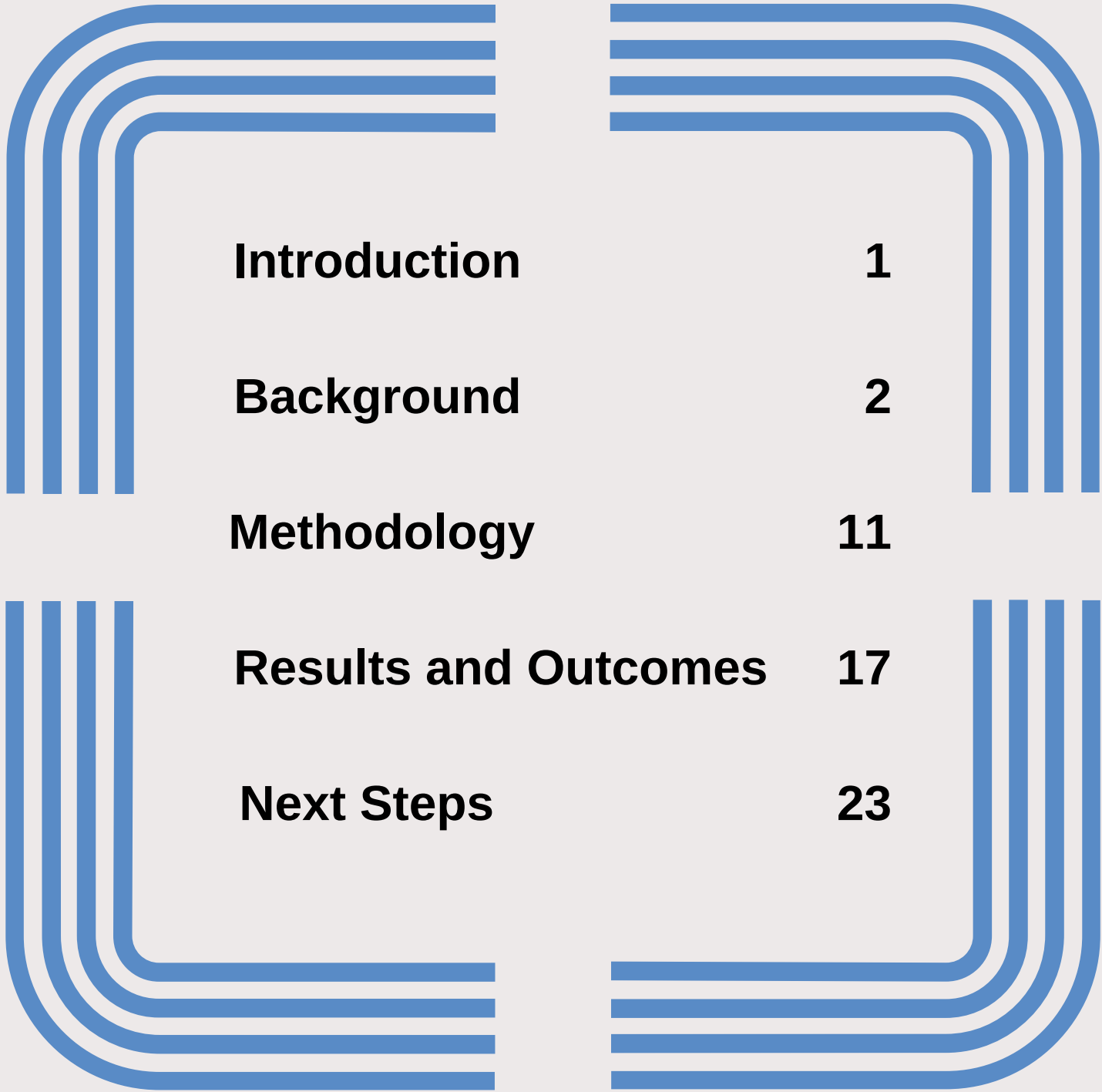
Abstract

News is presented in many different forms such as newspapers, magazines, websites, and mobile applications. There are many different tones in which articles can portray stories. Some of these include positive, negative, neutral, and constructive. Our project focuses on positive news, specifically, how it is drastically underrepresented and understudied in the current news landscape. The goal of our team is two-fold. First, we will investigate the effects that reading positive news has on individuals. Since there is not much pre-existing data on this subject, we will propose a study that will scientifically measure the effects of stress levels on individuals as they consume more positive news. In addition, we are also working on developing a mobile application that will encourage readers to take in more positive news using psychological habit-forming strategies. The popularity of mobile applications being used for news consumption has substantially increased in recent years, and pivoting to this strategy would help bring positive news into the mainstream market.

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Positive News and Why it is Important

It can often seem like the world around us is filled with negativity and darkness, with any of the positivity being exceptions rather than the norm. Even in our own personal lives, it is hard to focus on the positive outcomes of events and of ourselves. However, it is often not the case that these negative cases substantially outnumber their positive counterparts, but instead that humans as a whole engage and spread negativity far more. This is a common trait seen in cultures all across the world, which seems to suggest this was a survival mechanism from our ancestors. However, in the same way, the prevalence of food has hijacked our evolutionary traits and led to the obesity epidemic, the prevalence of instant information has led to a negativity epidemic. This human nature has led to mainstream newspapers focusing heavily on presenting negativity in their stories vastly more than the positives, leading to detrimental effects on both individuals and society as a whole. To counteract this, it is important to break up the constant barrage of negativity.

To tackle this issue, we split into two projects. The first involves writing a proposal for an academic study with the goal to help companies' triple bottom lines. The triple bottom line is a way for corporations' to measure success through non-financial means. It measures several aspects of performance including impacts on the general public and consumers, the planet's ecological well being, and business prosperity. Our study will mainly address the impacts on people and prosperity. These will be addressed by measuring individual wellbeing (people), with the prosperity aspect being dependent on the results and whether or not they can be used to promote the

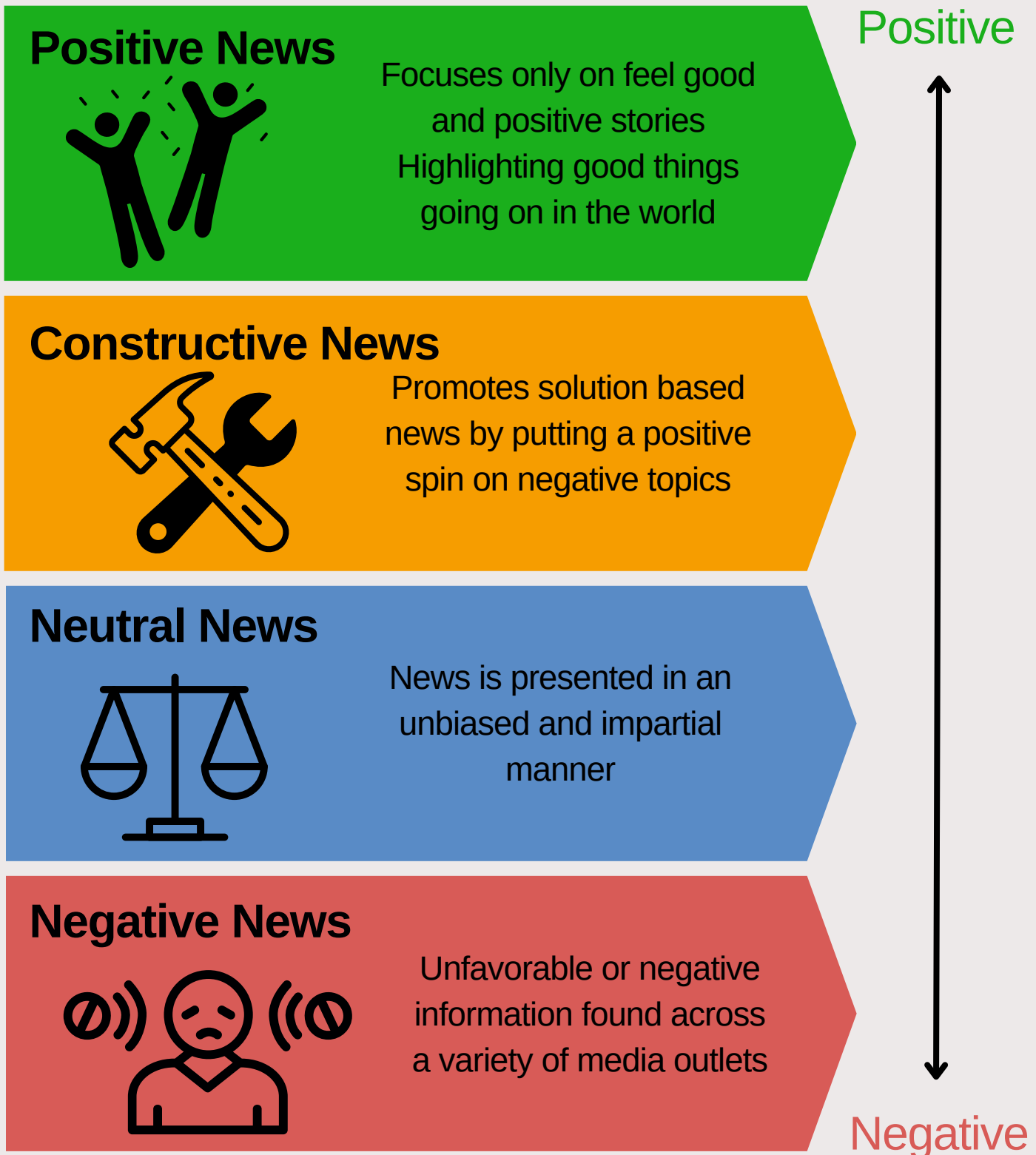
consumption of positive media. This encompasses the impact on employees, customers, and local populations. Beyond the business aspects of prosperity, the contributions of knowledge that could be obtained would improve greatly upon a currently limited field of study.

The second part of our project is to design a mobile application for Good News Magazin that involves a game component. We will be using Good News Magazin's current designs and layouts as well as positive habit forming strategies to design a quiz game that will test users on positive news facts. The results will lead to a corresponding news article by GNM. The quiz will help people form positive media habits and a routine of reading more positive news, or at least a few good facts per day. The goal is to give people an easy way to get some positive news into their daily routine in an engaging way without feeling like a chore. The app can also be used to gather data on how people feel before and after reading these facts and what the long term effects of getting good news daily can do.



Background

Explanation of different news article's tones



Negativity Bias

Negativity Bias is the ingrained biological tendency to not only register negative events far more frequently than positive ones, but also to dwell on those events for much longer and remember them much more frequently. In their journal article “Negativity Bias, Negativity Dominance, and Contagion”, Dr. Paul Rozin and Dr. Edward Royzman, Psychology professors at the University of Pennsylvania, go in-depth on researching how negativity bias itself and how it affects our emotional decision-making.¹ In their article, they break down negativity bias into four key aspects: negative potency, greater steepness of negative gradients, negativity dominance, and negative differentiation. Negative potency and dominance will be the main focus of research as they are able to be quantitatively and empirically analyzed.

Negative potency is the idea that if given two events of equal magnitude but opposite emotional weight, the more negative event is much more noticeable. The authors of the paper demonstrated this idea by using quantitative examples and exploring them by exploring loss aversion, a subset of negativity bias in which people feel a stronger emotional response to negative changes in numbers over positive changes. Examples of this are people being much more emotionally charged over losing \$100 or over gaining 10 lbs of weight than they are from gaining \$100 or losing 10 lbs. Negative dominance is the principle that if you take an objective sum of the aspects and values in an event, an individual's subjective sum will be more negative. This means that

even if someone is given positive stimuli, the potency of said stimuli will not be as effective as a negative one. An example of this is that even though gaining \$150 is objectively better than losing \$100, on an emotional level the magnitude of positivity from gaining that \$150 would be equivalent to the magnitude of negativity from losing \$100.

Although it is clear how negativity bias affects our thinking, it is less clear why it occurs and how it developed in the first place. Dr. John Lazarus, a professor of psychology from New Castle University, attempts to shine a light on this issue in his article why this occurs through the lens of evolution. He proposes this through the “concave fitness-state hypothesis”, which is based on the evolutionary idea that natural selection is attempting to reach a state that maximizes fitness. This means that organisms are attempting to reach a state best suited for their environment since that is what will allow them to grow and reproduce. He states that negativity bias is a natural byproduct of this idea. This is an important area to research and explore as seeing how negativity bias develops and where it comes will allow much more effective solutions to be developed to combat and disrupt negativity.

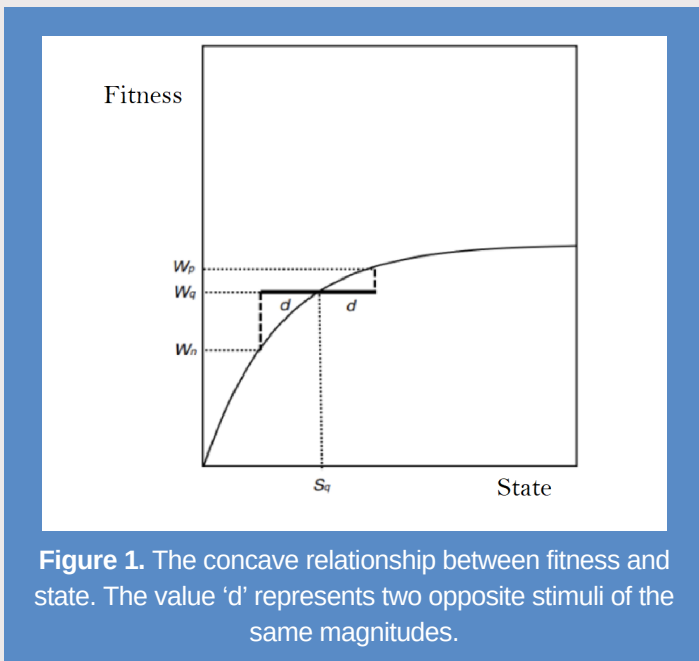
Dr. Lazarus explores and provides evidence in his paper that fitness and state can be graphed in a concave relationship, as demonstrated in Figure 1.² In this model, the reason for negativity bias is due to the fitness increase from a positive change in state is significantly less than the fitness decrease from a negative change in state of the same magnitude. An example of this would be how if a type of berry is mostly safe to eat but sometimes gives someone food poisoning, that risk of getting food poisoning

would be enough for our ancestors to avoid that type of berry altogether since one bad day could have been the difference between life and death. Even though this danger has significantly decreased in the modern day, our body and brain has not adapted to that, meaning that we still have that same bias as our ancestors had. Despite this, negativity bias can still be overcome, although different groups of people are more receptive to change than others.

suffering on television news.”, Johnson aimed to find out whether US television news networks have a focus on covering negative news.³ An analysis of 100 TV news programs over a 6 month period showed that US television news did, in fact, cover negative news much more often than positive news. Furthermore, it was found that negative news was often aired at the beginning of the broadcasts, giving it a more substantial focus.

This emphasis on negative news does not track with the real life frequency of negative events. By looking at specific genres of news, it has been proven that news tends to fixate on negative topics disproportionately. In “A comparative analysis of crime coverage in newspapers in the United States and other countries from 1960–1989: A review of the literature”, Marsh found that newspapers tended to cover violent crimes.⁴ He looked at the proportion of violent crimes compared to all crimes in several US newspapers and compared this to the proportion of violent crimes in real life. He found that these proportions did not match up, and that newspapers tended towards violence versus either educated readers on the causes of the crime or on possible solutions. This emphasis on negative topics also exists in the financial press. It has been shown that the financial press tends to disproportionately cover firms that are not doing well.

This trend of negative news is not confined to the US. In Spain, for example, negative stories are often highlighted in the news. Political stories with negative connotations are often given more importance through placement and/or formatting. This is a global problem.



Prevalence of Negative News

When reading the news, it is clear that negative topics are covered heavily by most media companies. It has been shown that most news covers topics that include violence, conflict, or suffering. In the study, “Bad news revisited: The portrayal of violence, conflict, and

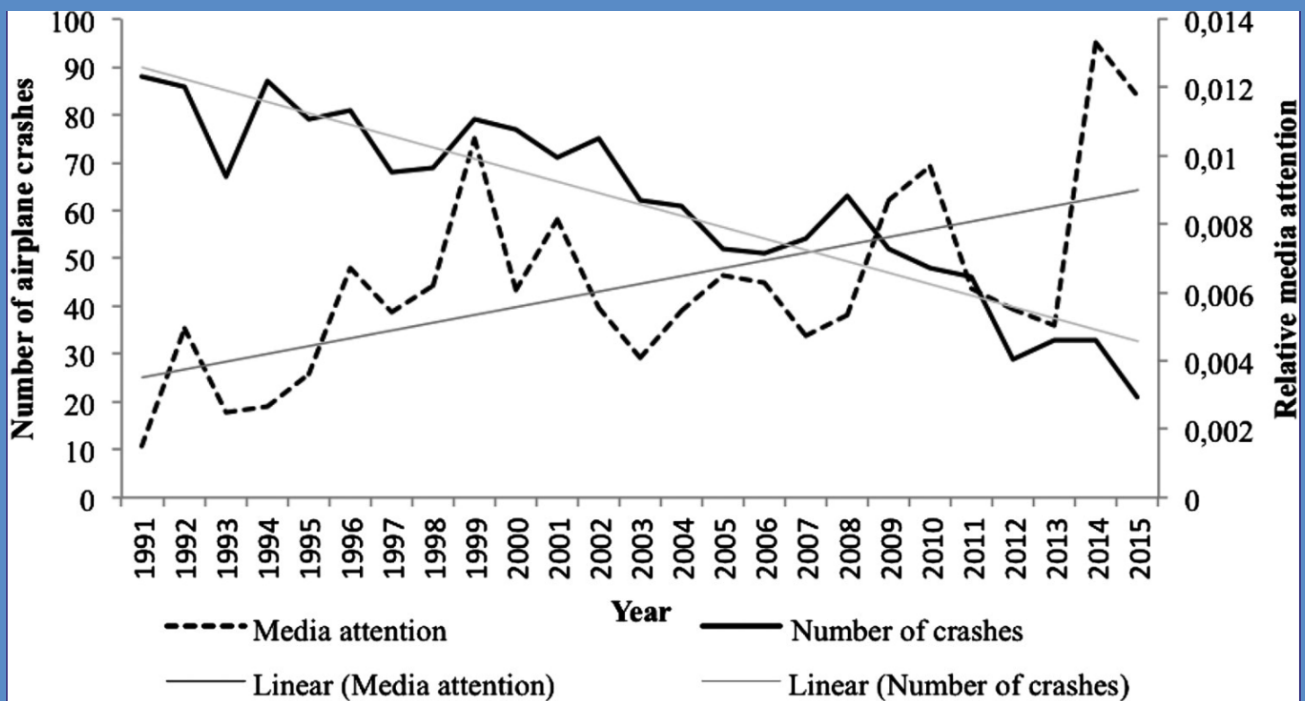


Figure 2. The inverse correlation of how many plane crashes occurred between 1991 to 2015 compared to how often plane crashes were reported on in the news of those years

The Impact of News on the Public

The freedom of the press is a key pillar of any free and just society. It is a powerful tool to keep people informed, provide a platform for diverse perspectives, and to help keep those in positions of authority accountable for their actions. It is often why many regimes target this very pillar when trying to crack down on resentment and instability. However, this also means that the news must be properly handled, as it can have a very real impact on individuals and society as a whole. This issue has become even more relevant in recent years, as the

barrier of entry to report on news, as well as the ability to widely distribute that news, has become vastly more easy thanks to the internet and social media, meaning that even harmful news that normally would never be shared can now spread just as well as any type of news.

One of the biggest and most relevant examples of this type of news spreading has been the hysteria around vaccinations, especially during the COVID pandemic. In her paper “Escaping Catch-22 — Overcoming Covid Vaccine Hesitancy”, Dr. Lisa Rosenbaum, a cardiologist and Professor of Medicine at Harvard Medical School, explores what has caused this stigma⁵ She interviews multiple people about their reasons for avoiding vaccines as well as many researchers and

scientists about their opinions.

During her research, one of the most surprising things she uncovered was that it was often the most educated subgroups of people that become the most skeptical. One explanation she gave is that educated people are often better capable of doing their own research, meaning they are able to find evidence that supports their beliefs as well as evidence that disproves the things they don't believe. She brings up a quote from an essay written by Harvard historian and professor Steve Shapin, who claims that the problem isn't that there is "too little science in public culture," but "too much".⁶ Dr. Rosenbaum points out that climate change and vaccine deniers often use the language of science to bolster their views.⁶ They provide as much evidence to support their claims as those that try to disprove them, thanks in large part to the overabundance of news making it easier to find ones that only support their views.

This issue is more than just people believing in conspiracy theories and rejecting mainstream science. Three professors from the University of Zaragoza analyzed the impact of vaccine hesitancy on mortality rate in their paper, "Impact of vaccine hesitancy on secondary COVID-19 outbreaks in the US: an age-structured SIR model".⁷ They concluded that even just a single percentage decrease in vaccine hesitancy is enough to cause 45 deaths per million people. In NPR's news article, "This is how many lives could have been saved with COVID vaccinations in each state", they concluded that, "Nearly 319,000 COVID-19 deaths could have been averted if all adults had gotten vaccinated." News can have a real and sometimes even a life and death impact on

people's lives. It is important not only for the general public to be informed on what news they're consuming, but also for journalists to make sure they're reporting news in a safe and ethical way in order to prevent consuming news becoming a bad habit for their readers.

The Impact of Negativity on Sales

Due to the prevalence of for-profit news organizations it is important to understand how biases impact a company's sales. When looking into the distribution of news and revenue generated it is easy to see why negativity is so prevalent, negative articles are more likely to draw reader engagement. A study from the Cambridge University press found, through experimentation, a 30 percent increase in sales when publishing a negatively perceived article and a 66 percent decrease in sales when publishing a positively perceived article.⁸ Their reasoning behind this phenomena is that negative articles produce an increased sense of arousal and attentiveness. A major driving force in the science behind this is negativity bias. With an innate Over exaggeration of negativity and the risks behind certain topics (ie. vaccines, GMOs, etc) leads to more clicks, more views, and more profits because more people are engaging with it.

The impact of negativity on a company's sales through news coverage can be significant. Negative articles are more likely to garner reader engagement, and as a result, drive more traffic and profits for news organizations.

Thus, it is not uncommon for media outlets to produce biased articles that support a public opinion in order to gather more engagement. The New York Times published an article titled "Bad News Bias" that dives into how and why news is sometimes tailored to beliefs.² In their piece, the quote Bruce Sacerdote, an economics professor at Dartmouth College, states that human beings tend to favor negativity in their stories. Thus, major media outlets are responding to their consumers' demands. This can be seen in action with the type and amount of coverage Covid 19 faced

during 2020, as seen in Figure 3. The vast majority of news articles on said topic at a national media level, as well as the majority of news at a United States local and International level of media, were negative. The popularity of these articles among readers only drove news companies to produce more content in that direction. Many have begun to use new techniques to drive this popularity further.

There are a variety of techniques that news companies use to generate sales through negativity and clickbait articles. One of these examples is over-exaggerating the truth, and

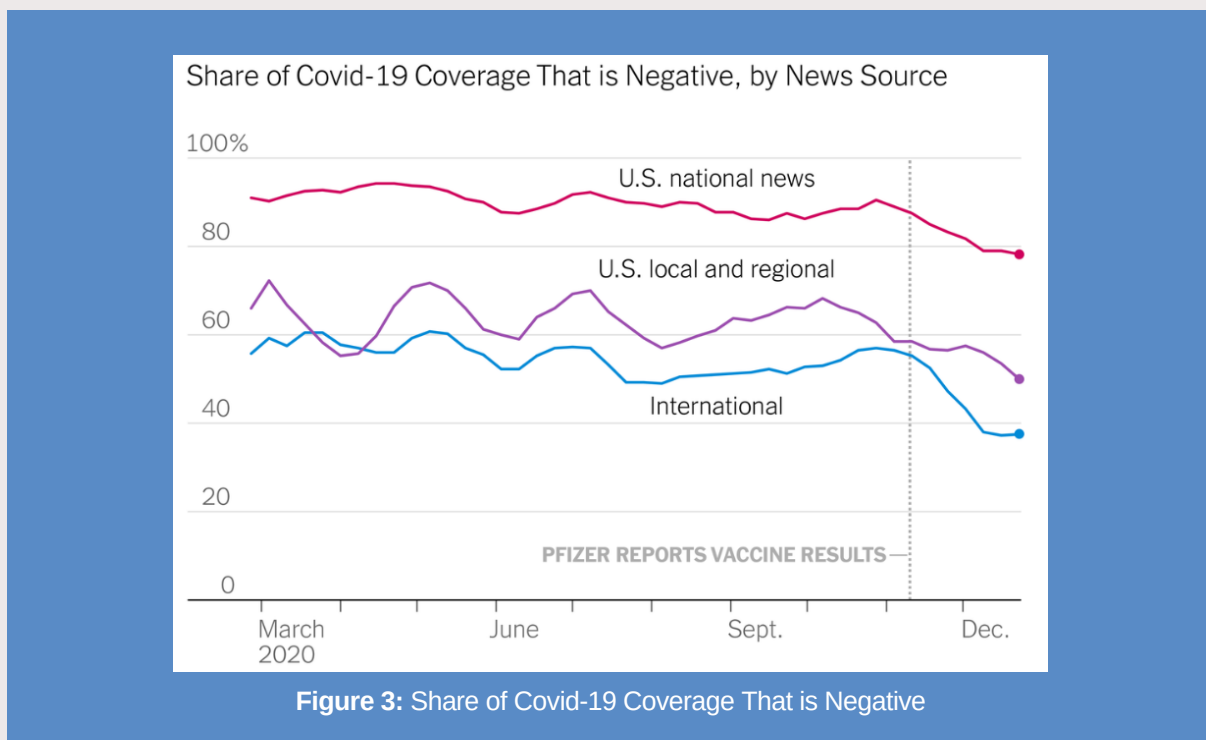


Figure 3: Share of Covid-19 Coverage That is Negative

their word choice. A past Interactive Qualifying Project from Worcester Polytechnic Institute titled "Risk amplification of GMOs in Europe" provides great background and examples of this phenomenon. Table 1, from their research paper, shows how the use of different languages can change the connotation and

feelings of the same topic. This technique exploits the innate negativity bias held by the public and can create an unwarranted negative public opinion about a topic. It is important for readers to be aware of this strategy and be able to avoid falling victim to it.

Table 1: Factors of Risk Expressed in Opponent Group Publication

Risk Factor	Opinions Expressed in GMO Opponent Group Publications
Control	There is no control over the use of GMOs. Possible outcomes from the use of GMOs are uncertain and may be uncontrollable by scientists.
Unknown risks	Scientific unknowns and risks have yet to be determined.
Voluntariness	Relates to the lack of control; many GMOs have been released without public knowledge and are, in turn, being forced upon the consumer market.
Irreversibility	GMOs may have irreversible effects on the environment.
Understanding	The opponent groups try to make the public feel as though they do not understand the scientific processes behind genetic engineering. Consequently, the level of public concern increases.
Catastrophic potential	Due to a lack of knowledge and unknown risks, there is the potential for a catastrophe once GMOs are released into the environment and food supply.
Equity	Not enough benefits exist to counter the numerous risks of developing GMOs.
Benefits	The benefits of GMOs are unclear from the consumer perspective.
Trust	Opponent groups have pointed out different incidents as examples of why the public should not trust the governmental and scientific community on issues related to GMOs.
Accident history	Past GMO accidents were repeatedly cited so as to heighten the risk and concern for their use.
Familiarity	The public is not familiar with the technology used to create GMOs.
Dread	The effects of GMOs could be so horrible that the public will regret their decision to accept them.
Origin	GMOs are an invention of human beings, not nature itself, thus raising many ethical issues.
Effects manifestation	There are possible delayed effects from the use of GMOs.
Effects on future generations	There is possible risk to future generations.
Victim identity	The victims of the adverse effects of GMOs are identifiable.
Media attention	Opponent groups use various forms of media and have multiple documents and ads available for the public that portray GMOs in a negative light.
Personal stake	Each individual is at risk.
Effects on Children	Children are at risk. By mentioning children, opponent groups immediately create concern for their well-being.

The Psychology of Habit Formation

Saying good things about yourself can improve your mood, your mental health, and your self-image. The same psychology can be applied when taking in information about the world around us and how we view that world. Around 50 percent of what we do every day is habitual, therefore forming positive habits is the key to living a happy, fulfilling, lifestyle.

We tend to gravitate towards negative news habitually as it is what has been most

offered and prevalent throughout our lives. Karen McIntyre and Catherine Gyldensted found that politically interested news consumers choose to read negative news despite reporting that they prefer positive news.⁹ People tend to gravitate towards what they think will have the most utility in their life. If there's an article about a new deadly disease versus an uplifting story that doesn't impact them, people are going to choose the first to stay prepared. Other values that may affect what people choose are the frequency of seeing a topic, unexpectedness, and an aspect of personalization. Most of these values will lead a reader to a negative story. However, too much negative news can lead to many harmful side effects such as compassion

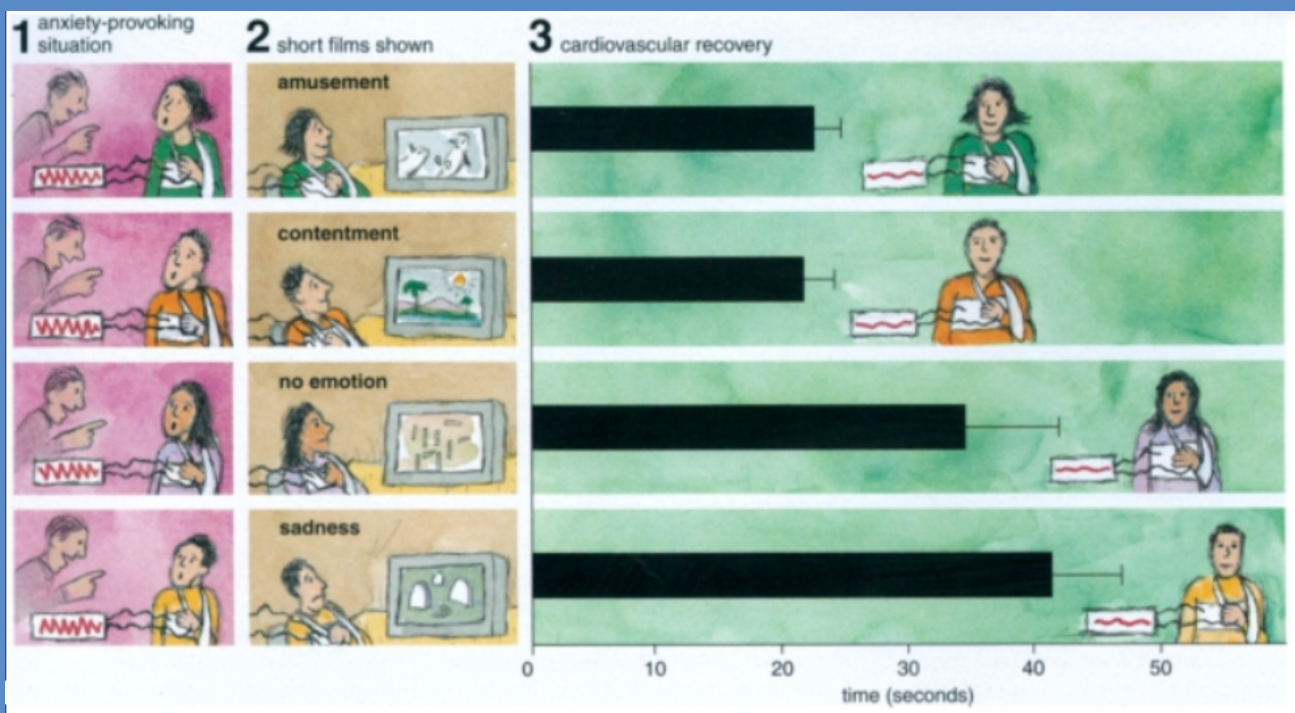


Figure 4: Exposure To Positive, Negative, And Neutral Media Have Varying Results On Physical Health

fatigue, where we become unmoved while hearing about human suffering. It has also been linked to an increase in anxiety, depression, and distrust of others according to a study done by Dr. Ola Manpreet.¹⁰

Habit formation at its core is very simple, we need a cue, a craving, a response, and a reward. Over time as this process is repeated, our brain makes a stronger and stronger connection between these steps until it is done without thought. For example, if someone showers every day when they get home from school that is a habit they have formed. The cue would be returning home, the craving would be a desire to feel clean, the response would be taking a shower, and the reward would be feeling clean and refreshed after a long day. A study by Brian M. Galla and Angela L. Duckworth found it's more than twice as easy to create new habits than to break old habits, so when aiming for a better view of the world, it is easier to look for a balance of positive and negative news intake than just cutting out the negative. According to Dr. Ola Manpreet, positive journalism has been found to leave people with the idea of hope, social progress, and individual shifts towards making change and mental well-being.¹⁰

It's been found by Brian M. Galla and Angela L. Duckworth that when having a goal, having strong inhibitions or restraint is much less helpful than having the ability to form strong habits.¹¹ When two groups were asked to make a list of desserts and one group was told not to put anything with chocolate, that group left the meeting craving chocolate much more than the first group. Suppression leads to increased thoughts and ultimately relapsed actions while developing habits lead to a healthy balance. Those who could form habits to achieve their goals had much better life outcomes, performed better academically and in the professional world, and had better social relationships.

For mobile applications, many games use a streak system to get their users coming back each day in order to form a habit. A streak is when the user comes back to complete a typically small task every day and the app displays in a visual way how long the user has been doing this. Streaks help especially in the early stages of habit formation because going from day 2 to day 3 is a fifty percent increase for the user, while day 50 to 51 may not matter as much, the habit is already formed by then. Two apps most famous for their streaks are Wordle and Duolingo. Duolingo has done a lot of research on how to make their streaks most effective for their users. They found that when they had their Duolingo bird do a little animated dance on each day the streak continued, the number of people who maintained their streaks went up. Wordle also shows the total number of times you have solved their daily puzzle in addition to your current streak. Both methods help maintain their current users and encourage habit formation further.

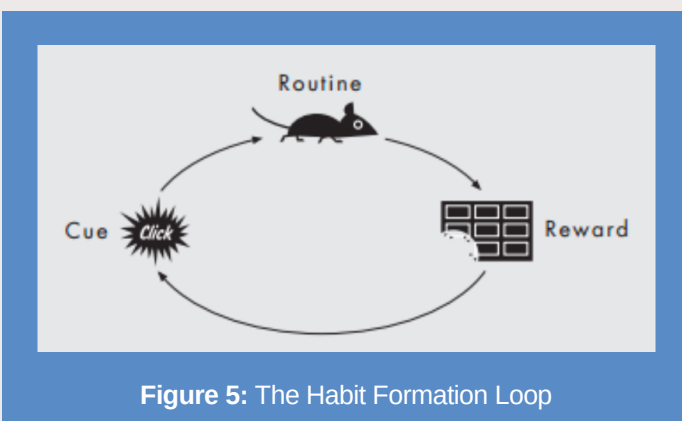


Figure 5: The Habit Formation Loop

Methodology

This project's overall objective is to research the benefits from introducing positive news to a reader's normal news consumption in order to counter the detriments of an overabundance of negative news, as well as uncover the best ways to keep readers engaged with reading positive news and to continuously come back to reading it. From the current research on the topic, there is a wide consensus on the harmful impact caused by the excess of negative news on both individuals and society as a whole, but there have been only a handful of studies done on the ways to counter that impact. Because negativity is much more engaging to all people and there is a huge quantity of news that leans towards negativity, it is not just important to demonstrate if positive news can help alleviate the issue, but specifically how it can best be displayed and promoted in order to maximize its benefits. The goal for the study is to examine the varying effects of consuming positive media. This will involve a longitudinal study, with wellbeing being measured by a mix of surveys, and cortisol testing. Specifically, we will conduct two different pre-existing surveys to measure participants' mental wellbeing and habit development, and cortisol level testing to measure prolonged stress. On the other hand, the app will explore ways to turn reading positive news into a habit for readers. This will involve designing the app with a daily quiz that uses streaks and leaderboard to keep users engaged and to come back daily. The quiz questions will then lead them to the Good News Magazin articles of which the quizzes are based off of to encourage users to read more about the topic.

Research Questions

Our project will explore the following three research questions. The first two pertain to the psychological study while the third will be looked at through the application development.

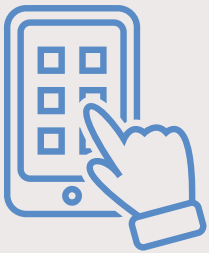
1. What effect does consuming Positive Media have on subjective psycho/physiological well being?
2. Does habitually reading positive news impact how often people read news?
3. What strategies are the most effective in engaging readers with positive news?

Research Design Approach

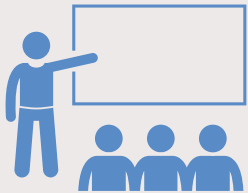
An overview of the research design approach for both projects is included on the following page.

For the app development project, we discovered upon arrival that the app was in a more nascent stage than anticipated, and we undertook significant coding work to make it operational. We had to design and then develop the code completely from scratch. We started with planning out the app, which included choosing a framework and language. We chose flutter as the framework due to the multiplatform nature so that we would not have to develop separate code for Android and Apple devices. We received layout designs for the app from Pia, an editor for Good News Magazin, and were able to closely replicate those designs with our code.

Mobile Application Overview



Choosing framework and layout of app



App consultant feedback on design



Integration of habit forming methods into app game play

Academic Study Overview

Literature review of research landscape surrounding negative and positive news and its effects



Expert interviews on study proposal ideas

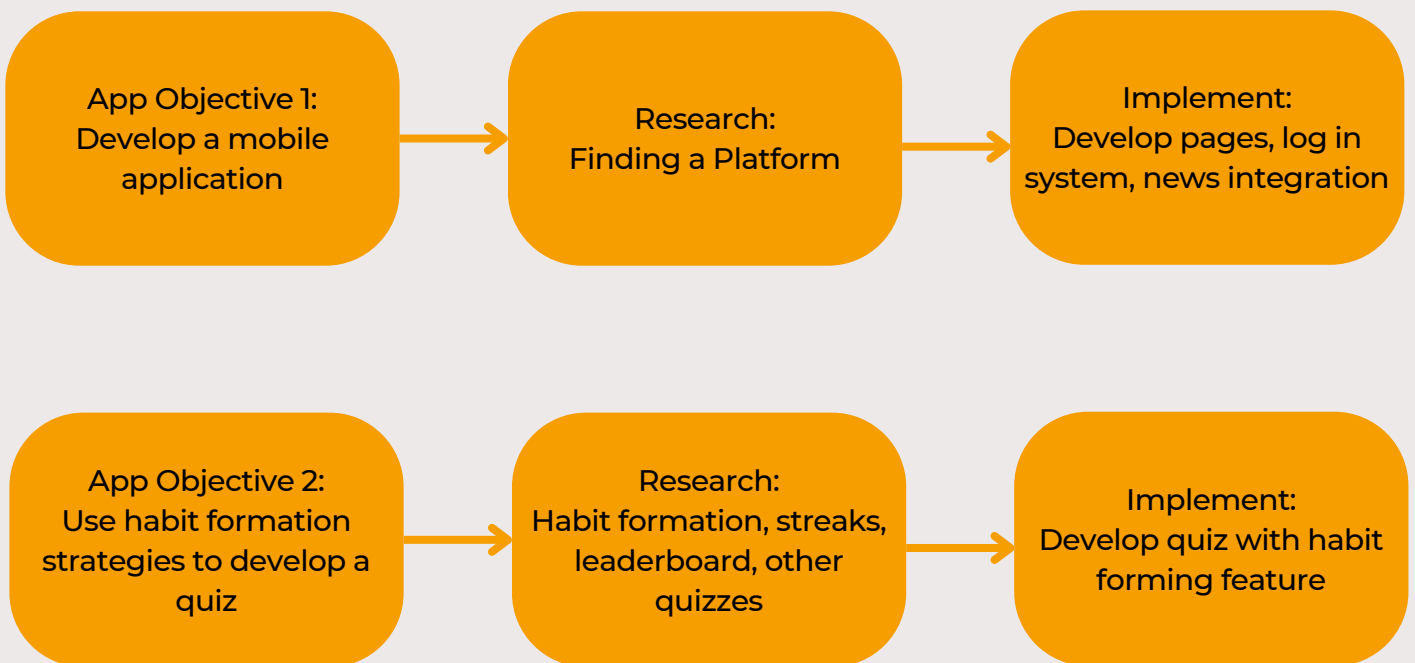


Pitch to Bonn university



The last step involves integrating habit forming metrics into the game play of the app. We plan on using both streaks and a leader board to encourage users to continue using the app and form a habit of it. With streak, having an appealing visual display makes the users more likely to come back. For our application we will be using a simulated sunflower field where the user will gain a sunflower for each

day they come back and get the questions correct. The leader board will display the users who have kept up their streak for the most amount of time. When Good News Magazin sent out a survey, many of its users responded that they like to be able to compare themselves to others and it keeps them more engaged with mobile games.



For the academic study, the first task was the literature review. We amassed large amounts of research and information on the varying topics we intend to cover both from our research in ID2050 and the research we have performed since arriving in Berlin. Throughout our preliminary research we investigated information surrounding a variety of topics including: negativity bias, demographics, the impact of news on the public, the psychology of bad habits, the impact of negativity on sales,

the psychology of good habits, the Fogg Behavioral Model, and information overload. While each of these were important at the time of study, further development of our project proved some sections became obsolete. Those sections that were still relevant had originally existed as separate paragraphs of text that needed to be understood and brought together in a cohesive manner. We laid out a format of three main sections, beginning with the current key concepts, theories, and studies that exist

around Negative, Constructive, and Positive news. Some aspects of these topics that we explored include their prevalence, impact on individuals and sales, and how much research has been done on each of them.

Key Debates and Controversies

There is some criticism of positive news. Some claim that positive news can be misleading, and lead people to ignore societal issues. This has been a common critique for a long time. In the 1990's, for example, there were ongoing debates about whether the overwhelming negativity in news media was justified. Many thought that yes, it was justified as a key function of the news is to bring attention to problems around the world.¹²

Constructive news, while attempting to address this problem, does not completely get around the problem of negativity bias. It has been found that even when reading constructive news, readers will more likely remember the negative parts, giving it a much larger focus than presented. It has also been shown to lower readers' comprehension of the information and may even lower their trust in the source.¹³

Understandably, positive news is sometimes associated with positive psychology. The field of positive psychology was pushed to the popular domain by Dr. Martin Seligman in the late 1990's.¹⁴ The entire field has been

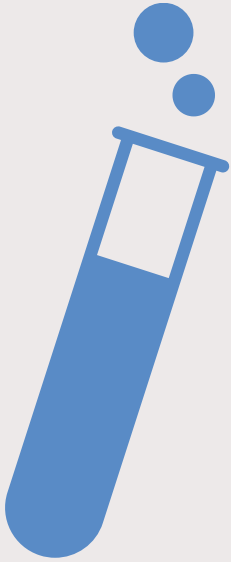
heavily criticized, and many have made statements questioning the effectiveness of methods used by positive psychologists. One such critique brings into question the accuracy of measurements and scales that are commonly used in positive psychology. Some also criticize the Western-centric views of positive psychology.¹⁵ In positive psychology, it is assumed that wellness comes from internal processes, which is more commonly a western belief and is contrary to the belief that happiness is affected more by environmental factors.¹⁵ Positive psychology, while being a very popular field, has many criticisms and is often not regarded as a legitimate science.

Gaps in Existing Knowledge

Our research proposal aims to solidify the results from the current small pool of studies while building upon existing knowledge. Negative media has been studied intensively for many years. However, it is just recently that positive media has begun to be analyzed.¹⁶ There are few studies on positive media, and even less, if any, studies on the long term psychological and physiological effects of positive news. We aim to understand the long term effects of consuming positive news, and whether it can be leveraged to create healthier news reading habits.

Research Proposal Methods

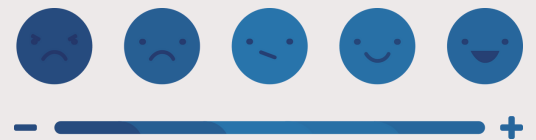
Cortisol Testing



Cortisol is a hormone that is released during periods of stress and can lead to health problems if they rise or fall out of a normal range. Each participant will choose a time between 1800 and 2100 to complete their tests. Cortisol levels follow a circadian rhythm. Thus, to eliminate the effect of the time of day on cortisol testing, the tests must be administered at the same time for every test. Cortisol levels fluctuate the most in the morning and are more stable in the evening, hence the timeframe mentioned above.¹⁷ Testing will be conducted on salivary cortisol. Salivary cortisol is found to be a good measure of adrenal function, as compared to serum cortisol levels.¹⁸ It is also easier, much less invasive, and less expensive than urinary or serum cortisol testing (blood testing). Given these benefits, we recommend the salivary testing method. Though, it must be made clear that the participants must not eat for a minimum of 30 minutes prior to testing otherwise the results may be incorrect.

The PANAS scale stands for Positive and Negative Affect Schedule.¹⁹ This survey consists of a list of adjectives that describe either a positive or negative emotion. There are 10 of each grouping spread mixed throughout the survey totaling 20 questions. When completed, the scores of the positive and negative emotions are tallied separately. This presents them with both a positive score and a negative score. These scores range from 10-50 with the averages being 33.3 and 17.4 respectively.¹⁹

PANAS Scale



PSS-10



The PSS-10, also known as the perceived stress scale, is a survey that consists of 10 questions used to measure the degree of psychological stress that a person is experiencing.²⁰ The scale is quite simple, consisting of 10 questions, 5 positive and 5 negative. Each question has a response option of 0-4. Upon completion of the survey, scores are tallied up by, first, reversing the value of the positive questions and then summing all of the scores together. People with low stress would score between 0-13, those with moderate stress would score between 14-26, and those under high stress would score between 27-40.²⁰

Results and Outcomes

While our project did not involve performing any experiments, we received feedback from experts and used academic studies and research to make informed decisions and finalize our deliverables.

Quiz Development

For the quiz portion of our application, along with using the designs we were provided by Good News Magazin, we also looked for inspiration from other news companies that already had developed a form of quiz for their users. We looked at examples from the New York Times as well as the BBC as both of their websites had a weekly recap quiz. The New York Times quiz is covered completely by a paywall so could not be thoroughly analyzed besides some of the surface details, such as it

containing 11 multiple choice questions, each with five answers. The questions were formatted in a structure of trying to test how well the reader had memorized articles in the past week. The BBC's on the other hand was completely free and could be tested by us. The questions were presented one at a time and instant feedback was given after you choose one of the three multiple choice options. Seven questions were given in total and at the end the score was tallied up. No leaderboard or comparison option was shown, however the option to share your score on social media was provided as well as a reminder to stay updated by subscribing to their email service. These examples provided some good ideas to add onto our quiz application that wasn't initially considered, such as a way to share the daily results with friends, which would both help promote GNM and the app on social media.

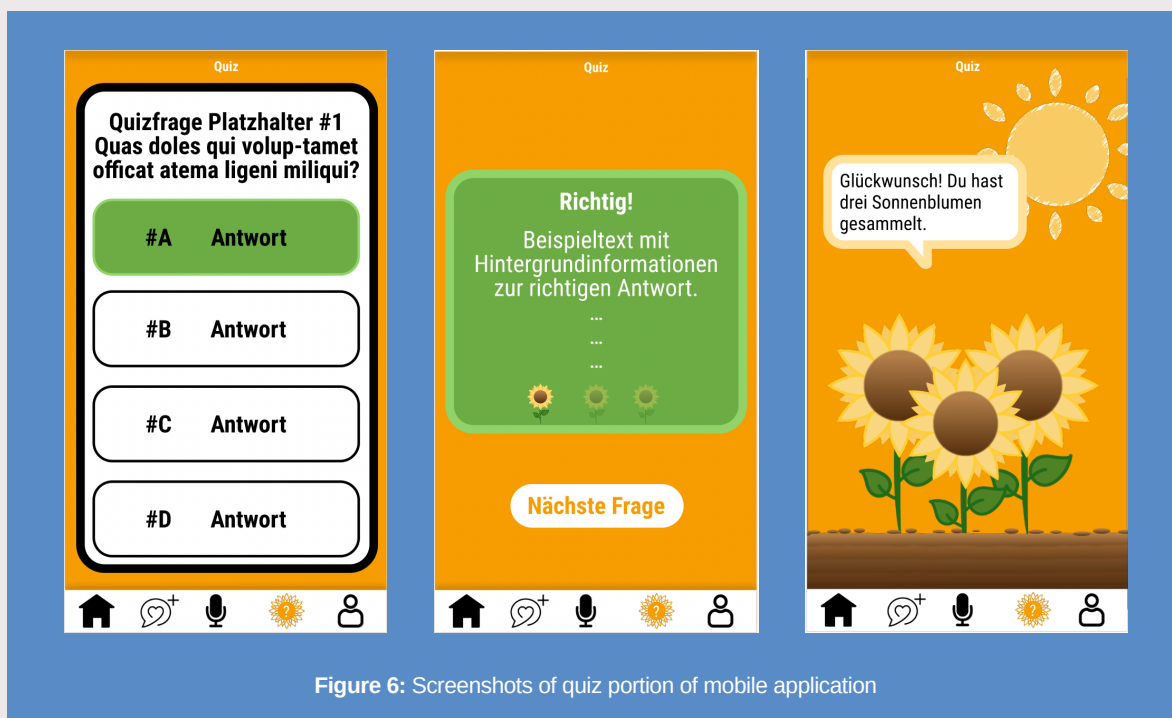


Figure 6: Screenshots of quiz portion of mobile application

Streaks and Leaderboards

We also got inspiration from other apps that use streak and habit formation techniques, such as Wordle and Duolingo. From those applications, features such as leaderboards keeping track of scores or streaks are commonplace in order to provide additional incentives to keep users coming back to the app everyday. Our quiz plans on having a similar implementation, with “sunflowers” being awarded for getting questions right as that has become a symbol for GNM. The user will be awarded one sunflower per question, with three free questions being given out per day. An additional boost can be bought to refresh the questions and provide three new ones, with an option to get a free boost after a streak of 7 days. The amount of questions gotten right that day will then translate to the amount of sunflowers added to the users virtual garden. As the user continues their streak and answering questions correctly, their garden will grow.

As a challenge two leaderboards will be shown, one for longest streak and one for most sunflowers, to add a game-like feel to the quiz to add additional fun and incentive for users. In quiz apps users like to compare themselves against others to see how they are doing and add a level of competition. The leaderboards allow for this component even if not directly interacting with other users in a game.



Figure 7: Screenshots of quiz portion of mobile application where users will collect sunflowers to show their streak and can get boosts

Generating Questions

Next we began to look at ways we could use artificial intelligence to generate quiz questions to give less work for the writers. On a brief trial we realized two main flaws with our attempts. First when generating a quiz, it tends to look more like the New York Times quiz where it is testing users on how closely they read the article, rather than being a more general quiz with the intention of enticing users to click on the article. The goal of our quiz application is a way to promote positivity by showing users questions where the answer is

the best outcome as well as leading to an article that would go more into depth on that fact, so simply generating a test is not enough. The second flaw was due to the model that ChatGPT was built on, it did much better with English than it did with German, and would often struggle generating questions for the German articles unless they were translated into English beforehand. Although the second problem does have a straightforward solution (converting the article into English and then the generated question back into German) the first problem will require further work in coming up with a proper prompt in order to generate the type of questions that are needed for the app.



What is the goal of the citizens' initiative "Rights of Nature - the referendum!" in Bavaria?

- A) To collect 70,000 signatures to enshrine the rights of nature in law
- B) To collect 250,000 signatures to anchor the rights of nature in the state constitution
- C) To organize a referendum on the rights of nature at the federal level
- D) To establish a separate Federal Ministry for Nature to protect ecosystems



Figure 8: Potential quiz question from Chat GPT after being given an article from Good News Magazin

Expert Feedback from Bonn

During our 5th week, we visited Cologne and the nearby city of Bonn. The purpose of this trip was threefold: to meet Good News Magazin's layout designer, speak with staff at Bonn University about our research proposal, and to receive feedback on our app from a technical consulting group, as seen in figure 10.

During our meeting with the app consultants, we discussed the designs, our ideas, and our progress so far. The biggest piece of advice they gave us was to rearrange the order of the pages. In the initial design, the first page the user sees is to log-in, sign up, or continue into the app as a guest. They said this can feel discouraging for new users that the first thing they see is being asked to pay. Even if a lot of the app is behind a pay wall we should rearrange the pages so they are only met with the login page once they click on an action that only subscribers can do.



Figure 9: Presentation to App consultants

For the study proposal, after discussing funding and scope for the research with Florian, we made the decision to heavily cut down on the methodology and recruitment from the original idea of 150 to the current plan of 60 participants and shifting the focus to cortisol testing. Florian's main concern was that without much pre existing research on the subject,

anyone would be hesitant to fund a study that is too large. We quickly drafted a 60 person variant of the experiment. We then presented this version of the study to two members of Bonn University faculty for feedback. They agreed that a smaller scale study would be better suited for our goals, and were keen about using cortisol as a stress measurement tool.

Overview of Study

Participants will be split into two groups, each consisting of ~30 participants: The control group will continue their normal news reading habits, and the experimental group will read at least one positive news article on five days every week. A baseline measurement of wellbeing using PANAS and PSS-10, as well as a cortisol test will be taken before the study. During the study, these measurements will be taken once every 7 days. The study will last around 3 months. At the end of the entire study, this data will be analyzed for correlations between reading positive news and wellbeing.



Participants

While random, some demographics are recommended to be excluded from the experiment as their current biological makeup could lead to skewed results. Women who are pregnant will be excluded, as pregnancy causes elevated cortisol levels throughout the day.¹⁸ People who smoke will be excluded, as smoking may raise cortisol levels.²¹ People with depression and/or anxiety disorders will be excluded. Depression can raise baseline cortisol levels during the afternoon, which is when this study will measure cortisol. Anxiety disorders, while a little more unclear, may have an impact on cortisol as well.²²

Broader Impacts

Practical Considerations



It is important to mention and consider the ethical concerns posed by this study. In dealing with individuals' psyche, stress levels, and mental wellbeing it is recommended that each participant is given access to a counselor and/or psychiatrist should they need it. Participants must be made aware of their right to withdraw from the study at any time should they not want to continue. They should also be informed on the goals of the experiment and be debriefed on the intentions behind the study. The confidentiality of participants and their data is crucial as well, thus their data must be well protected.

Contributions to Knowledge

Currently, there is a plethora of information on the effects that negative news can have on individuals/society. There are also some studies that demonstrate the effects of constructive news. However, positive news, being a relatively new field of journalism, remains a relatively unexplored field. Our study will look into the psychological/physiological effects of positive news and hopefully shed some light on potential benefits of reading positive news. Although this study is relatively small-scale, this would lead the way for larger studies on positive news, cementing a place for positive news in the media landscape.



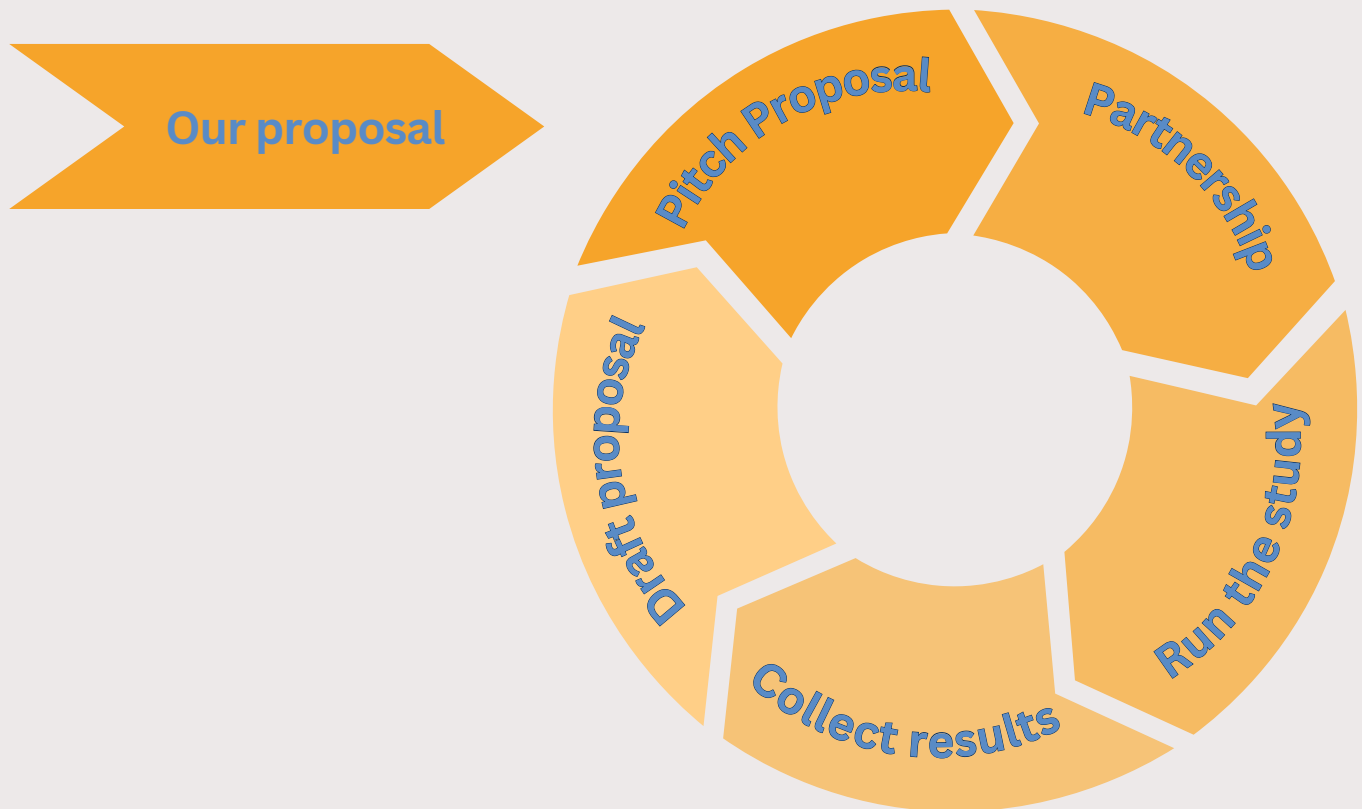
Implications



The damaging effects of negative news have been well-documented - depending on the results of this study, there may be a benefit to society that could be realized through understanding the impact of positive journalism. Through further studies on the effects of positive news, news agencies might look into healthier, more effective ways of presenting news and readers could be encouraged to find healthier news consumption habits.

Next Steps

Research Proposal



Following the turnover of the final research proposal from our IQP team to our sponsor there is still a large amount of work to be done. Through in depth conversations with our sponsor and University Bonn advisors we have been able to develop a system in which the research landscape around the effects of positive media will be able to grow. The process begins first with a pitch of the final proposal of our study. The purpose of this step is to allow Good News Magazin begin their search for a sponsor and mentor. The system used to complete this is called enaCom. EnaCom is a transfer center that supports members of University Bonn working with start up projects. Through this system, Good News Magazin will

find a mentor who specializes in a related field, as well as some form of government sponsorship or funding. After finding a compatible partnership the early stages of the research experiment can take place, these include collecting the materials needed as well as finding participants. After the preliminary steps are complete the experiment can be run and the data can be collected and interpreted. With this newly interpreted information added to the research landscape, new studies can be drafted, proposed, and run to continue building knowledge. Our goal is to provide a stepping stone for an iterative series of experiments that will build the research landscape on the effects of consuming positive media.

App Development

For the future of the application it is important to continue to improve user experience and retention. Gathering feedback for the application from users, such as using focus groups, would be a great way to identify any bugs, issues, or features that could be added. Working on a notification system for the quiz portion in order to remind users of their streak would be a great way also to help form a habit for users. Other features that would be great for the future but we're able to complete due to time constraints would be more social features, such as the ability to add friends on the app and share quiz scores on social media. Additionally, integrating the app more tightly with the subscription to allow things such as streaks unlock free articles would be a great way to provide additional engagement.

Conclusion

In conclusion, the prevalence of negativity in our society is a result of our evolutionary traits and the overemphasis on negative news in mainstream media. We have attempted to help counteract this through two projects. The first is an academic study that aims to help understand the effects of positive news, specifically addressing the impacts on people and prosperity. The second project involves designing a mobile application for Good News Magazin with a game component that encourages positive news consumption and habits. Both of these projects have the potential

to contribute to a more positive and uplifting society, ultimately breaking up the constant barrage of negativity that surrounds us. By promoting positive media habits, we can work towards creating a more balanced and healthy society for ourselves and future generations.

Once the app is stable and functioning as intended, it would be useful to go back and improve upon any timesavers that had to be used. The first one would be to have the app integrate its own news articles and format them instead of having to rely on the GNM website for that information. On top of that, integrating ChatGPT or some other text generating AI directly into the app flow instead of requiring questions to be generated and inputted manually would be a great way to have the app require less maintenance.

Finally, we'd like the app and quiz to be used for researching the impacts of positive news. Collecting data using the quiz portion of the application can be used to help study positive news in future studies and explore the more widespread impacts of positive journalism, especially on a larger and more general demographic.

to contribute to a more positive and uplifting society, ultimately breaking up the constant barrage of negativity that surrounds us. By promoting positive media habits, we can work towards creating a more balanced and healthy society for ourselves and future generations.

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