

© 2020 Sanorita Dey

A PERSUASIVE APPROACH TO DESIGNING INTERACTIVE TOOLS AROUND
THE PROMISES AND PERILS OF SOCIAL PLATFORMS

BY

SANORITA DEY

DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Computer Science
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2020

Urbana, Illinois

Doctoral Committee:

Professor Karrie Karahalios, Chair
Professor Alex Kirlik
Associate Professor Hari Sundaram
Associate Professor Brittany Duff
Dr. Zhicheng Liu, Adobe Research

ABSTRACT

Every day, people interact with various social platforms. Diverse forms of social platforms opened up a plethora of data to study information dissemination and understanding crowd behavior in finer details. However, there is a flip side to this. People do not only get benefited by using social platforms; rather these platforms can also be exploited for spreading organized disinformation and unintended misinformation to a large audience. These social platforms, with access to the history of users' socio-political biases, can emerge as tools to shape mass opinion. Such a broad spectrum of diversity raises questions about how we can identify the promises and perils of social platforms and how we can design user-centric tools around them.

Efficient identification of such promises and perils of social computing systems will require a convergence of social science, behavioral psychology, and persuasion theory with computing. My research shows ways to this convergence. In my dissertation, I have taken a theoretical approach to explain the existing structures of social platforms. My findings helped me to develop interactive tools for masses leveraging socio-political and psychological cues from the crowd. My work is empirical in nature, for which I drew intuitions from theories in social science and used a combination of qualitative and quantitative data analysis techniques to extract insights on users' behavior. My research leads to practical systems for human-centric applications and to this end, I chose a specific type of social platform: crowdfunding platform.

Specifically, this dissertation makes three contributions. First, it investigates how different forms of crowdfunding platforms become promising resources in our daily life. To this end, I present two work. The first work demonstrates how scientific crowdfunding platforms assist young researchers to seek funding for their research projects through expert endorsements. The second work focuses on the novice entrepreneurs and explains how enterprise crowdfunding platforms assist novices to gather funding from the crowd for their creative ideas and how persuasive promotional videos are essential for those campaigns to be successful. The findings of this work led to the next part of this dissertation where I designed and built VidLyz, an interactive online tool, that can explain the significance and implication of persuasion factors to novice entrepreneurs who have no formal training in advertising and media studies. A follow-up user study showed that VidLyz can effectively guide novices step-by-step to make a concrete plan for their campaign videos.

Finally, I take a step further and investigates the flip side of social platforms: how social

platforms can increase opinion polarization on traditionally stigmatized topics such as equal rights for LGBTIQ people. I show that even after getting exposed to content both in favor of and against equal rights for LGBTIQ people simultaneously, users develop a more polarized opinion on the stigmatized issue after the exposure. In the last part, this dissertation shows promising ways to mitigate the effect of attitude polarization and in-group sensitization with the help of behavioral priming techniques. The findings of this dissertation present structured ways of uncovering the promises and perils of social platforms and shows how these aspects can be leveraged to build interactive socio-technical systems. Overall, it may be fair to see this dissertation as a step forward to design socio-technical systems based on the knowledge learned from the interaction of the users of social platforms.

*To my beloved baba, Mahendra,
who taught me to believe in the dawn while it is still dark
and
To my loving ma, Shila,
whose life is a living lesson of perseverance to me.*

ACKNOWLEDGMENTS

First and foremost, I owe my deepest gratitude to my advisor Professor Karrie Karahalios. She spent countless hours to shape my thoughts and always gave me the strength to do better. Above all, she taught me how to think like a Human-Computer Interaction researcher. She was always there whenever I needed guidance and suggestions both in my work and in my personal life. Thank you, Karrie, for being such a great mentor and above all, a wonderful person. You are my role model. I will always be grateful to you.

I am also grateful to my Ph.D. committee members: Prof. Brittany Duff, Prof. Hari Sundaram, Prof. Alex Kirlik, and Dr. Zhicheng Liu (Leo). In early 2015, I started a collaborative project with Brittany and that collaboration has established a long-standing relationship between us. She has been a great mentor throughout my Ph.D. career. She taught me how to formulate an existing problem from the theoretical perspective and how to focus on the minute details. I always enjoy her company and learned a lot from her experience as a young faculty member at University of Illinois at Urbana-Champaign (UIUC). Hari always had time for me, even at very short notice. He always spent the time to listen to my queries and gave thoughtful suggestions. He inspired me to think clearly and critically about a problem. I highly appreciate his suggestions and feedback in my job-search process. I want to thank Alex for all his suggestions and kind support. He always amazed me by his ability to look at the bigger picture of a problem, which I tried to emulate. And thanks Leo for helping me formulate my dissertation and supporting me wholeheartedly during my job-search process.

Thank you, Prof. Wai-Tat Fu, for always believing in me and encouraging me to pursue my goals. Your thoughtful insight and valuable feedback enriched my work. I would like to take this opportunity to thank my Master's advisor, Prof. Srihari Nelakuditi. His ability to think optimistically was inspiring. He was always there for me when I needed him the most. I will cherish your philosophy and positivity in my life. I am also thankful to Prof. Romit Roy Choudhury, my advisor at Duke University, and my first mentor at UIUC. You have always been a great inspiration to me. You taught me how to pay attention to details and thrive for the best. I am also thankful to my undergraduate research advisor Prof. Sekhar Mandal and my mentors Prof. Amit Kumar Das, Prof. Abhik Mukherjee, and Prof. Arindam Biswas for their unconditional support. Thank you for believing in me. Special thanks to Dr. Vishy Swaminathan, my mentor at Adobe Research. I had a wonderful time working on your team. It was a rewarding experience to know you as a person. Thank you

for mentoring me and giving me all the opportunities to do excellent research at Adobe.

My journey at UIUC was enriched not only by my mentors but also by my friends. My academic sibling, Vera Liao, has been an amazing person. She was always there whenever I needed some guidance. I would also like to thank Helen for giving me valuable suggestions even at her busiest times. You are an awesome person. I enjoyed our time together at conferences. I am also thankful to Motahhare Eslami for all her suggestions throughout my Ph.D. career and most importantly, during my job-search. Your story inspires me a lot. Finally, I am thankful to my friends in the HCI group: Jennifer Kim, Hidy Kong, Sneha Krishna Kumaran, Kristen Vaccaro, Mary Pietrowicz, Nikita Spirin, John lee, Wayne Wu, Grace Yen, Eric Yen, Robert Deloatch, Emily Hastings, Yi-Chieh Lee, Ziang Xiao, Amy Oetting, Patrick Crain, Mingkun Gao, Gina Do, Farnaz Jahanbakhsh, Po-Tsung Chiu, Sebastian Rodriguez, Joon Park, and Sadaf Tayefeh. Thank you for your cheerful company and constant moral support.

To my non-HCI friends, I met at Urbana-Champaign: Mainak Ghosh, Shalmoli Gupta, Shegufta Bakht Ahsan, Sangeetha AJ, Sandeep Dasgupta, Swetosree Dasgupta, Indrajit Srivastava, Rohit Gupta, Soumya Dasgupta, Ashutosh Dhekne, Neha Hatolkar, and Priyasmita Ghosh. Thank you for making my life outside academia joyful and memorable. I am also blessed to have friends from Indian Institute of Engineering Science and Technology, Shibpur: Aritra Banerjee, Sumana Pal, Sadik Bhimani, Siddhartha Dutta, and Souvik Sen. We had the best time together at Shibpur and you always bring a smile to my face.

Finally, I would like to show my gratitude to my family.

First, I want to thank my husband, Nirupam Roy. It has been 17 years since we first met, and we have become best friends since then. He not only supported me morally and emotionally throughout all these years but also his critical feedback enriched my work significantly. Words will always fall short to explain our journey together. Thank you, Nirupam for your unconditional support. I would also like to thank my father-in-law Tarun Kumar Roy and mother-in-law late Sikha Roy for always believing in me and supporting me through all ups and downs.

I would like to thank my brother, Shuvo Dey. I always cherished to have a younger brother and you are more than what I have asked for. You filled my childhood with lots of fun and joy. I wish we could spend more time together.

Finally, my heartiest gratitude and respect for my mother Shila Dey and my father, Mahendra Chandra Dey for their perpetual support, guidance, sacrifices, love, and of course sleepless nights. I can always count on them to be there for me. They taught me to stay humble and focused on what I wish for. My mother never doubted my ability, no matter what others thought about me. My father told me that one day I would pursue my Ph.D.

career when I was just 5 years old. This is the fulfillment of his dream; the one that he had in his mind from the day I was born.

Last, but not least, I want to thank our son, Nabhoneil. He is just 11 months old now but even at this young age, he has been so supportive throughout my job-interview preparation and during all my interviews. He made me realize once again the unconditional love that my parents gave to me. Thank you, Nabhoneil. You are the sunshine of my life.

TABLE OF CONTENTS

CHAPTER 1	INTRODUCTION	1
1.1	Origin	2
1.2	Contributions	3
CHAPTER 2	RELATED WORK	7
2.1	Promises of Social Platforms	7
2.2	Perils of Social Platforms	15
CHAPTER 3	PERSUADING THE CROWD THROUGH EXPERT ENDORSEMENTS	24
3.1	Introduction	24
3.2	Methodology	25
3.3	Results	27
3.4	Discussion	29
3.5	Limitations	31
3.6	Conclusion	31
CHAPTER 4	PERSUASION THROUGH CAMPAIGN VIDEOS: AN APPLICATION OF ELABORATION LIKELIHOOD MODEL	33
4.1	Introduction	33
4.2	Methodology	35
4.3	Results	41
4.4	Discussion	52
4.5	Design Implications	54
4.6	Ethical Concerns	55
4.7	Limitations and Future Work	57
4.8	Conclusion	58
CHAPTER 5	AN INTERACTIVE TOOL FOR MAKING PERSUASIVE CAMPAIGN VIDEOS	59
5.1	Introduction	59
5.2	Informing the Design	61
5.3	Design	63
5.4	Evaluation	69
5.5	Results	73
5.6	Discussion and Future work	86
5.7	Ethical Concerns	88
5.8	Conclusion	89

CHAPTER 6	EMPIRICALLY SHOWING THE EFFECTS OF STIGMATIZED CROWDFUNDING CAMPAIGNS ON SOCIAL OPINION	90
6.1	Introduction	90
6.2	Study 1: Impact of Attitude-Inconsistent Campaigns on a Stigmatized Topic	91
6.3	Study 2: Impact of Attitude-Consistent and Attitude-Inconsistent Campaigns	100
6.4	Discussion	107
6.5	Ethical Concerns	109
6.6	Conclusion	110
CHAPTER 7	MITIGATING THE IMPACT OF POLITICAL CROWDFUNDING CAMPAIGNS ON NON-POLITICAL TOPICS USING BEHAVIORAL PRIMING	112
7.1	Introduction	112
7.2	Research Questions	114
7.3	Study 1: Impact of Political Crowdfunding Campaigns	115
7.4	Study 2: Impact of Behavioral Priming on Non-Partisan Topics	126
7.5	Discussion and Future Work	134
7.6	Ethical Concerns	139
7.7	Limitations	141
7.8	Conclusion	141
CHAPTER 8	CONCLUSION AND FUTURE WORK	143
8.1	Persuading the Crowd	143
8.2	Interactive Tool for Persuasive Learning	144
8.3	Perils of Social Platforms	144
8.4	Summary of Ethical Concerns	145
CHAPTER 9	REFERENCES	147

CHAPTER 1: INTRODUCTION

Social platforms are inevitably part of our every day life. We use social platforms to communicate with our friends and family [1, 2], to create new connections [3, 4], to browse news on current affairs [5, 6], to fund a cause that we strongly care about [7], and to get funding for a new business [8]. Widespread usage of social platforms has given us a passage to the thoughts, opinions, and biases of the crowd. Diverse forms of social platforms opened up a plethora of users' data on interaction of various forms to study information dissemination and understanding crowd behavior in finer details. However, there is a flip side to this. People do not only get benefited by using social platforms, these platforms can also be exploited for spreading organized disinformation and unintended misinformation to a large audience [9]. Social media research in the last decade primarily focused on understanding how users' data can be analyzed to infer the mass behavior [10, 11, 12, 13]. However, these social platforms, with access to the history of users' socio-political biases, are now emerging as tools to shape mass opinion. In the recent past, disinformation campaigns, troll farms, and bots are used on social platforms to influence public opinion on sensitive topics for political gains [14]. Such a broad spectrum of diversity raises question about how we can identify the promises and perils of social platforms and how we can design user-centric tools around them. The use of social computing resources to influence user's belief is an emerging issue with severe implications. To cope up with the increasing demand, the research community is moving toward understanding the techniques of influential content generation, effective information dissemination through social platforms, and ultimately their impacts on mass opinion.

Efficient identification of such promises and perils of social computing systems will require a combination of theories and practiced of social science, behavioral psychology, and persuasion theory with computing. My research shows ways to this convergence. In my dissertation, I have focused on developing interactive tools for masses leveraging socio-political and psychological cues from the crowd. My work is empirical in nature, for which I drew intuitions from social science theories and used a combination of qualitative and quantitative data analysis techniques to extract insights on users' behavior. My research leads to practical systems for human-centric applications and to this end, I chose a specific types of social platform: crowdfunding platform.

Among various types of social platforms, I chose crowdfunding platforms because similar to other social platforms such as Facebook and Twitter, crowdfunding platforms also have social signals such as "Likes", "Shares", and "Comments". Moreover, unlike any other

platforms, crowdfunding platforms have a strong and unique social signal: “Monetary Donation”. Since people donate money when they find appealing campaigns, crowdfunding platforms stimulate “practical activism” (instead of slacktivism) which is rarely found in other social platforms [15]. The presence of this strong social signal motivated me to study not only the promises (in enterprise and scientific crowdfunding platforms) but also the perils (in donation-based and political crowdfunding platforms) of social platforms through various types of crowdfunding platforms.

1.1 ORIGIN

Before I go much further, I feel compelled to explain the origins of this dissertation. When I started exploring crowdfunding platforms as an emerging social platform in 2014, only a few studies were trying to understand the benefits of crowdfunding and at the same time exploring the challenges that novice entrepreneurs were facing to become successful in this promising but competitive domain [16, 17, 18]. A little further digging revealed that one key element that novices found most intimidating was to make a compelling video explaining their business idea because of their lack of experience [19]. But this is hard to skip because studies showed that without a video, the probability of being successful was significantly low. I tried to find existing literature that could explain how novices, without any prior experience in making promotional videos, can make appealing promotional videos for their campaigns by themselves. Unfortunately, I did not find one because analyzing video takes time and certain skills. So I started exploring this problem from the perspective of professional advertising agencies and tried to figure out how their professional work culture can be made accessible to common people using the power of crowdsourcing.

This was my first venture to understand the promises that crowdfunding platforms afforded to a larger audience and how these promises are surrounded with many more challenges. My interest in crowdfunding platforms later made me observe that these social platforms not only show promises but also they expose some strong perils that can impact people’s long-standing belief significantly. Although, I started exploring the promises and perils of social platforms through crowdfunding platforms initially, only afterward I realized that many on my observations are also valid for other kinds of social platforms as well because along with other forms of social support such as likes, shares, and comments (primarily found in Facebook and Twitter), these platforms show support through donated money, a strong social signal mostly not available on other social platforms.

1.2 CONTRIBUTIONS

- **Persuading the crowd: Empirical results showing how to present new ideas to a larger audience through social platforms**

As the first step toward understanding the promises of social platforms, I investigated the persuasive power of crowdfunding platforms. To this end, I focused on scientific crowdfunding platforms that is primarily designed to assist young researchers to seek funding for their research projects. Research communities often struggle to seek funding for their scientific projects, especially at the early stage of a project. This challenge is even higher for young researchers as they are often not eligible to receive funding from national funding agencies. To find an alternative source for funding research ventures, researchers started seeking help from the crowd. In chapter 3, via a mixed-method analysis, I identified what type of endorsements, provided by experienced researchers, persuade the crowd to donate for scientific crowdfunding campaigns. I found that endorsers describing a general scientific benefit was not an effective endorsement; rather it is beneficial for campaign creators to have a thoughtful discussion with their endorsers about their projects to motivate endorsers to write informative and passionate endorsements instead of writing generic ones.

In the second work, I investigated another powerful social platform, enterprise crowdfunding platform, that assists entrepreneurs to present their business ideas to the crowd so that potential donors can provide funding for the business. These platforms allow entrepreneurs to pursue their business ideas from the funding gathered from the crowd even when angel investors are not interested to fund a project. One key element that persuade the crowd to donate for these type of crowdfunding campaigns is a promotional video that explains the whole idea of the business in a nutshell to the audience. Entrepreneurs, with limited funding and prior experience, find it hard to make a persuasive video for their campaigns. In chapter 4, I presented a mixed-method approach to the list of persuasion features that can explain the persuasive appeal of a campaign video and can illustrate how these features can be measured with the help of the non-expert crowd workers. I explained the impact of these persuasion features on campaign videos using the Elaboration Likelihood Model (ELM). The model helped me show that based on different campaign types, the impact of various persuasion features can significantly differ from each other.

- **Implementation of an interactive tool for making persuasive campaign videos**

My findings from chapter 4 motivated me to explore whether novice entrepreneurs

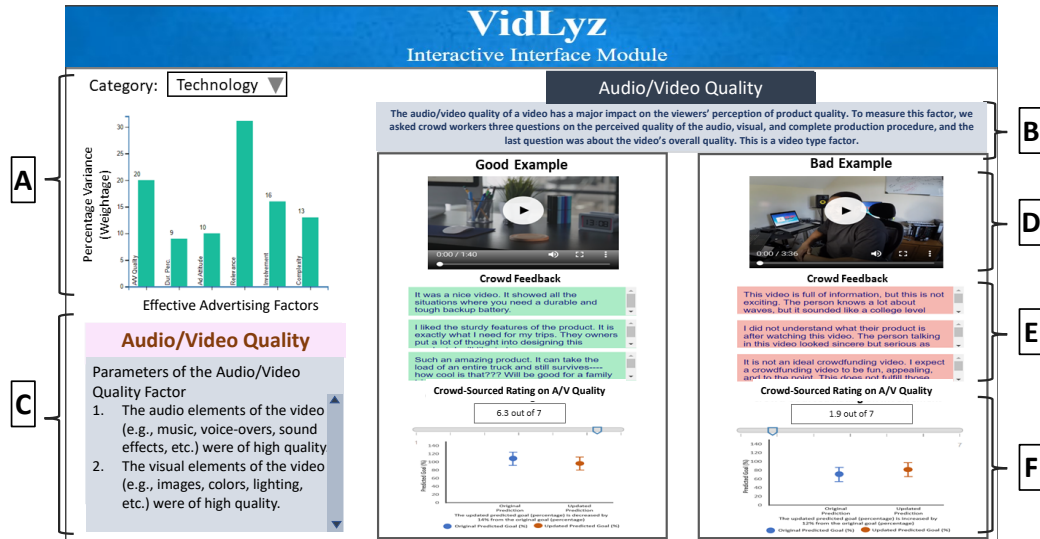


Figure 1.1: The interactive interface module of the VidLyz tool (comprehensive version). The bar chart (A) on the top-left side shows the percentage variances of all the persuasion factors (Audio/Video Quality, Duration Perception, Attitude to the Ad, Relevance, Involvement, and Complexity) for a specific product category. On the right side, VidLyz presents one good and another bad example videos (D) along with crowd-sourced feedback (E) and prediction model (F) for each persuasion factor separately.

can apply these persuasion features in making their campaigns more persuasive to the prospective donors. These persuasion features were primarily identified by the advertising research community where they expected that these features will be used mostly by experts in advertising agencies. Novice entrepreneurs do not generally pose such expertise to interpret the practical consequence of these features, let alone apply them into making their videos. To address this, I designed and build VidLyz (shown in Figure 5.1), an interactive online tool, that can explain the significance and implication of persuasion factors to novice entrepreneurs who have no formal training of advertising and media studies. I used example campaign videos and crowd-sourced feedback tied with each persuasion factor to help novice entrepreneurs understand how they can apply them while making their videos. A follow-up user study showed that VidLyz can effectively guide novices step-by-step to make a concrete plan for their campaign videos. Experienced entrepreneurs felt that VidLyz can work as a checklist even for experienced users for making creative promotional videos.

- **Empirically showing the perils of social platform: How social platforms can bias our opinion on socially sensitive topics**

In the second part of my dissertation, I take a step further and investigate the flip side of social platforms: how social platforms can increase social polarization on traditionally stigmatized topics such as equal rights for LGBTIQ people. In Chapter 6, I studied this polarization effect using donation-based crowdfunding campaigns that not only presents the stigmatized topics to the larger audience but also shows varying levels of social support in the form of a monetary donation, social media shares, likes, and comments. I found that even when people do not donate to these campaigns, their opinion on socially stigmatized topics gets influenced by these campaigns. To empirically test this, I designed two groups of crowdfunding campaigns where one group of campaigns supported equal rights for the LGBTIQ community and the other group of campaigns opposed it. In multiple user studies, I exposed participants to one campaign that supported equal rights and the other one that opposed it simultaneously. This design was equivalent to getting exposed to one attitude-consistent (a campaign that the participant supported) and another attitude-inconsistent (a campaign that the participant opposed) at the same time. I found that even after getting exposed to attitude-consistent and inconsistent campaigns at the same time, participants developed a more polarized opinion on the stigmatized issue after the exposure. For example, users who supported equal rights ignore the shortcomings of the campaign that supports the LGBTIQ community but remain highly critical of the campaign that opposed the LGBTIQ community. The attitude of the users opposing the topic also became more polarized. Moreover, they intend to donate significantly more money to the campaign that they supported compared to the one that they opposed.

- **Designing around bias: Implementing external priming to overcome biased opinion of sensitive topics**

Finally, in Chapter 7, I expanded my investigation to understand how the biased opinion instigated from social platforms impact people's opinion across platforms. To this end, I looked into a new kind of social platform called political crowdfunding platforms. These platforms allow politicians to gather funding for their election campaigns online from the larger audience. The interesting part of these platforms are: these platforms allow politicians to gauge their popularity among their target audience through the campaign even before the candidate decides to run for the position. Empirically, I analyzed how politically sensitive campaigns affect people's opinion on non-political charitable appeals in the long run. I found that exposure to an attitude-inconsistent (the campaign that the participant did not support) political crowdfunding campaign can make people more polarized even about non-partisan charitable campaigns. Guided by

these findings, I investigated how careful utilization of external priming can mitigate such polarization effect. It turned out that carefully designed campaigns using external priming techniques can mitigate people's polarized attitude toward non-partisan charitable campaigns.

The findings of this dissertation presents structured ways of uncovering the promises and perils of social platforms. It presents the empirical evidence that interactive tools, designed based on crowd feedback, can provide more opportunities to the users of social platforms. Finally, this dissertation shows promising ways to mitigate attitude polarization effect on the users of social platforms. Overall, it may be fair to see this dissertation as step forward to design socio-technical systems based on the knowledge learned from the interaction of the users of social platforms.

CHAPTER 2: RELATED WORK

In this chapter, I first explore the promises of social platforms by assessing the overall impact of endorsement in a wide range of field. This section lays the foundation of the first work presented on Chapter 3 on how particularly scientific crowdfunding platforms can utilize the benefit of endorsement. Second, I review how videos, a powerful medium, can influence people's donation decision on social platforms which guide my work in chapter 4 and 5 about identifying the persuasion factors that can positively influence target audience to donate. This finding also informs my work on developing an interactive tool called VidLyz that entrepreneurs can use to make persuasive campaign videos on their own. Finally, I focus on the perils of social platforms and visit the literature on biased assimilation to understand how that is affecting our digital life. This section extends to chapter 6 where I explained the effect of stigmatized topics discussed on crowdfunding platforms. This section also leads to chapter 7 where I proposed techniques for mitigating social polarization effect. At the end of each section, I describe how this dissertation extends that line of work and adds to what we already know about each area.

2.1 PROMISES OF SOCIAL PLATFORMS

In this part of my dissertation, I investigate the promises of social platforms through scientific crowdfunding and enterprise crowdfunding platforms.

2.1.1 Effect of Endorsement on Scientific Crowdfunding Campaigns

Scientific crowdfunding is relatively new social platform where researchers seek funding from the crowd to conduct scientific experiments. Few empirical studies have studied it. An early investigation found that having a large audience, using accessible and persuasive language, and having outreach efforts impact outcomes of scientific crowdfunding campaigns [20]. In another study, Hui et al. [21] found that scientists were attracted to crowdfunding because it not only gave them access to funding for conducting some initial ground work but also allowed them to receive social approval from a large number of donors in contrast to receiving reviews from a small grant reviewer panel.

To add to the scientific crowdfunding literature, as an initial step, we focused on the use of endorsements in other social media. In 2012, LinkedIn allowed its members to provide social proofs of their connections' skills and expertise, which encouraged people with fewer

skills on their profile to add more [22]. Endorsements further serve to connect people via social grooming [23]. In advertising, prior research [24] has found that when a celebrity endorses more and more products, consumers' perceptions of celebrity's credibility become less favorable. In medical crowdfunding, Kim et al. [25] found that the perceived credibility of a medical crowdfunding campaigns can be evaluated through collective social endorsements, redundancy across various sources, and online community discussions. In academic recommendations and job applications, endorsements are processed as the letter of recommendation (LOR). Research on LOR has shown that specific mentions of applicant's knowledge, work habits, skills, ethics, and accomplishments in the LOR were perceived to be a highly valued information by the reviewers [26, 27, 28].

2.1.2 This Work

Similar to LOR, the endorsements for scientific campaigns are also presented in written format. Because of the similarities in their basic format, we expected to see similar topics, found in the LOR, in the endorsements for scientific crowdfunding campaigns, although some variations are possible due to the contextual differences in these platforms. Specifically, we analyzed endorsements from scientific campaigns posted on Experiment.com and derived a taxonomy of topics discussed in the endorsements. A regression analysis revealed that when endorsers explained the skills of the campaign owners, the probability of success of the campaign improved; on the contrary, when endorsers reiterated the goal of the project, the campaign was less likely to succeed.

2.1.3 Effect of Campaign Videos on the Success of Enterprise Crowdfunding Campaigns

A large number of research studies have identified predictors of success in crowdfunding campaigns. Greenberg et al. [17] showed that using only static campaign features, such as project goals and project categories, a classifier could predict with 67% accuracy whether a campaign would be successful or not. Etter et al. [16] showed that by adding dynamic features, such as the amount of money pledged across time, and social features, such as twitter activities and social graphs of backers, they could increase the prediction accuracy to 74%. Mollick [18] also studied a comprehensive list of features and found a similar result. These prior work have shown that successful projects had patterns in their project features that could be captured by various types of classifiers. However, these classifiers do not always explain *why* these features are predictive, and therefore provide little guidance for *how* project creators can improve their campaigns.

Subsequent studies looked at details of crowdfunding campaigns to understand how they impact success. Xu et al. [29] found that the outcome of a campaign was related to the types of updates posted during the campaign. Successful projects tended to use certain types of project updates, which can be interpreted as certain types of persuasive cues for potential backers. The textual description of a campaign such as the length and readability of the description [17] and the use of certain phrases in the description [30] could also impact the outcome of a campaign. These results are again consistent with the idea that choosing the right persuasive cues (e.g., textual descriptions) are important.

Research has also found that other factors, such as social connections, reward levels, or funding goals are important. Rakesh et al. [31] showed that the larger size of the campaign owner’s social network increased the probability of a campaign’s success. Greenberg et al. [32] found an association between the number of rewards and campaign success. They found that entrepreneurs reduced the number of reward levels when they relaunched their failed campaigns. Prior work has also found that smaller funding goals [33] and shorter campaign duration [18] positively correlate with success.

Campaign videos are believed to help the project creators create a close bond with potential backers. Prior studies have shown that videos help entrepreneurs showcase professionalism [34], experience [35], and past success [36], which are crucial to success in crowdfunding. These studies, however, have not yet provided an analysis of specific aspects of the video that predict success, and thus, cannot be easily used as guidelines for creating campaign videos. It is also not clear how the persuasive power of a video can predict success *over and above* the predictive power of other static project representation features, such as the funding goal or the number of updates.

The process of coming up with a compelling story for a campaign video is not straightforward for novice entrepreneurs. This suggests that having concrete guidelines could be very useful for novice entrepreneurs. In fact, in interviews, Hui et al. [19] found that making a campaign video was one of the most challenging tasks for novice entrepreneurs. To present a compelling story, new entrepreneurs sometimes had to rely on counselors who agreed to help write their video scripts, but this delayed their campaign’s launch date. Entrepreneurs also found it intimidating to handle cameras and editing tools during the video making process. Moreover, in the testing phase, creators often preferred to seek feedback about their videos from their friends and family. However, prior work has shown that friends and family generally do not disclose their honest feedback to each other [37, 38, 39] which makes the task of improving the video based on their feedback harder.

Although the challenges of making campaign videos are discussed extensively among the crowdfunding community via blogs and forums[40, 41], to date only the presence (vs absence)

of a video is found to be critical for the campaigns' success; not including a video decreases chances of success by 26% [18]. No systematic effort has been taken to explore what video factors contribute to the success of projects over and above the existing features found to be important in prior work.

2.1.4 Persuasion through Videos

Our main goal is to understand how campaign videos persuade potential backers to support crowdfunding campaigns. However, the concept of persuading users via videos is not new. For example, Kristin et al. [42] investigated the persuasion effect for YouTube's citizen-produced political campaign videos. They found that source credibility was the most important appeal for the audience. They also found that there was no relationship between the appeals in the videos and the strength of the political information. Hsieh et al. [43] studied the persuasive effect of online videos from the perspective of marketing practitioners. They found that perceived humor and multimedia effects had positive influences on both attitude toward an online video and forwarding intentions.

Like political campaign videos, persuasion through videos has been also extensively studied in the context of television advertising. It is widely believed that television advertisements may alter not just the knowledge but also the attitudes of the consumer. However, Krugman [44] argued that television advertising did not always produce action by changing the attitudes of consumers. Krugman claimed that when the viewer was not particularly involved in the message, television advertisements merely shifted the relative salience of preexisting attitudes toward the product.

2.1.5 Research on Effective Advertising

With the innovation of online videos, social media, and interactive systems, designers often try to make their product persuasive to the audience. A persuasive product can have a wide range of effect on the audience. On one side, it can change people's behavior, whereas on the other side, it can convince consumers to buy a product. Despite their effectiveness, designers cannot successfully build persuasive systems that can change people's behavior. Fogg Behavior Model (FBM) proposed a model to explain the conditions that can nudge users to make necessary changes in their behavior to adopt a new system: 1) when they have sufficient motivation, 2) when they can adopt a new system, and finally, 3) when they receive an effective trigger from the system [45]. Oinas-Kukkonen et al. [46] adopted this model and explained how this conceptual model can be interpreted through design principles

and therefore, can be used to implement functionality for persuasive systems. One domain where theories such as FBM is applied heavily to design persuasive systems is advertising.

As only a few researchers have empirically studied the content of campaign videos, as an initial step, we focused on advertising literature because television advertisements have a lot in common with campaign videos. Like television advertisements, campaign videos are created to inform and persuade target backers to adopt a particular product, service, or idea. Besides, both types of videos are short. The average duration of television advertisements is 30 seconds to 1 minute, and the average duration of Kickstarter videos is 2 to 3 minutes. Although television audience and campaign backers may have different viewpoints, these inherent similarities motivated us to explore factors studied in advertising literature to analyze campaign videos.

For both academic research and industry practices, it is important to understand what factors make an advertisement memorable and effective. However, measuring the effectiveness of advertisements has many challenges [47]. People do not usually buy a product immediately after watching an advertisement, so its effectiveness works more as a carryover effect. Furthermore, there are various user and context specific factors such as the viewers' prior experience, product availability, buying capacity, and brand popularity that can potentially impact the viewers' reaction to the advertisement [47]. Despite of all these challenges, prior studies have found that some factors can predict the attitude towards the advertisement with high precision. For example, the production quality of video advertisements is considered an effective predictor of the viewers' attitude towards the advertisement [48]. Other notable factors studied extensively to understand the effect of the advertisements include the attention to, and involvement[49] with the advertisement. Attitude towards the brand is considered an equally important aspect for measuring the effectiveness of advertisements [50].

Currently, there appears to be no single comprehensive list of factors for measuring the effectiveness of advertisements. Lucas et al. [51] took early initiatives in this direction, summarizing how theories from applied psychology and scientific marketing helped to measure the effectiveness of advertisements. Wells et al. [52] continued that initiative and came up with an updated set of factors applied both in academia and industry research to measure advertising effectiveness. This dissertation aimed to determine what features of campaign videos might predict the success in convincing potential backers for donations.

2.1.6 The Elaboration Likelihood Model (ELM)

Persuasive communication has been studied extensively in social and behavioral psychology, advertising, marketing, psychotherapy, counseling, and political campaigns. One of

the most influential dual process persuasion theories to explain consumer behavior in the advertising literature [53] is the elaboration likelihood model (ELM) [54]. The ELM integrates many seemingly conflicting research findings and theoretical orientations under one conceptual umbrella.

ELM proposes two distinct persuasion routes for evaluative processing: the central route and the peripheral route. Central persuasion results from a person’s thoughtful consideration of the true merits of the information presented in support of an object or a topic. For example, in an air conditioner’s advertisement, air conditioner’s cooling power would be considered a central cue, as this is a critical feature of an air conditioner. However, if a person is not motivated to thoroughly process the advertisement, they may apply simple heuristics such as peripheral cues without scrutinizing the true merits of the information [55]. Air conditioner’s color would be considered a peripheral route because aesthetics are not directly related to the utility of the product. Cue utilization changes based on how they relate to the product. An attractive model with shiny hair may be a peripheral cue in a car advertisement, however, in a shampoo advertisement, that model may be a central cue because shiny hair demonstrates something about shampoo. Similarly, in the context of campaign videos, we expect that arguments regarding the quality and utility of the primary product or service, and the quality of the video or audio will be evaluated differently depending on the category.

2.1.7 This Work

This dissertation aims to understand the persuasive impact of campaign videos by revealing controllable elements that contribute to the success and enabling entrepreneurs to create more effective campaign videos. I have followed a long thread of research in effective advertising and persuasion theory to report the persuasive effects of campaign videos related the success of the campaigns. Moreover, most of the prior studies considered all Kickstarter campaigns as one big category. However, prior work on ELM has shown that observers’ utilization of cues for central versus peripheral routes may vary depending on the motivations and ability of the observer [55]. In this dissertation, I adopted ELM to understand whether central and peripheral persuasion cues can explain the varying perceptions of backers while they are evaluating campaign videos of different project categories on Kickstarter.

2.1.8 Applying Persuasion Factors into Making Campaign Videos Persuasive

After identifying persuasion factors that make campaign video appealing to the audience, I try to observe whether novice entrepreneurs can learn how to apply these factors to make

effective campaign videos for their target donor audience on their own. To address this issue, we interviewed 15 novice participants (9 female). 10 of them made some form of promotional videos in the past. However, none of them had made any campaign videos on their own or helped someone else to make a campaign video in the past. So, in terms of experience in making campaign videos, these participants were comparable to novice entrepreneurs who have no prior experience in making a campaign video. To understand how well they could interpret the known persuasion factors in campaign videos, I presented them my list of persuasion factors and explained how I used those factors to design a logistic regression model in predicting the success of a campaign.

All participants felt that the persuasion factors I presented to them would be useful for new entrepreneurs. However, I asked them to reflect on how those findings would be useful for making their own videos persuasive, participants found most of the factors ambiguous. They explained that just from seeing the names of those factors, they were not sure how researchers measured those factors for the actual campaign videos. Hanjalic et al. [56] found that video content can be analyzed on two basic levels: 1) cognitive and 2) affective. The cognitive level aims at extracting information that describes the “facts”, e.g., the structure of the story or the composition of a scene. On the other hand, the affective level can be defined as the amount and type of affect (feeling or emotion) present in a video and expected to arise in users while watching the video. In crowdfunding, novice entrepreneurs often explore videos from successful campaigns based on the affective level to understand what factors make them appealing to the audience. However, this task is hard without any guidance or prior training and can be biased by including only the perspective of the individual entrepreneur (versus perception of the “crowd”). Participants wanted a structured way to understand the significance of persuasion factors and how they can apply those factor in their videos.

2.1.9 The Effect of Interactive Tools in Engagement and Learning

Interactive tools and videos are considered as effective elements for learning and exploration in many contexts. Prior research found that interactive tools can increase engagement of the students in classroom environments [57] and independent learning [58]. Acknowledging the importance of interaction in learning and exploration, Google launched Oppia [59], an education tool, that allows anyone to create interactive activities for teaching. Adly et al. [60] found that interactive simulation-based teaching tool can significantly improve student’s engagement in the learning process and can help them better understand the abstract concepts.

2.1.10 Impact of the Generation Effect

In cognitive science, researchers found that when learners were asked to generate study materials rather than only reading them, they achieved better retention and generalization of learning. This phenomenon is called the generation effect. One explanation of the generation effect was the lexical activation hypothesis which claims that when engaged in self-generation, the person will need to activate and associate relevant semantic knowledge, which strengthens connections between the new information and existing knowledge. As a result, self-generation often leads to better understanding and retention of information [61, 62]. Cognitive scientists [63] utilized the generation effect to design computer-based cognitive tutors that can encourage students to do self-explanation in a classroom setting. Self-explanation stimulated generation effect which helped students achieve better understanding and better transfer of learning.

2.1.11 Storyboards and their Importance in Planning Videos

The success of a video largely depends on the pre-production planning. Video shooting and post-production editing are expensive and time-consuming, so producers prefer to utilize storyboards as their pre-production planning tool. A storyboard is a visual representation of the video that illuminates and augments the script narrative [64]. It is a sequence of simple hand-drawn sketches and annotations scribbled in the margins that shows the narrative flow of the video, scene by scene. A storyboard works like a map for the video production team [65]. It allows people to share their ideas at a very early stage with minimum expense.

2.1.12 This Work

We took inspiration from the previous work and designed a tool called VidLyz. VidLyz has two parts: 1) the interactive interface and 2) the planning module. My goal is to design the interactive module that it can present the persuasion factors accompanying crowd-sourced ratings and feedback in to provide necessary guidance to novice entrepreneurs. Furthermore, to encourage novice entrepreneurs to learn more about persuasive campaign videos through lexical activation, I designed the guided planning module. This module allows users to think actively about their product on their own instead of going through videos made for other products. In the end, entrepreneurs can use storyboards to prepare an elaborate pre-plan for their videos. My goal is to enable entrepreneurs to go through the actual production phase of the video much faster, which consumes the majority of their campaign video budget.

2.2 PERILS OF SOCIAL PLATFORMS

In the last piece of my dissertation, I investigate the flip side: the perils of social platform. In this section, I review the literature about sexual stigma in particular and understand how social platforms can influence people’s opinion on socially sensitive and stigmatized issues. I also explore design implications on how to redesign campaign materials to overcome the bias created by sensitive political crowdfunding campaigns.

2.2.1 Sexual Stigma

Historically, the term stigma referred to a mark or bodily sign- designed to expose something bad about the moral status of the signifier [66]. Link et al. [67] focused on the socially constructed meaning of this mark and described that stigma involves a label and a stereotype, with the label linking a person to a set of undesirable characteristics that form the stereotype. One of the most discussed phenomena regarding stigma is the sexual stigma, a socially shared knowledge about the sexual orientation whose status is devalued relative to that of heterosexuals’, where heterosexuals are regarded as the prototypical members of the community [68, 69].

In this dissertation, we focus especially on stigma against LGBTIQ people. The negative attitude associated with LGBTIQ people [67] often extends to hostility, discrimination, and even aggression against sexual minorities [70]. People, suffering from this hostility, often seek social and financial support through crowdfunding campaigns. On the other hand, people who oppose sexual minorities, also face social bashing and tension as public opinions change. For many stigmatized topics, crowdfunding campaigns have been launched to support opposite perspectives on the same platform, and it is not clear how individuals’ diverse pre-existing attitudes influence how they perceive these campaigns and whether their opinions will be changed by these campaigns.

2.2.2 Crowdfunding and its Social Impact

Early work studying crowdfunding campaigns has largely focused on factors that can determine probabilistically whether a campaign will be successful or not [17, 18, 29, 30, 71]. In the last few years, researchers have started investigating the emotional and social impact of crowdfunding campaigns more deeply on areas such as scientific crowdfunding [21] and enterprise crowdfunding[72, 73]. Kim et al. [74] explored how supporters of medical crowdfunding campaigns not only provide financial support to the beneficiaries, but also assist

beneficiaries to create and promote their campaigns and helped them balance their lives by providing food, transportation, or even childcare support. Megan Farnel [75] focused on a more sensitive subsection of medical crowdfunding campaigns: funding for gender/sexual reassignment (G/SRS) surgeries for the transgender community. She conducted a case study on three campaigns launched in three different platforms and found that supporters of Indiegogo were the most supportive of these campaigns whereas beneficiaries faced many challenges when they approached potential supporters on Kickstarter and YouCaring.

Gonzales et al. [76] also studied transgender community and found that transmen often avoid Facebook and prefer Tumblr to promote their campaigns just to avoid social embarrassment from their close friends and family members. Dey et al. [77] took this work a step further and explored the topic of “equal rights for the LGBTIQ community”. They found that exposure to campaigns related to this sensitive topic polarize people’s opinions on the topic in the long run. Apart from analyzing the impact of crowdfunding campaigns about socially sensitive issues, researchers have also shown how crowdfunding campaigns are impacting our social and economic infrastructure. Brabham [78] found that conservative groups used the support for art projects through platforms like Kickstarter to justify the decision to defund public art projects. The growing body of research work helps me understand the impact of both sensitive and non-sensitive crowdfunding campaigns on our society.

2.2.3 The Rise of Stigmatized Crowdfunding Campaigns

To illustrate the impact of crowdfunding campaigns on the opinions of stigmatized social issues, it is useful to review recent notable events relevant to this paper. One recent crowdfunding campaign about the sexual stigma that raised many ethical controversies was the campaign about a bakery in Oregon, called “Sweet Cakes”. The bakery owners were fined \$135,000 for refusing to bake a cake for a same-sex wedding [79]. To pay this fine, the owners created a crowdfunding campaign on GoFundMe which managed to raise about \$109,000 in just one day. However, GoFundMe decided to remove the campaign immediately from their platform since the owners of the bakery were involved in legal charges. GoFundMe also revised their Terms and Conditions in an attempt to not allow campaigns in future that benefit individuals or groups facing formal charges or claims of serious violations of the law [80]. The removal of this campaign attracted a lot of attention from people who supported the bakery. Later, this campaign was relaunched on another platform, *Continue to Give*, and raised \$355,500, the highest amount raised by any campaign on that platform.

The revised policy prohibited people with legal charges to launch campaigns in GoFundMe; although, people without any legal charges are still launching campaigns in GoFundMe on

various stigmatized issues. For example, GoFundMe hosted more than 70 campaigns to pay for the medical expenses of injured counter-protesters who opposed white supremacy at Charlottesville and managed to raise more than \$1M in just five days after the incident [81]. The abundance of stigmatized campaigns suggests that campaigns on socially stigmatized topics are becoming more common in donation-based crowdfunding platforms.

GoFundMe’s new restrictions created the need for restriction-free alternative crowdfunding platforms among the group of people who are no longer allowed to launch campaigns on a mainstream platform such as GoFundMe. For example, recently released platforms such as RootBocks and WeSearchr [82] are gaining popularity as alternative anti-censorship venues within the alt-right community [83]. The proliferation of platforms with differing ideologies has led to a widening spectrum of campaigns in the charitable crowdfunding genre. An interesting and important question is how these campaigns may impact the perception of the individuals on stigmatized topics?

2.2.4 The Impact of Social Support

Psychiatrist Sidney Cobb defined social support as “the individual’s belief that one is cared for and loved, and belongs to a network of communication.” In the past, the concept of social support was studied in the primary healthcare domain where social support was essential to humanize medical care [84]. With the widespread popularity of social media and other online platforms, researchers examined the trend of seeking social support through various social media signals such as tweets [85, 86], Facebook’s posts and shares [87], and YouTube *likes* and *comments* [88]. Push polling is another well-known medium that attempts to change social support using the disguise of a legitimate scientific polling [89]. Like push polls or political campaigns, crowdfunding campaigns also receive social support in the form of monetary donation, social media shares, and comments. Some platforms also indicate where the donations come from. This provides more information on the kind of social support for the campaigns. Next, I discuss how people may show bias in assimilating new information when diverse information is presented.

2.2.5 Biased Assimilation and Attitude Polarization

Biased assimilation theory claims that information relevant to a topic is not always processed impartially. Rather, based on pre-existing beliefs and expectations, individual may dismiss and discount empirical evidence that contradicts their initial views but will derive support from evidence, of no greater value, that seems consistent with their views. As an

outcome of biased assimilation, people may perceive that their initial attitude has become stronger after evaluating supporting and opposing evidence together. This tendency is known as attitude polarization.

Lord, Ross, and Lepper first provided the demonstration of biased assimilation and attitude polarization in 1979 [90], where participants evaluated the effects of capital punishment. Subsequent research has replicated the effect of biased assimilation on abortion [91], climate change [92], the John F. Kennedy assassination [93], presidential debates [94], technology failure [95], and biological explanation of homosexuality [96].

2.2.6 This Work

In this dissertation, I aim to understand the opinions of individuals on socially stigmatized crowdfunding campaigns, especially when the campaigns are inconsistent with their attitude and they have varying level of social support from the crowd. I attempt to explore the impact of stigmatized campaigns and their social support on individuals' pre-existing attitude about fairness and equality for LGBTIQ people in the context of crowdfunding. Unique and complex social dynamics of these campaigns may have important implications on how this emerging form of social media may moderate social opinions. In this dissertation, I aim to explore the effects of stigmatized campaigns not only for the supporters of the campaigns but also for the general audiences of these campaigns who may not decide to donate explicitly. I examine whether presenting stigmatized crowdfunding campaigns results in the biased assimilation of information and attitude polarization that may play an important role in shaping opinions on a topic.

2.2.7 Political Sensitization and Activation of Partisan Identity

Social identity theory explains people's perception of their own identity using the concept of in-group and out-group effect. The term in-group identifies a social group in which someone psychologically identifies as being a member. On the contrary, someone identifies a social group as an out-group when they perceive that they do not belong to that group. The in-group vs out-group categorization can be stimulated by many factors such as sex, age, race/ethnicity, or geographic location and this identification can naturally bring some benefit. Prior work has shown that when college students were sensitized about in-groups vs out-groups where the out-group was linked with risky health practices, they willingly started making healthy choices, for instance, eating less fattening food and drinking less alcohol [97]. However, in-group identification can amplify social bias too. For instance, Cairns et al. [98]

have shown that at the time of religious violence, community members can naturally become more sensitive about their religious identity, and thus they can develop in-group favoritism and become more hostile toward the out-group members, i.e., people from other religious community.

Religious identity is not the only reason for which people experience bias in society. Political ideology is one of the most prominent factors that contribute toward in-group vs out-group categorization. Prior work has shown that when political identity became salient over the national identity, people started showing higher in-group favoritism. However, this effect was attenuated when the national identity became the salient thought for the participants. Further investigation revealed that when political identity became salient, people became less sensitive to an attack that was attributed to in-group members [99]. Politicians have also used this self-categorization strategy to motivate their supporters through social media. In a longitudinal study, researchers found that politicians used Facebook posts to create a complex flow of attention between in-group and out-group concerns which led them to create converging sentiments among their supporters. Overall, any kind of social identity, when that identifies a group of people into a socially advantaged group, members of that group typically exhibit implicit in-group favoritism and show bias against out-group members than do members of socially disadvantaged groups [100].

Political crowdfunding platforms have provided a unique opportunity to politicians from which they can not only receive funds for their election campaigns but also these platforms can potentially become a convenient place for gaining support from new supporters. However, it is still not known whether these political crowdfunding campaigns can inadvertently trigger the in-group and out-group categorization among the audience and if so, then how will that impact the audience's opinion in general.

2.2.8 Social platforms and their Relationship with the Political Domain

Researchers in Computer-Supported Cooperative Work (CSCW) and Human-Computer Interaction (HCI) have repeatedly investigated how people's engagement with social media impacts their political ideology. For instance, in a recent study, Wang et al. [101] have shown how Facebook helps college students to receive diverse perspectives on political issues. However, Facebook does not only bring benefits to college students. Although college students frequently use Facebook to consume political news, they avoid commenting and sharing news on Facebook because they are concerned about managing impressions. To stay committed to their political ideology, people with strong partisan identity curate their social media feeds that are reflective of their political preferences [102, 103, 104] and change their settings to

see fewer posts from individuals in their network who hold differing political views [105, 106].

In addition to consuming political news, social media platforms also work as a direct communication medium between political candidates and their supporters, although these interactions have not always been categorized as positive interactions. Prior work has shown that adversarial users often use Twitter to harass political figures. Hua et al. [107] found that highly adversarial users primarily deliver negative comments to politicians of the party that they oppose and express fewer positive comments to the politicians of the party that they support through Twitter. Some of the adversarial attacks in social media happen in an obscure way through regular information campaigns. Empirical analysis has found that by imitating ordinary users, such information operations systematically micro-target audiences of different political ideologies to foster antagonism and undermine trust in information intermediaries [108].

Similar to Facebook and Twitter, crowdfunding platforms such as CrowdPac provide opportunities to political figures to communicate with their existing and prospective supporters. With so many similarities between political crowdfunding platforms and other social media such as Facebook and Twitter, the main difference is that the sole purpose of these crowdfunding platforms is to present the political agendas of the politicians. Because of these structural designs, people visiting these platforms may already have emotional alertness when exploring such political campaigns. In this paper, we aimed to understand the fuller impact of the dynamics that emerge from this alertness that people experience when they get exposed to political crowdfunding campaigns and how that experience can influence their exiting opinion on non-political socially sensitive topics.

2.2.9 Political Crowdfunding Platforms

The earliest known political crowdfunding campaign was done in 1885 when the U.S. Congress and the state of New York failed to finance the pedestal for Statue of Liberty [109]. The publisher of the newspaper “The World” came to the rescue by launching a crowdfunding campaign in his newspaper for the pedestal. The campaign successfully raised \$100,000 in just 5 months from more than 160,000 donors. In recent years, political crowdfunding campaigns have gained a lot of interest in U.S. politics. Traditionally politicians in the U.S. used to receive the majority of their funding from large donors, small donors, and PACs (political action committees). With the launch of the political crowdfunding platforms, politicians found it convenient to collect their required funds. These platforms allow politicians to jump-start their fund-raising initiatives. Before filing their candidacy, politicians can launch their crowdfunding campaigns in these platforms where they can explain their

political agendas and intention for running for elective positions. Anyone supporting any specific politician can donate money through these crowdfunding campaigns to support that candidate. This enables the politicians to gauge their level of public support even before they decide to run for a position. This is particularly useful for politicians running for the first time for an elective position as they may not know if they are viable as a candidate in the political arena. Someone not receiving enough funding can also decide to not run for the position at all which will automatically return all the donations to the respective donors. Only those campaigners who will ultimately file their candidacy will receive the donations from their crowdfunding campaigns. Besides gathering funding, politicians started considering crowdfunding as a mainstream medium because even a small amount of donation encourages voters to participate in the voting process. Voters' participation is critical especially for local elections since local elections often suffer from low voter turnout.

One of the most popular political crowdfunding platforms in the U.S. is CrowdPac [110] that allows potential candidates to gauge the amount of support they would receive if they decide to run for a position before they decide to submit their candidacy. Bryan Parker from Oakland, CA used this feature before deciding to run for the mayoral race in 2014 [111]. A similar platform, called uCampaign [112], allows candidates to create social apps with minimum effort to raise money for election campaigns and promotes fundraising through word of mouth. This platform would ask the primary supporters of a campaign to contact 10 more people they knew and to request them to join the app and donate money for the campaign. In 2016, uCampaign used this word of mouth strategy to help Senator Ted Cruz to win the Iowa Caucus. Some platforms in this domain are more specific to their goal. One example is Flippable [113], whose mission is to flip state governments from red to blue by choosing candidates to fund from only those states where Democrats are not holding the following 3 positions together: State House of Representatives, State Senate, and the governorship.

2.2.10 Public Perception of Science around Partisan Politics

In America, it is often believed that many — if not all — the issues connected to science are viewed by the public through a political lens. Although scientific findings are always backed by experimental evidence, people's perception of science largely depends on partisan-politics [114]. A recent Pew survey found that around 54% of Democrats think scientific experts are usually better at making decisions about scientific issues than other people. In contrast, 34% of Republicans say the same [115]. However, media experts believe that there is hardly any difference between liberals and conservatives on accepting scientific evidence

without any political bias. The only difference is in their way of expression: Liberals often assert that conservatives are simply anti-science, whereas conservatives often insist that Democrats tout scientific findings to justify giving government a larger and more intrusive role [116]. In the case of scientific topics, often disagreements occur over a different set of issues between liberals and conservatives. Many liberals object to nuclear power, hydraulic fracturing (fracking) for oil and gas, genetically modified organisms, and some aspects of genomic medicine. For conservatives, highly debatable issues include evolution, stem cell research, and vaccination [116].

Among these, climate change is a widely discussed scientific topic both inside and outside the United States. The European Union has always been the leader of international climate diplomacy [117]. However, its efforts have suffered from significant deficits because of the clashing interests of member countries, some of which still heavily depend on coal. In Australia, politicians' political affiliations are powerful influences on climate change beliefs. Politicians from center-left and progressive parties are more aligned with the scientific evidence of climate change compared to non-aligned or conservative leaders [118]. In the U.S., politics is at the center of people's views about climate. To bring this topic out of the political influence, activists previously suggested to use "climate crisis" instead of "climate change" since "change" on its own hardly sounds like a bad thing [119]. Due to extensive discussion on the influence of partisan politics on climate change, in this paper, we have used climate change as a topical lens to examine how people's perception on non-political topics would get affected by political crowdfunding campaigns especially when it is discussed outside of the political context (in the context of philanthropic appeals).

2.2.11 Effects of Behavioral Priming on Political Ideology

Many researchers believe that although political ideology is considered as a long-standing belief, it can be malleable at least for a temporary duration. Someone's attitude about a topic depends not only on their long-term political ideology but also on their momentary state of mind. The state of mind can affect how one organizes relationships between categories at a specific moment, or "schema". Previous research studies have shown that conventional conservative ideology follows *personal merit schema*, which means that according to conservative ideology, success is seen as the product of hard work, wise decision-making and other aspects of personal merit, whereas failure and low status are related to their opposites [120, 121, 122, 123, 124]. On the other hand, liberal ideology relates success to luck, social advantage, the help one receives from others, and other factors independent from personal merit. Researchers call it the *good fortune schema* [120]. If, at any moment, con-

servatives find a reason to believe in good fortune schema, their further judgment, at least for a short duration, will reflect the liberal ideology and vice versa [125].

A different body of research studies has shown evidence that political position can be influenced by activating different feelings such as safety versus threat. Research studies have shown that conservatives perceive the world as a more dangerous place and appear to be more perceptually vigilant to potentially threatening stimuli than liberals [126, 127, 128, 129]. It is shown that threats such as terror alert or attacks increase conservatism [130] (more specifically social conservatism [131]) among liberal people. Conversely, liberals typically like to perceive the world with a feeling of physical safety [131]. Similar to the previous scenario, if liberals start feeling threatened, their further decisions will reflect the conservative ideology and vice versa [125].

Previous work has shown that both of these priming strategies (schema priming and threat versus safety priming) can attenuate people's partisan ideology and can make their shared community ideology more salient for a certain time duration. Our goal is to understand after exposure to sensitive topics, whether and how behavioral priming occurs and how liberal and conservative people might change their original political position at least for a short duration. A better understanding of the effect of behavioral priming will allow crowdfunding platform designers to be better equipped to protect their donors from such an effect of sensitization and in-group favoritism in the future.

2.2.12 This Work

In political crowdfunding campaigns, potential candidates discuss socially sensitive topics as part of their election agenda. On the other hand, numerous charitable campaigns related to these sensitive topics are launched to support initiatives at many levels. While all these political crowdfunding platforms have attracted attention from mass-media and social media in the last few years, little is known about how these campaigns impact other non-political crowdfunding campaigns hosted in non-political platforms in the long run. I aim to fill this gap in this dissertation. Furthermore, I apply external priming techniques to understand what type of external priming strategy will work best for liberal and conservative people to change their original political position at least for a short duration. I believe that better understanding of the effect of external priming strategies will allow crowdfunding platform designers to be better equipped to overcome the bias of their potential donors.

CHAPTER 3: PERSUADING THE CROWD THROUGH EXPERT ENDORSEMENTS

3.1 INTRODUCTION

The gradual decrease of success rates of national funding agencies like NSF [132] and NIH [133] has motivated researchers to find alternative funding sources. One newly-explored alternative for funding scientific research is crowdfunding, in which researchers request financial support from the crowd through online campaigns. Examples of popular scientific crowdfunding platforms include Experiment.com [134], Rockethub [135], and crowd.science [136]. Scientific crowdfunding campaigns not only allow researchers to engage the general public in the research process but also help researchers obtain funding in a relatively short time compared to traditional research funding processes [21].

While enterprise crowdfunding, such as Kickstarter, has been extensively studied, there is still a lack of research on scientific crowdfunding. Although there are many similarities between these two types of crowdfunding platforms [21], one important factor that differentiates scientific from enterprise crowdfunding is the general objectives of these two types of campaigns; while backers of most enterprise crowdfunding campaigns receive some rewards from the creators, backers typically do not receive rewards for supporting scientific crowdfunding projects. Rather than focusing on rewards, backers of scientific crowdfunding are likely to focus on factors such as scientific values, the preparedness of the project team, and the likelihood of success. Therefore, it is likely that backers may have a different motivation for supporting these campaigns.

Because backers may not have the expertise to evaluate scientific crowdfunding projects, to attract backers' attention, creators often request external endorsements from scientists or researchers in related areas. This form of endorsement is unique to scientific crowdfunding (although implicit endorsement by other backers may serve similar functions in enterprise crowdfunding). Intuitively, endorsements are powerful persuasive cues as they increase the level of trust of potential backers, who may eventually donate to a campaign [137]. While important, there is a lack of systematic research on the impact of endorsements on scientific crowdfunding.

This chapter focuses on the analysis of campaign endorsements on Experiment.com. In particular, I derived taxonomy of endorsement topics and developed a logistic regression model to identify the relationship between endorsements and the success of the campaigns. I adopted the theoretical framework of the Elaborative Likelihood Model (ELM) which claims that persuasion can be effective based on the motivation of users in two ways: 1)

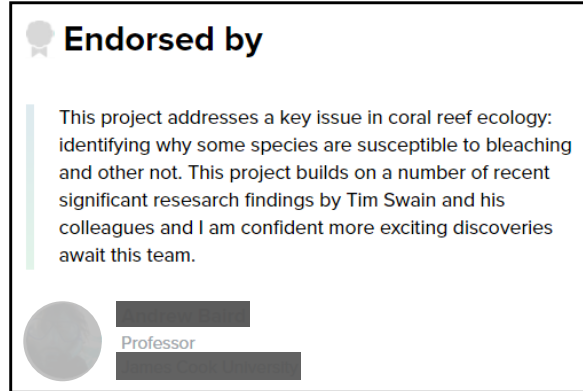


Figure 3.1: A sample endorsement from a scientific crowdfunding campaign posted on Experiment.com

the central route and 2) the peripheral route. In the context of scientific crowdfunding, endorsements can be thought of as a central cue that reinforces the deliberate processing of the research skills of the campaign creators by potential backers. On the other hand, products or services in the form of rewards can be considered peripheral cues which are not directly related to the quality of the research project. By studying the dynamics of scientific crowdfunding campaigns, I aim to find how differences in campaigns may prime potential backers to selectively attend either central or peripheral persuasion cue.

3.2 METHODOLOGY

Experiment.com allowed creators to ask other scientists to endorse their projects from August 2013 [138]. For my study, I chose Experiment.com over other platforms for two reasons. Unlike other platforms, Experiment.com is dedicated to scientific crowdfunding only. Moreover, Experiment.com has projects in 21 scientific categories which is rarely found in other equivalent platforms. Experiment.com recommends that campaign creators seek endorsements from people that potential backers will trust, such as advisors, colleagues, collaborators, department chairs, or people affected by the research topic. These endorsements are placed at the bottom of projects' Webpages along with the endorsers' names and affiliations. Figure 1 shows an example endorsement.

To understand what topics endorsers typically highlight in their endorsements, I tried to collect the URLs of all the launched campaigns from Experiment.com up until July 2016. As Experiment.com does not have an exposed ID for each project, I first collected the usernames of all users (backers, project owners, and endorsers) from all of the projects available on the Website's discover project page. Later, I extracted all of the distinct projects

Table 3.1: Topics identified from the endorsements of scientific campaigns through manual coding. I provided short description for each topic along with an example endorsement for each topic.

Topics	Detailed Description
	Example Endorsements
Campaign owner’s skills and access to resources	Described the academic achievements, competence, interpersonal skills, and explicit access to resources of the campaign owner/s essential to conduct the research project
	Example: "Dr. Hopkins is an outspoken advocate for human rights and a passionate, enthusiastic, and hard-working researcher whose contributions towards assuring diverse groups have a voice are widely known and respected" (E259).
Importance of the research project	Explained why the proposed project is important and how specifically the findings from the project will fill the information gap in the corresponding research domain
	Example: "This project has interesting theoretical and practical implications. The study design is straightforward, the analytical techniques are appropriate, and the insights gained will be valuable" (E139).
Overall scientific benefit	Explained why new research in a general direction is necessary from a broad perspective, without describing any specific details related to the proposed project
	Example: "Genetic variations in mosquitoes can lead to pronounced differences in their ability to spread mosquito-borne viruses like Zika virus. To most effectively control potential future outbreaks of Zika, we need to understand how well mosquitoes can transmit Zika" (E287).
Reiteration of the project	Described briefly what the campaign owners were planning to do in the proposed project
	Example: "Dr. Michael Ferro’s proposed a project to conduct an expedition to the West Coast of America to document previously unknown species in the genus <i>Sonoma</i> " (E109).
Endorser’s relationship with the campaign owner	Explained the personal relationship of the endorser with the campaign owner
	Example: "Lee Bryant worked for me as a field biologist on a project in 2013" (E379).
Affiliation of the endorser and the campaign owner	Explained institutional affiliation of the endorser and campaign owner
	Example: "As Professor and Chair of the Department of Mechanical Engineering, I’m very pleased to endorse the UW ZeroG Team’s project" (E349).
Worthiness of the project for crowdfunding	Explained why the proposed project would be appropriate for crowdfunding
	Example: "Crowdfunding is particularly appropriate for studying the Zika virus outbreak because this kind of outreach is a public good and requires immediate support. (E30)"
Confirmation of endorser’s monetary support	Stated that he/she already pledged for the project and explicitly mentioned to donate money
	Example: "I am glad to financially support the novel approach being proposed to detoxify sewage. Please donate for this project " (E98).
Others	Endorsed the project without any specific reason
	Example: "I would be happy to endorse this project" (E731).

mentioned on users’ profile pages. Using this strategy, I collected 1037 (92%) projects out of 1127 total projects launched in Experiment.com (as reported in the status page of Experiment.com). Among these campaigns, I considered only 982 “non-live” campaigns for my analysis (campaigns past their deadlines) to ensure that I knew the outcome of the campaigns (successful or unsuccessful). Among the “non-live” campaigns, 337 campaigns had at least one endorsement. I extracted all of the endorsements and performed a mixed method analysis. In total, I collected 810 endorsements. Of the 982 non-live campaigns, 645 campaigns had no endorsements. Among these without-endorsement campaigns, 259 were successful and 386 were unsuccessful. This indicates that there must be factors other than endorsements that make a campaign successful. However, in the limited scope of this chapter I chose not to analyze the effect of other factors. This comparison is indeed important and remains for future work.

To develop a topic taxonomy of the above endorsements, two coders from my research team thoroughly investigated all the endorsements and iteratively developed a coding scheme for the endorsement topics [139]. The process involved three cycles of coding and revision until consistent patterns emerged in the data. After the coding scheme was established, a third coder examined it to verify the methods. In the second stage, I used a hierarchical logistic regression analysis to produce an analytical model for the campaign outcomes.

3.3 RESULTS

Among the 337 non-live campaigns with at least one endorsement, 211 campaigns successfully raised their target goal and the remaining 126 campaigns did not. On average, successful campaigns had 2.56 (SD:1.30) endorsements whereas unsuccessful campaigns had 1.88 (SD:0.98) endorsements. I found the difference in the average number of endorsements for successful and unsuccessful campaigns to be statistically significant ($t(308)=3.80$, $p=0.0001$).

3.3.1 Topics Extracted from the Endorsements

Table 1 lists the nine topics identified through manual coding by two coders. The Cohen's kappa coefficient [140] between the coders was 0.73. A brief description of each of these topics along with an example endorsement can be found in Table 1. Figure 2 shows the percentage of frequencies of these topics for successful and unsuccessful campaigns. The most frequently mentioned topic was the overall scientific benefit (26.19%) closely followed by the campaign owner's skills and access to resources (23.31%) and the importance of the research project (21.64%).

Although this qualitative analysis helped us find the main topics stated in endorsements for scientific crowdfunding campaigns, it did not reveal how endorsements affected the overall outcomes of the campaigns. To this end, I conducted a logistic regression analysis using the frequency of the topics found in the qualitative analysis as predictor variables, and the outcome (success or not) as the independent variable.

3.3.2 Factor Analysis

To avoid over-fitting of the regression model, I reduced the dimensionality of the original space by performing factor analysis before including the variables into the regression model. I found six main factors for which the sum of square loading is greater than 1. Those six

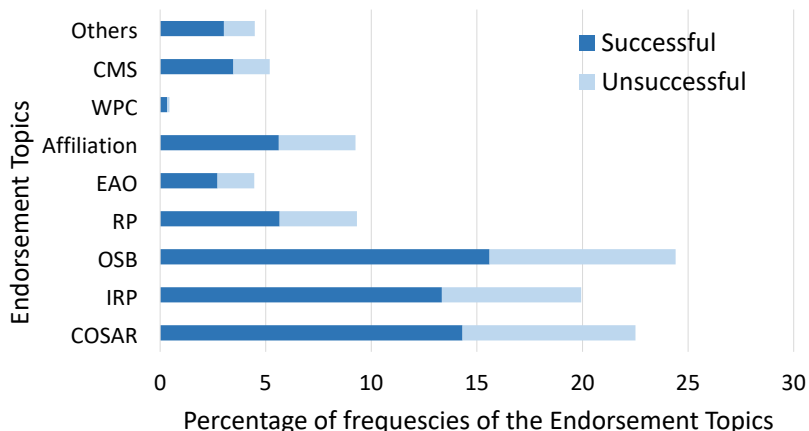


Figure 3.2: Percentage of the frequencies of the endorsement topics for successful and unsuccessful campaigns. Abbreviation of the topics: COSAR: the campaign owner’s skills and access to resources, IRP: the importance of the research project, OSB: overall scientific benefit, RP: a reiteration of the project, EAO: the endorser’s association with the campaign owner, Affiliation: affiliation of the endorser and the campaign owner, WPC: the worthiness of the project for crowdfunding, CMS: the confirmation of the endorser’s monetary support, and Others: other generic endorsements without any specific reason

factors are: 1) the campaign owner’s skills and access to resources, 2) the importance of the research project, 3) the overall scientific benefit, 4) a reiteration of the project, 5) the affiliation of the endorser and the campaign owner, and 6) a confirmation of the endorser’s monetary support. There were three topics for which the loadings were below the cut-off threshold (0.60). Those topics were: 1) the endorser’s association with the campaign owner (loading: 0.45 in factor 5), 2) the worthiness of the project for crowdfunding (loadings: 0.23 in factors 6), and 3) others (loadings: 0.16 in factors 6). I did not include these three topics in the regression analysis.

3.3.3 Logistic Regression Analysis

Previous studies showed that campaign representation features were predictive of success for enterprise crowdfunding [16, 17, 18]. To understand how endorsements predicted outcomes over and above campaign representation features, I also initialized the logistic regression model with these features, which included the campaign’s funding goal, duration, the number of lab notes, the number of images, the number of URLs, and the number of comments. I then added the frequencies of the six endorsement topics as independent variables. The quality of the model was measured using Nagelkerke’s R^2 [141].

Table 2 depicts the β coefficients, errors, and significance estimates for the model. The R^2

Table 3.2: Logistic regression coefficients and p-values (asterisk (*) indicates statistical significance $p < 0.05$).

	Predictor Variables	β	SE	P
Variables used for Model Initialization $R^2 = 0.36$	Funding Goal	0.75	0.21	0.02 *
	Duration	0.11	0.13	0.03 *
	#of Lab Notes	0.33	0.09	0.08
	# of Images	0.28	0.25	0.04 *
	# of URLs	0.41	0.49	0.31
	#of Discussions	0.58	0.27	0.03 *
Frequencies of the Endorsement Topics Included Later $R^2 = 0.51$ $R^2_{\Delta} = 0.15$	Campaign owner’s skills and access to resources	0.31	0.18	0.03 *
	Importance of the research project	-0.10	0.21	0.63
	Overall scientific benefit	0.08	0.20	0.69
	Reiterate the project	-0.63	0.28	0.02 *
	Affiliation	-0.08	0.34	0.81
	Confirmation of monetary support	0.24	0.80	0.03 *

value for the initial model was 0.36. After adding the endorsement topics, the R^2 value for the model became 0.51. This shows that endorsement topics have an additional 15% prediction power for the campaigns’ outcome over the campaign representation features. The Wald statistics for R^2_{Δ} was significant after adding the frequencies of the endorsement topics. Three out of six topics were statistically significant. Among these three significant topics, 1) the campaign owner’s skills and access to resources and 2) a confirmation of endorser’s monetary support were positively correlated with the outcomes and 3) a reiteration of the project was negatively correlated with the outcomes of the campaign.

3.4 DISCUSSION

My mixed-method study shows that endorsements predicted the outcome of scientific crowdfunding campaigns. I found that the most effective type of endorsement was the discussion about the campaign owner’s skills and his or her explicit access to resources such as a rare dataset or important equipment essential for a project. This finding is consistent with the theoretical framework of ELM. The positive effect of endorsements, discussing researchers’ skills and efficiency for research projects, shows a persuasion effect through the peripheral route of potential backers. Although further research is needed to test generalizability, my findings indicate that backers in scientific crowdfunding value the competence

of the campaign creators most. This may suggest a philanthropic perspective that is tacitly motivating the backer’s community.

I also found that campaign representation features are positively correlated to the success of the campaign. This finding is consistent with Mollick’s findings that show project representation features can improve the prediction accuracy of success for enterprise crowdfunding [18]. I believe that my initial findings will encourage platform designers to explore the effectiveness of endorsements not only for scientific crowdfunding but also for enterprise crowdfunding.

Although written endorsements are the only explicit endorsement included in the campaigns’ Webpage, this is not the only type of endorsement a campaign can receive. Another possible type of endorsement is the endorsement conveyed through campaign videos and from sources outside of the campaign page (e.g., blogs). To understand the full impact of endorsements, further investigation is needed to analyze the importance of video endorsements along with the social status of the endorsers.

In this chapter, I explored how academic endorsers can write effective endorsements for making strong donation appeals. Here, the fundamental question is whether academic endorsements maintain equity among junior and senior researchers. This is critical because in academia, it is not uncommon for students from minority and under-represented communities to receive limited resources [142, 143]. Many of these scientific campaigns are created by junior researchers with limited prior experience and lower popularity in their scientific communities. Moreover, junior researchers often do not fulfill the eligibility criteria for receiving federal funding. It may be difficult for them to receive strong endorsements from reputed researchers of their academic community, especially at the early stage of their projects. Putting too much importance on endorsements will automatically put junior researchers into an unfavorable position compared to experienced researchers.

In addition to seniority, academic recognition can also be a barrier for receiving effective endorsements. In the scientific community, recognition is primarily gauged by the number of peer-reviewed publications and the status of the affiliated institutions. Someone with more publications and from a higher-ranked institution is considered as more recognized compared to others with fewer publications and from lower-ranked institutions [144, 145]. Prior work has shown that scientists prefer to read materials based on an author’s preceding reputation. As a result, two publications of equal intrinsic merit receive differential credit if the authors are unequal in prestige and recognition [146]. This effect is known as the “Matthew Effect” in science which can also be summarized by the proverb “the rich get richer and the poor get poorer”. The “Matthew Effect” can be a critical criteria for deciding who will receive the most effective endorsements. Academic recognition can also trigger a

sense of mutual reciprocity in this context. Reputed researchers may only feel compelled to write a passionate endorsement for another recognized researcher because of reciprocal altruism.

The effect of academic recognition can become even more complicated because of “astroturfing” attempts. Astroturfing is the process to create a false impression of widespread support for an individual or a product, where little such support exists in reality. Multiple online identities and fake pressure groups are often used to mislead the crowd into believing that the position of the astroturfer is the commonly held view. Authoritarian regimes all over the world use astroturfing campaigns to spread disinformation through social media [147]. In academia, researchers sometimes pay for astroturfing endorsements which can devalue authentic endorsements to a great extent. Young, honest researchers may suffer the most because of such attempts. Having a parallel peer-review process operated by the crowdfunding platforms may mitigate many challenges related to endorsements. This will provide junior researchers an opportunity to prove the worthiness of their projects to the broader crowd. Platforms can also redesign their terms of services against astroturfing endorsements to set up a fair environment for all researchers.

3.5 LIMITATIONS

The success of scientific crowdfunding depends on many factors. This chapter only focuses on how topics mentioned in endorsements can affect the outcome of scientific crowdfunding campaigns. My findings may not generalize to all other platforms, types of projects, and different platform rules. A comprehensive study with a larger data set or an additional analysis of endorsements on other platforms like equity crowdfunding platforms [148, 149] can further validate the results.

3.6 CONCLUSION

My results suggest that it is beneficial for campaign creators to have a thoughtful discussion with their endorsers about their projects to motivate endorsers to write informative and passionate endorsements instead of writing generic ones. Besides, platform designers can provide more specific guidance to campaign owners and potential endorsers based on my findings. My results have shown that endorsers describing a general scientific benefit was not predictive of success. Although this finding does not invalidate the importance of stating the overall scientific benefit in endorsements, it suggests that focusing more on the creators’

skills is more useful. It may be that for crowdfunding (versus NSF/NIH funding), donors may pay more attention to personal skills and abilities—consistent with existing literature in the crowdfunding domain [150].

In this chapter, I explained the effect of academic endorsements by analyzing around 1100 scientific crowdfunding campaigns. In the future, a more comprehensive study with a larger data set may further validate the results. The findings of this chapter led me to investigate whether similar research technique can be applied to explain the effectiveness of other crowdfunding campaigns elements. In chapter 4, I addressed this question by examining promotional crowdfunding videos. Promotional videos are essential for crowdfunding campaigns to be successful. However, making an appealing video is not an easy task for entrepreneurs. Large corporations produce appealing promotional videos by hiring professional ad agencies. Entrepreneurs generally cannot afford to hire agencies because of their limited budget. In chapter 4, I applied the ELM (Elaboration Likelihood Model) to explain the factors of campaign videos that may convince potential donors to donate for a campaign.

CHAPTER 4: PERSUASION THROUGH CAMPAIGN VIDEOS: AN APPLICATION OF ELABORATION LIKELIHOOD MODEL

4.1 INTRODUCTION

Crowdfunding—a practice for raising funds from people online by advertising project ideas — has gained immense popularity among new entrepreneurs. For example, Kickstarter, the largest online crowdfunding platform to date, successfully funded 110,270 projects by raising 2.21 billion dollars from more than 11 million backers¹ [151]. Although there have been a large number of successfully funded campaigns, on average, only 35.34% of projects on Kickstarter successfully reach their target goal [151]. The low success rate has inspired the research community to explore campaign features that can increase the likelihood of success. For example, research has shown that campaign duration, funding goal, descriptive phrases, updates, and the number of social media shares are related to the final outcome of the campaigns [17, 18, 18, 29, 30, 33, 152]. These findings provide important guidelines for project creators to improve their campaigns.

One of the most important, and perhaps least explored, elements of a crowdfunding campaign is the campaign video. Because of its storytelling power, a video is a powerful communication channel for connecting emotionally with the audience [153]. The power of video seems equally strong in crowdfunding, as research has found that the mere presence of a video positively influenced donors to pledge their money for a campaign [18]. Kickstarter specifically stresses the importance of videos [154]. In their guidelines, the first suggestion for campaign creators is to include a video that describes “the story behind the project”. Recognizing the importance of campaign videos, Kickstarter also makes “project video analytics” [155] available to let project creators know how many times their video was played and what percentages played through the entire video. Although these statistics presumably reflect elements that contribute to the success of campaigns, there is still a lack of systematic studies on how elements of campaign videos affect potential backers’ perception of the projects, and to what extent the perception of those elements predicts the campaign’s success. In fact, given that 86% of the Kickstarter campaigns have a campaign video [18], predicting success simply by the presence or absence of a video is not very informative. The current study aims to fill this gap in the literature by providing a better understanding of the impact of specific features of campaign videos in different project categories, such that project creators can create more effective campaign videos.

¹Backers are people who pledge money to join campaign creators in bringing projects to life.

The current study adopts the theoretical framework that assumes that potential backers have two paths to process various persuasive cues that impact their perception of the campaign videos [156]: a top-down path and a bottom-up path. A top-down path is influenced by backers' expectations of the main product promoted by the campaign, and a bottom-up path is influenced by the information communicated by the content and various features of the video. To study the impact of the top-down path, I chose to study 210 campaigns from three project categories (Technology, Fashion, and Design), as donors tend to have different expectations of the product in each of these categories. To study the impact of the bottom-up path, I designed a survey to measure how potential backers perceive different features of the video (e.g., video quality). These features were selected based on the Elaboration Likelihood Model [55] and the literature on effective advertising [52]. I will elaborate on this theoretical framework in the methodology section, which motivates the current framework.

I recruited 3,150 workers from Amazon Mechanical Turk (MTurk) to evaluate the campaign videos. This approach allowed us to observe the persuasion effect of campaign videos on a comparatively larger number of participants than a traditional lab experiment. 29.40% of the MTurk workers recruited for my study had previously backed at least one Kickstarter campaign. I conducted a mixed-methods study involving concurrent qualitative and quantitative analysis. The qualitative analysis provided us with initial hints regarding MTurk workers' expectations of an effective campaign video. More importantly, it shaped my technique for measuring the impact of the campaign videos through a quantitative analysis which was designed by following the principles of persuasion theory. I will describe the details of these features in the methodology section.

To preview my results, the main findings of the current study are listed below.

- In their open-ended responses, MTurk workers primarily focused on the utility and relevance of the product in the technology category. In the design and fashion categories, the presenter in the video, and the quality of the audio and video were the main focus. This finding is consistent with the idea that separate top-down category expectations guide backers' attention to different aspects of the videos.
- The perceived quality of the campaign videos was a stronger predictor of the success for campaigns in the design and fashion categories, but the perceived quality of the products was a stronger predictor in the technology category. This finding is consistent with the idea that cues (e.g. audio quality) change in importance and diagnosticity depending upon the category.
- The perceived complexity of the product has different effects on project success in

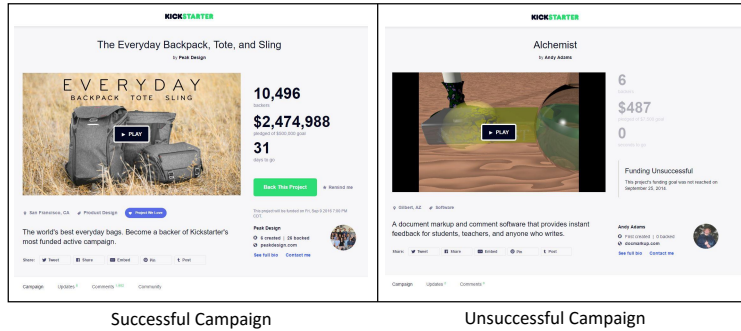


Figure 4.1: Example of campaign videos of a successful and an unsuccessful campaign.

different campaign categories. Specifically, in the technology category, campaigns perceived to have lower complexity were more likely to be successful; but the effect was reversed in the design and fashion categories. This finding has important implications for creating more effective campaign videos for diverse project categories.

4.2 METHODOLOGY

I divide my methodology into multiple sections to explain how I chose campaign videos for my user study, what advertising literature inspired us to design my survey, and finally, how I conducted the user study using MTurk.

4.2.1 Selecting Videos for Analysis

For my study, I collected a list of 71,588 publicly available campaign URLs from all 15 categories on Kickstarter launched between April 2014 and February 2015. I shortlisted only those categories which primarily host campaigns about tangible private good products such as technology, games, design, fashion, and craft. Among these categories, I chose the following three categories for my analysis: technology, fashion, and design that I felt provided different emphases on utility versus aesthetics. To maximize the diversity of the categories, I chose the technology category, as the products in this category were primarily designed to serve some type of utility requirements. I chose the fashion category since fashion products primarily stressed aesthetics elegance. I chose design as my third category because I observed that the products in this category were a good mix of both utility requirements and aesthetic elegance.

For each category, I sorted all the campaigns in ascending order based on their funding goal and removed 5% of campaigns from each end of these sorted lists as potential outliers

(because of their too high or too low funding goals). Then I randomly chose 35 successful and 35 failed campaigns for each of the three categories and collected their corresponding title videos along with general campaign representation features, including funding goal, number of tweets, number of Facebook shares, number of reward levels, number of updates shared by the project owner(s), number of comments posted by the backers or potential backers, number of images posted on the campaigns' webpage, and campaign's duration². During this selection process, I considered only "non-live" campaigns (campaigns with past deadlines) so that I knew the final outcome of the campaigns (successful or failed).

4.2.2 Designing the MTurk Survey

To design my survey, I consulted the large body of literature on effective advertising and selected factors that were measured based on the individual responses of potential consumers, as in my study, I aimed to collect the individual reaction of MTurk workers on campaign videos. During this process, I excluded some factors from my consideration, as they were only applicable to television advertisements. For example, one of the most important factors for measuring the effectiveness of television advertisements was "brand equity" of the product. However, as crowdfunding platforms were built primarily for new entrepreneurs without any established brand name, I considered this factor irrelevant to my study. I applied a similar judgment for the "celebrity endorsement" factor, as it was less likely for celebrities to endorse a product launched on Kickstarter without an established brand name. My goal was to identify factors related to the diverse persuasion effect of the videos on the viewers. However, during this selection process, I avoided the direct memorization effect as it might not be crucial in crowdfunding; potential backers likely viewed a specific video only once. Based on these criteria, I chose the following seven factors for my analysis: 1) relevance, 2) complexity, 3) involvement, 4) purchase intent, 5) perception of video duration, 6) audio-video quality, 7) attitude toward the video.

I expected the cues to be utilized differently depending on the category. Factors related to the product [157] (factor 1 to 4) were primarily used to judge the merit of the product. As the main purpose of a campaign video is to advertise the product to potential backers, for technology products, I considered the product-related factors as the central cues. On the other hand, backers potentially would not have any direct incentive to evaluate structural features [157] of the campaign videos; rather they would evaluate the quality of the structural features based on some heuristics and their prior experiences. Therefore, for technology products, I considered video related factors (factor 5 to 7) as peripheral cues. However, for

²By "successful", I mean the campaigns that reached their funding goal within their deadline.

design and fashion products, these aesthetic or sensory video factors may be more meaningful for evaluating the product. I will refer to factor 1-4 as **product related factors** and factor 5-7 as **video related factors**. Figure 7.2 shows how I divided the seven factors.

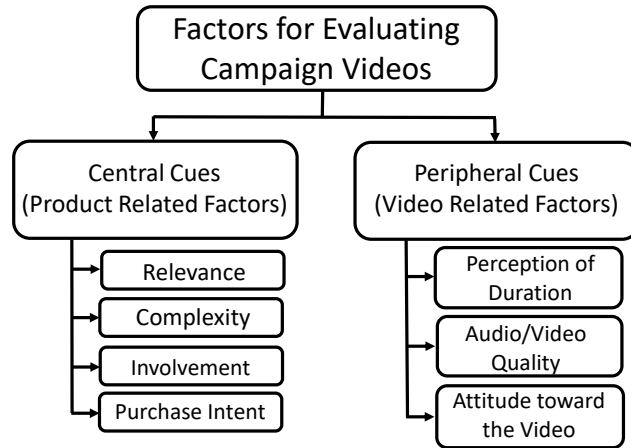


Figure 4.2: The figure shows the product and video related factors. I used these factors to analyze campaign videos in my study.

I collected the complete list of 62 survey questions for the seven factors from their corresponding literature (discussed below). I conducted a series of preliminary pilot studies on MTurk with these questions. During the pilot studies, I observed that participants found it hard to answer some questions especially questions related to the novelty of the product because of their lack of background knowledge. I iteratively removed those questions from the survey until I developed a stable list of 28 survey questions that I believed were suitable for novice MTurk workers. I describe each of these factors along with their corresponding literature next.

4.2.3 Product and Video Related Factors

Product Related Factors I considered four factors related to the assessment of the product: a) relevance, b) complexity, c) involvement, and d) purchase intent. Prior work has shown that these product-related factors are important to convincingly present a target product to potential consumers. Here, I briefly describe these four factors.

Relevance: In advertising research, creativity is considered one of the essential elements needed to stand out in a cluttered marketplace. [48]. A widely accepted approach to describe creativity is to use two criteria: novelty and relevance [158, 159]. However, during my pilot studies, I observed that questions related to novelty were confusing to crowd workers as backing a new product or idea should involve some novelty already. Therefore, I ignored

questions regarding novelty for my survey and only considered questions regarding relevance to measuring the extent to which the video content was relevant to the MTurk workers [48].

Complexity: In marketing research, product complexity has been found to affect factors like sales, innovation, and consumers' attraction [160, 161]. If a product is in an unfamiliar or complex category, its complexity may overwhelm consumers. However, complexity can also attract and maintain interest in cases where a complex design adds elegance without incorporating more challenges for the consumer. I included this factor to understand whether the effects of perceived product complexity differ depending on the project category.

Involvement: A central concept in consumer research over the past few decades is involvement. Higher involvement towards a product indicates more stable attitudes that are less likely to change [162]. Prior work has shown that involvement encapsulates arousal, interest, and motivation of the consumer [163]. To measure MTurk workers' involvement with the campaign video, I used the 10-item unidimensional scale proposed by Zaichkowsky [164].

Purchase Intention: Purchase intention is an individual's conscious plan to make an effort to purchase a product [165]. It is used in advertising research to measure consumers' reactions to the product after encountering the advertisement [166, 167]. I measured purchase intention using a single survey question (On a scale of 1 to 5, how likely will you purchase this service or product in future?) to measure the direct impact of campaign videos on MTurk workers. This survey question has two fundamental challenges. First, here I asked about purchasing the product which is different from donating for a product. In crowdfunding platforms, donors may donate for a product even without having any desire to own it. Since the "purchase intent" factor by default assumes that the product will be purchased, this factor may not completely capture the intention of crowdfunding donors. Despite this limitation, this factor is acceptable in this context since all Kickstarter donors receive some form of gifts or the product in exchange for their donation.

The second challenge is that the "purchase intent" factor is measured using a self-reported survey question. In practice, potential donors will have to take a more challenging decision before donating their own money compared to reporting a hypothetical amount in a survey. The behavioral research community also acknowledged the limitations of self-reported data. Moreover, in real life, donors will come across many similar donation appeals on crowdfunding platforms from which they will have to choose the right one worthy of their donation. Therefore, campaigns will also have to compete with each other before receiving any donation at all. Despite all these challenges, prior researchers admitted that interpretation of events using self-reported surveys is important [168]. In my scenario, although external measures (such as observing the actual donations behavior) would add value to the overall observation, the self-reported purchase intent is a useful measurement for my study.

Video Related Factors I considered three video related factors for my analysis: a) perception of video duration, b) audio-video quality, and c) attitude towards the video. Although the main purpose of a television advertisement is to present a target product successfully to the audience, viewers evaluate television advertisements based on several indirect factors. My video related factors were introduced to measure the impact of these indirect factors and to see if they might be utilized differently depending on the category.

Perception of Duration: Previous studies have shown that perception of the passage of time is affected by interest, motivation, or enjoyment of a task [169, 170]. When viewers feel that while watching an advertisement, time passed more quickly, they tend to enjoy the advertisement more [171]. I expected that perceiving Kickstarter campaign videos to have a shorter or longer duration (relative to actual duration) would be an indicator of interest in the campaign video. Therefore, I included this factor in my survey.

Audio/Video Quality: Previous literature has shown that the audio/video quality of a video has a major impact on the viewers’ perception of product quality [48, 172]. To explore whether production quality is also important for crowdfunding videos, I asked crowd workers four questions. Three questions focused on the perceived quality of the audio, visual, and complete production procedure, and the last question was about the video’s overall quality [48].

Attitude Towards the Video: Attitude towards the advertisement video is an important mediator for measuring the effectiveness of advertisements. It is thought to provide an understanding of the consumers’ overall evaluation of the advertisement video. In my survey, I measured the attitude of crowd workers towards campaign videos on a four-item, seven-point Likert scale. The items are anchored by “pleasant-unpleasant”, “good-bad”, “like-dislike”, and “interesting-uninteresting”. [173, 174].

4.2.4 Data Collection from MTurk

I recruited MTurk workers to evaluate the campaign videos for two reasons: 1) the MTurk platform enabled us to recruit a large number of participants for my survey at a reasonable cost, and 2) prior work has shown that MTurk workers can perform complex skill-intensive as well as subjective rating tasks [175, 176, 177, 178, 179]. To collect data from MTurk, I posted Human Intelligent Task (HIT)s asking the MTurk workers to watch a randomly assigned campaign video. To ensure that the crowd workers watched the video, I disabled all video player controls (play, go forward, go backward, and pause). I also displayed two single-digit numbers embedded at random timestamps in the video. At the end of the video, I asked MTurk workers to report those two numbers shown in the middle of the video. I

discarded the responses of the MTurk workers who failed to report those numbers with an assumption that they did not pay enough attention to the video. Overall, I rejected 8.7% of responses for this reason. Although this memory task might interrupt the viewing experience of the MTurk workers to some extent, I believe that the impact would be minimal and would be normalized as all the crowd workers experienced a similar interruption.

Once the video was over, I redirected the crowd workers automatically to the survey page. I did not allow MTurk workers to watch the video more than once to ensure that the survey responses were based on their first impression of the video. I believe that this strategy would closely replicate a real-life scenario where backers would generally watch a specific campaign video only once. I made the assumption that MTurk workers had not watched those campaign videos from some external sources before. In the end, I asked MTurk workers to complete a demographic survey.

I conducted a mixed-methods analysis consisting of two phases: a qualitative analysis and a quantitative analysis. Before they responded to any other questions, I asked each MTurk worker to write down their thoughts about the video in a free-form text box. My goal was to keep crowd workers free from any influence of the survey questions while they provided their open-ended opinions. I used these responses for qualitative analysis. After completing the free-form comment section, MTurk workers subjectively rated the video on the product and video related factors. I used these subjective ratings to conduct my quantitative analysis. I collected opinions and subjective ratings from 15 different MTurk workers for each of the 210 videos to reduce the bias across individual workers³. For the statistical analysis, I averaged the 15 responses for each video. Each MTurk worker rated only one video. In total, 3150 unique MTurk workers participated in my study. I paid 33 cents (an average payment amount in AMT for 9 minutes) for each completed task.

I conducted a qualitative analysis of the open-ended answer to understand how MTurk workers perceive campaign videos without any external priming. The quantitative measures, on the other hand, allowed us to observe whether existing measures from the advertising literature could improve the accuracy of predicting a campaigns' final outcome over and above the existing static campaign representation features which were already found to be predictive in prior work. Moreover, the findings of the qualitative study could also help us explain whether the theories adopted from advertising literature were appropriate or not for analyzing the campaign videos.

³To decided the number of workers required to evaluate each video, I consulted the existing literature. Bernstein et al. [180] hired around 15 MTurk workers to perform their word processing tasks. Carvalho et. al. [181] showed that each task in a study should hire 11 workers for optimum performance. However, when a job requester does not have any prior knowledge about the system, it is advised to hire a few more workers for improved convergence.

4.3 RESULTS

4.3.1 Qualitative Analysis of the Free-Form Comments

The free-form open-ended comments from the MTurk workers allowed us to explore how MTurk workers perceived the campaign videos. Two coders thoroughly investigated the free-form comments to identify what factors primarily influence the overall experience when watching a campaign video. The coders iteratively developed a coding scheme for the factors related to campaign videos using an induction process [139] that involved multiple coding and revision cycles until I saw consistent patterns in the data. During this process, I excluded 13.8% of the comments from my analysis as these comments were too short for successful coding, and they were usually not too meaningful for my purposes. Examples of some rejected comments are: 1) “Good”, 2) “Okay”, and 3) “watched the video”. After the coding scheme was established, a third coder examined it to confirm the scheme. 9% of the MTurk workers did not comment on their videos. Based on the manual coding, I classified all the comments into six factors. These factors could also be put into two major categories: product-related factors and video related factors – i.e., the same categories in my subjective rating survey. In this section, I discuss the factors identified through my qualitative analysis.

Product Related Factors Three factors were noted that were related to the product: 1) content of the video, 2) the effect of product complexity, and 3) explanation of the necessity of the funding. The following sections describe these factors in detail and explain how the factors vary across different project categories.

Content of the Video: MTurk workers mentioned several issues about the content of the video in their free-form comments (n = 474). MTurk workers felt that showing the step-by-step development of a product, especially in the technology category, helped them trust in the ability of the campaigns’ owners. MTurk workers also appreciated owners for explaining the purpose and utility of their products in their videos.

“Loved it. It was [a] clear concept and easy to relate to. I loved the journey he took us on through; from the outdoor[s] to his workshop to an office. He showed us many different products when he was walking us through the designs of his website without making it the main focus.”[MT658]

Moreover, MTurk workers often felt that some products had many similar products already available in the market. In these cases, MTurk workers expected the owners to explain how their products were different from the existing products. Without that explanation, MTurk

workers thought that the proposed products were redundant and therefore did not need to be funded.

“I thought that it was an interesting product. But, I am not so sure that it is that different from other products that may be available already. It’s hard to imagine that something like this doesn’t already exist.”[MT851]

Another critical issue in this domain was the time taken to introduce the products. For all three categories, sometimes the owners took an unexpectedly long time to introduce their product in their videos. MTurk workers felt that the owners wasted their time with less important details in the beginning. In multiple instances, MTurk workers felt that they would have stopped watching the video because of the long introduction time if they were not participating in an MTurk task. MTurk workers also felt uncomfortable if the videos had long silences where there was neither any background music nor any speaker talking. They also explained that videos with many still pictures looked like a slide show instead of a video and reflected a lack of effort from the owners’ side.

MTurk workers explicitly appreciated campaign videos where the owners showed the final product instead of just a design prototype. In addition, MTurk workers felt confident about a campaign when they saw real users were happy about using the product instead of professional models. Furthermore, they felt that it was important to show a sense of community in the campaign video, i.e., the campaign owners should explain not only how their product would be useful for themselves but also how others would benefit from their products.

The Effect of Product Complexity: MTurk workers interpreted the products’ complexity differently for different product categories ($n = 310$). I found that for the technology category, MTurk workers appreciated the intuitive, easy to use product designs, as they felt more confident about using technology products that they could easily understand through the short video. As one crowd worker mentioned:

“He was very thorough in explaining the importance of his toolkit and what it can do for businesses. Also, this is something that any level of skill could use. I like that you don’t have to have a lot of experience to use it.”[MT289]

On the other hand, MTurk workers found it intimidating when they watched videos of complex and hard to understand technology products. As one MTurk worker mentioned:

“When I was finished watching the video, I started contemplating how hard it would be for someone like myself, with little to no experience in web videos, to use his product/service.”[MT693]

MTurk workers mentioned that frequent use of technical jargon made it harder for them to understand the basic concepts of the products; hence they considered these products to be more complex. As expressed by another MTurk worker:

“There was way too much technical detail being thrown out too fast. It made it very hard to follow. My head hurts. The people and the product seemed genuine but I just wanted it to end.”[MT2177]

The concept of perceptual fluency [182] can explain this behavior which claims that new, difficult to process elements can be interpreted as increased risk or taken as complex. For example, roller coasters that have more difficult-to-pronounce names are judged as more dangerous.

I observed the opposite effect for the campaigns in design and fashion categories. For design and fashion campaigns, MTurk workers appreciated products having complex designs because of excellent craftsmanship, owners’ attention to details, and rigorous effort put into the development of the products by the owners which made the product seem to be higher quality.

Explanation of the Necessity of the Funding: The main purpose of any crowdfunding campaign is to convince people to donate money to back an idea or product. MTurk workers showed concerns when the campaign owner did not address why they needed funding from the crowd (n = 258). In some instances, the owners of unsuccessful campaigns mentioned in their video that they already owned a company or a shop and still sought donations to launch a new product. MTurk workers thought that entrepreneurs who already owned an establishment should be capable of launching their own products without any donation from the crowd. MTurk workers felt that if the owners still sought donations on Kickstarter, they should explain clearly why they could not afford to launch their product using their existing capital. Otherwise, the MTurk workers felt exploited as one MTurk worker stated:

“I don’t realize why she needs funds from the crowd. She seems very ordinary to me and it appears she has plenty of money already.”[MT573]

MTurk workers also felt that entrepreneurs who explicitly described their future plans about how to spend the donation money looked more authentic and competent than the campaign owners who did not explain their budget in the video.

Video Related Factors In terms of the video, I found three more factors: 1) perceived quality of audio and video, 2) appearance of the owner in the video, and 3) the use of comedy, children, and pets. The following sections describe these factors in detail.

Perceived Quality of Audio and Video: The perceived quality of audio and video was the most frequently mentioned factor for all three project categories (n = 690). MTurk workers strongly criticized lower quality audio and video in their comments. One major issue related to audio was the choice of background music. MTurk workers mentioned that their overall experiences of watching the video were enhanced when the mood of the background music matched the content of the video. On the other hand, inappropriate use of background music (such as loud music playing while the owner spoke) distracted them from the content of the video.

“The music in the background drove me crazy. It was too loud, obnoxious, and annoying. It was an odd choice for the video.”[MT602]

Another frequently mentioned issue related to the audio quality was the background noise. MTurk workers found that technology videos recorded in a production facility were hard to follow because of the loud background noise. A similar issue was observed when the videos were recorded in an outdoor setup due to the strong sound of the wind.

The video quality was another important issue raised by the MTurk workers. Low camera resolution, a shaky hand-held or out-of-focus camera, poor lighting, and poor editing were a few major issues discussed regarding poor video quality. Reflection from an amateurish or glossy background was another frequent reason for low perceived video quality by the MTurk workers. Because of poor video quality, MTurk workers doubted the ability of the owner to produce an acceptable product. Perceived low A/V quality was interpreted as a lack of professionalism.

Appearance of the Owner in the Video: The second frequently discussed factor about the campaign video was the appearance of the owner (n = 495). MTurk workers mentioned the appearance of the owner more frequently for videos in the design and fashion categories than the technology category. They found that some project owners looked nervous and expressed low self-confidence through their body language. MTurk workers felt disconnected when the owners did not appear as a serious and passionate person when explaining their products in the video.

“that one dude was wearing a baseball hat and that seemed ridiculous that he was trying to sell his product or get people to pay him to make the product while looking like a degenerate.”[MT774]

In some cases, MTurk workers observed that the owners read their script from a teleprompter or a piece of paper held behind the camera. MTurk workers interpreted this behavior as

a lack of passion, which lowered their overall satisfaction for the video. An over or under-rehearsed script was another factor that was interpreted as a signal of owners' lack of passion for the campaign.

“They[campaign owners] seemed very nervous and that made me believe that they could not accomplish their objective. They were reading their lines from a tiny screen. I thought that they should have scripted this out a little more; There were way too many ‘ah’ and ‘ums’ throughout the video.”[MT1077]

MTurk workers also criticized the owners for not smiling in the video. The owners' speech sounded less engaging without any smile. Another frequently mentioned factor about the appearance of the owners was their accent. MTurk workers sometimes found it hard to understand heavy accents of the project owners in the videos. Some felt distracted and failed to follow the details of the campaign due to the unfamiliar accent.

Use of Comedy, Children, and Pets: One popular way to present the products through campaign videos in Kickstarter was the use of humor or comedy. MTurk workers felt that a hint of comedy made the video enjoyable and more engaging. However, most of the MTurk workers felt that too much comedy or satire was distracting and annoying (n = 205) because it gave them the impression that the campaign owners themselves did not take their products seriously. Workers struggled to understand the main message of the video delivered through overemphasized comedy, which made them less motivated to donate to the campaign.

“I just couldn't help thinking at every new point he brought up how ridiculous the whole thing sounded. I felt that the jokes made it difficult to tell if they were seriously pitching a product. If [they were] serious, it was unprofessional.”[MT575]

Another frequently mentioned factor was the use of children and pets in campaign videos. MTurk workers appreciated campaign owners for including children and pets when their products were targeted for children and pets, respectively. However, when there was no direct connection between the product and children or pets, MTurk workers found that the use of children and pets in those videos was annoying and intended to hide the weakness of their products by exploiting the backers emotionally. For example, in a video for a jewelry product, the owner let her cat roam around in front of her while she explained her product in the video. MTurk workers found that distracting:

“The cat needs to stop walking around in front of the speaker. It was distracting and annoying. What [does] the cat have to do with the jewelry.”[MT90]

Summary of the Qualitative Analysis The exploratory qualitative analysis revealed six factors from the free-form comments provided by the MTurk workers. Three of these aspects were closely related to the product (central cues), and the other three factors were related to the video (peripheral cues). This exploratory qualitative analysis suggested that MTurk workers' opinions were generally consistent with my framework derived from the elaboration likelihood model and cue utilization. Some of these factors, such as product complexity and the audio-video quality were the same as the factors in my survey, which was designed based on existing advertising literature. This indicates that the evaluation strategies of the MTurk workers for the campaign videos had a certain level of similarities to the strategies of a consumer of television advertisements. This observation has major implications for entrepreneurs to design their campaign videos. This observation suggests that following well-established strategies of television advertisements to campaign video creation could be beneficial for entrepreneurs. In addition, my qualitative analysis revealed some new factors (such as the appearance of the owner and the use of comedy, children, and pets) that seemed to take on specific importance to crowdfunding, which I did not consider in my survey. These additional factors gave us a comprehensive list of opinions regarding the campaign video that would be hard to capture through a user survey.

When I analyzed these factors separately for three different project categories, I found that for the technology category, only 24.20% of MTurk workers mentioned at least one video related factor in their free-form comments. On the other hand, for the design and fashion categories, 39.05% and 43.66% of crowd workers respectively, mentioned video related factors in their free-form comments. This difference implies that MTurk workers concentrated more on video related factors for the design and fashion categories, but for the technology category, product-related factors were their main concern. I interpret this observation as consistent with the notion that potential backers are more likely to apply a top-down approach to judge the products of different categories. The backers are likely to employ their prior experiences while evaluating a campaign depending on a specific project category even before judging the merit of the actual campaign. This top-down approach may shape the attitudes of the backers in a different way for different project categories.

Although this qualitative analysis gave us some bottom-up initial insight into the MTurk workers' attitude towards the campaign videos, these observations could not measure the prediction strength of the central and peripheral factors for the final campaign outcome. In addition, to measure how MTurk workers utilize different cues when analyzing campaign videos based on different project categories, I also needed to measure the relative effects of the product and video related factors for each project category separately. MTurk workers' varying attitude towards different project categories motivated us to apply a nested block-

wise logistic regression technique for quantitative analysis, which would allow us to measure the effect of the product and video related factors separately for each category.

4.3.2 Quantitative Analysis of the Subjective Ratings

I conducted a quantitative regression analysis using subjective ratings provided by the MTurk workers for campaign videos. I used my custom survey questions regarding the product and video related factors (explained in the methodology section) to collect subjective ratings from MTurk workers. To initialize my regression model, I used the following static project representation features found effective to predict the outcome of the campaigns in prior work: 1) campaign’s funding goal, 2) the number of tweets, 3) number of Facebook shares, 4) the number of reward levels, 5) the number of updates, 6) number of comments, 7) campaign’s duration, and 8) the number of images. Here, I explain how I used project representation features and subjective ratings to perform logistic regression analysis.

Factor Analysis I used the nested block-wise logistic regression method to develop a model for the projects’ final outcome (success/failure) prediction. To decide the structure of each block, I performed a factor analysis on all survey questions. Factor analysis shows us how much each factor explains the variances in the data through percentage variances for each project category. It also shows us the corresponding percentage variance of the survey questionnaires in each factor. I used the percentage variance of each factor to define my predictive factors and the percentage variance of the survey questionnaires to decide their membership among the chosen predictive factors.

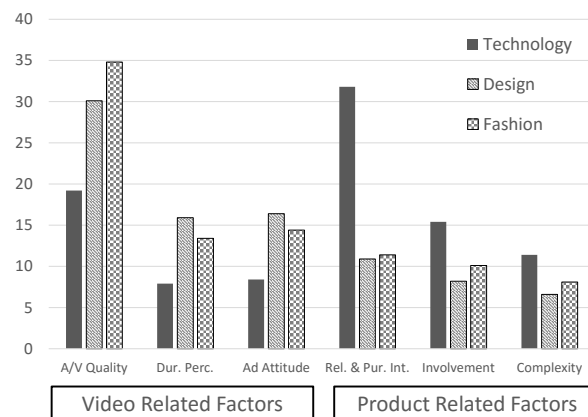


Figure 4.3: The percentage variances of video and product related factors calculated using factor analysis for all the project categories.

I found that for all three project categories, relevance and purchase intention factors were

highly correlated (correlation coefficient: 0.81). Therefore, I combined these two factors to create a new factor called relevance and intent. Figure 4.3 shows the percentage variances of the factor analysis for the video-related and product-related factors. For the technology category, the product-related factors had a higher percentage of variances (cumulative 58.6%) than the video related factors (cumulative 35.5%). However, for the fashion and design category, the video related factors had higher percentage variances (Fashion 62.6% and Design 62.4%) than the product-related factors (Fashion 29.6% and Design 25.7%). These results indicate that according to the survey responses, the product-related factors explained more variances for the technology category. For the fashion and design categories, video-related factors were responsible for the larger variances.

Logistic Regression Analysis To conduct the nested block-wise logistic regression process, I considered video and product-related factors as two separate blocks. I also created one separate block consisting of only the project representation features found to have predictive power in prior work. I created two logistic regression models for each project category. I initialized my **first logistic regression model** with the block of project representation features. I called this initialization process ‘step 0’. Then, in ‘step 1’, I added the video related factors in the model, and in ‘step 2’, I added the product-related factors to complete building the first model. For **the second logistic regression model**, I again initialized the model with the project representation features in ‘step 0’, but reversed the order of entry of the blocks of product and video related factors. So, I added the product-related factors in ‘step 1’ and the video related factors in ‘step 2’ of the second model. The quality of the models was measured using Nagelkerke’s R^2 [141]. This process of adding blocks was repeated for each of the three project categories. These two models allowed us to compare the relative effect of each block of factors separately for each project category, which was necessary to find the differences among the project categories.

My dependent variable was the actual final outcome of each project in Kickstarter: successful or unsuccessful. I coded the successful projects as 1 and unsuccessful projects as 0. I estimated the Wald statistic of the model after adding each block to confirm that the Wald statistic was significant ($p < 0.05$) for the model.

I tested the assumptions of the logistic regression analysis before conducting the regression procedure. I performed Box-Tidwell procedure [183] on all six independent variables to confirm the assumption that they were linearly related to the logit of the dependent variables. For all the independent variables, the interaction terms were not statistically significant, which indicates that my independent variables satisfied the assumption of linearity. Moreover, after merging the relevance and purchase intention factors, factor analysis

showed that no two independent variables were highly correlated to each other, satisfying the multicollinearity assumption. I also verified the studentized residuals to make sure that there were no significant outliers in my sample. Tables 4.1, 4.2 and 4.3 have shown β coefficients of the logistic regression at each step for the technology, design, and fashion categories respectively along with the Nagelkerke's R^2 value. The Wald statistic for R^2_{Δ} was significant in all the stages. Here I discuss each project category separately.

Table 4.1: β coefficients of the Hierarchical Logistic Regression for the Technology Category. Asterisk(*) denotes statistical significance ($p < .05$).

	Model 1			Model 2		
	Step 0	Step 1	Step2	Step 0	Step 1	Step 2
R^2	0.31	0.42	0.56	0.31	0.48	0.56
R^2_{Δ}	0.31	0.11*	0.14*	0.31	0.17*	0.08*
Atti. towards Video	-	-0.17*	-0.16*	-	-	-0.16*
A/V Qual.	-	0.24*	0.20*	-	-	0.20*
Dur. Perc.	-	-0.04*	-0.01	-	-	-0.01
Rel. & Pur. Int.	-	-	0.50*	-	0.26*	0.50*
Involvem.	-	-	0.64*	-	0.39*	0.64*
Complex.	-	-	-0.14*	-	-0.13*	-0.14*

The Technology Category Table 4.1 shows the regression analysis for the technology category. For both model 1 and model 2, the prediction power of the product and video related factors was calculated on and above the project representation features which were added in step 0 for initialization. My analysis shows that product-related factors have the most predictive power for the campaign outcome in the technology category. All the predictive variables in this block were statistically significant. Relevance and involvement were positively correlated with the outcome. Involvement had the most significant influence in my model, closely followed by relevance and complexity. However, complexity is negatively correlated with the success of technology projects.

All video related factors except the duration perception were statistically significant for this category. Audio-video quality had the most significant positive association with the outcome of the campaigns. Duration perception was negatively correlated here, suggesting that the crowd workers did not consider the successful campaign videos as long. One interesting finding in this block was the negative coefficient of the attitude towards the video, which suggested that having more interesting and pleasant videos did not help the campaigns in the technology category to be successful. One explanation for this is that the most interesting videos might have shown some highly ambitious products, which the MTurk workers might not have much faith in.

Table 4.2: β coefficients of the Hierarchical Logistic Regression for the Fashion Category. Asterisk(*) denotes statistical significance ($p < .05$).

	Model 1			Model 2		
	Step 0	Step 1	Step2	Step 0	Step 1	Step 2
R^2	0.32	0.50	0.57	0.32	0.43	0.57
R^2_{Δ}	0.32	0.18*	0.07*	0.32	0.11*	0.07*
Atti. towards Video	-	0.13*	0.26*	-	-	0.26*
A/V Qual	-	0.21*	0.54*	-	-	0.54*
Dur Perc.	-	-0.15	-0.18*	-	-	-0.18*
Rel. & Pur. Int.	-	-	0.08	-	0.14*	0.08
Involvem.	-	-	0.12*	-	0.15*	0.12*
Complex.	-	-	0.04*	-	0.09	0.04*

The Fashion Category Table 4.2 shows the regression analysis for the fashion category. For the fashion category, I found that the video related factors had the most predictive power as a block. All the factors in this block were statistically significant, and audio-video quality had the most significant association with the final outcome of the campaigns. Audio-video quality and attitude towards the video were positively correlated, whereas, duration perception had a negative coefficient. This suggests that MTurk workers' perception of higher audio-video quality and a better attitude towards the video predicted successful fashion campaigns. Product-related factors were less predictive than video related factors in the fashion category. Among the product-related factors, all the factors were positively correlated with the outcome, but relevance and intent were not statistically significant. Complex fashion products might receive more appreciation from the consumers, which might increase the likelihood of those projects being successful.

Table 4.3: β coefficients of the Hierarchical Logistic Regression for the Design Category. Asterisk(*) denotes statistical significance ($p < .05$).

	Model 1			Model 2		
	Step 0	Step 1	Step2	Step 0	Step 1	Step 2
R^2	0.34	0.47	0.53	0.34	0.42	0.53
R^2_{Δ}	0.34	0.13*	0.06*	0.34	0.08*	0.11*
Atti. towards Video	-	0.07	0.23*	-	-	0.23*
A/V Qual.	-	0.17*	0.48*	-	-	0.48*
Dur. Perc.	-	-0.13*	-0.21	-	-	-0.21
Rel. & Pur. Int.	-	-	0.02	-	0.08*	0.02
Involvem.	-	-	0.06*	-	0.09*	0.06*
Complex	-	-	0.03*	-	0.11*	0.03*

Table 4.4: Comparing the prediction accuracy of the model among the previously found project representation features only, project representation features + video related factors, and project representation features + product related factors. Subjective ratings of product and video factors can achieve accuracy around 82% on average, which is around 16% higher than the average accuracy for the project representation features (average 66.06%)

	Proj_Rep	Proj_Rep + Vid_Rel	Proj_Rep + Prod_rel
Technology	68.8	77.7	83.1
Fashion	68.9	85.8	80.5
Design	65.1	77.7	74.4

The Design Category Table 4.3 shows the regression analysis for the design category. I again found that video related factors were the most predictive factors. In this block, audio-video quality had the largest positive association with success. Duration perception was negatively correlated. Product-related factors were less predictive than video related factors for campaign videos. Among all the product and video related factors, only duration perception was negatively correlated with the final outcome of the campaigns.

Accuracy Prediction I compared the prediction power of the models at each step of the regression analysis by measuring prediction accuracy. Table 4.4 shows the accuracy comparison for the project representation features found previously to predict success. The addition of the video and product-related factors over and above the campaign representation features improved the prediction accuracy for all categories. For the technology category, product-related factors had higher prediction accuracy than video related factors. For the fashion and design categories, video-related factors had higher prediction accuracy than product-related factors.

Summary of Quantitative Analysis The logistic regression analysis and the corresponding prediction analysis of the three project categories revealed that although prior work has demonstrated project representation features predicted the success of campaigns with reasonable accuracy [17, 18], my results showed that subjective ratings of the product and video related factors in campaign videos can improve the prediction accuracy of the final outcome of the campaigns over and above the campaign representation features in the prediction model. Although the additional variances explained was modest (about 10% from each type of factors for a total of about 20% of the variance), to my knowledge this was the first attempt to understand *how* different factors in campaign videos impacted their successes, and *how* they could vary in different project categories. For example, I found that MTurk workers attended to different factors in the videos in the technology category differ-

ently than videos in the fashion and design categories, and there seemed to be differences in how the attended factors predicted their successes. Future research can further investigate how these factors can actually help creators to create more effective videos that will better match their products.

Overall, my findings were consistent with my general framework inspired by ELM. People who are motivated to evaluate a message will look for cues that are important for the product. These cues may change depending on the expectations or uses of a product category. Crowd workers were more influenced by the central cues when evaluating videos of the technology category. It is possible that because most of the products in the technology category were utility-based products, crowd workers mostly concentrated on the product-related factors as being central to the argument of why they should or should not fund the campaign. On the other hand, as products displayed in the fashion and design campaigns were, in general, more artistic and aesthetically attractive (or at least these properties were expected to be important for these products) than the products in the technology category. If a campaign owner can make an aesthetically pleasing and well-produced video then they might transfer those abilities to making the product. This is consistent with my finding that video related factors have higher predictive powers than product-related factors for videos in fashion and design categories.

4.4 DISCUSSION

Many professional agencies produce campaign videos as if they were television advertisements. On average, a good video made by a reputable agency costs approximately 2,000 dollars. The cost increases from 3,000 to 10,000 dollars for higher production quality. This indicates that professional agencies likely follow a specific strategy to create effective campaign videos. However, new entrepreneurs often hesitate to spend that amount because of the lack of initial funding resources. I hope that my findings will provide initial guidance to novice entrepreneurs who want to make their campaign videos.

What makes my work different from existing literature in the crowdfunding domain? My quantitative analysis has shown that audio-video quality is one of the most important factors for evaluating campaign videos of the three campaign categories I explored, which implies that a bottom-up evaluation strategy is critical in the judgment process for crowd workers. More importantly, my study suggests that it is not sufficient to have *one* general guidelines for all project categories; rather entrepreneurs should follow category specific strategies to make more persuasive videos. For example, I found that technology campaign videos should highlight product-related cues to have a better persuasive effect on backers. Simple

explanations and product demonstrations are key. On the other hand, design and fashion campaign videos should focus more on video related cues such as audio-video quality to enhance persuasion. This finding supports my initial intuition of a top-down approach that backers may use to evaluate products based on the cues that are utilized most heavily. This approach based on audience expectations can potentially be extended for making videos of other similar categories.

My findings do not necessarily suggest that an effective campaign video alone guarantees success. Nor do I claim that incorporating these factors into campaign videos is the only means of making a campaign successful. The factors identified in my study are not exhaustive. Rather, I believe that other factors, such as the types of updates, the number of connections in social media, and the quality of the finished product are also important for the success of campaigns. However, my study provides some initial insights about how central and peripheral cues can be defined and utilized based on the project categories to create a persuasive video and to capture backers' attention promptly in an already crowded crowdfunding platform.

Campaign videos share the main goal of television advertisements, that is, to inform and persuade the consumer to buy a product. This similarity drew us to investigate whether theories applicable to television advertisements can also be useful for analyzing crowdfunding campaign videos. Of course, there are some differences between these two types of marketing videos that I observed through my study. My qualitative analysis showed that explaining why one needs funding was considered as an important factor by the crowd workers. This is interesting because it seems to indicate that unlike television advertisement viewers, potential backers do not just want to give money to someone who already has it and then just receive the product in return. Instead, they may perceive that they are buying into the process itself in which they get to be not just consumers, but also catalysts for creation. This role as an investor in addition to the consumer may explain the desire for more seriousness from the campaign owners than humor.

Another possible way of analyzing videos is to conduct a visual content analysis which primarily extracts meta-features of a video. For example, the visual content analysis might identify the number of frames of a video in which a human face is detected. I decided not to follow this approach in my study because, from the perspective of a novice entrepreneur, these meta-features may not be practically useful while making a campaign video. The motivation for understanding how the cues from campaign videos are utilized from the backers' perspective influenced me to design my study based on persuasive communication.

4.5 DESIGN IMPLICATIONS

I foresee that my work creates many opportunities to facilitate the process of making persuasive and effective videos for crowdfunding campaigns.

4.5.1 Implications for Campaign Owners

My main finding that campaign videos of different project categories should apply category-specific strategies for making videos, can help campaign owners understand that simply having a strong storyline for their videos is not sufficient. Rather, campaign owners need to know how people perceive their products and identify important persuasion cues, to generate a good initial plan for creating more effective videos. A well-defined plan for videos may also help campaign owners generate a storyline different from stereotypical ones.

My findings indicate that crowdsourced MTurk workers can effectively evaluate campaign videos by pointing out their strengths and weaknesses. Keeping this in mind, imagine an online tool that would allow future entrepreneurs to seek feedback on their campaign videos from crowd workers before launching their campaigns. Because this online tool would be anonymous, this approach will allow entrepreneurs to receive emotionally unbiased opinions about the product and video related factors in an early stage of the video-making process. This may help entrepreneurs revise their videos without the need to hire a professional, and they could gain additional insight by showing their revised videos to their friends and family [19]. Additionally, entrepreneurs could use this tool to interpret the strengths of archived sample videos [184] which is not always straightforward.

4.5.2 Implications for System Designers

In my study, I found that the perceived audio and video quality of a campaign video is a critical factor in predicting the success of a campaign. One way that system designers of crowdfunding platforms can help resolve this issue is by applying some basic filters in their campaign material submission website which can ensure an acceptable video and audio quality for all campaigns. For instance, the platform can prompt campaign owners to edit the video if the speech is not audible or is indistinguishable from background noise or music. Similar suggestions can be made if the presenter or the main product is out of focus. Additionally, the platform can provide templates to future project owners to develop an awareness of what color contrast best-fit video shots in indoor places versus outdoor places or in well-lit places versus darker places.

Applying a top-down approach by potential backers while evaluating a campaign video can have larger implications for crowdfunding platforms. In the future, crowdfunding platforms may streamline certain features specifically for campaigns of a specific category. For example, Kickstarter may encourage entrepreneurs in the technology category to include a straightforward demo of their products in their videos, which may help the campaign owners gain the backers' trust. Similarly, entrepreneurs in the fashion categories may consider putting more effort into visual effects to display a visually stunning product in their videos.

System designers can host a web-based tool to present the aggregated analytical profiles of the existing campaign videos for each type of product category separately. Each profile in this analytical tool could be defined based on the weights of the factors which will be measured using subjective ratings provided by MTurk workers. This web-based tool could assist campaign owners to visualize the predictive factors of the campaign videos based on their specific product type. Additionally, this would enable campaign owners to observe how the effects of different persuasive factors change depending on the marketing goals.

4.6 ETHICAL CONCERNS

In this chapter, I discussed how persuasion features can make campaign videos more appealing. Videos are typically considered as a powerful medium for convincing people about a product. However, how will people feel if they find a crowdfunding product attractive in the campaign video but later get disappointed by the actual product? Will it trigger a sense of distrust for the crowdfunding platform hosting the video? Or even more critical, will it impact their donation behavior in the long run? Presenting inaccurate information in crowdfunding videos may not always be intentional. Since entrepreneurs mostly create their campaign videos before manufacturing their actual products, there can be some unavoidable discrepancies between the products shown in the videos and the actual products due to Last-minute challenges in manufacturing. Such inaccuracies or false claims are hard to avoid even for entrepreneurs with good intentions.

Here, the ethical concern is not associated with the unintentional inconsistencies; rather it is about the intentionally included false claims in campaign videos. Using misleading or inaccurate promotional videos is not a new concept. Political campaigns often circulate misleading, manipulative, offensive, defamatory, and unethical video ads to influence voters [185, 186, 187, 188]. However, political awareness keeps people inherently more skeptical about political messages. Large corporations also produce TV ads by including false claims to convince people about their products [189]. Because of this tendency, the “inoculation” idea of media literacy and advertising literacy emerged. The primary objective of

inoculation was to help people, particularly children, identify and defend against persuasive attempts [190, 191]. Generally, adults are not considered vulnerable to persuasive ads when they consume them in traditional media such as TV and radio because there is already very high skepticism for advertising. However, ads can still create some confusion since there are now lots of “ads” that are either “native” ads that look like content, or influencers posting things. A recent audit found that in social media, adults also fail to differentiate ads from articles [192].

The crowdfunding campaign videos may not be treated with similar skepticism. Unlike political videos and TV ads, campaign videos may be seen more as “authentic” or “real” and therefore be met with less resistance and skepticism than ads are, and perception of the source will matter as well. If it is seen as an appeal from a non-commercial group, it might also be greeted with less skepticism and resistance/avoidance. Because of this sense of trust, potential donors of crowdfunding campaigns feel comfortable donating for a product long before the product is manufactured. Since crowdfunding campaigns naturally possess various uncertainties, maintaining a trusting relationship between the campaign creators and the potential donors is the key to be successful in crowdfunding. Campaign videos should not only create persuasive appeal among their audience but also they should set the right expectation about the product among the audience. Entrepreneurs need to be careful to stay true to their claims while making persuasive campaign videos to attract the attention of potential donors.

Through the discussion above, one question emerged: what can crowdfunding platforms do to mitigate this challenge? One possible solution can be creating policies against false claims in campaign videos. In the past, on several occasions, social platforms applied new regulations to cope up with threats and challenges. For example, a few years back, GoFundMe revised its terms of service to prohibit raising money for the legal defense of heinous crimes, violent, hateful, sexual or discriminatory acts [193]. Similar regulations can be applied to make campaign owners accountable for making misleading and false claims. Prior work has found that even the warning from fact-checkers can reduce the sharing of false posts on social media [194]. Such regulations taken by crowdfunding platforms may also discourage entrepreneurs to make false claims in their campaign videos. However, before applying such strong regulations, platforms need to apply careful judgment to identify those campaigns where false claims were made intentionally, rather than accidentally.

Finally, in any fundraising effort, it is important to maintain ethical practices and accountability. Prior work primarily studied ethical concerns for non-profit organizations [195, 196, 197]. To ensure the ethical standard, researchers recommended non-profit organizations to maintain transparency, trustworthiness, and organizational accountability with their po-

tential donors. To gain the long-term trust of potential donors, crowdfunding platforms should also follow the same approach. And in this noble initiative, campaign owners also need to participate wholeheartedly because without them this will be hard to achieve only by crowdfunding platforms.

4.7 LIMITATIONS AND FUTURE WORK

My study considered only three out of fifteen project categories from Kickstarter to analyze the impact of campaign videos. In the future, a large-scale study is needed to explore a greater variety of categories and factors of campaign videos that may influence the outcome of campaigns. To this end, it would be interesting to analyze the videos of public good campaigns such as campaigns in dance or theater categories. As the final products of these campaigns are not commonly a tangible product, the videos may need to highlight different factors to make these campaigns successful. Besides, I extracted the factors of the campaign videos based on the ratings and comments of crowd workers. I assumed that opinions of the MTurk workers would be comparable to these of the actual backers on Kickstarter since 29.05% of my participants backed at least one Kickstarter campaign. Future investigation is needed to empirically demonstrate similarities between backers on Kickstarter and MTurk workers to verify the effectiveness of the factors extracted in my study. In this chapter, I analyzed campaign videos based on their perceived level of persuasiveness. However, I have not considered the script or the screenplay of the video in my analysis. Often, the flow of the screenplay and the arguments of the script have important roles in making an ad effective for the target audience. Writing the screenplay for tv ads or campaign videos is uniquely challenging because of the short duration (3-5 minutes). The screenplay might go through multiple iterations to arranging everything within the duration of a campaign video. In my analysis, I did not directly consider the impact of the screenplay. This can be an interesting direction to investigate in the future.

An interesting thing to look at in the future is the persuasion knowledge level of the crowd workers. For example, this could prove important to explain why an audience member dislikes the use of children or pets, especially if they know that those things are frequently used to try to persuade the audience without being related to the message. In the future, I would like to collaborate with campaign owners during the campaign material preparation phase to experience how effectively campaign owners utilize the factors found in my study in their videos and how those videos affect the outcome of campaigns.

4.8 CONCLUSION

Making a persuasive and understandable campaign video for a large audience takes many special skills. Moreover, understanding persuasive effects is difficult especially without any prior theoretical guidance. However, in a platform like Kickstarter, primarily built for novice entrepreneurs and artists, it is unlikely to find campaign owners with a high level of campaigning skills and experience. This inherent limitation often forces campaigns owners to seek help from professional agencies to make campaign videos. The process of getting the video made by agencies can cost thousands of dollars which is hard to arrange for new entrepreneurs who often have few resources to start with. I believe the product and video related factors explained in this study will help entrepreneurs to overcome this initial obstacle and encourage them to make campaign videos by themselves at a reasonable cost that better emphasize their communication skills.

The next step of this work is to examine whether novice entrepreneurs can apply them into making their campaign videos and if so, how much the application of persuasion factors improve the persuasiveness of their videos. In chapter 5, I explore this by inviting entrepreneurs for a user study. The objective of that user study was to examine the effectiveness of persuasion factors into making campaign videos appealing for the target audience.

CHAPTER 5: AN INTERACTIVE TOOL FOR MAKING PERSUASIVE CAMPAIGN VIDEOS

5.1 INTRODUCTION

Crowdfunding platforms, such as Kickstarter and Indiegogo, have gained popularity among new entrepreneurs by providing the opportunity to collect funding from millions of common people with almost no initial investment. These web platforms allow entrepreneurs to present their ideas using project descriptions, pictures, and videos. Naturally, video plays an essential role in crowdfunding campaigns, particularly for its storytelling power [18, 153].

While a video is crucial in convincing people to donate for crowdfunding campaigns, creating an appealing video is a challenging task for novice entrepreneurs [19]. Making a professional video involves several elements such as storyline, script, camera movements, editing, post-production editing, and so on. Most importantly, there are many audience persuasion factors, which are critical to optimizing when making a campaign video persuasive to the audience. These factors are challenging to apply in videos without professional training in advertising and marketing. Unfortunately, novice entrepreneurs – while experts on their products – often do not even know what factors make a video generally persuasive, much less, what factors would make a video most persuasive for their specific audience.

Past research identified many of these persuasion factors that can make campaign videos appealing to the audience [71]. Although these findings are valuable to researchers and advertising professionals, they do not help inexperienced entrepreneurs to effectively optimize their videos. The impact of these factors depends on campaign type, and often, their impacts are not intuitive. For instance, a complex representation of a fashion product is interpreted as evidence of fine craftsmanship by the general audience. Conversely, a video showing the complexity of a technology product does not work favorably for the campaign. In this case, the audience assumes the product is difficult to use and it negatively impacts their overall impression of the campaign [71]. Without any true guidance or examples of best practices, the implication of such persuasion factors is hard for novice entrepreneurs to understand.

Traditionally companies consult advertising agencies for creating persuasive product videos. However, the majority of the entrepreneurs on crowdfunding platforms are beginners and cannot afford such resources due to a limited budget. As an alternative, novice entrepreneurs attempt to learn using past campaign videos as examples, seek suggestions from peers and family members [19], and look for tips and strategies on the web [40, 41]. Many entrepreneurs depend on free counseling from film experts to compensate for their lack of experience in making videos [19]. Since Kickstarter does not allow creators to search through failed cam-

paings, novice entrepreneurs even go through third-party tools and blogs to compare and contrast ideas of their campaign videos. Unfortunately, this process can take three to six months of extensive work [19] and can still result in ineffective campaign videos.

The goal of this chapter is to understand whether and how I can develop assistive tools to help novice entrepreneurs learn how to apply persuasion factors to make effective campaign videos for their target donor audience. To this end, I focused on two main hypotheses based on the literature from HCI, and cognitive and learning science. First, given that novice entrepreneurs have difficulty predicting how combinations of persuasion factors will impact the success of their campaigns, I hypothesize that a tool that assists them in exploring effects of these factors on campaign outcomes through a process of structured interactivity will help them to a) learn the impact of these factors and, b) apply them in making their own videos more persuasive. Second, given that people learn new concepts better by thinking deeply about the concept and by generating materials by themselves, I hypothesize that a tool that guides novice entrepreneurs, in a step-by-step manner, to actively think about the critical aspects of persuasive campaign videos and to generate the planning materials of their videos by themselves will result in more appealing and creative plans for their videos.

In this chapter, I developed a functional prototype of VidLyz, an assistive web-based tool which consists of the following two modules: an interactive interface module that helps novice entrepreneurs learn the nuances of persuasion factors and enables them to make a comprehensive plan for their campaign video with the help of positive and negative example videos, interpretable explanations and measurement scales of persuasion factors, crowd-sourced feedback, and prediction models towards the success of the campaign (H1). From my second hypothesis, I designed another module, called the *guided planning module*, that guides novice entrepreneurs to actively think of the campaign video from the perspective of their own target audience and specific product category (H2).

To evaluate the effectiveness of the VidLyz tool, I conducted an in-lab user study with 45 participants and interviewed five previous campaign creators with different backgrounds and experiences. The primary objective of my evaluation was the following: 1) whether VidLyz can assist in learning of the implication of persuasion factors and 2) whether this learning can help them make better plans for their campaign videos. To this end, I created two different versions of my VidLyz tool: 1) a non-interactive version (a simple version without any interactive properties or guided active thinking) and 2) a comprehensive version (highlighting the interactive features and incorporating the guided planning module). I also recruited participants in the control group, which included no tool but a list of example campaign videos categorized based on the final outcome (success/failure) of their corresponding campaigns.

I randomly assigned each version of the VidLyz tool to 15 different participants and asked them to explore the tool to understand how persuasion factors can impact the effectiveness of campaign videos for prospective donors. In the end, all participants had to make their own plans for a campaign video of their pre-assigned product using a storyboard (a pre-production planning tool widely used by advertising agencies and film makers to make low-fidelity, easily customizable plans for videos).

Results show that the comprehensive version of the VidLyz tool helped novice users gain a deeper understanding of the relative importance of the persuasion factors. The combination of the interactive interface and the guided planning module helped participants create coherent and persuasive storyboards for their proposed campaign videos. Overall, their storyboards were suitable for their target audience, which is a key element for an effective campaign video. A follow-up user study showed that crowd workers found the storyboards of the comprehensive group to be persuasive. Finally, semi-structured interviews with participants and five prior and one future campaign owners informed us of the aspects of the VidLyz tool that can be improved in the future to better assist novice entrepreneurs in making their campaign videos persuasive.

5.2 INFORMING THE DESIGN

One critical issue in helping novice users make a persuasive campaign video is to identify what possible challenges campaign video novices may face in making a persuasive video. To address this issue, I interviewed 15 novice participants (9 female). 10 of them made some form of promotional videos either for their course projects or for their college fairs in the past. However, none of them had made any campaign video on their own or helped someone else to make a campaign video in the past. So, in terms of experience in making campaign videos, these participants were comparable to novice entrepreneurs who have no prior experience in making a campaign video. To understand how well they could interpret the known persuasion factors in campaign videos, I presented them the list of product and video related factors found by Dey et al. [71]. I also explained how those factors were used to design a logistic regression model in predicting the success of a campaign.

Next, I asked them to think of an imaginary scenario where they have created a new product and wanted to launch a crowdfunding campaign for their product. Before launching the campaign, they would need to make their own campaign video without hiring a professional agency due to limited funds. In the context of this imaginary scenario, I asked them the following questions:

1. What are the challenges you may face in the process of making a persuasive campaign video?
2. Whether and how can the factors explained by Dey et al. [71] be useful for you to make your video persuasive?

The interviews were semi-structured. I asked each participant the basic questions mentioned above as well as some follow-up questions based on their responses. Here, I summarized my findings from the interviews:

First, participants described their challenges in four stages: 1) initial planning, 2) building a coherent storyline, 3) shooting the video, and 4) editing and post-processing the video. Since the challenges involved in the last two stages are out of the scope of this work, I focused on the challenges identified by my participants in the first two stages.

Eleven participants emphasized the importance of having a planning tool for novice campaign creators. As one participant mentioned:

When I had to make a video to promote the science fair in my college, I had no idea how to do that. Should I ask friends for suggestions or should I go to the internet to look for some ideas? It was so overwhelming for me that I did not even want to start working on it.[14]

Next, I found that participants (N = 9) struggled to make a coherent storyline for their videos. Participants described that when they had to make a video, they were unable to decide which elements would make their videos persuasive to the target audience. Finally, they found it challenging to come up with a storyline that would convey their messages clearly to the audience.

In response to my second question, all participants felt that the product and video related factors I presented to them would be useful for new entrepreneurs. However, when they were asked to reflect on how those findings would be useful for making their own videos persuasive, participants found most of the factors ambiguous. They explained that just from seeing the names of those factors, they were not sure how researchers measured those factors for the actual campaign videos.

From the responses, I identified four assistive elements that would be desired by novice users for planning a persuasive campaign video. First, example campaign videos that would allow novice users to understand how they could apply persuasion factors in their own videos. Second, criteria for all the product and video related factors that were used by crowd workers to rate the existing campaign videos. Third, a tool that could allow novice users a way to explore how each factor contributes to making the video persuasive to the audience. As I5 mentioned:

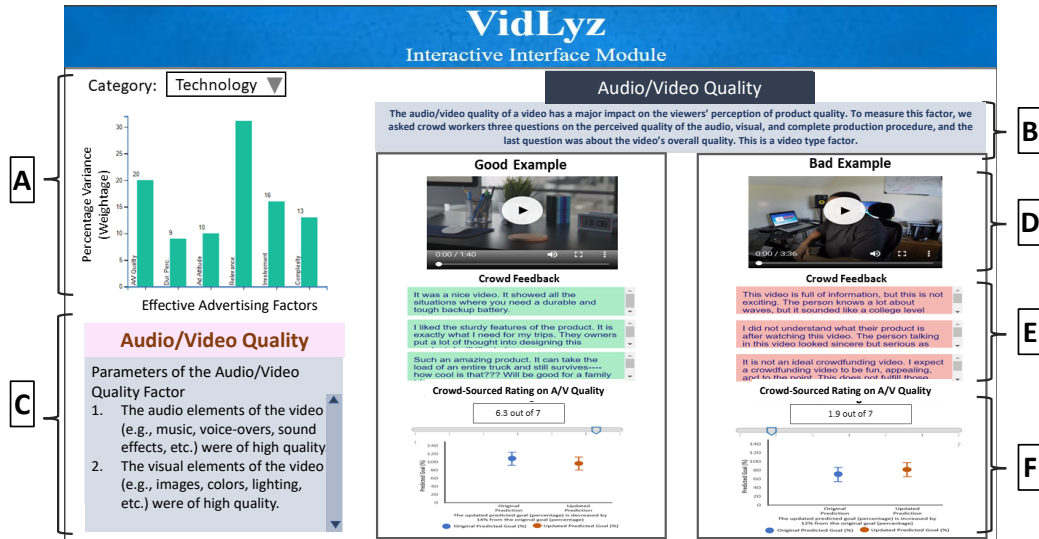


Figure 5.1: The interactive interface module of the VidLyz tool (comprehensive version). The bar chart (A) on the top-left side shows the percentage variances of all the persuasion factors (Audio/Video Quality, Duration Perception, Attitude to the Ad, Relevance, Involvement, and Complexity) for a specific product category. On the right side, VidLyz presents one good and another bad example videos (D) along with crowd-sourced feedback (E) and prediction model (F) for each persuasion factor separately.

Ideally, I would like to take into account everything that makes a video appealing to the audience, but in reality, it is hard to accommodate everything in a fixed time and with a limited budget. I need to know what factors are essential and how much they would affect the overall quality of my video.[15]

Finally, participants wanted a structured way to plan for a video that would eliminate the initial confusion and unorganized way of thinking about the video.

Based on the findings from my interviews, I designed and implemented the VidLyz tool consisting of 1) a novel web interface that can assist novice users in understanding how product and video related factors impact the overall quality of campaign videos (fulfilling the requirements of the first three assistive elements) and 2) a guided planning module that can guide novice users to think actively about their campaign videos like an advertising agency professional (fulfilling the requirement of the last assistive element).

5.3 DESIGN

To meet the requirements identified from our interview study, I designed the interactive interface and the guided planning module as part of the functional prototype of the Vid-

Lyz tool. In this section, I explained the design of these two components.

5.3.1 Design of the Interactive Interface Module

The main purpose of an interactive interface module was to explain the implication of persuasion factors in the context of campaign videos through explanations, scales, and crowd-sourced feedback. Our goal was to present the perception about existing campaign videos of those people who could represent the potential donors of crowdfunding campaigns. Here, I explained all the steps that I followed to design this module.

Subjective Rating Collection I considered two campaign categories to design this module: 1) fashion and 2) technology, since campaign videos in these two categories were found to be significantly different from each other [71]. I collected a list of 9,810 publicly available URLs of fashion and technology campaigns launched between April 2014 and February 2015 on Kickstarter. I randomly chose 70 campaigns (35 successful and 35 failed) from each category and collected their corresponding campaign videos. In total, I selected 140 videos for our study.

Since I was interested in people’s subjective assessment of campaign videos to inform the design of our interactive interface, I recruited MTurk workers to rate our videos. Prior work has shown that MTurk workers can perform complex, skill-intensive, and subjective rating tasks [29, 175, 177, 178, 179]. Since participants’ natural interest for a certain product category might influence their feedback, each MTurk worker was asked for their preference between the fashion and technology category on Kickstarter. Based on their preference, they were asked to watch a randomly assigned campaign video of their preferred category from our collection.

Once they finished watching the video, I asked workers to rate it based on the following six effective advertising factors, which were found to be persuasive for crowdfunding campaign videos: 1) relevance, 2) complexity, 3) involvement, 4) perception of video duration, 5) audio/video quality, and 6) attitude toward the video [48, 71, 158, 164, 173]. I did not consider “purchase intent” because it was found to be closely correlated with the “relevance” factor in the previous work [71]. I collected ratings from 15 different MTurk workers for each video. In total, 2100 MTurk workers participated in our study. I paid 33 cents for each completed task. 36% of our participants had donated to at least one reward-based crowdfunding campaign (such as Kickstarter campaigns) in the past and the majority (>89%) of our participants were familiar with crowdfunding platforms.

To make sure that the MTurk workers watched their assigned campaign video till the end,

I closely followed the strategy previously used by Dey et al. [71]. I removed all the controls of the video player (pause, forward, backward, stop, play). I also embedded two single-digit numbers in each video. Before presenting the campaign video, I informed our participants that they would find two numbers in the middle of the video that they would have to report in the end. At the end of the video, I asked MTurk workers to report those numbers and discarded the survey responses of those MTurk workers who failed to report those numbers. I rejected the responses of 114 participants for this reason. I also conducted three rounds of pilot studies to estimate the average time required to complete our task. On average, participants took 16.45 minutes to complete our task during the pilot study. Since all videos were more than three minutes long, I discarded the responses of those participants ($N = 7$) who took less than five minutes to complete the study. I also conducted an attention check in our survey where I asked participants to not answer one specific question. I discarded the responses of participants who failed the attention check ($N = 15$). In total, I discarded 6.5% responses through these validity checks.

Interface Design I used subjective ratings of the campaign videos to design the interface module. I conducted three rounds of preliminary pilot studies with eight participants and revised the design of our interface module based on the participants' feedback. None of these eight participants had any prior experience in making promotional campaign videos. All these participants were at least high school graduates so they should have basic knowledge of how to follow step-by-step instructions and structured workflow. I believe that the majority of the novice entrepreneurs will also have that experience since launching a crowdfunding campaign in an online platform such as Kickstarter will also require them to follow a structured workflow. To explain the design of our interface module, let us consider a hypothetical scenario where Alice, a novice user, needs to make a persuasive campaign video for her product. Her primary goal is to make a coherent storyline for her video. Here I explain the functionality of the interactive interface module that is designed to help Alice to meet her goal. The interface module has six coordinated sections (shown in Fig 5.1 with labels A-F). They are explained here:

- **Category specific percentage variance graph (Section A):** First, the user needs to choose the category that best matches her product from the drop-down box at the top left corner (section A in Fig 5.1) of our interface module. In our prototype, I included two categories: technology and fashion. Imagine that Alice chooses the technology category. She will find a bar chart highlighting the percentage variances of all the effective advertising factors for the technology category. I performed a factor analysis

on the crowd-sourced subjective ratings to calculate the percentage variances.

Since the primary objective of this interface is to make users better understand and be sensitive to the significance of the persuasive advertising factors, I made this bar chart interactive so that users can click on any specific bar on the chart and be presented with five additional pieces of information regarding the corresponding factor in section B, C, D, E, and F. I explain these sections below.

- Interpretable explanation and scale of persuasive advertising factors (Sections B and C): Imagine that Alice has chosen the bar corresponding to the factor “Audio/Video Quality” in the technology category. Section B briefly explains the meaning of the “Audio/Video Quality” factor in the context of campaign videos using layman’s term. I composed these explanations in such a way so that anyone without any prior experience in advertising can understand them without any external assistance. Next, section C shows the survey questions used in the MTurk study to rate a video on the “Audio/Video Quality” factor. These questions increase the transparency of the scale used for each factor to Alice.
- Example videos (Section D): Section D presents two example campaign videos on “Audio/Video Quality” chosen from the technology category. On the left side, there is an example video that was rated very high on the “Audio/Video Quality” factor by MTurk workers. The video on the right-hand side was rated very low on this factor. Prior work [198, 199, 200] found that people learning new concepts and procedural tasks perform better with examples. I used contrasting examples to emphasize how a specific persuasion factor can either positively or negatively a campaign video.
- Explanatory comments on example videos (Section E): On the left side of section E, our interface module presents three comments made by MTurk workers about the example video shown on the left side of section D regarding “Audio/Video Quality”. These comments highlight the positive aspects of the video on “Audio/Video Quality” observed by MTurkers in this video. Similarly, on the right side of section E, I show three negative comments about the example video shown on the right side of section D regarding “Audio/Video Quality”. The purpose of these comments is to explain to creators how these videos were perceived from the perspective of the audience, which may provide a better understanding of these factors to novice video creators.
- Prediction of the Goal Amount (Section F): Finally, on the left side of section F, I show the rating of the video shown on the left side of the section D. This section

also presents a slider which is by default set to the rating of the same video on the “Audio/Video Quality”. The graph below the slider shows the predicted goal amount (in percentage) for the corresponding campaign based on a multiple linear regression model. I built the multiple linear regression model on the subjective ratings provided by the MTurkers on effective persuasion factors where the dependent variable was the percentage of the campaign goal amount. Alice can change the rating shown in the slider and our backend engine will then predict the updated percentage of the goal amount of the corresponding campaign, keeping the ratings of all other factors constant but only changing the rating for “Audio/Video Quality”. On the right side of section F, I implemented the same prediction model as I did on the left side, but for the other example video shown on the right side of section D.

5.3.2 Design of the Guided Planning Module

Previous work has found that for effective learning, theoretical learning of skills alone is not sufficient. Learners need to have opportunities to apply that skill too in order to actively making sense of learning [201]. In order to complement this learning process, I aimed to design a guided planning module that helps novice entrepreneurs think about and apply their learned knowledge for preparing their own campaign videos.

Since there is no well-defined way about how a planning module can encourage novice entrepreneurs to think actively about their campaign videos, I studied the procedure conventionally followed by professional advertising agencies for the same task. I aimed to design a step-by-step guided planning module that would motivate novice users to think like a professional doing pre-production planning for the video. Advertising agencies usually follow a structured workflow to produce an ad for a client, from understanding the requirements of the client until making a video advertisement. In a recent book [202], Kocek explained this process from the perspective of an account planner. An account planner identifies the needs of the consumer and then decides how an ad can motivate that consumer. A systematic and structured step-by-step workflow is also effective outside the advertising domain. Vaish et al. [203] showed that a structured workflow could even enable a crowd-sourced team to produce collaborative videos for scientific papers.

From the workflow of an account planner, I identified six questions for our planning module that I believe will help novice users make comprehensive plans for their persuasive videos. I also considered one additional question for our planning module about the “reasons for donation” as it was found important for campaign videos in previous work [71]. In total, I have included seven questions in our planning module. I hypothesized that to gain the

benefit of guided active planning, novice entrepreneurs need to follow the steps of the guided planning module and need to thoroughly think about responses from the perspective of their target audience and the product. The process of writing down these answers will provide the benefit of a generation effect which will enable them to think of their responses more critically and later will help them create a more coherent and consistent storyline for their campaign videos. Thus, I call this the “guided planning module”. Here I briefly explain the seven questions of the guided planning module.

- **Benefits and Utility of the product:** The main purpose of a promotional campaign video is to positively present the product to the target audience. In advertising agencies, account planners discuss iteratively with their audience and clients to identify all the uses and benefits of the product. In our planning module, I included this question because I believe this will prompt novice entrepreneurs to think creatively about the benefits of using their products and list all of the possible benefits and utilities of their products that are worth highlighting in their campaign video.
- **Unique characteristics of the product:** A promotional ad usually focuses on the specific characteristics of the product that makes the product unique among other products in the market (unique selling proposition). I included this item because this could help novice entrepreneurs think about what is unique about their product compared to existing products.
- **Hidden insight of the product:** In advertising agencies, account planners start the process of creating a campaign by writing a creative brief. The creative brief sets up the goal of the advertisement so that it can be followed by the creative team when making an ad. One important element of a creative brief is finding the hidden insight into the product. Hidden insight focuses on benefits or uses of the product that people may not be obvious, but account planners think that if highlighted, would make the product more desirable to the audience. I included this element to help novice inventors think outside of the box.
- **Main takeaway of the campaign:** Both print and video ads strive to have a takeaway message in their content that they expect their audience to remember for a longer duration. For traditional product advertisements, this is regarded as an important factor because of the time gap between the viewing of an ad and customers buying the product (e.g., buying a car or milk). In crowdfunding, although the audience can donate immediately after watching the campaign video, a memorable takeaway may

motivate viewers to spread the word about the campaign more actively through social media and other forums.

- A tagline for the product: In advertising, a tagline is used to make a product memorable for the audience. This is also used to create a product identity which can make the product seem unique among other similar products. For example, Coca-Cola used the tagline, “Taste the Feeling” in an attempt to make their product easily relatable to everyday feelings such as “the first date” [37]. Although coming up with an effective tagline takes a long time even for professionals, I included it in our module so that novice entrepreneurs can think about the main theme of their video and plan everything around that theme.
- Target consumers of the product: Usually, advertising agencies perform a series of segmentation studies to identify potential target customers of a product before making an ad. These studies help agencies understand the lifestyle, demographics, daily routines, and habits of target customers to inform the mood and theme of the ad. In our planning module, I included this aspect because it could motivate novice entrepreneurs to think about the campaign video from the perspective of the target audience (donors and consumers), rather than just from the perspective of themselves – the campaign creators.
- Reasons for donation: In most of the successful campaign videos on Kickstarter, I found that inventors explain explicitly why they need donations from the crowd. Dey et al. [71] also found that when inventors did not explain this aspect in their video explicitly, crowd workers often raised suspicion about why they needed donations for the product. I included this prompt in our module to remind novice entrepreneurs to include the explanation of how the donated amount will be spent in their campaign video.

5.4 EVALUATION

Since designing an assistive tool to help novice entrepreneurs make persuasive videos is still a new direction of research, in my evaluation, I aimed to gauge the usefulness of the interactive interface and the guided planning module and to gain insights about how I can improve the VidLyz tool in the future. To evaluate the usefulness and effectiveness of VidLyz, I conducted a user study by recruiting participants and randomly assigning them to a group: 1) control group, 2) non-interactive group, or 3) comprehensive group.



Figure 5.2: The non-interactive version of the interface module of the VidLyz tool

The control group was created to validate the assumption that a novice video creator would face difficulty in planning a persuasive campaign video without external assistance. Participants in this group did not have access to any module or tool; however, I just provided them access to a list of past videos categorized in technology and fashion categories because past research showed that novice creators typically search out past examples when making a video on their own. In each category, the example videos were further categorized as successful or unsuccessful. I asked them to come up with a plan for a persuasive campaign video for a pre-assigned product.

Participants in the non-interactive group used a non-interactive version 5.2 of the VidLyz tool. I aimed to design the non-interactive version in a way so that participants could passively access the example campaign videos with minimum interaction just as they would do during a regular web search. For the two product categories, I showed the percentage variance of the effective persuasion factors using a bar chart in the non-interactive version as I did in the comprehensive version. However, when participants clicked on each bar in this version, I only showed them a brief definition of the factor and the list of questions used in the MTurk survey to rate a video for that corresponding factor. Instead of contrasting video examples used in the comprehensive version, I presented 12 example videos at the same time, categorized based on the product categories (technology or fashion) and the final outcome of their corresponding campaigns (successful and unsuccessful). Six of these videos were collected from successful campaigns, and the other six videos were collected from unsuccessful campaigns. I also presented MTurkers ratings of each video across the persuasion factors. However, the example videos were not individually explained with crowd-sourced feedback and interactive prediction model which, I hypothesized, would be essential to understand the impact of the factors in making effective campaign videos.

Finally, participants in the comprehensive group used a complete version of the VidLyz

tool. I hypothesized that participants in the comprehensive group would be able to learn the significance of persuasion factors most effectively (vs. the control group and the non-interactive group). I also hypothesized that this learning would allow the participants in the comprehensive group to come up with more persuasive plans for a campaign video compared to the participants in the control group and the non-interactive group.

5.4.1 Participants

I attempted to hire novice entrepreneurs for the user study from a Midwestern university town in the United States by posting flyers in restaurants, cafes, and public libraries and by sending invitation emails to campus-wide mailing lists for faculty, university staff, and student communities. Despite multiple attempts, I did not receive any response and finally decided to recruit participants who were not current novice entrepreneurs but were interested in crowdfunding and were not experienced with making professional videos since the most important element I was interested in was how my system could assist novice video makers. I recruited 45 participants for the user study. None of these participants were experts in making professional promotional videos, and no one had any prior experience in making campaign videos (novice campaign video creators). However, 13 of these participants had made some kind of video in the past. These 13 were equally distributed between groups: five of these participants were assigned to the control group, four were assigned to the non-interactive group, and the remaining four participants were assigned to the comprehensive group. Participants' average age was 26.81 (SD=6.76), and 53% were females. 83% of participants were familiar with crowdfunding platforms, such as Kickstarter and Indiegogo, and 28.42% had donated to at least one crowdfunding campaign prior to participating in the study. On average, each participant took one hour 15 minutes to complete the study and received \$10/hour for their participation.

5.4.2 Procedure

For the user study, I randomly assigned each participant in one of the three user groups. I asked all participants to imagine the scenario that I used in my design informing interview. I then presented two products to each participant: 1) a magnetic levitation floating holder (a technology product, shown in Fig 5.3a) and 2) a pair of men's or women's shoes (a fashion product, shown in Fig 5.3b and Fig 5.3c). I asked each participant to choose one product that they would like to make a promotional campaign video for. Other than the simple description of these products, I did not mention any other information about these products



Figure 5.3: (a) Magnetic levitation floating holder, (b) Men’s shoes, and (c) Women’s shoes.

to participants. Rather, I asked them to imagine that they themselves were the inventors of their chosen products so that they would have the freedom to decide how they wanted to make a campaign video for their product.

Each participant first completed an introductory survey where I asked them about their familiarity with Kickstarter and whether they had donated for a campaign before or not. This information helped the experimenter know how to introduce the interactive interface module to the participants. Next, my experimenter took around 10 minutes to explain the motivation of the study and the expectation of designing a storyboard at the end of the experiment. The experimenter also explained how the interface module (either the comprehensive version or non-interactive version) was designed and the functionality of each section of the module. Since participants in the control group did not have access to any tool, the experimenter spent this time to explain the list of example videos that they had access to. The experimenter also showed the findings of Dey et al. [71] and explained briefly the importance of persuasion factors in making a campaign video effective. Next, all participants explored their resources – either example videos (control) or their assigned version of the VidLyz tool – on their own. Once they finished exploring their resources, they completed a Persuasion factor survey to explain the persuasion factors in their own words.

Next, the experimenter asked participants using the comprehensive version to answer the questions of the guided planning module from the perspective of their target audience and of the product that they had chosen at the beginning of the experiment. For participants in the control group and the non-interactive group, the procedure was the same except the experimenter asked them to think about the answers to those questions rather than writing them down. I hypothesized that by not writing down the answers to the questions of the guided planning module, participants in the control group and the non-interactive group would not generate in-depth responses step-by-step from the perspective of their product and their target audience. Glancing over these questions without writing answers would be equivalent to simply reading about the importance of these steps for effective campaign

videos on a website; while it provides information, it would not allow them to gain the benefit of the generation effect. Thus, those that simply read about considerations would find the ultimate storyboard task to be more challenging than would participants in the comprehensive group.

Finally, the experimenter asked all participants to draw a storyboard for a campaign video for their assigned product. my experimenter briefly explained the main concept of a storyboard to each participant. Each participant answered the following two questions before drawing the storyboard: 1) the main problem that they wanted to solve with their assigned product, and 2) their target audience. Later, I used the answers to these questions to evaluate the quality of the storyboards drawn by participants. Once they finished drawing the storyboard, I conducted a short semi-structured interview (10 min) to understand their overall experience of using the VidLyz tool and to ask for suggestions on how to improve my tool in the future. In the end, each participant completed a demographic survey.

To understand whether VidLyz can assist novice creators to learn and apply persuasion factors in making a more effective campaign video (RQ5.1), I analyzed the responses from the “Persuasion factor survey”. I also had two media production experts (blinded to condition) evaluate the quality of the storyboards to understand whether learning of the significance of the persuasion factors can help novice entrepreneurs to make a well-structured plan for their persuasive campaign video (RQ5.2). In the process of answering RQ5.2, to include potential audience responses, I also recruited participants from MTurk to evaluate the persuasiveness of the storyboards. Additionally, I analyzed the interviews with participants to understand the scope of improvement of the VidLyz tool. Finally, I interviewed five entrepreneurs who had prior experience creating campaign videos for their own campaign launches on Kickstarter. The goal of these interviews was to receive feedback on VidLyz from people who themselves had faced the challenges of making a persuasive campaign video as a novice.

5.5 RESULTS

To answer RQ5.1, I analyzed the responses of participants in the “Persuasion factor survey”. I hypothesized that VidLyz would assist participants to better understand the significance of persuasion factors in the context of crowdfunding campaign videos which, in effect, would inspire them to consider those factors in making their storyboards more persuasive for the target audience. To answer RQ5.2, media production experts first evaluated the persuasiveness of their storyboards. I also evaluated the storyboards with crowd workers to understand the potential effectiveness of these storyboards in seeking crowdfunding. Here, I hypothesized that VidLyz would assist participants to come up with more persuasive

pre-production plans for their campaign videos. Finally, I interviewed previous and future campaign creators to explore how VidLyz can be improved in the future to better assist novice campaign creators in making persuasive plans for their campaign videos.

5.5.1 Evaluation of the Responses of the Persuasion Factor Survey (RQ5.1)

To analyze the free-form responses of the participants, I performed iterative open-ended coding [204, 205], followed by thematic analysis [206, 207, 208]. Thematic analysis is an inductive analytical technique that consists of exploring the data to identify and classify recurring patterns. I cooperated with the primary analyst in a review of the raw analysis to look for complexities, organize and refine the themes, and corroborate the findings. Four major themes emerged from the responses: 1) Elaborate description, 2) Implied significance, 3) Contextual insight, and 4) Proposed solution.

Elaborate Description Participants explained the effective advertising factors more elaborately than the brief explanation provided in the VidLyz tool or the research paper [71]. For example, P3 mentioned factors such as graphical fonts, lighting, background sounds, music choice, and change in tempo could eventually impact the “Audio-Video Quality” of a video.

Implied Significance Participants reflected on the implied significance of the persuasion factors that can impact the overall impression of the donors about the campaign/creator and their intent. As P5 commented:

Good audio and video quality of a campaign video implies that the creator of the campaign is serious and cares a lot about the issues being addressed by the product.[P5]

Contextual Insight Participants emphasized the context of crowdfunding campaigns while they discussed effective advertising factors. They explained how traditional advertising factors could be interpreted differently when the focus was on campaign videos. As P27 mentioned:

*... Many Kickstarter’s are trying to sell a unique brand with a distinct mission.
... When a campaign video omits the owner or the key player, they lose their trustworthiness since it appears that they are unwilling to stick up for their own product.*[P27]

Proposed Polution Participants not only explained the effective advertising factors in the context of crowdfunding but also suggested strategies that could make campaign videos more engaging to the target audience. For example, P7 explained how campaign videos could increase viewers' involvement by establishing a relationship between the product and a well-known social movement.

Next, we asked two independent coders to rate each response from my survey based on these four major themes explained above. My coders coded each response on a binary scale, i.e., when a response or part of a response matched a theme, it received one point for that theme, if not, it received 0 points. Cohen's kappa test showed a substantial agreement between the two coders ($K = 0.84$). Therefore, I averaged their scores to perform multinomial logistic regression analysis. I considered each major theme score as an independent variable, and the group ID (condition) of each participant was the dependent variable. My goal was to understand how accurately I could predict the group ID of a participant based on the ratings on their storyboards across all four themes.

Since I took an average of the ratings of two coders, for each theme the rating value is one of three possible options: low(0), medium(0.5), or high(1). Similarly, my dependent variable also had three categories: 1(control group), 2 (non-interactive group), and 3 (comprehensive group). First, I verified how well my observed dataset corresponded to the regression model. I calculated the Pearson goodness-of-fit statistic and found that the model fit the data well ($p = 0.89$) ($p > 0.05$ indicates that the model fits the data). Next, I formed the likelihood ratio test for my independent variables. I found that (Elaborate description ($p = 0.01$), Contextual insight ($p < 0.01$), and Proposed solution ($p = 0.03$)) were each statistically significant but Implied significance ($p = 0.19$) was not. Finally, I observed the parameter estimates of my model to compare my user groups. First, I kept the control group as the reference group and compared the comprehensive group to the control group and the non-interactive group to the control group through parameter estimates. I found that participants in the comprehensive group were rated more highly on Elaborate description ($B = 1.21$, $SE = 0.16$, $p < 0.01$), Contextual insight ($B = 0.87$, $SE = 0.33$, $p = 0.01$), and Proposed solution ($B = 0.56$, $SE = 0.21$, $p = 0.03$) than participants in the control group. I also found that participants in the non-interactive group had higher ratings than the control group on Elaborate description ($B = 0.91$, $SE = 0.43$, $p = 0.01$) and Proposed solution ($B = 0.78$, $SE = 0.14$, $p = 0.03$). Finally, I recalculated the model to compare the relationship between the comprehensive group and the non-interactive group (keeping the non-interactive group as the reference group). Participants in the comprehensive group were rated higher on Elaborate description ($B = 0.25$, $SE = 0.11$, $p = 0.04$) and Proposed solutions ($B = 0.29$, $SE = 0.18$, $p = 0.04$) than participants in the non-interactive group. My findings were consistent with my initial

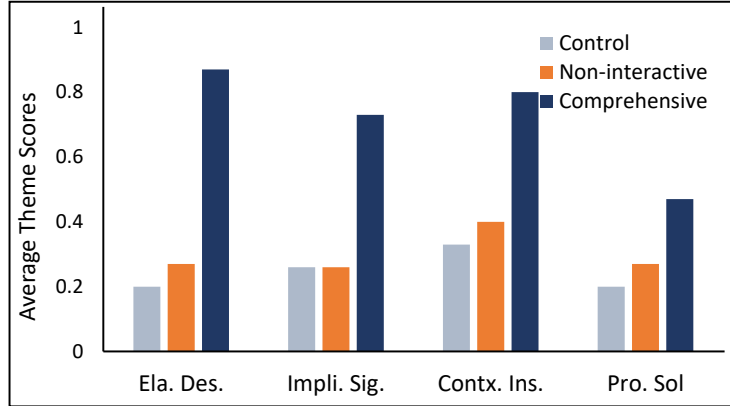


Figure 5.4: Average theme scores based on “Persuasion factor survey” for participants in the control group, non-interactive group, and comprehensive group

hypothesis that the interactive interface module and guided planning module assisted novice participants in learning the significance of the persuasion factors in the context of campaign videos.

5.5.2 Consideration of Persuasion Factors in Drawing Storyboards (RQ5.1)

I asked participants whether they considered any engaging advertising factors when they drew their storyboards. If yes, I asked participants to list those factors next to each segment of the storyboard. My goal was to understand whether participants considering diverse persuasion factors could generate more effective storyboards. I found that participants using the comprehensive version considered 6.07 factors on average ($SD=0.82$) for each storyboard. In contrast, participants in the control group considered only 3.80 factors on average ($SD=1.31$) for each storyboard, whereas participants in the non-interactive group considered 4.02 factors on average ($SD=1.23$) for their storyboards. One-way ANOVA analysis showed that the number of factors considered by participants of each group was statistically significantly different ($F(2, 42) = 17.24, p < 0.01, \text{partial } \eta^2 = 0.45$). Post-hoc Tukey analysis showed that participants of the comprehensive group considered significantly more persuasion factors to draw their storyboards compared to the participants in the control group ($p = 0.02$) and the participants in the non-interactive group ($p = 0.02$).

Table 5.1 shows the frequency (in percentage) of each effective advertising factor mentioned by the participants. Participants in the control group considered the A/V quality factor most frequently followed by the relevance factor. Similarly, participants in the non-interactive group considered the A/V quality, relevance, and complexity factors most frequently (frequency at least over 10%). In contrast, participants of the comprehensive

Table 5.1: Frequency (in percentage) of the effective advertising factors mentioned in the storyboard segments by participants of the control, non-interactive, and comprehensive group

	Control	Non-interactive	Comprehensive
A/V Quality	61.33%	26.89%	16.66%
Dur. Perc.	5.34%	3.44%	7.69%
Ad Attitude	2.55%	3.86%	21.79%
Relevance	20.33%	17.58%	18.24%
Involvement	3.58%	7.60%	20.23%
Complexity	6.87%	41.03%	15.38%

version considered almost all factors (except duration perception) when they drew their storyboards. One explanation is that participants in the control group and the non-interactive group did not understand the significance of the persuasion factors in making a campaign video persuasive, especially those factors which were not intuitive to novice users. Due to the lack of interactive elements incorporated in the comprehensive version, participants in the control group and the non-interactive group considered only those factors which were more intuitive for them to understand (such as A/V Quality). This finding indicates that the interactive property and the guidance of the VidLyz tool were useful for novice participants to understand the significance of persuasion factors in the context of campaign videos.

5.5.3 Evaluation of the Storyboards (RQ5.2)

To answer RQ5.2, I analyzed the storyboards created by the participants. All participants drew storyboards to make the pre-production plan of their campaign videos for their corresponding product (either a levitation holder or a pair of shoes). Fig 5.5 shows a screen-shot of the storyboard drawn by P8 for a pair of shoes. On average, participants in the control group spent 43.07 (SD = 8.23) minutes to draw their storyboards, whereas participants in the non-interactive group spent 35.45 (SD = 5.03) minutes to complete their storyboards. Finally, participants using the comprehensive version spent 28.12 (SD = 3.76) minutes on average. One way ANOVA test showed that the time difference was statistically significant ($F(2,42) = 23.07, p < 0.01, \text{partial } \eta^2 = 0.52$). Post-hoc Tukey analysis showed that participants in the comprehensive group took significantly less time than the participants of the non-interactive group ($p = 0.01$) and the control group ($p = 0.01$). Similarly, participants in the non-interactive group took significantly less time than participants in the control group ($p = 0.01$) to draw their storyboards.

Two coders with prior experience in media studies evaluated the storyboards independently based on the following three parameters: 1) whether the storyboard addressed the

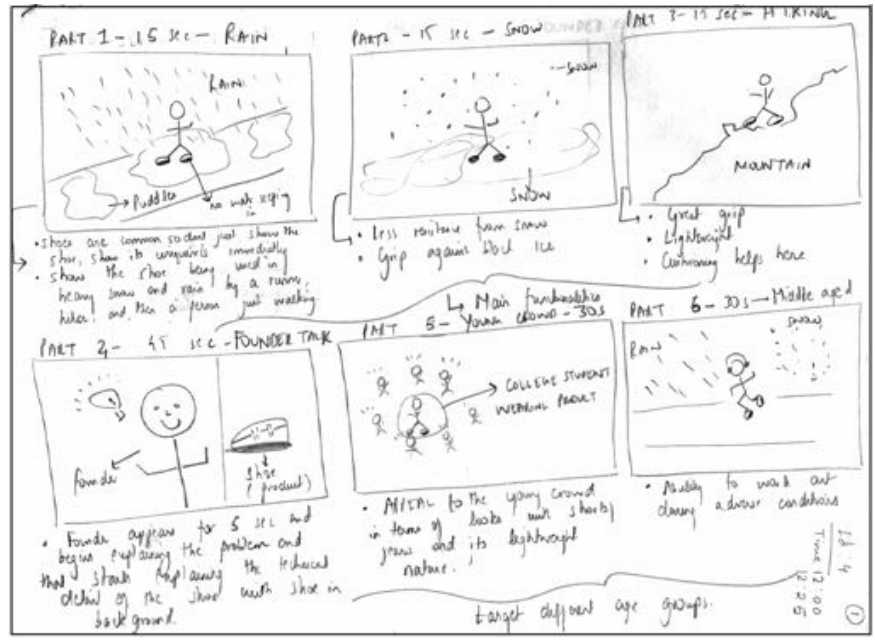


Figure 5.5: This storyboard was drawn by participant P8 who used the comprehensive version of VidLyz

Table 5.2: Average ratings on all three criteria for the storyboards drawn by the participants of control group, non-interactive group, and comprehensive group

	Control M (SD)	Non-interactive M (SD)	Comprehensive M (SD)
Solving Main Problem	2.98 (0.72)	3.42 (0.69)	4.29 (0.48)
Suitable for Target Audience	2.87 (0.71)	3.21 (0.87)	4.34 (0.62)
Creative and Appealing	3.02 (1.17)	3.53 (1.08)	4.47 (0.56)

main problem that the participant wanted to solve with the product (mentioned by each participant), 2) whether the idea presented in the storyboard was appropriate for the target audience (each participant mentioned their target audience in the beginning), and finally, 3) whether the storyboard was creative and appealing. I adopted these evaluation criteria from principles followed by advertising agencies where they use this criterion to evaluate the creative strategy of advertisements [202].

My coders used a five-point Likert-scale ranging from strongly disagree (1) to strongly agree (5) for each criterion to rate the storyboards. Since there was a substantial agreement between two coders for all three criteria based on Cohen’s kappa test (K = 0.82 for the first criteria, K = 0.80 for the second criteria, K = 0.86 for the third criteria), I averaged their scores for each storyboard for all three criteria. Table 5.2 shows the average scores of the storyboards across all three criteria.

I performed multinomial logistic regression to understand how accurately storyboard ratings of the participants can predict their corresponding assigned group in the user study. For my analysis, I considered three independent variables: Likert scale ratings of the storyboards in three criteria (solves the main problem, suitable for the target audience, and creative and appealing). My dependent variable was the participants' assigned group membership (condition). Pearson goodness-of-fit statistic showed that the regression model fitted my dataset well ($p = 0.72$; $p > 0.05$ indicates model fit). I calculated the likelihood ratio to identify statistically significant independent variables. I found that all independent variables were statistically significant (solving main problem ($p = 0.02$), suitable for target audience ($p = 0.02$), and creative and appealing ($p = 0.02$)).

Finally, I compared my groups through parameter estimates. I found that participants in the comprehensive group were more likely than participants in the control group to be rated higher on solving the problem ($B = 0.96$, $SE = 0.22$, $p = 0.01$), suitable for target audience ($B = 1.12$, $SE = 0.23$, $p < 0.01$), and creative and appealing ($B = 1.07$, $SE = 0.31$, $p < 0.01$). I also found that participants of the comprehensive group had higher likelihood than participants in the non-interactive group to be rated higher on solving the problem ($B = 0.64$, $SE = 0.19$, $p = 0.02$), suitable for target audience ($B = 0.84$, $SE = 0.33$, $p = 0.01$), and creative and appealing ($B = 0.79$, $SE = 0.21$, $p = 0.01$). Participants in the non-interactive group were statistically similar to participants of the control group in all criteria. These findings supported my hypothesis that the interactive interface and the guided planning module of the comprehensive version of the VidLyz tool helped participants to come up with effective and more persuasive pre-production plans for their campaign videos.

5.5.4 Evaluation of the Storyboards based on Guided Planning Module (RQ5.2)

To understand how closely participants followed the guided planning module to draw their storyboards, I compared their responses with their corresponding storyboards. Since only the participants in the comprehensive group explicitly wrote down their responses for the questions in the guided planning module ((as I instructed the participants in the control group and the non-interactive group to think about their responses instead of writing them down), I could directly compare only the responses of the participants of the comprehensive group for this evaluation process. To understand the impact of the guided planning module on the participants of the control group and the non-interactive group, I analyzed their responses from the semi-structured interviews. I discussed the insight gained from those responses in section 5.5.6.

The experimenter did not ask any participants to follow the guidelines provided by the

Table 5.3: Number of the participants from the comprehensive group who closely followed each guideline from the guided planning module to draw their storyboards

Topics of the Guided Planning Module	Number of Participants (out of 15)
Benefits and Utility	15
Unique Characteristics	12
Hidden Insight	3
Main Takeaway	9
Tagline	5
Target Consumers	10
Reasons for Donation	11

guided planning module to draw their storyboards. Rather, the experimenter mentioned that those guidelines are conventionally followed by professional ad-agencies to make effective TV advertisements. My goal was to observe how many participants naturally felt the need to follow the guidelines to draw their storyboards. This technique allowed us to observe the natural attitude of the participants toward the guided planning module. Table 5.3 lists all the seven guidelines of the guided planning module along with the number of participants who followed those guidelines to draw their storyboards. All participants in the comprehensive group reflected on the benefit and utility of their chosen product in their storyboard. This was not surprising to us since the main task of a campaign video is to explain the benefits and utility of the product to the prospective donors. Both “unique characteristics” and “reasons for donation” factors were also addressed by 11 participants. Prior work showed that explaining the reasons for the donation request is an important aspect of a successful campaign video as it justifies the core purpose of launching the crowdfunding campaign to the prospective donors [71].

Only five participants used their taglines in their videos. One possible explanation is that generating an intriguing tagline takes a long time and multiple iterations even for professional copywriters. Since the participants spent a short amount of time to prepare their taglines as part of the guided planning module, most of them naturally did not come up with an interesting tagline, and that may be the reason why they decided to not use that in their storyboards. Since novice entrepreneurs will most likely have more time to reflect on their taglines, I believe they will be more encouraged to use this element in their videos. Another topic of the guided planning module which was used sparingly by participants was the “hidden insight”. Participants of the user study found it hard to differentiate between the “unique characteristics” and the “hidden insight” of a product. Ad-agencies find the “hidden insight” of a brand or product by rigorously researching the product with the help

of the product’s company and through market research. In my case, the participants were neither the creators of their products nor got a chance to do market research on their assigned product. Only four participants gave an answer that was different from their responses for the “unique characteristics” question and out of those four participants, three of them used it in their storyboards. Overall, the guided planning module helped participants to draw their storyboards. Although responses from the “tagline” and “hidden insight” questions were challenging for participants to incorporate in their storyboards, I believe real entrepreneurs might find them easier to incorporate because of their higher involvement with the product. In the future, I would like to add more explanations and examples for those two questions to make them more accessible for novice video makers.

5.5.5 Evaluation of the Storyboards with Crowd Workers (RQ5.2)

Finally, I recruited 75 participants from MTurk to evaluate the persuasiveness of the storyboards created by the participants. I aimed to understand whether crowd workers would find the storyboards created by the comprehensive group more persuasive compared to the storyboards created by the participants of the control and non-interactive groups. To this end, I presented an imaginary scenario to MTurkers where they had to decide how much they would like to donate to a sample crowdfunding campaign. Based on their preference, I showed a sample Kickstarter campaign to each MTurker either about a pair of shoes (fashion campaign) or about a magnetic levitation floating holder (technology campaign). The campaign looked similar to any other typical Kickstarter campaign except the campaign video section was empty. I told participants that the creator of the campaign was trying to make a video appropriate for the campaign; however, the creator needed help from MTurkers to decide a plan for the video out of three different plans. Here, I presented three storyboards to each MTurker. One of them was drawn by a participant from the control group, the second one by a participant of the non-interactive group, and the last one by a participant from the comprehensive group. The order of the storyboards was counterbalanced. I asked MTurkers to write down, for each version of the storyboard, how much they would like to donate to that campaign. Overall, for each storyboard, I collected the intended donation amount from five different MTurkers and averaged them to minimize individual differences.

On average, crowd workers wanted to donate \$26.53 (SD = 6.88) for the corresponding campaigns of the storyboards drawn by the participants in the comprehensive group. MTurkers wanted to donate \$13.60 and \$9.00 for the campaigns of the storyboards drawn by the participants of the non-interactive group and the control group respectively. I performed a one-way ANOVA on the intended donation amount to understand if there was any significant

difference among the groups. I found that the intended donation amounts were significantly different for storyboards across three different groups $F(2,42) = 19.10$, $p < 0.01$, partial $\eta^2 = 0.48$. Post-hoc Tukey analysis showed that MTurkers intended to donate significantly more money for storyboards created by the comprehensive group compared to the control group ($p < 0.01$) and the non-interactive group ($p < 0.01$). No statistically significant difference was found between the intended donation amount of the non-interactive group and the control group. This indicates that the interactive interface and the guided planning module helped participants of the comprehensive group to come up with persuasive storyboards for their campaigns, which in effect motivated MTurkers to report higher intended donation amounts.

5.5.6 Participants' Opinion

At the end of the user study, I conducted a short interview (10 minutes) with each participant. My goal was to understand their experiences about using the VidLyz tool and get feedback to improve the tool in the future. I transcribed the interviews manually in the lab and performed interactive open coding to identify the main themes of the interviews. First, I asked the participants of the non-interactive group and the comprehensive group which module of the VidLyz tool they found the most useful to help them draw their storyboards. 16 participants (10: comprehensive version and 6: non-interactive version) found the interactive interface module more useful than the guided planning module for creating a storyboard. They felt that coordinated example videos and crowd-sourced feedback were the elements that helped them come up with their own storyboards. In contrast, 6 participants (2: comprehensive version and 4: non-interactive version) felt the opposite since they felt that the planning module guided them to think only about the topics that were key to the storyboard. Finally, 8 participants (3: comprehensive version and 5: non-interactive version) found them equally important for drawing a storyboard as they felt that the elements of the interface module and the planning module were complementing each other. Since participants in the control group could not access any tool, they were not asked this question.

Next, I asked all participants if they had any suggestions for improvements. Participants pointed out a few areas where the VidLyz could be improved in the future. Four participants of the comprehensive version suggested including an additional example video for each persuasion factor which has an average rating and, therefore more opportunities for improvement compared to the highly-rated example videos. Participants felt that this would allow them to understand the implication of each persuasion factor better. Three participants, who had prior experience in drawing storyboards, suggested including a digital drawing tool for

drawing the storyboard. P4 felt that a digital drawing tool would allow users to comfortably iterate over their storyboards at their own pace. Two participants from the comprehensive version wanted to see some standard topic modeling on the MTurkers' feedback to identify the main themes of those feedbacks. Finally, four participants of the non-interactive group mentioned the necessity of completing the planning module before attempting to create a storyboard. As P19 mentioned:

I did not pay much attention to the planning module first. But later, when I had to think of the storyboard, I realized why the planning module included those questions. It was guiding me through the storyboard.[P18]

This explains why participants of the non-interactive group and control group took significantly more time to draw the storyboard than those of the comprehensive version. Since control group participants could not specifically talk about any improvement opportunities for the VidLyz tool, they mostly (N = 11) asked for a better organization of the example campaign videos. P37 asked for annotated example videos as she felt that annotations would help her to identify the strengths and the weaknesses of the example videos without spending time in going through all the videos one by one.

5.5.7 Comments from the Previous Campaign Creators

I conducted one-on-one 30-min interviews with five participants who had previously launched a crowdfunding campaign either on Kickstarter or on Indiegogo. They did not receive any remuneration for participating in these interviews. All participants followed the all-or-nothing funding model for their campaigns. Four of the participants completed their campaigns successfully, and one participant was not able to reach the target amount on time. Two of these participants launched their campaigns in the technology category, one in the fashion category, one in the design category, and the final participant in the art category. All these campaign creators included a video in their campaigns.

I demonstrated the non-interactive and the comprehensive versions to all participants. All participants expressed enthusiasm about the overall design of the VidLyz tool. Four participants preferred the comprehensive version of the VidLyz tool. One participant (E3) suggested combining these two versions by including the scores of all the persuasion factors for each example video in my comprehensive version. E3 agreed that this inclusion of raw scores might become overwhelming for some users. He suggested adding these scores as a hidden property so that anyone interested in knowing these scores could access them at their own convenience. E1 wanted to access more than one good example videos for each

persuasion factor as these examples could highlight different aspects of a single factor. E2 also wanted to see more examples but for a wide variety of products. As E2 mentioned: “*In the fashion category, you will find several (eight) sub-categories in Kickstarter. A campaign video for apparel should look much different from that of a pet fashion accessory. I want to find at least one example from each sub-category in this platform*”. E1 also mentioned that along with past examples, VidLyz should allow users to access short clips of campaign videos highlighting only one specific topic such as product demo:

When I made a campaign for my portable 3D printer, I knew that I had to show the demo of my product. But I was not sure how much details [sic] I should include in my demo. A library of video clips where people are only showing the demo of their products would be useful at that point.[E1]

Two participants (E2 and E3) felt that the tool should allow experienced campaign creators to include new materials into the platform. This will help to build a community among novice and experienced campaign creators and enrich the tool’s functionality significantly over time. E4 asked for the experience and the personal interest of the MTurkers who commented on the example campaign videos. Since he launched his campaign in the “Art” category, from his personal experience he felt that many MTurkers may not find the campaigns – planning to restore artists’ communities – appealing and creative. He felt that incorporating some details of the MTurkers would enable novice entrepreneurs to judge the merit of the feedback before considering changing the plan for their own videos based on the specific feedback.

Four out of five participants felt that the inclusion of the guided planning module would be useful for entrepreneurs irrespective of their experience level. They felt that this module could work as a checklist for campaign creators to make their videos suitable for the target audience. They also felt that this module would encourage campaign creators to think about their product and video ideas from the perspective of the audience before they made the plan for their videos.

In addition to interviewing these five participants, I interviewed one more participant (N1) who had previously had a campaign and was also planning to launch a campaign within the next few months. N1 was in the process of making a plan for his campaign video at the time of the interview. N1 owned a small garden store in a shred-space shop in the downtown area and was planning to launch a campaign to rent a solo retail space for his store. I presented both the non-interactive and the comprehensive version of VidLyz to N1 and asked his opinion about the tool. As expected, accessing the example videos in technology and fashion categories did not directly help him to make a plan for his own video (since he was planning to launch his own campaign in the retail category), however, he still found

it useful to watch the example videos as he felt that the best or worst examples gave him a general idea about making a better campaign video from scratch. N1 also found those examples useful because those videos helped him understand how he could produce his own video with good audio and video quality. For example, he mentioned that he now would like to use a steadicam instead of a hand-held camera to shoot his own video as it would make the video more stable even if he shoots it in an outdoor retail location.

N1 also wanted to watch more than one bad example videos for each persuasion factor as he felt that watching more bad examples would help him to avoid making obvious mistakes in his own video. After watching the example videos, N1 expressed the need for a script for his video. He felt that having a well-planned script will be useful for his video because, in many of my bad examples, campaign owners fumbled multiple times which N1 interpreted as a lack of sincerity on the campaign owners' part. Finally, N1 wanted to get some feedback from the crowd during the course of making his own video. He felt that early feedback from the crowd would allow him to produce an appealing video that will attract donations not just from friends and family but also from more strangers on the platform.

5.5.8 Summary of Results

To summarize, my evaluation with the help of media experts, MTurkers, and experienced entrepreneurs showed that the interactive interface module of the VidLyz tool helped novice users understand the implication of persuasion factors in making campaign videos engaging and effective. In addition, the guided planning module encouraged novice users to actively think of all the critical elements of their proposed campaign videos from the perspective of a professional account planner. One concern that is worth discussion about campaign videos is whether having a fixed set of rules for making persuasive campaign videos will eventually make videos monotonous. The persuasion features considered in designing VidLyz are broad features and they left a lot of room for imagination on the users during interpretation. However, the examples shown in VidLyz may consciously or subliminally influence users of this tool to think in the same direction. As previous work has shown that having a set of examples in hand can potentially hinder creativity [209]. Moreover, a fixed set of example videos will also fail to capture the new trends for campaign videos.

One suggestion that I came across multiple times while conducting the evaluation study for VidLyz was to have an up-to-date pool of good and bad examples for each feature instead of having only a small and fixed set of examples (one/two examples for each feature). Another interesting idea was to have a bunch of small clips as examples instead of having full videos as examples. For example, analysis of the existing campaign videos revealed that pitching

the idea of the product in the video concisely and quickly (within the first 30/40 seconds of the video) is the key to drawing the attention of the audience. Users suggested that a tool like VidLyz should have a repository of video clips for pitching the product. I believe having short clips highlighting different sections of campaign videos will provide entrepreneurs a variety of ideas instead of limiting their thoughts to only a few full example videos. However, in parallel to small clips, having full examples are also important because some persuasion concepts such as involvement are hard to interpret through 40 second long clips; rather those concepts only makes sense when the entire video is watched.

In addition to example video pools and collection of small clips, a more sustainable and practical approach for VidLyz is to be launched as a social platform where users will be able to contribute new examples on the existing pools based on the trend of the community. This may also encourage interaction among the entrepreneurs' community since prior work found that interaction encourages engagement among online communities on social platforms [210].

5.6 DISCUSSION AND FUTURE WORK

My evaluation showed that VidLyz can assist novice users in developing well-structured pre-production plans for their persuasive campaign videos persuasive. Since a well-structured plan for a video ad, such as a commercial, is highly valued by advertising agencies [202], VidLyz can potentially be a useful tool for novice entrepreneurs who want to make their videos persuasive without having to hire outside professionals.

My current prototype of the VidLyz tool is primarily designed to assist novice entrepreneurs in the process of making their campaign videos. However, if desired, the core concepts of the interactive interface and active learning can be used to assist other communities too. For example, everyday people upload thousands of cooking videos on YouTube. Some of them manage to get thousands of views, whereas others cannot manage to get as many views as they expect. It could be promising to design an extension of VidLyz that will serve other groups of people making online videos.

The main contribution of VidLyz is two-fold. First, VidLyz showed that if persuasion factors, identified by advertising professionals and crowd-based on potential factors from the literature, are presented in an interpretable way to novice entrepreneurs with the help of example campaign videos, crowd-sourced feedback, and final outcome prediction models, novice entrepreneurs can learn the effect of these factors and can potentially apply them in making plans for their campaign videos. The interactive design of the tool can make this learning process tailored and convenient for novice creators. Second, this can enable novice entrepreneurs to make persuasive pre-production plans for their videos which they can use

later to shoot the actual videos for their campaigns. In the process of preparing materials for crowdfunding campaigns, the production of the video can be one of the most challenging tasks. I believe that VidLyz can be a helpful tool for those novice entrepreneurs who do not have prior experience in making promotional videos but who either cannot afford or do not want to spend a large amount of money to hire professionals for doing the same. That said, the motivation of this work is to help those entrepreneurs who want to raise money, not to exploit potential donors of crowdfunding campaigns by convincing them to donate to potentially fraudulent campaigns presented through persuasive campaign videos. All stakeholders involved in crowdfunding campaigns need to be vigilant to eliminate fraudulent campaigns from the platforms. I believe that VidLyz will assist entrepreneurs who have good products but might fail to successfully attract donors' attention because of not having the funds to hire someone to create appealing campaign videos.

In this chapter, I designed the prototype of the VidLyz tool for the following persuasion factors: relevance, complexity, involvement, perception of duration, audio/video quality, and attitude towards the video. In the future, more factors can be included in the design of the interactive interface module, depending upon the requirement. Moreover, VidLyz used feedback and ratings generated by crowd workers. While other entrepreneurs are generally not the intended audience of a campaign video, feedback and ratings could also be collected from other online communities such as experienced crowdfunding entrepreneurs. Feedback from previous campaign creators indicated that building a community of novice and experienced campaign creators around the tool could help novices receive feedback consistent with the latest crowdfunding trends. A related future study would be to compare the feedback generated by crowd workers and by peer entrepreneurs. Involving peer entrepreneurs in the feedback system may also enrich the overall quality of the feedback. Experienced entrepreneurs can express their feedback based on their personal experiences in this domain.

During the evaluation phase of the VidLyz tool, I recruited participants who were most familiar with crowdfunding platforms such as Kickstarter. However, none of these participants were preparing to launch their own campaign at the time of participating in the user study. I tried to recruit novice entrepreneurs preparing to make a campaign video by circulating emails through campus-wide email distribution lists and by distributing flyers in my locality multiple times. Unfortunately, I did not receive any positive response. Being unsuccessful to recruit novice entrepreneurs, I decided to recruit participants who were interested in crowdfunding in general but did not have any professional experience in making promotional videos for the user study. I assumed that in terms of video-making experience and expertise, these participants would be comparable to novice entrepreneurs. However, unlike novice entrepreneurs, they did not have any immediate motivation for making persua-

sive campaign videos on their own, which can be considered a limitation of the evaluation process of this chapter. In the future, I would like to evaluate the effectiveness of VidLyz by recruiting novice entrepreneurs who are planning to launch campaigns for their own products. I believe those participants will be more motivated to use this tool because of their personal involvement in the project. Moreover, I believe that repeating the user study with novice entrepreneurs will not invalidate my current findings; rather, that will reconfirm my findings, and I hope the effect size will be stronger in that scenario.

The design of the VidLyz tool can serve novice entrepreneurs to make plans for their campaign videos. I would like to expand the functionality of the VidLyz tool so that it can assist novice users in gathering feedback on pilot versions of their campaign videos. This will allow novice users to iterate on their videos multiple times and to receive unbiased feedback from the anonymous crowd at every stage of the video. Prior work showed that novice entrepreneurs often find it challenging to receive unbiased feedback from their friends and family since friends and family do not necessarily feel comfortable expressing their honest negative opinion to closed ones [39, 211]. It would be interesting to observe how VidLyz is utilized throughout a complete cycle of making campaign videos and how the generated feedback prompts iterations on them. In the future, applying VidLyz during the life-cycle of real campaigns will allow us to understand how it can assist entrepreneurs to reach their target donation amount for their campaigns.

5.7 ETHICAL CONCERNS

My evaluation showed that VidLyz can effectively assist entrepreneurs in making comprehensive plans for persuasive campaign videos. One ethical concern of this tool is that whether the tool may nudge entrepreneurs to include certain elements in their videos that entrepreneurs might not intend to include initially. The primary objective of VidLyz is to provide entrepreneurs suggestions that can maximize the probability of success of their campaigns. These suggestions may not always coincide with the entrepreneur’s initial ideas for their videos. Theoretically, one may argue that following the suggestions of VidLyz would be a better option in this scenario. But will entrepreneurs feel comfortable to adopt all the suggestions made by VidLyz, especially when the suggestions are colliding with their own? Or will they feel less confident to adopt those foreign suggestions? This may become a “hard to overcome” ethical dilemma for entrepreneurs. Because of such conflict, entrepreneurs may feel psychologically stressed out and such experience can also damage their overall impression about VidLyz.

This type of ethical dilemma can become more complicated if VidLyz’s suggestions turn

out to be worse than the campaign creator’s ideas. In this situation, VidLyz may hinder the natural creativity of the entrepreneurs. This is in direct conflict with Kickstarter’s basic goal: a platform that promotes creativity and freedom of thought. How can we deal with a such scenario where the ideas of an entrepreneur are much better than the suggestions provided by VidLyz? I believe this situation will be hard to handle with the statistical model running at the background of VidLyz; rather we need human intervention to deal with such a complex situation. Feedback from MTurkers may be a viable solution in this case since human evaluators will be much more dynamic to understand the superiority of the entrepreneur’s ideas over the tool’s suggestions.

5.8 CONCLUSION

Novice entrepreneurs put a lot of effort into making the materials of their crowdfunding campaigns. One of the most complicated things to make can be the campaign video. Persuasive campaign videos can increase the probability of success for crowdfunding campaigns significantly. However, making a persuasive video may not be an easy task for novice entrepreneurs. In this chapter, I identified the challenges that novice entrepreneurs may face to make their videos persuasive with limited knowledge. I proposed VidLyz, an assistive tool to help novice entrepreneurs understand how persuasion factors can make a campaign video engaging to the audience. The primary design goals and components of VidLyz contribute to the domain of building a persuasive system for the end-user. My evaluation suggests that through an interactive interface and guided active thinking, VidLyz can assist novice entrepreneurs in planning an effective persuasive campaign video.

So far, I have described how social platforms can be beneficial for different communities and how we can apply social science and communication theories to make it more convenient for users to interact with social platforms. Interactive technology and effective strategic interaction can enable users to receive much more benefit from social platforms than they could do without them. However, these benefits are not free from challenges. Every day, by interacting with social platforms, people not only open up a lot of opportunities and promises but also these interactions may expose us to numerous risks and threats. In Chapters 6 and 7, I have shown how social platforms can impact our long-standing opinion and how behavioral priming can assist us to deal with those changes.

CHAPTER 6: EMPIRICALLY SHOWING THE EFFECTS OF STIGMATIZED CROWDFUNDING CAMPAIGNS ON SOCIAL OPINION

6.1 INTRODUCTION

GoFundMe, a pioneer in donation-based crowdfunding, came to media attention by hosting campaigns on various socially stigmatized issues such as equality for LGBTIQ people and abortion. For example, a campaign was created in 2015 to assist the owners of Memories Pizza who received death threats and numerous negative comments for declaring during an interview that their pizza parlor would not cater a gay wedding due to religious reasons. The campaign raised \$842,387 in just a few days [212]. The extraordinary success of this campaign immediately triggered several rival campaigns. One such campaign, that was launched to help homeless LGBT youth, raised \$165,975 from more than 4,000 supporters. While seeking monetary support is the primary objective, such campaigns can also present discriminatory incidents related to stigmatized topics to a large audience. This creates the potential for crowdfunding campaigns to shape the opinion of the individuals' about stigmatized topics.

Shaping social opinions through online media is not new to the research community. Previous researchers have demonstrated the power of traditional mass media and social media in shaping opinions regarding mental illness and political movements [213, 214]. Similarly, while crowdfunding platforms might primarily be viewed as fundraising sites, these platforms contain numerous unique social signals that may potentially impact individuals' social opinions. For example, crowdfunding platforms allow people to see the active support from others in the form of monetary donations along with social media shares and comments. Despite the potential of these signals, little is known about how socially stigmatized campaigns with active social supports may influence individuals' opinions about stigmatized topics.

In this chapter, I aim to explore how people assimilate information about stigmatized topics when the information is presented as a donation-based crowdfunding campaign. I chose a specific stigmatized topic, fairness and equality for LGBTIQ people, as it is one of the most discussed topics in donation-based crowdfunding platforms (5064 campaigns found on GoFundMe related to the keyword "LGBTQ"). Opinions on stigmatized topics such as equality for LGBTIQ people are often polarized. I hypothesize that people's pre-existing attitudes toward these topics may moderate how they perceive and react to information presented on crowdfunding campaigns, and to what extent they may change their attitudes towards them.

Often, campaigns presenting conflicting points of view of a stigmatized topic appear on a crowdfunding platform at the same time. Someone, browsing such campaigns, may expe-

rience a sense of *cognitive dissonance* especially when one sees campaigns inconsistent with his or her pre-existing attitude. I desire to know whether individuals' pre-existing points of view on equality for LGBTIQ people affect their opinions when the stigmatized topic is presented with differing points of view on a crowdfunding platform.

To this end, I recruited 126 participants for two experiments from a Midwestern community in the United States using flyers and mass-email. The experiments were designed to investigate how people with different opinions, either supporting or opposing equality for LGBTIQ people, will perceive and react to campaigns that are consistent or inconsistent with their pre-existing attitudes. To preview my results, I found distinct patterns between people who support and oppose equality for LGBTIQ people as they saw these campaigns. All the participants changed their perceived opinions after reading the support for the campaigns but participants opposing equality were less inclined to change their attitude than participants supporting equality. Further experiments showed that participants opposing equality would donate significantly more money to opposing campaigns compared to those who supported equality.

6.2 STUDY 1: IMPACT OF ATTITUDE-INCONSISTENT CAMPAIGNS ON A STIGMATIZED TOPIC

6.2.1 Goal

The goal of the first study is to understand how high social support for attitude-inconsistent campaigns related to gender minority (LGBTIQ) stigmatized topics impacts individuals' perceptions on the topic. Here, I call any campaign an "attitude-inconsistent" campaign for a participant when the participant supported fairness and equality for LGBTIQ people but the beneficiary of the campaign did not and vice versa. On the other hand, I call any campaign an "attitude-consistent" campaign for a participant when both the participant and the beneficiary of the campaign either supported or opposed fairness and equality for LGBTIQ people. Here, by LGBTIQ I mean lesbian, gay, bisexual, transgender, intersex, and queer or questioning people.

6.2.2 Materials

I prepared two pairs of crowdfunding campaigns for the study. In each pair, I had one campaign where the beneficiary of the campaign supported fairness and equality for LGBTIQ people and another campaign where the beneficiary of the campaign opposed fairness

and equality for LGBTIQ people in some form. In short, I call them supporting equality and opposing equality campaigns respectively. To prepare the first pair of campaigns, I took inspiration from two highly publicized GoFundMe campaigns: 1) *Support Memories Pizza* [212] and 2) *Support LGBT Youth in Indiana* [215] launched on April 1, 2015 and April 2, 2015 respectively. The *Support Memories Pizza* campaign was launched when the owners of a pizza shop in Indiana were forced to close their business after receiving death threats for their response to a television reporter when asked if they would cater a gay wedding event. The *Support LGBT Youth in Indiana* campaign was launched the next day in response to the previous campaign to support LGBT youth group in Indiana. I could not use these campaigns in my study as they were originally published because of the differences in the length of the description, number of comments, number of shares on social media, and donation amount. Since my goal was to minimize all these external effects and capture the reaction of the participants to the topic of fairness and equality for LGBTIQ people only, I modified the descriptions of these campaigns to be broadly equivalent on key dimensions such as overall length (between 570 and 620 words), number of paragraphs, the main theme of each paragraph, and source attribution since these factors are known to be important determinants of message persuasiveness and argument strength [216, 217]. I also changed the title of the campaigns to eliminate their direct resemblance to the original GoFundMe campaigns. I used the following titles for the campaigns: “Support Sheldon Pizza” (opposing equality) and “Support LGBTQ Youth in Louisiana” (supporting equality).

The above two campaigns focused on the issue of fairness and equality for LGBTIQ people from a specific perspective - declining service to same-sex couples by local businesses. Although this particular perspective is important, equality for LGBTIQ people is discussed from various perspectives in my society. To make sure that the study findings are not restricted to only one type of social perspective, I chose to also study workplaces where LGBTIQ people frequently face discrimination. I prepared another pair of campaigns based on two online news articles regarding workplace discrimination [218, 219]. As reported in the first article [218], a consultant, Dr. Frank Turek was fired from Cisco and Bank of America for his involvement in writing anti-gay books. The second article [219] reported that an assistant professor named Jason Hough was forced to resign from John Brown University, a private Christian liberal arts college in Arkansas, for his sexual orientation. I took these two articles and carefully modified them to look like the description of a standard crowdfunding campaign and to match the key dimensions as I did for the previous pair of campaigns. I refer to these campaigns as “Support Derek Lan” (opposing equality) and “Support Jason Dough” (supporting equality) respectively.

Along with the description, a standard campaign has other important elements such as the

amount of money donated, the goal of the campaign and the comments left by the crowd. I set a goal of \$50,000 for all four campaigns. Since I hypothesized that high support from the crowd for an attitude-inconsistent campaign would be more likely to affect the opinions of participants, I decided to present these campaigns as if they had received a very high level of support. To show that a particular campaign received very high levels of support from the crowd, I set the donated amount of \$848,401 which is remarkably high in comparison to other GoFundMe campaigns [220].

I also took comments from the original campaigns launched in GoFundMe and carefully designed the comments to reflect high support. To show strong support from the crowd, I showed ten comments for a campaign. I consulted the literature on the persuasiveness of messages. The use of fear or threat appeals has long played a central role in attempts to change and shape attitudes utilizing persuasive messages [221, 222, 223, 224]. Threat messages have been used to successfully persuade citizens to change their behavior in certain ways: to regularly visit the dentist, to use seat belts, to stop smoking, and to vote in a certain way in an election. However, a recent study showed that the persuasiveness of a message depends not only on the type of the message (rewarding or threatening) but also on the attitude of the audience. Lavine et al. [225] found that people with high authoritarianism perceive threat messages (emphasizing negative consequences) as more persuasive than reward messages (emphasizing positive benefits). However, people with low authoritarianism perceive the reward message as more persuasive than the threat message.

Since I did not focus on the authoritarianism of the participants, I included a mix of five reward messages and five threat messages as my comments for each campaign to show high support from the crowd. The following are examples of a reward and a threat message:

“As a Christian, I really appreciate someone that decided to start something to encourage people to give to causes they do support. I fully endorse this too.”[Reward message]

“I think it is a tragedy that these people are being boycotted after being asked a hypothetical question and responding they would not cater a gay wedding. Today if I don’t stand up for people who are taking a stand on the word of God then I am going to lose a lot more Christian freedoms.”[Threat message]

6.2.3 Study Procedure:

I created an online platform to conduct the study. After signing the consent form, participants completed a 16-element attitude assessment survey that asked about their personal

opinions on several stigmatized topics. I chose 16 most polarizing topics in America for this survey [226]. One question in this survey asked: “What is your opinion about homosexuality as a legitimate and acceptable lifestyle?”. Participants used a 9-point scale to answer this question where -4 meant “strongly opposing” and 4 meant “strongly supporting”. Participants’ response to this question helped us determine their pre-existing attitude about fairness and equality for LGBTIQ people. Participants who answered +1 or higher were considered as participants with a supporting attitude towards equality. On the other hand, participants who answered -1 or lower were considered as participants with opposing attitude towards equality. Four participants who answered 0 were excluded from this study since they did not have a strong opinion either way. Knowing the topic of my campaigns in advance might influence the responses of the participants for this survey question. To avoid this unintended influence, I included 15 other survey questions about other stigmatized topics. Participants used their personal computer to participate in this study.

Next, I asked each participant to read the description of one of my prepared crowdfunding campaigns instructing them to read it as if it was a real one and to try to react to it as if it were real. Based on participants’ attitude towards fairness and equality for LGBTIQ people, I decided which campaign to assign to each participant. Every participant read a campaign inconsistent with their attitude, i.e., participants with supporting attitude towards equality read one of the two campaigns where the beneficiary of the campaign was opposing equality and vice versa. I assigned the campaigns to participants with an opposing attitude towards equality in the same way.

Once participants finished reading the campaign, I asked them to complete a survey to understand their opinion of the crowdfunding campaign that they had just finished reading. Since I asked participants to complete the survey before showing any kind of social support from the crowd for the campaign, I called this the pre-support survey. Once participants finished answering the survey questions, I presented a very high support for the corresponding campaign. I demonstrated social supports for the campaign through the total donation amount and comments from the crowd. Next, I asked participants the same set of questions as I did in the pre-support survey to compare the opinion of the participants before and after seeing social support for the campaign. I call this the *post-support survey*. Finally, participants completed a demographic survey.

6.2.4 Measures in the Surveys

To design my pre-support and post-support survey, I consulted existing literature on biased assimilation and attitude polarization [90, 91, 92, 93, 94, 95, 96]. I identified 18

survey questions from the above-mentioned literature which reliably measure opinions on stigmatized topics on a seven-point Likert scale. I classified these 18 questions into five main factors: 1) persuasiveness, 2) awareness, 3) empathy, 4) perception of social support, and 5) comfort level. I categorized the first four of them as campaign perception factors and the last one as a factor about participants’ objective feelings. Table 7.1 shows a list of representative survey questions from each factor. I also measured whether participants perceived any change in attitude about fairness and equality for LGBTIQ people after reading the description of the campaign or after seeing social support for the campaign using a three-point scale (+1 = agreed more with the campaign’s beneficiary’s perspective, -1 = agreed less, 0 = no change).

Table 6.1: Representative survey questions from each factor

Factors	Sample Questions
Persuasiveness	How persuasive was the campaign?
Awareness	How aware are you of the social and political movements surrounding this issue?
Empathy	Are you emotionally involved in the issue?
Perception of Social Support	Do you believe that my society have the adequate social infrastructure to support the beneficiary of this campaign?
Comfort Level	To what extent did reading this campaign make you feel happy?

6.2.5 Participants

I recruited 52 participants from a Midwestern university town in the United States by posting flyers in restaurants, cafes, and public libraries and by sending invitation emails to campus-wide mailing lists for faculty, university staff, and student communities. Out of these 52 participants, 25 participants had a supporting attitude towards equality and 27 of them had an opposing attitude towards equality (based on my initial attitude assessment survey responses). Participants’ average age was 35.33 (SD=13.61), and 52% were females. The majority of the participants (88%) were familiar with crowdfunding platforms, such as Kickstarter and GoFundMe and approximately half of the participants (46%) had donated to at least one crowdfunding campaign before participating in the study. More than half of the participants (62%) identified themselves as Caucasian, 19% as Asian, 13% as African-American, and 6% as others. All participants were at least high school graduates and 42% participants held a bachelor’s or graduate degree. On average, each participant took 35 minutes to complete the study and received \$9 for their participation.

6.2.6 Results

My experiment included two independent variables. One was between-subject: *pre-existing attitude towards equality* (supporting/opposing) and the other one was within-subject: *the order of the survey* (before seeing the support/after seeing the support). Since I had five dependent variables, I first performed a MANOVA test to understand the effect of my independent variables on all six dependent variables. The multivariate analysis revealed a significant two-way interaction among the independent variables on the dependent measures ($F(7,94) = 4.41$, $p < 0.01$, Wilk's $\lambda = 0.84$, $\eta^2 = 0.15$). To further understand this interaction, I performed separate 2 X 2 ANOVAs on the six dependent variables.

I found significant two-way interactions between participants' pre-existing attitude and the order of the survey on three out of the four measures in the campaign perception category: persuasiveness ($F(1,50) = 18.11$, $p < 0.01$, $\eta^2 = 0.26$, supporting participants before: $M=3.54$, $SD=1.08$, after: $M=4.92$, $SD=1.09$, opposing participants before: $M=3.78$, $SD=1.26$, after: $M=4.04$, $SD:1.39$), awareness ($F(1,50) = 4.68$, $p = 0.03$, $\eta^2 = 0.10$, supporting participants before: $M=3.56$, $SD=1.17$, after: $M=4.76$, $SD=1.09$, opposing participants before: $M=3.60$, $SD=1.13$, after: $M=3.72$, $SD:1.07$) and empathy ($F(1,50) = 4.21$, $p = 0.04$, $\eta^2 = 0.07$, supporting participants before: $M=3.64$, $SD=0.84$, after: $M=4.62$, $SD=0.98$, opposing participants before: $M=3.09$, $SD=1.07$, after: $M=2.60$, $SD:0.95$). No other two-way interaction was found significant.

Although I did not find any interaction effect for comfort level and perception of social support measures, I found a significant main effect of order of the survey for comfort level ($F(1,50) = 4.52$, $p = 0.02$, $\eta^2 = 0.09$) and perception of social support measures ($F(1,50) = 13.10$, $p < 0.01$, $\eta^2 = 0.26$).

Figure 7.3 shows the average persuasiveness ratings of participants with supporting and opposing attitudes towards equality before and after they saw the social support. The figure shows that participants with supporting and opposing attitudes towards equality reacted differently in their persuasiveness ratings before and after seeing the high support of the attitude-inconsistent campaign. Participants with supporting attitude towards equality provided higher persuasiveness ratings than participants with opposing attitude towards equality after they saw social support for an attitude-inconsistent campaign. I observed similar patterns for the awareness measure. These patterns were consistent with the idea that for stigmatized topics, reactions to campaigns depended on the pre-existing attitudes of the participants: those with opposing pre-existing attitude tended to be less affected by campaigns that supported equality; whereas those with supporting pre-existing attitude were more likely to change their opinions by campaigns that opposed equality.

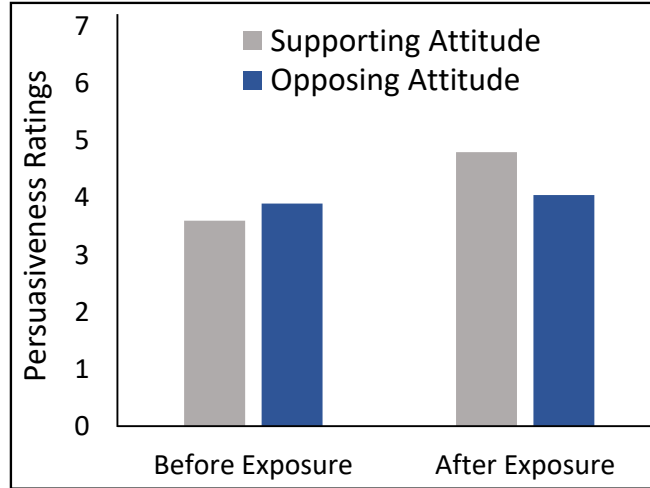


Figure 6.1: Average persuasiveness ratings of participants before and after showing social support for the campaign.

Figure 6.2 shows the average empathy ratings of participants with supporting and opposing attitudes towards equality before and after they saw social support. The figure shows that participants with an opposing attitude towards equality felt lower empathy after seeing support for the attitude-inconsistent campaign. On the other hand, participants with a supporting attitude towards equality felt more empathy after seeing support for the campaign. This pattern was again consistent with the idea that the attitude-inconsistent campaign moderated participants' reactions based on their pre-existing attitude - participants with supporting attitude felt more empathic for the beneficiary of the campaign although the campaign was inconsistent with their attitude. But participants with opposing attitude did not show a similar empathy affection for the beneficiary of the attitude-inconsistent campaign. Rather, seeing the social support for the campaign made them less empathic for those campaigns.

Table 6.2: Average (standard deviation) comfort level and average perception of social support before and after showing support

	Before Support	After Support
Comfort Level	1.94 (0.56)	2.37 (0.68)
Perception of Social Support	2.35 (0.76)	3.82 (0.71)

Finally, I found significant main effects of the order of the survey on comfort level and perception of social support. Participants' comfort level with the campaign's message and

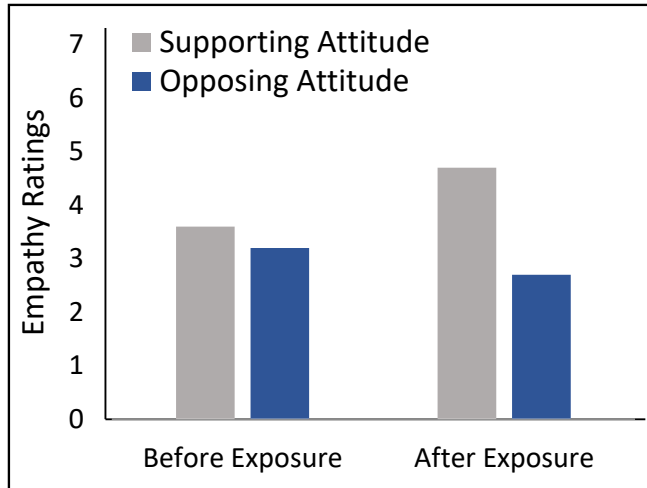


Figure 6.2: Average empathy ratings of participants before and after showing high social support for the campaign.

perception of social support ratings before and after they saw social support are shown in Table 6.2. As Table 6.2 indicates, participants felt more comfortable with the campaign and a higher perception of social support after seeing the social support for the campaign, regardless of their pre-existing attitude towards equality. This increase in comfort level and perception of social support for an attitude-inconsistent campaign may initially seem counterintuitive since each participant saw an attitude-inconsistent campaign. One possible explanation is that when participants first saw the attitude-inconsistent campaign, their comfort level decreased because of cognitive dissonance [227]. Here, cognitive dissonance is the mental discomfort experienced by a person who simultaneously holds two or more contradictory beliefs, ideas, or values. Participants' comfort level may have increased after seeing social support for the campaign because they found a way to release themselves from cognitive dissonance. According to Festinger [227], there are at least two ways to reduce cognitive dissonance: people may either change their attitudes to accommodate the new information, or they may reinterpret the information in ways to rationalize (and sometimes strengthen) their attitudes or beliefs. As we will see in the next analysis, I found that indeed some participants did change their attitude.

I compared the change of attitude measure for participants with supporting and opposing attitudes before and after showing social support. I performed a t-test to compare the change in attitude measure for participants with supporting and opposing attitudes towards fairness and equality for LGBTIQ people before showing the social support and found no significant difference. I performed a one-sample t-test for participants with supporting and opposing attitudes to understand whether the mean changes of attitude measures were different from

0. I found that the means were also not different from 0. This indicates that after seeing the campaign's description but before seeing social support, participants did not experience any change in attitude.

However, when I compared the change of attitude in participants with supporting and opposing attitudes after showing social support, I found that participants with a supporting attitude changed their attitude towards equality significantly more than participants with opposing attitude did ($t(51) = 3.58, p < 0.01, d = 0.13$). A one-sample t-test performed on change of attitude in participants with an opposing attitude towards equality showed a change in attitude among this group was not significantly different from 0. However, change of attitude in participants with a supporting attitude towards equality was significantly higher than 0 ($t(24) = 2.59, p = 0.02, d = 0.09$), i.e., participants with a supporting attitude changed their attitude in favor of the attitude-inconsistent campaign (which opposed equality). A possible explanation is that participants with a supporting attitude changed their existing attitude since they were not specifically attached to attitudinal consistent information over attitudinal inconsistent information. A similar finding was also observed by Iyengar et al. [228] when they studied the impact of attitudinal consistent and attitudinal inconsistent information about presidential candidates among conservatives and liberals and found that liberals did not necessarily prefer a specific type of information about presidential candidates.

Summary of Results in Study 1 Overall, the results of this study show that participants' opinions were significantly impacted by an attitude-inconsistent crowdfunding campaign. However, participants with an opposing attitude towards equal rights were less likely to change their attitude compared to participants with supporting attitude towards equal rights. The results suggested the pre-existing attitudes moderated participants' reactions to attitude-inconsistent campaigns on stigmatized topics.

My results were inconsistent with the assumption that exposing people to information from "the other side" may help them develop a more balanced view of the topic (e.g., [229]). Rather, I found that those with an opposing attitude towards equality felt less empathy for campaigns that supported equality, even if they had a large amount of social support. These findings can be explained by the values associated with conservatism which include fear, aggression, dogmatism, intolerance of ambiguity, uncertainty avoidance, terror management, group-based dominance, and system justification [230, 231]. These characteristics make conservatives more likely than liberals to misperceive their ideological opponents as more extreme than they are [232]. In my study, participants with opposing attitude might have felt fear and terror after seeing strong support for the attitude inconsistent campaign because

of their stronger beliefs in traditional values and social norms. This might have made them less empathic for those campaigns. If so, this effect might be mitigated if I could show these participants two campaigns at the same time - one supporting and the other opposing the topic. Also, showing both high and low support interchangeably for attitude-consistent and attitude-inconsistent campaigns might make participants feel more open to both sides of this argument. My Study 2 experiment was designed to test this idea.

I designed an additional study where I presented both an attitude-consistent and an attitude-inconsistent campaign to each participant. I wanted to know whether the behavioral difference between participants with supporting and opposing attitude towards equality remains when they encounter attitude-consistent and attitude-inconsistent campaigns simultaneously. This design also allowed us to examine how people shape their opinion when they are exposed to attitude-consistent and attitude-inconsistent information with a varying level of social support.

6.3 STUDY 2: IMPACT OF ATTITUDE-CONSISTENT AND ATTITUDE-INCONSISTENT CAMPAIGNS

6.3.1 Goal

The goal of the second study is to understand when attitude-consistent and attitude-inconsistent stigmatized crowdfunding campaigns are presented simultaneously along with varying levels of social supports, how participants with supporting and opposing attitudes towards equality react to those campaigns.

6.3.2 Materials

I reused the campaign materials that I designed for study 1. Since I want to examine the varying level of social support on stigmatized campaigns in this stage, I additionally designed low social support condition. To show very low social support for a particular campaign, I showed the donated amount as \$3,809 (the total amount donated at the end of the campaign) which is only 7% of the goal amount of \$50,000.

I also displayed only two comments for each campaign and both of these comments were generic and taken from the real campaigns. An example of such a comment is here:

“I truly believe in this campaign and support you from the heart.”

6.3.3 Study Procedure:

I reused the online platform built for the first study with some modifications. After signing the consent form, participants in this study completed the same 16 element attitude assessment survey used in the first study. Next, I asked participants to carefully read a pair of crowdfunding campaign descriptions and showed them social supports (comments and the total amount raised) for each campaign. In each pair, I chose one campaign where the beneficiary of the campaign supported equality and another campaign where the beneficiary opposed equality. The campaigns were presented side by side and participants were allowed to read them in any order they preferred. I also randomly switched the position of the two campaigns- to counter-balance the effect of the position. I randomly assigned high support condition for one campaign and low support condition for another campaign for each participant. When participants finished viewing the two campaign descriptions and their social support indicators, I asked them to answer a set of survey questions about each campaign to know their opinion about these campaigns. While participants answered the survey questions for each campaign, I kept the corresponding campaign accessible on the right side of the screen to avoid confusion. At the end, participants completed a demographic survey.

After one week of this experiment, I invited all participants to take part in an extension of this experiment. All agreed to participate in this extension study. For the extension study, I followed the same procedure as described above, but with two important changes. First, I showed each participant a new pair of campaigns. Since I prepared two pairs of campaigns, I showed each participant the second pair of the campaigns that they had not seen the first time. Second, I switched the amount of social support each participant saw for attitude-consistent and attitude-inconsistent campaigns. For example, a participant who first saw high support for an attitude-consistent and low support for an attitude-inconsistent campaign saw low support for an attitude-consistent and high support for an attitude-inconsistent campaign.

To understand participants' opinions about these campaigns, I asked each participant to complete four surveys in total, one for each campaign. The type of the campaign and the support level were as follows: 1) high support for a supporting equality campaign, 2) low support for an opposing equality campaign, 3) low support for a supporting equality campaign, and 4) low support for an opposing equality campaign. Participants completed the same survey for each campaign. I reused all the survey questions from the first study in this new survey with some additional elements.

6.3.4 Designing the Revised Opinion Survey

In study 2, I used 10 new survey questions and one open-ended question. The survey began with the open-ended question to avoid the influence of the survey questions on the participants. In the open-ended question, I asked participants to describe their opinion on each campaign.

Table 6.3: Representative survey questions for new factors

Factors	Sample Questions
Sense of Community	People supporting this campaign have similar priorities like me.
Fairness	How unfair/unjust was it for beneficiary of the campaign to be harassed for expressing his own belief?
Donation Agreement	Will you consider donating to this campaign?
Donation Amount	How much would you like to donate?

I included 10 new survey questions in this study related to the sense of community, fairness, donation agreement, and donation amount. I hypothesized that these additional factors would help us understand the behavioral differences better between participants with supporting and opposing attitudes towards equality. Table 6.3 shows a list of representative survey questions for the new factors. Since each participant in this study could read one attitude-consistent and another attitude-inconsistent campaign simultaneously, I was curious to know whether participants would naturally feel more comfortable and safe with one group of campaign supporters over the other group and as a result would feel either more or less fairness measure for the beneficiary of the attitude-consistent campaign.

The concept of sense of community is studied extensively by social psychologists. Modern society developed a community around interest and skills than around locality [233]. With the proliferation of virtual communities, Wellman et al. [234, 235] studied this topic from various perspectives and found that virtual communities are places where people go to find emotional support, sense of belonging, companionship, and encouragement, in addition to instrumental aid. In my study, although participants did not get an opportunity to actively participate in any virtual community, they might passively experience the effect of a community by browsing the comments of the supporters of each campaign. To capture this experience, I included seven survey questions to measure their sense of community feelings with the supporters of each campaign. I believe that participants will feel a higher sense of community with the supporters of attitude-consistent campaigns than the supporters of

attitude-inconsistent campaigns.

I also included one survey question about the fairness of the incident described in each campaign with an assumption that participants will find the incident described in their attitude-consistent campaigns more unfair than the incident described in attitude-inconsistent campaigns.

At the end, I asked participants whether they would like to donate to the campaign and if they answer yes, I also asked them how much money they would like to donate.

6.3.5 Participants

In this study, I recruited 74 new participants following the same way as I did for the first study. Participants' average age was 36.96 (SD=12.22), and 53% were females. Based on my initial attitude assessment survey responses, 35 participants had a supporting attitude towards equality and 39 of them had an opposing attitude towards equality. Almost all the participants (96%) were familiar with crowdfunding platforms such as Kickstarter and GoFundMe and 49% of participants had donated to at least one crowdfunding campaign before participating in the study. More than half of the participants identified themselves as Caucasian(73%), 10% as Asian, 8% as African-American, and 9% as others. All the participants were high school graduates and 49% of participants held at least a bachelor's or graduate degree. On average, each participant took one hour and thirty minutes to complete the study and received \$9/hour for their participation.

6.3.6 Results

My experiment included three independent variables. One was between-subject variable: *pre-existing attitude towards equality* (supporting/opposing) and the other two were within-subject: *the type of the campaign* (campaign's beneficiary supporting equality/campaign's beneficiary opposing equality), *the level of support* (high support/low support). In total, I have ten dependent variables: 1) persuasiveness, 2) awareness, 3) empathy, 4) perception of social support, 5) fairness, 6) comfort level, 7) sense of community, 8) agreement to donate, 9) donation amount, and 10) change of attitude.

Similar to the experiment in the first study, I categorized persuasiveness, awareness, empathy, perception of social support, and fairness as factors related to campaign perception. Next, I categorized the comfort level as participants' objective feelings. I considered the sense of community as a category for social bonding in a virtual group and finally, I categorized agreement to donate, donation amount, and change of attitude factors as active engagement

factors. Since I had ten dependent variables, I performed a MANOVA test to understand the effect of my independent variables on all ten dependent variables. The multivariate analysis revealed a significant two-way interaction between the pre-existing attitude and the type of the campaign variables ($F(2,287) = 12.81, p < 0.01, \text{Wilk's } \lambda = 0.82, \eta^2 = 0.18$). However, no three-way interaction was significant. To further understand this interaction, I performed 2 X 2 X 2 ANOVAs on ten dependent variables.

ANOVA showed two-way interactions between pre-existing attitude and the type of the campaign on all dependent variables except the perception of social support as shown in Table 6.4. Fig 6.3 shows the average persuasiveness ratings of participants for each type of campaign.

Table 6.4: Two-way Interactions on Dependent Variables

Dependent Variables	Significant Two-way interactions of 2 X 2 X 2 ANOVAs
Agreement to donation	$F(1,72)=59.05, p < 0.01, \eta^2=0.39$
Donation Amount	$F(1,72)=10.37, p=0.002, \eta^2=0.13$
Persuasiveness	$F(1,72)=55.99, p < 0.001, \eta^2=0.37$
Awareness	$F(1,72)=28.00, p < 0.001, \eta^2=0.27$
Empathy	$F(1,72)=14.04, p < 0.001, \eta^2=0.15$
Comfort Level	$F(1,72)=11.85, p=0.001, \eta^2=0.14$
Sense of Community	$F(1,72)=66.34, p=0.001, \eta^2=0.48$
Fairness	$F(1,72)=22.21, p < 0.001, \eta^2=0.27$
Change of Attitude	$F(1,72)=26.66, p < 0.001, \eta^2=0.27$

Participants with a supporting attitude found campaigns supporting equality more persuasive than campaigns opposing equality regardless of the level of support received from the crowd. On the other hand, participants with an opposing attitude towards equality showed opposite behavior; they found campaigns opposing equality more persuasive than campaigns supporting equality. This indicates that both participants with supporting and opposing attitudes found campaigns consistent with their pre-existing attitude more persuasive than campaigns inconsistent with their pre-existing attitude and the effect was statistically significant. The similar pattern was observed for all the other eight factors too for which I found significant two-way interactions between participants' attitude and the type of the campaign.

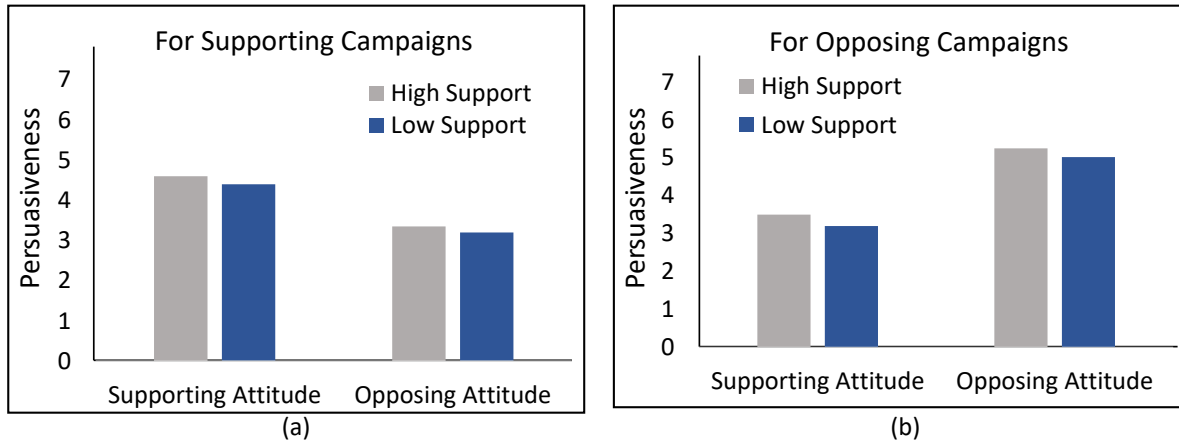


Figure 6.3: Average persuasiveness ratings for participants with supporting and opposing attitudes. Figure (a) shows ratings for only supporting campaigns. Figure (b) shows ratings for only opposing campaigns.

These patterns were consistent with biased assimilation theory which claims that people's judgment on a topic mostly depends on their preexisting attitude; rather than on the true merit of the information. My results suggest that participants in my study were biased when they were asked to share their judgment on stigmatized campaigns. They supported campaigns that were consistent with their attitude without any critical judgment but opposed attitude-inconsistent campaigns. Post-hoc Tukey analysis for donation amount revealed that participants with an opposing attitude towards equality ($M=94.23$, $SD=208.03$) wanted to donate significantly more money than participants with a supporting attitude towards equality ($M=13.29$, $SD=59.66$) for their corresponding attitude-consistent campaigns. One possible explanation is that participants with an opposing attitude were strongly driven by their conservative values (as seen in study one) which made them more passionate about their attitude-consistent campaign than participants with a supporting attitude were. This implies that showing both supporting and opposing campaigns at the same time did not make participants with opposing attitude more empathic for campaigns supporting equality. Rather, it strengthened their pre-existing attitude and motivated them to donate significantly more to opposing equality campaigns than participants with supporting attitude donated for supporting equality campaigns.

One of the new factors introduced in this study was the sense of community for which I also found a significant two-way interaction between pre-existing attitude and the type of the campaign. This indicates that participants perceived that they belong to the community of the supporters who supported their attitude-consistent campaigns. This behavior is consistent with the behavior of the virtual communities explained in [236, 237], suggesting that

stigmatized campaigns are potentially building virtual communities of supporters of their own.

I did not find any two-way interaction for the level of support through ANOVA. However, I found that after seeing high social support, participants rated a campaign higher on comfort level $F(1,72)=4.53$, $p=0.04$, $\eta^2=0.07$). I also found a significant main effect of the level of support on the perception of social support factor ($F(1,72)=5.10$, $p=0.03$, $\eta^2=0.10$). Participants perceived that campaigns receiving high support from the crowd must have strong social support for its beneficiaries. On the contrary, campaigns with low support level might not receive enough social support for its beneficiaries. This suggests that participants considered the level of support, received by these campaigns, as a reliable indicator of the amount of social support available for the beneficiaries of these campaigns. This implies that the level of support received by my stigmatized campaigns helped to shape the social perception of the participants about fairness and equality for LGBTIQ people.

I also observed a significant main effect of the type of campaigns on the perception of social support factor ($F(1,72)=5.43$, $p=0.03$, $\eta^2=0.10$). A post-hoc Tukey test showed that participants perceived that the owners of the campaigns supporting equality ($M=3.91$, $SD=0.47$) have lower social support than the owners of the campaigns opposing equality ($M=4.83$, $SD=0.41$). Overall, low perceived social support can be explained by the sense of sexual stigma associated with the idea of equality for LGBTIQ people for a long time. The sense of stigma may influence participants to donate less for campaigns that are supporting equality in some form.

In summary, I found that all participants showed the tendency of biased assimilation when I presented both attitude-consistent and attitude-inconsistent campaigns simultaneously. Across nine dependent variables, participants perceived their attitude-consistent campaigns more positive and persuasive than attitude-inconsistent campaigns. I also observed that participants were more inclined to change their attitude because of the attitude-consistent campaigns than the attitude-inconsistent campaigns. Moreover, I found that participants considered the level of support as a reliable indicator of the social support for stigmatized topics such as equality for LGBTIQ people. Overall, participants perceived that the owners of the campaigns supporting equality have low supportive social support than the owners of the campaigns opposing equality.

I also observed that participants with an opposing attitude wanted to donate significantly more money to attitude-consistent campaigns than participants with a supporting attitude. To understand the differences in reactions between participants with supporting and opposing attitudes, I analyzed the open-ended responses of the participants regarding their opinion about these campaigns. I found that participants with supporting and opposing attitudes

towards equality perceived these campaigns from a fundamentally different perspective. Participants with a supporting attitude believed that people in the LGBTIQ community should have equal human rights, like any other heterosexual person, to act based on their sexual orientation. However, when participants with a supporting attitude towards equality were asked to rate a campaign opposing equality, they were still sympathetic to the beneficiary's of the campaign because of the humanitarian ground; although they claimed that they did not share the same point of view of the beneficiaries of those campaigns.

On the contrary, many participants with an opposing attitude considered homosexuality as a sinful act to God because of their religious belief (N=14). They felt that no one should practice a homosexual lifestyle under any circumstances. They claimed that beneficiaries of the campaigns supporting equality should anyway suffer the consequences of their actions since they were committing a sin. This sense of sin may explain the less empathic attitude towards high crowd support (observed in the first study) or higher donation behavior (observed in the second study) of the participants with an opposing attitude towards equality. Participants with a supporting attitude towards equality may not experience anything as strong as a religious belief. This highlights a special characteristic of stigmatized topics such as fairness and equality for the LGBTIQ people which can potentially make people more polarized than usual when presented in an online platform similar to crowdfunding.

6.4 DISCUSSION

In the past, researchers have identified the benefits of exposing people to diverse opinions [229, 238]. However, since stigmatized topics by definition do not conform to traditional norms, simple exposure to diverse opinions about stigmatized topics may have differential effects on shaping people's opinions. In my experiments, I found that people with supporting and opposing attitudes towards fairness and equality for LGBTIQ people did not react similarly when they were asked to judge attitude-inconsistent crowdfunding campaigns. Participants moderated their judgment based on their pre-existing attitude towards equality. While participants supporting equality were more inclined to change their attitude after seeing social support for attitude-inconsistent campaigns, participants opposing equality maintained their initial attitude; in fact, they strengthened their pre-existing attitude and decided to donate significantly more to their attitude-consistent campaigns than their attitude-consistent campaigns.

These results indicate that exposure to diverse opinions through crowdfunding campaigns on stigmatized topics does not always reduce social polarization. I found that it may lead to a feeling of discomfort for people opposing equality since it was against the values associated

with conservatism. To reduce discomfort, instead of changing their beliefs, people may find ways to discount the attitude-inconsistent information and strengthen their beliefs. This indicates that exposure to diverse opinions may sometimes *increase* rather than decrease social polarization. These findings are consistent with prior work where Jost et al. [232] found that conservatives are more likely to engage in motivated reasoning than liberals, including the rejection of counter-attitudinal information. Work remains to be done in this direction to explore how the personality traits such as openness and neuroticism of an individual can influence their reactions in case of discomfort created by attitude-inconsistent information [239]. In the future, it will also be interesting to study the effect of stigmatized crowdfunding campaigns where the description of these campaigns will be modified carefully following the principles of moral foundation theory [240] since the application of this theory is found to be persuasive for people with both conservative and liberal values.

In my experiments, I specifically looked into two specific scenarios of discrimination faced by the people who were either supporting or opposing equality for LGBTIQ people. However, in the real world, discrimination happens in many other scenarios such as discrimination in housing, endemic bullying in schools, colleges, and public transports, lack of medical care for HIV infected members of the LGBTIQ community and so on. Further work needs to be done to explore other scenarios related to fairness and equality for LGBTIQ people to understand the impact of these campaigns from a broader perspective. Moreover, it will also be interesting to conduct a longitudinal study to explore whether exposing stigmatized crowdfunding campaigns in an experimental setup impact participants' existing attitude on these issues in the long run. Additional work also remains to be done on how other stigmatized issues such as the use of medical marijuana, right to abortion, and gun control can impact the opinion of the people who are either supporting or opposing these issues when these issues are presented in crowdfunding platform as charitable campaigns.

Another interesting direction to look at in the future is the effects of isolated social platforms in shaping social opinions. The recent ban on certain types of campaigns from mainstream crowdfunding platforms forced people to launch alternative crowdfunding platforms such as Hatreon [241] and WeSearchr[82]. Such isolation may encourage a certain group of people to develop an alternative interpretation of attitude-inconsistent opinions and information. This may also further exacerbate social polarization and create more obstacles for deliberative democracy. Future work needs to be done to understand the effect of the existence of alternative platforms along with mainstream platforms and whether the moral stand-point of the platforms can shape individuals' opinions especially about stigmatized topics in the long run.

In this chapter, I discussed how crowdfunding campaigns on socially stigmatized top-

ics polarize people's opinions. A reader of this chapter may ask whether polarization and disagreement are same or not. Polarization should not be confused with disagreement. Disagreement results in healthy and constructive discussion and debate. However, polarization and segregation influence people to take extreme steps. Because of attitude polarization, online groups fight with each other on social media and their opinions shift towards the extremes. Due to societal segregation, people with different opinions refuse to stay in the same neighborhood, avoid sending their children to a culturally and racially integrated school, consciously try to stay away from people with different color, race, or even political ideology.

Politicians often encourage polarization because it helps them gain more support and maximum turnout from their supporters. Polarization also helps them to create in-group political solidarity based on perceived threats from the supporters of the opposite political party. Supporters themselves often get inclined to polarized attitudes because cognitively it is easy for the supporters to process the people of the opposite political party as "enemies". In that case they can ignore evaluating all the positive and negative aspects of the other group. A recent Pew survey has found that those who have few or no friends in the other political party are more likely to have "very cold" feelings about the people in that party [242]. Extreme polarization among voters also motivates them to elect politicians with more extreme point-of-view, avoiding those who are willing to cooperate with the politicians of the other party [243]. This creates a political gridlock, making it difficult for Congress to tackle national problems. Polarization in the community also instigates deception which in effect makes it more stressful and frustrating for the supporters of the political parties [244].

In the context of political polarization, the question that interests me most is how can we mitigate polarization? I believe, there may not be any one-shot solutions or simple answers to that. Political polarization does not arise overnight and seems unlikely to dissipate that quickly, either. Rather, efforts from political reformers, business giants, social activists, academics, and above all grass-root communities need to be combined if we at least want to see an incremental difference.

6.5 ETHICAL CONCERNS

The primary ethical concern of this chapter is whether the findings of this chapter can be exploited to create an increased attitude polarization effect. This can be of primary interest for political campaigns since they often get advantage in elections through increased attitude polarization effect in the society. One way to do this is through social platforms. People share their personal information through social platforms. Someone can purchase millions of users' personal information sorted chronologically from social platforms [245].

Now, the question is: how can someone misuse people’s personal information extracted from social platforms? Prior work has shown that accumulated personal information can reveal various sensitive information about a user. It can reveal people’s characteristics, traits, and personalities [246, 247, 248], and advanced algorithms can do these identification tasks at scale without any human intervention. This is alarming because adversarial platform designers can use such a rich set of information as a weapon to manipulate mass behavior. They can intentionally manipulate users’ social platforms’ feed and can show content in such a way so that it can stimulate polarization effect to the maximum. Access to user’s personal information can also make it feasible to launch personalized attacks that were practically impossible to launch in the past.

In general, micro-targeting is not a new concept. In the age of the internet, we have all seen personalized ads that are curated based on our browsing history, credit card transactions, and various other data. But it has become a topic of serious concern when the same strategy was weaponized to manipulate public opinion. The recent scandal of Facebook’s data breach by Cambridge Analytica raised the question: whether such attempts should be declared unlawful by the congress? A global investigation forced Cambridge Analytica to close its door permanently. But the threat is still there. Without proper regulation and policy, anyone else can again attempt a similar data breach on social platforms. Recently, the European Union has adopted GDPR (General Data Protection Regulation) to become fit for such threats of the digital age. Can we expect to see such regulations in the U.S. as well soon? For now, at least congress started thinking in that direction which initiated multiple hearings for the top-officials of social platforms. I believe effective regulations are essential for protecting our personal information from similar attacks in the future.

6.6 CONCLUSION

In conclusion, we, as researchers, are not in a position to support the point of view of any group over the other. Rather, I believe that my work will contribute to the large body of literature on social polarization and selective exposure by revealing the complex dynamics of information on stigmatized topics and the pre-existing attitudes of people. Given the potential impact of crowdfunding platforms on social opinions, I need more research to fully understand how various online media are contributing to shaping the opinions of the people on stigmatized topics, and how this will affect the aggregated social opinion of a community. I believe that my findings provide an important starting point for the research community to increase their awareness of the complex influence of crowdfunding campaigns on shaping social opinions on stigmatized social issues.

This chapter shows how social platforms might affect people's opinions even when they are not actively interacting with those platforms (such as not donating to crowdfunding campaigns related to stigmatized topics). This work has many implications. First and foremost, these findings may make social platform users more conscious of how social platforms can have the effect of attitude polarization specifically on stigmatized topics. This consciousness might change the way how users consume information from social platforms. Besides users of social platforms, this work also has implications on the coordinators of social platforms. Coordinators and platform designers can mark sensitive campaigns to alert users upfront. They may have a sensitivity meter with each campaign and a continuous meter may alert users about stigmatized topics even before they read the content. Finally, users who launch campaigns on crowdfunding platforms can apply priming strategies to avoid moral bias among their supporters. In the next chapter, I described how behavioral priming strategies can mitigate polarization effects among users.

CHAPTER 7: MITIGATING THE IMPACT OF POLITICAL CROWDFUNDING CAMPAIGNS ON NON-POLITICAL TOPICS USING BEHAVIORAL PRIMING

7.1 INTRODUCTION

Over the last decade, various online crowdfunding platforms have connected thousands of charitable projects to the crowd. Recently, a new trend is rising – collecting funds for political events through crowdfunding campaigns. While public fund-raising has been a part of the political process for quite some time in the U.S., traditionally, major sources of donations were wealthy individuals, PACs (political action committees), and corporations. Only a small fraction came directly from individual “small donations” (\$200 or less). However, this has changed since the 2008 US presidential campaign when President Barack Obama raised more than two-thirds of his total election funds through online crowdfunding [249]. Following the success of that campaign, many new crowdfunding platforms such as CrowdPac [110], FireFund [250], uCampaign [112], and Flippable [113] were launched to exclusively facilitate political crowdfunding campaigns. Figure 7.1 shows a screenshot of an example political crowdfunding campaign.

The primary objective of these political crowdfunding campaigns is to assist politicians in raising funds directly from citizens and to assess the acceptance of their political agenda among potential supporters. However, the impact of these campaigns may go beyond simply raising money and assessing the popularity of a candidate. These crowdfunding campaigns often focus on socially divisive partisan issues that can not only motivate potential supporters but also may serve as echo chambers for groups from the extreme ends of the political spectrum and exacerbate opinion polarization generally [251]. Will exposure to these political crowdfunding campaigns make people more sensitive to non-political topics? Will the arguments and agendas presented in these campaigns activate the audience’s in-group identity and make them more disapproving and hostile toward out-group members? If so, are there interventions that could mitigate the potential polarization of attitudes and make people’s opinions less biased toward non-political topics?

Prior research has shown that when people are exposed to attitude-consistent and attitude-inconsistent information simultaneously, they prefer to selectively attend to attitude-consistent information and avoid or ignore attitude-inconsistent information [252, 253]. They may also seek to self-categorize themselves based on attitude consistency through identifying an “in-group” and “out-group” [99, 254], becoming particularly sensitized to the attitudes and values that seemingly identify the out-group. This process may serve to reinforce a social

identity i.e., people may identify themselves as belonging to a group with similar ideological viewpoints, and consequently develop a polarized attitude that conforms to their self-constructed identity toward otherwise non-political topics. Even when people consider ostensibly non-partisan science-based issues, they often ignore and disregard solid scientific evidence and decide what to believe based on their long-standing beliefs and partisan ideology and this observation is true for both liberals and conservatives [116] in the United States. This line of research motivated us to explore whether exposure to conflicting issues in political crowdfunding campaigns can exacerbate attitude polarization. In society, extreme polarization and political partisanship can negatively affect the community especially at the time of crisis [255]. Furthermore, it is critical to examine the effect of political crowdfunding campaigns because these campaigns not only expose people to politically divisive agendas but also show, in real-time, how many people are supporting these agendas by donating money, a strong social signal for activating in-group favoritism and attitude polarization.

To study how exposure to political crowdfunding campaigns can potentially influence people's attitudes, I conducted a user study with 219 participants from Amazon Mechanical Turk (MTurk). First, I intended to see whether exposure to a political crowdfunding campaign, especially one that was inconsistent with the participants' own political beliefs and attitudes, could sensitize their partisan identity and make their opinion biased on non-political topics. I found that when I asked participants' opinions on an attitude-inconsistent political crowdfunding campaign, they became more sensitive to political agendas, discussed by the partisan political campaign. Next, I aimed to find whether this sensitization could impact their opinion about non-partisan socially sensitive topics. I asked participants to examine two non-political charitable crowdfunding campaigns that had opposite points of view on climate change, a partisan topic that was addressed in the political campaign. In one campaign, the owners of the campaign supported initiatives to take action to stop climate change whereas the other campaign supported communities who suffered due to the climate action law (which was created to save the environment from human activities that can cause climate change). As hypothesized, because of their sensitization and salient in-group identity, participants' attitudes became more polarized about those conflicting charitable campaigns.

Building on these findings, I was curious to know whether any behavioral priming strategy can mitigate the sensitization caused by exposure to an attitude-inconsistent political campaign. We, therefore, conducted a follow-up user study with 207 MTurk users where I applied two types of behavioral priming techniques to redesign the charitable campaigns: schema priming and threat/safety priming. I rewrote the main descriptions of the charitable campaigns based on priming strategies. For example, to apply the threat/safety priming, I created two different versions of a single charitable campaign: in one version, I paraphrased



Figure 7.1: An example of a political crowdfunding campaign. Each campaign provides the name of the candidate, the position for which the candidate is running, and the location of his/her candidacy. The campaign shows the amount of donation received in real-time and how many people donated to the campaign. Similar to other crowdfunding campaigns, these campaigns also allow owners of the campaign to share their donation appeals through social media.

the existing statements in a way so that they sounded more threatening and intimidating to the audience whereas in another version I included assuring statements so that the audience could feel more safe and secure. I found that behavioral priming strategies did help participants to mitigate the sensitization due to having to engage with an attitude-inconsistent political crowdfunding campaign. More importantly, I observed that the effectiveness of the behavioral priming techniques depended on participants' original political beliefs.

7.2 RESEARCH QUESTIONS

In this chapter, I aimed to investigate whether and how political crowdfunding campaigns can impact people's attitudes toward non-political sensitive topics. Political crowdfunding platforms have made the discussion of various partisan topics easily accessible to the general audience, which includes both the supporters and opponents of those campaigns. To understand the impact of these campaigns, I asked:

RQ7.1 How can exposure of a *political* crowdfunding campaign impact individuals' attitudes toward non-political socially sensitive topics?

Since political ideology is a long-standing belief, people often become sensitive when they get exposed to or interact with political content. Often, these types of sensitivity can make people more polarized and develop in-group favoritism in the long run. However, prior research has shown that certain types of priming techniques can temporarily mitigate this type of polarization and in-group categorization. Therefore, I asked:

RQ7.2 Can behavioral priming such as schema priming and threat/safety priming mitigate people’s in-group favoritism and make them more open toward appeals on non-political socially sensitive topics?

7.3 STUDY 1: IMPACT OF POLITICAL CROWDFUNDING CAMPAIGNS

7.3.1 Goal

To answer RQ7.1, I conducted a user study. To this end, I classified political campaigns into two types: 1) attitude-consistent and 2) attitude-inconsistent. I considered a political campaign to be “attitude-consistent” for a participant when the participant is leaning toward a political party and the political campaign is for a candidate for that same political party (e.g., Republican party voter and the political campaign is also created to support a Republican candidate). On the other hand, for a participant leaning toward the Democratic party, a political campaign of a Republican candidate will be considered as an “attitude-consistent” campaign. In this study, my primary goal was to explore whether and how exposure to various types of political crowdfunding campaigns impact people’s self-perceptions and personal beliefs on non-political socially sensitive topics. Here, I designed the study in a way so that I can observe this impact (if any) on charitable crowdfunding campaigns which are either supporting or refuting a non-political sensitive topic, such as climate change.

7.3.2 Materials

Political Crowdfunding Campaigns I prepared two political crowdfunding campaigns for my study: one for a Republican candidate and another for a Democrat candidate. To prepare these campaigns, I took inspiration from existing campaigns posted on political crowdfunding platforms [110]. In the campaign created for the Republican candidate, I considered an imaginary candidate who was planning to run for the US House, 2nd district. The other campaign was for an imaginary Democrat candidate who was also planning to run for the same congressional district. In my campaigns, I decided to not mention the state of the candidates. Instead, I asked participants to assume that the candidates were running from their state since reducing the psychological distance by reducing physical distance prompts people to be more motivated to process details [256].

In my campaigns, I primarily focused on the political agenda of the corresponding political party [257]. For the Republican candidate, I discussed the candidate’s plans on the tax deduction, job opportunities, revised health-care, and less regulation over the business

sector. I refer to this campaign as the “Republican campaign”. For the Democrat candidate, I discussed the candidate’s plans on an improved education system, sustainable job opportunities, better environmental policy, and secured health-care and medical benefits. I refer to this campaign as the “Democratic campaign” in the rest of the chapter.

I could not use any standard existing campaign in my study directly because of the differences in the length of the description, number of comments, number of shares on social media, and donation amount. To minimize external effects, I designed these campaigns to be broadly equivalent to key dimensions such as overall length (between 570 and 620 words), number of paragraphs, and source attribution since these factors are known to be important determinants of message persuasiveness and argument strength [216, 217].

Pretesting Political Crowdfunding Campaigns To pre-test the political campaigns, I recruited three graduate students from the Political Science department who independently rated the political campaigns. Each rater had at least three years of experience as Ph.D. candidates on comparative politics and political philosophy. They used 5-point Likert scales to rate the campaigns on the following criteria: 1) comprehension, 2) attractiveness, 3) acceptance, 4) believability, 5) involvement, 6) relevance, and 7) motivation, and 8) likelihood to be successful. I performed the Fleiss Kappa analysis to measure the agreement between three raters. There was a very high agreement between the raters’ judgment, $\kappa = 0.87$ (95% CI, 0.64 to 1.15), $p < .01$. Therefore, in terms of persuasive appeal, no significant difference was found between two political campaigns. Furthermore, to check how each campaign was situated on the political ideology spectrum, the raters answered the following question for each campaign [258]: How would you describe the political view of the candidate represented by the campaign — 1: very conservative, 2: conservative, 3: moderate, 4: liberal, 5: very liberal, and 6: no opinion. All three raters rated the Republican candidate as *conservative* (rating 2) and the Democratic candidate as *liberal* (rating 4).

Charitable Crowdfunding Campaigns In addition to the political campaigns, I created two charitable crowdfunding campaigns on the topic “climate change”. The title of the first campaign was “Restore Global Climate by Preventing Deforestation and Promoting Active Reforestation”, which was aligned with the agenda of the Democratic campaign. I refer to this campaign as the “Pro climate change campaign”. The primary objective of this campaign was to seek funding to support a local initiative that was trying to prevent deforestation and encourage active reforestation to save the local community from gradual landslides. On the other hand, I created the second campaign, titled “Save the Communities Suffering for the Climate Action Law”, which was aligned with the “Republican campaign”.

I will refer to this campaign as the “Anti climate change campaign”. The main goal of this campaign was to rehabilitate the coal miners who lost their jobs in coal mines and oil industries.

To create these two campaigns, I took inspiration from charitable campaigns posted in GoFundMe and Indiegogo. At the time of my experiment, I found more than 3,000 campaigns related to climate change on GoFundMe. I designed my campaigns based on those existing campaigns. Similarly, I consulted several news articles that discussed how strict climate action laws and lack of rehabilitation plan were destroying the employment opportunities for many communities. I again balanced all the key dimensions of these two campaigns (as I did for the political campaigns) to minimize the effect of the external factors on the participants. For both campaigns, I set the goal of \$40,000. I showed that 80% of the goal amounts have already been donated for these campaigns to show that these campaigns have received a decent amount of support from the crowd.

Pretesting Charitable Crowdfunding Campaigns To pre-test the charitable campaigns, I recruited three HCI researchers (excluding the authors of this chapter) who had at least three years of experience researching crowdsourcing and crowdfunding. Each rater independently rated the charitable campaigns using 5-point Likert scales on the same eight criteria that I used for the political campaigns: 1) comprehension, 2) attractiveness, 3) acceptance, 4) believability, 5) involvement, 6) relevance, 7) motivation, and 8) likelihood to be successful. Fleiss Kappa showed that there was high agreement between the raters’ judgment, $\kappa = 0.76$ (95% CI, 0.52 to 0.98), $p < .01$. Therefore, in terms of persuasive appeal, charitable campaigns were not significantly different from each other. Besides, to check whether charitable campaigns were highly influenced by political ideology, the raters answered the following question for each campaign — How would you describe the political influence or motivation of the campaign — 1: politically influenced and motivated, 2: not politically influenced or motivated, 3: no opinion. All three raters rated that both of the charitable campaigns were *not politically influenced or motivated (rating 2)*.

7.3.3 Study Procedure

I created an online platform to conduct the user study; Fig 7.2 shows the sequence of the activities that I followed. Participants started the study by completing a 16-item political typology quiz [259] published by Pew Research Center. This quiz classifies political leaning into nine sub-categories ranging from core conservative to solid liberal. For my purpose, I used this quiz to identify whether a participant leans toward liberal or conservative ideology.

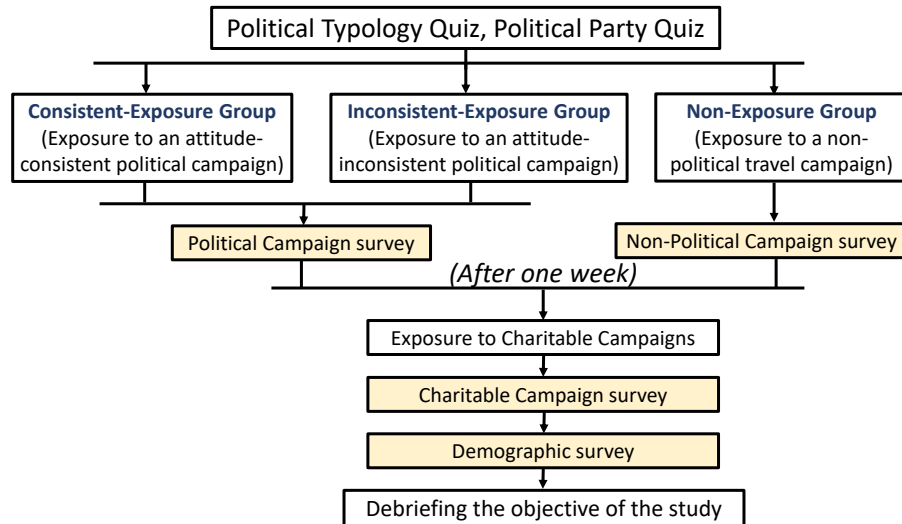


Figure 7.2: This flowchart shows the steps that I followed sequentially in the first study. The yellow boxes represent the surveys taken by the participants at different stages.

I also asked participants to complete an 11-item political party quiz [260] published by Pew. This quiz helped us find out where someone fits on the partisan political spectrum ranging from liberal Democrat to conservative Republican. Furthermore, this quiz let us know the opinion of the participants on various politically divisive issues such as climate change, right to abortion, health-care for everyone, and so on. For my purpose, I used this quiz to identify whether a participant was leaning toward the Democratic or Republican Party. I also identified the opinion of the participants on climate change. Since I wanted to capture the reaction of the participants on political crowdfunding campaigns to partisan cues, I excluded three participants who were identified as *independent* by the political party quiz.

I divided participants into three groups. Participants of the first group were exposed to an attitude-consistent political campaign, i.e., Republican participants were exposed to a Republican candidate’s crowdfunding campaign and vice-versa. The second group read an attitude-inconsistent political campaign, i.e., in this condition, Republican participants were exposed to a Democratic candidate’s campaign and vice-versa. I called the first group the “*Consistent-exposure group*” and the second group the “*Inconsistent-exposure group*”. I instructed each participant of these exposure groups (both consistent and inconsistent) to assume that their assigned campaign was a campaign for a political candidate who was considering running from their congressional district.

Finally, the third group was the control group who was not exposed to any political campaign, rather they were asked to read a non-political travel campaign where the campaign

creator asked for funding for a personal trip. I pretested this travel campaign to make sure that this campaign was not influenced by any specific political ideology (conservative or liberal). The purpose of presenting this travel campaign was to expose control group participants to a campaign that would not necessarily instigate their partisan leaning but would require the same amount of time and effort that the exposure groups would spend to read the corresponding political crowdfunding campaign. I called the third group the “*Non-exposure group*”. Once exposure groups finished reading their assigned campaign, I asked them to complete a short survey, called “political campaign survey”, to understand their opinion of the political campaign. I also asked participants in the non-exposure group to complete a short survey called “non-political campaign survey”. Once participants completed the survey, I informed them that it was the end of the experiment. I did not want participants to consciously relate the political campaign with the charitable campaigns. Therefore, I did not mention the remaining part of the study at that time.

After one week, I contacted all participants and asked them whether they would like to participate in a new study. All but two participants agreed to participate in the new study. This time, I asked participants to let us know their opinion about two charitable crowdfunding campaigns. I presented two charitable campaigns, “Pro climate change campaign” and “Anti climate change campaign” side by side, and participants were allowed to read them in any order they preferred. I also randomly switched the position of the two campaigns – to counter-balance the effect of the position. When participants finished reading these campaigns, I asked them to answer a set of survey questions about each campaign to know their opinion about them. I call this survey the *charitable campaign survey*. Finally, all participants completed a demographic survey. In the end, I debriefed participants about my study design and explained that I was interested to know how their opinions on the charitable campaigns were influenced by the political campaign shown in the first part of the study.

7.3.4 Measures in the Surveys

To design the political, non-political, and charitable campaign surveys, I consulted existing literature on crowdfunding, cognitive dissonance, and biased assimilation and attitude polarization [77, 90, 91, 92]. I identified 18 survey questions from the above-mentioned literature to measure the opinion of the participants on the crowdfunding campaigns on seven-point Likert scales. I classified these 18 questions into five main factors: 1) intended donation amount, 2) persuasiveness, 3) empathy, 4) sense of community, and 5) comfort level. Table 7.1 shows a list of representative survey questions from each factor. Also, I

asked participants to self-report their own change-in-attitude toward the political campaign using three-point scales (+1 = more favorable attitude toward the campaign, -1 = less favorable attitude toward the campaign, 0 = no change) just before completing the demographic survey.

Table 7.1: Representative survey questions that I used in political campaign survey, charitable campaign survey, and non-political campaign survey to measure opinions of the participants

Dependent Variables	Sample Questions
Intended Donation amount	If you have \$50 to donate, how much would you like to donate to this campaign?
Persuasiveness	How persuasive was the campaign?
Empathy	Are you emotionally involved with this campaign or with the agenda of this campaign?
Sense of Community	People supporting this campaign and I value the same thing.
Comfort Level	To what extent did reading this campaign make you feel comfortable?

7.3.5 Participants

I recruited 219 participants from Amazon Mechanical Turk (as shown in Table 7.2). 106 of them identified themselves as Democrats and liberals and 113 of them as Republicans and conservatives (based on the political party quiz and political typology quiz responses). Based on the political party quiz, all participants who identified themselves as Republicans and conservatives agreed to the statement that *“this country (the United States) has gone too far in its efforts to protect the environment”*. On the contrary, liberal and Democrat participants agreed that *“this country should do whatever it takes to protect the environment”*. Participants’ average age was 33.87 (SD=11.52), and 47% were females. Approximately, one-third of the participants (36%) had donated to at least one charitable crowdfunding campaign

Table 7.2: Distribution of participants in consistent-exposure, inconsistent-exposure, and non-exposure groups

	Conservatives	Liberals
Consistent-Exposure	36	38
Inconsistent-Exposure	34	39
Non-Exposure	36	36
Total	106	113

Table 7.3: The opinion of the participants captured from political and non-political campaign surveys. * sign marked those dependent variables for which at least one group of participants was significantly different from two other groups

Dependent Variables	Pairwise Comparison	Effect Size	Consistent Exposure	Inconsistent Exposure	Non Exposure
Intended Donation Amount*	F(2,216)=30.32, p<0.01	0.51	30.89	7.18	26.66
Persuasiveness*	F(2,216)=17.55, p<0.01	0.39	5.95	2.36	6.11
Empathy*	F(2,216)=21.27, p<0.01	0.42	6.21	2.77	6.41
Sense of Community*	F(2,216)=15.75, p<0.01	0.36	5.83	1.95	5.65
Comfort Level*	F(2,216)=11.33, p<0.01	0.32	6.35	2.11	6.27

before participating in the study. 72% of participants had donated to at least one election campaign in the past but only 8 participants donated to online political crowdfunding campaigns. More than half of the participants (72%) identified themselves as Caucasian, 10% as Asian, 14% as African-American, and 4% as others. On average, each participant took 36 minutes in total to complete the two experiments and received \$5.50 for their participation.

7.3.6 Results

Validation of the Design Manipulation I started my analysis by first examining the validity of my design manipulation. I compared the responses of the political campaign surveys against the non-political campaign survey. I hypothesized that participants in the inconsistent-exposure group would be least supportive of their attitude-inconsistent political campaign compared to the participants in the non-exposure group and the consistent-exposure group. I had two independent variables for this analysis: exposure to a political campaign (consistent-exposure, inconsistent-exposure, and non-exposure) and participants' political leaning (liberal vs conservative). In addition to that, I had the following five dependent variables: 1) intended donation amount, 2) persuasiveness, 3) empathy, 4) sense of community, and 5) comfort level. Since I had multiple dependent variables, I performed a one-way MANOVA test to validate my hypothesis. I found that there was a statistically significant difference between the three user groups on the combined dependent variable, $F(4, 430) = 31.72, p < 0.01$; Wilks' $\lambda = 0.22$ with a moderate effect size of 0.42. Follow-up univariate ANOVA tests with a Bonferroni adjusted α level of 0.01 showed that for all five dependent variables (intended donation amount, persuasiveness, empathy, sense of community, comfort level), the three user groups are significantly different from each other.

Tukey post-hoc tests showed that (as shown in Table 7.3) inconsistent-exposure group participants intended to donate significantly less money than participants of the consistent-exposure and non-exposure groups ($F(2,216)=30.32, p<0.01, \text{effect size} = 0.51$). Further-

more, inconsistent-exposure group participants felt significantly less empathy ($F(2,216)=21.27$, $p<0.01$, effect size = 0.42), less sense of community ($F(2,216)=15.75$, $p<0.01$, effect size = 0.36), and less comfortable ($F(2,216)=11.33$, $p<0.01$, effect size = 0.32) compared to participants of the consistent-exposure and non-exposure groups. Additionally, inconsistent-exposure group participants also found their corresponding campaign significantly less persuasive ($F(2,216)=17.55$, $p<0.01$, effect size = 0.39) compared to participants of the consistent-exposure and non-exposure groups. Overall, these findings indicate that participants in the inconsistent-exposure group were significantly less supportive of their inconsistent political campaign than the participants of the consistent-exposure group of their consistent political campaign and a non-exposure group of their non-political campaign. Thus, these findings validated my study design.

Analysis of the Responses of the Charitable Campaign Surveys (RQ7.1) To address my main research question, I analyzed the ratings of the charitable campaign surveys. I aimed to examine specifically the effect of exposure to an attitude-inconsistent political campaign on participants. I hypothesized that exposure to an attitude-inconsistent campaign would make participants more sensitive about their political identity. This exposure would trigger their in-group favoritism and that would make their opinion polarized toward non-political/non-partisan charitable campaigns, especially when the charitable campaigns were about a socially sensitive topic.

My experiment included three independent variables. Two were between-subjects: participants' political leaning (liberal vs conservative) and exposure to a political crowdfunding campaign (consistent-exposure, inconsistent-exposure, non-exposure). The within-subject variable was the type of the campaign (pro climate change campaign/anti climate change campaign). I again considered the following five dependent variables for my analysis: 1) intended donation amount, 2) persuasiveness, 3) empathy, 4) sense of community, and 5) comfort level. Since I had five dependent variables, I first performed a MANOVA test to understand the effect of my independent variables on all five dependent variables. The multivariate analysis revealed a significant three-way interaction among the independent variables on the dependent measure ($F(4,412) = 89.91$, $p < 0.01$, Wilk's $\lambda = 0.84$, $\eta^2 = 0.31$). To further understand this interaction, I performed separate 2 X 2 X 2 ANOVAs on five dependent variables.

Table 7.4 presented a summary of the results. I found significant three-way interactions between participants' political party, exposure of the political campaign, and the type of the campaign for all five dependent measures: intended donation ($F(1,136) = 28.46$, $p < 0.01$, $\eta^2 = 0.51$), persuasiveness ($F(1,136) = 36.46$, $p < 0.01$, $\eta^2 = 0.55$), empathy ($F(1,136)$

Table 7.4: Opinion of the participants for the pro climate change and anti climate change campaigns. The first column shows the exposure conditions (consistent-exposure, inconsistent-exposure, and non-exposure). The rows marked with the * sign marks the dependent variables for which the ratings of the pro and anti campaigns were significantly different from each other. Ratings of the pro and anti climate change campaigns were significantly different only for the inconsistent-exposure condition. No significant difference was found for the consistent-exposure and non-exposure conditions.

Exposure Type	Participants' Political Leaning	Dependent Variables	Pro Climate Change Campaign	Anti Climate Change Campaign	Pairwise Comparison	Effect Size
Consistent Exposure Group	Conservatives	Int. Donation	21.56	25.33	F(1,207)=2.26, p=0.13	0.27
		Persuasiveness	4.76	5.20	F(1,207)=1.09, p=0.24	0.21
		Empathy	5.33	5.48	F(1,207)=0.81, p=0.31	0.17
		Sen. of Community	5.17	5.30	F(1,207)=0.27, p=0.52	0.04
		Comfort Level	5.31	5.56	F(1,207)=0.54, p=0.40	0.08
	Liberals	Int. Donation	26.81	23.68	F(1,207)=1.89, p=0.19	0.24
		Persuasiveness	5.30	5.06	F(1,207)=0.33, p=0.50	0.05
		Empathy	5.24	5.11	F(1,207)=0.49, p=0.44	0.06
		Sen. of Community	5.32	5.14	F(1,207)=0.22, p=0.58	0.03
		Comfort Level	5.46	5.18	F(1,207)=0.28, p=0.52	0.04
Inconsistent Exposure Group	Conservatives	Int. Donation*	12.28	39.21	F(1,207)=11.72, p<0.01	0.76
		Persuasiveness*	2.20	5.90	F(1,207)=5.43, p=0.03	0.64
		Empathy*	2.31	5.92	F(1,207)=5.29, p=0.03	0.63
		Sen. of Community*	1.90	6.11	F(1,207)=7.38, p=0.01	0.71
		Comfort Level*	2.01	5.76	F(1,207)=5.87, p=0.03	0.66
	Liberals	Int. Donation*	36.77	16.28	F(1,207)=9.62, p<0.01	0.78
		Persuasiveness*	6.30	2.50	F(1,207)=5.35, p=0.03	0.66
		Empathy*	6.14	2.37	F(1,207)=5.52, p=0.03	0.70
		Sen. of Community*	5.98	2.04	F(1,207)=6.03, p=0.02	0.73
		Comfort Level*	5.63	2.02	F(1,207)=5.41, p=0.03	0.68
Non Exposure Group	Conservatives	Int. Donation	20.92	23.83	F(1,207)=1.69, p=0.19	0.24
		Persuasiveness	4.97	5.15	F(1,207)=1.16, p=0.24	0.21
		Empathy	5.39	5.54	F(1,207)=0.31, p=0.50	0.05
		Sen. of Community	5.32	5.47	F(1,207)=0.17, p=0.62	0.02
		Comfort Level	5.21	5.39	F(1,207)=0.88, p=0.27	0.19
	Liberals	Int. Donation	27.67	22.11	F(1,207)=2.84, p=0.08	0.31
		Persuasiveness	5.45	5.26	F(1,207)=1.21, p=0.23	0.22
		Empathy	5.38	5.19	F(1,207)=1.20, p=0.23	0.22
		Sen. of Community	5.41	5.25	F(1,207)=0.73, p=0.33	0.15
		Comfort Level	5.44	5.01	F(1,207)=1.04, p=0.25	0.20

= 25.12, $p < 0.01$, $\eta^2 = 0.41$, sense of community ($F(1,136) = 31.62$, $p < 0.01$, $\eta^2 = 0.53$, and comfort level ($F(1,136) = 22.95$, $p < 0.01$, $\eta^2 = 0.37$). Next, I examined if any two-way interaction was statistically significant. I accepted the statistical significance of a two-way interaction at a Bonferroni-adjusted alpha level of 0.006. I found that for all five dependent variables, there were statistically significant two-way interactions of political ideology and exposure to a political campaign for both the pro climate change campaign and the anti climate change campaigns for the inconsistent-exposure group. However, I did not find a

significant two-way interaction for the consistent-exposure and non-exposure groups (shown in Table 7.4).

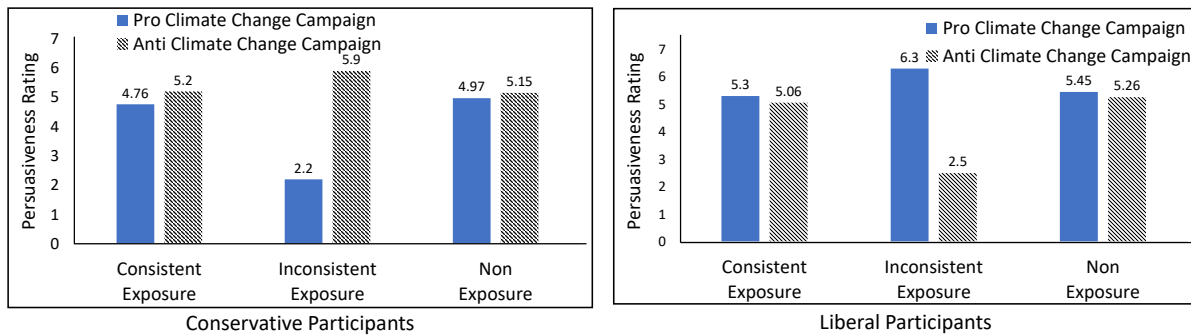


Figure 7.3: Average persuasiveness ratings of participants for both charitable campaigns of consistent-exposure, inconsistent-exposure, and non-exposure groups for conservative (on the left) and liberal (on the right) participants. For both conservatives and liberals, ratings of the inconsistent-exposure group were significantly different for the charitable campaigns.

Figure 7.3 shows the average persuasiveness ratings of liberal and conservative participants who were either in the exposure or in the non-exposure group. The figure shows that when conservative participants were initially exposed to an attitude-inconsistent political candidate’s campaign, they gave significantly higher persuasiveness ratings to the “anti climate change campaign” than the “pro climate change campaign”. However, when conservative participants were not exposed to any political campaign or when they were exposed to an attitude-consistent campaign, their persuasiveness ratings did not differ significantly for the pro and anti campaigns. I observed a similar trend for the liberal participants but in the opposite direction. I observed a similar trend for empathy, sense of community, and comfort level factors.

Finally, I performed a one-sample t-test on the change of attitude measure to observe whether participants experienced any change of attitude during the experiment. I found that the ratings of the participants in the non-exposure group ($t(70) = 2.13, p = 0.18, d = 0.04$) and consistent-exposure group ($t(72) = 2.07, p = 0.21, d = 0.04$) were not significantly different from 0. This was expected as the participants in the non-exposure group saw a non-political campaign. Moreover, consistent-exposure group participants saw an attitude-consistent campaign that did not require them to mentally defend their existing attitude toward the initial political crowdfunding campaign. However, ratings of the participants in the inconsistent-exposure group were significantly lower than 0 ($t(72) = 4.03, p < 0.01, d = 0.14$). This means that only participants of the inconsistent-exposure group became less favorable toward the attitude-inconsistent political campaign at the end of the user study. One explanation is that in the first part, exposure to the attitude-inconsistent political cam-

campaign made participants in the inconsistent-exposure group more sensitive to their political beliefs and partisan identity. Later, even exposure to the charitable campaigns on climate change made them less favorable toward the political campaign.

These findings suggest that exposure to an attitude-inconsistent political campaign significantly affected the reactions of both liberal and conservative participants. Although I presented the political campaign and the charitable campaigns as part of two separate studies (one week apart), exposure to an attitude-inconsistent political campaign made participants more sensitive to their partisan identity. It may have triggered defensive in-group favoritism and out-group hostility. Therefore, when they had to evaluate the content on a non-political socially sensitive topic, their opinion became more polarized. This confirms my initial hypothesis that exposure to attitude-inconsistent political campaigns can affect people's opinions on non-partisan topics such as climate change.

This finding can be explained with the self-categorization theory that claims that whenever people experience some external trigger, their sense of in-group favoritism becomes salient. Their partisan attitude becomes more sensitive in their behavior. Although many things can initiate these external triggers, a reminder of the partisan ideology is known to be a strong trigger in this scenario. In my study, an attitude-inconsistent political campaign might have worked as a trigger among all participants in the inconsistent-exposure group. As a reaction to that, participants became more sensitive to their partisan ideology. They showed in-group favoritism, i.e., conservatives became highly supportive of the attitude-consistent anti climate change campaign and liberals became highly motivated by their attitude-consistent pro climate change campaign. Because of out-group hostility, both groups expressed negative opinions toward their corresponding attitude-inconsistent campaign. However, for the non-exposure and the consistent-exposure groups, participants did not experience this sort of sensitization. Therefore, they did not feel the urge to compensate for their behavior by expressing a highly polarized attitude toward charitable campaigns.

These findings made us wonder whether any external intervention could help participants in the inconsistent-exposure group to cope with their sense of in-group favoritism. Previously, researchers have found that in most cases, people have mixed feelings and values where for some causes they lean towards conservative ideology, and for other causes, they lean towards liberal ideology. At any point in time, people's reaction to a topic does not always depend on their political beliefs; rather their state of mind can decide how they will react. Therefore, if liberals experience conservatives' threat priming, their opinion can shift toward conservative ideology and vice versa [125]. A similar outcome can be observed by applying schema priming strategies. All these priming techniques were tested separately in different studies. No one has compared different types of priming strategies and their effectiveness

systematically. Moreover, it is not known how effectively these priming techniques would redesign non-political topics (such as campaigns on climate change) so that even participants with highly sensitive partisan identity would not become polarized toward those topics. This is what I intended to answer in RQ7.2. To answer RQ7.2, I conducted another user study which I explained in the next section.

7.4 STUDY 2: IMPACT OF BEHAVIORAL PRIMING ON NON-PARTISAN TOPICS

7.4.1 Goal

The goal of this second study is to understand whether behavioral priming can prevent people from developing a sensitized, polarized opinion toward a non-partisan socially sensitive topic even after getting exposed to an attitude-inconsistent political campaign. I also aim to compare the effectiveness of two types of behavioral priming techniques that previous studies have proposed through my study (assuming that they will be effective in reducing polarized attitude).

7.4.2 Materials

I reused the political campaigns that I designed for study 1. Besides, I redesigned the charitable campaigns following two sets of priming techniques: 1) schema priming and 2) threat/safety priming.

Schema Priming As I discussed in the literature review section, schema priming can have two different variations: 1) personal merit schema and 2) good fortune schema. Conservative ideology believes in personal merit schema where success is considered as an outcome of hard work, wise decision-making, and other aspects of personal merit [122, 123, 261]. On the other hand, liberal ideology believes in good fortune schema where success is a result of good fortune, social advantage, help from others, and other factors independent of personal merit [261]. Previous studies have shown that when conservatives were asked to adopt the good fortune schema, their opinion shifted toward liberal ideology. Similarly, when liberals were primed to adopt personal merit schema, their opinion shifted toward conservative ideology [125]. Inspired by these findings, I revised the content of the charitable campaigns to stimulate the schema priming among participants. For the “pro climate change campaign”, I created two different versions. In one version, I revised the content in such a way so that the campaign reflects the properties of good fortune schema such as chance, opportunity, and

help from others. In the other version, I used the properties of the personal merit schema such as hard work, self-discipline, and wise decisions to reorganize the campaign's description. For instance, I included and highlighted the following new section in the campaign's description that showed help from others:

“In several locations, the climate restoration team was fortunate enough to receive support from local authorities where volunteers willingly took care of the planted trees throughout the year.”[Good fortune schema]

Similarly, I revised the “anti climate change campaign” following the properties of the good fortune and personal merit schema and also created two different versions of this campaign. For instance, I added the following section in the campaign's description where I discussed how tirelessly volunteers worked with the coal miners' community:

“Since 2010, our volunteers are working tirelessly to make a list of miners who have lost their jobs in coal mines during the last ten years and did not get any steady alternative job yet.”[Personal merit schema]

I highlighted all these new additional sections in the campaigns' description assuming that participants would specifically focus on these sections and thus, they would get influenced by the priming conditions. Moreover, I hypothesized that revising the “pro climate change campaign” with the good fortune schema would make conservative participants more favorable toward their attitude-inconsistent charitable campaign, whereas applying the personal merit schema to the “anti climate change campaign” would make liberal participants more favorable toward their attitude-inconsistent campaign.

Threat/Safety Priming Experimentally increasing a feeling of physical safety can motivate conservative people to think more like socially liberal people [131]. On the other hand, when liberals face a threat scenario, they behave more like a conservative [130]. I designed my second pair of behavioral priming based on the literature mentioned above with the hypothesis that the application of the threat and safety priming on the charitable campaigns would make both conservative and liberal participants more favorable toward their corresponding attitude-inconsistent campaigns. I reconstructed the two different versions of the “pro climate change campaign”, one following the safety priming strategy and another applying the threat priming condition. For instance, I included the following section that showed an increased sense of safety:

“In multiple locations, because of our initiatives, the number of landslides reduced significantly in the last five years. Reforestation also reduced the intensity of tidal surges to a great extent. It provided a sense of safety to the residents of the coastal areas particularly during cyclones and hurricanes.”[Safety priming]

Similar to the schema priming, I also revised the “anti climate change campaign” by following the strategies of the threat and safety priming conditions. For instance, I added the following section in the campaign’s description where I highlighted the potential threats that coal miners’ community would suffer from if necessary steps were not taken:

“This massive unemployment situation forced the children of our coal miners’ community to deal with endemic poverty, opioid abuse, and a deficient K-12 education system. Because of this educational attainment during young adulthood, these children are likely to suffer from lifelong implications of economic adversity and insufficient health care facilities.”[Threat priming]

7.4.3 Study Procedure

In this study, I reused the same online platform that I used for the first study with some modifications. First, participants completed the same political typology quiz and the political party quiz that I used in study 1 to identify the political ideology and political leaning of the participants. Since my goal was to observe the effect of behavioral priming after exposing participants to an attitude-inconsistent political campaign, I divided participants into three groups. The first group of participants was randomly chosen to receive schema priming (either good fortune or personal merit based on their political position), the second group of participants was randomly chosen to receive threat/safety priming, and the final group (the control group) received no priming at all. I call the first group the “schema priming group”, the second group the “threat/safety priming group”, and the final group the “non-priming group”. In summary, I divided participants into six mutually exclusive groups as shown in Table 7.5.

I started by asking all participants that they would read a political crowdfunding campaign and let us know their opinion about the campaign. I showed each participant an attitude-inconsistent political campaign. Once participants finished reading their assigned campaign, I asked them to complete the “political campaign survey”, to record their opinion on the political campaign. Once participants completed the survey, I informed them that it was the end of the experiment.

Table 7.5: The participants in this study were divided into the following six mutually exclusive groups. We asked each participant to read a pair of charitable crowdfunding campaigns. Participants of the priming conditions read the modified versions of the charitable campaigns but participants of the non-priming condition, were exposed to the original campaigns. The third column in this table shows the number of participants assigned in each condition.

Participants' Groups	Condition of the Charitable Campaigns	No of Participants
Conservative schema priming	Charitable campaigns updated following good fortune schema	35
Conservative safety priming	Charitable campaigns updated following safety priming condition	37
Conservative no priming	No priming applied on the charitable campaigns	34
Liberal schema priming	Charitable campaigns updated following personal merit schema	33
Liberal threat priming	Charitable campaigns updated following threat priming condition	35
Liberal no priming	No priming applied on the charitable campaigns	33

After one week, I contacted all participants and asked them whether they would like to participate in a new study. All but four participants agreed to participate in the second part. This time, I asked all participants to let us know their opinion about two charitable campaigns. I presented two charitable campaigns, “pro climate change campaign” and “anti climate change campaign” side by side, and participants were allowed to read them in any preferred order. I showed two charitable campaigns that were revised using schema priming to participants of the schema priming condition. Similarly, threat/safety priming condition participants saw two charitable campaign revised using threat/safety strategy and no priming condition participants saw two original campaigns (Table 7.5). When participants finished reading these campaigns, I asked them to complete two charitable campaign surveys, one for each campaign. Next, on a scale of 1 to 7, they rated how fortunate they felt, their personal merit assessment, their sense of safety, and their sense of uncertainty at that moment. I call this the “priming validation survey”. Finally, all participants completed a demographic survey. In the end, I debriefed participants about my study design and explained that I was interested to know how their opinions on the charitable campaigns were influenced by the political campaign shown in the first part of the study.

7.4.4 Designing the Surveys

We used the same political and charitable campaign surveys as we used for study 1. In addition to these two surveys, we used a new priming validation survey in this study. In this

survey, we asked participants four more questions to measure: 1) how fortunate they felt, 2) their assessment of personal merit, 3) their sense of safety, and 4) their sense of uncertainty. We included these questions in the priming validation survey because each question directly captured the feeling induced by at least one priming condition. We hypothesized that participants in the no priming condition would experience none of these feelings as strongly as the participants in the priming condition. Finally, we included a change of attitude measure as we did in stage 1.

7.4.5 Participants

In this study, we recruited 207 new participants the same method as the first study. Participants' average age was 39.22 (SD=10.62), and 47% were females. 106 participants had identified themselves as conservatives and Republicans and 101 participants as liberals and Democrats (based on the political typology quiz and the political party quiz responses). Based on the political party quiz, all conservative participants agreed that *"this country has gone too far in its efforts to protect the environment"*. On the contrary, all but three liberal participants agreed that *"this country should do whatever it takes to protect the environment"*. 41% of the participants had donated to at least one charitable crowdfunding campaign before participating in the study. 69% of participants had donated to at least one election campaign in the past but only 3 participants have also donated to an online political crowdfunding campaign. More than half of the participants (69%) identified themselves as Caucasian, 11% as Asian, 17% as African-American, and 3% as others. On average, each participant took 46 minutes to complete the study and received \$6 for their participation.

7.4.6 Results

Validation of the Priming Condition We started my analysis by validating the effectiveness of the priming manipulations. To this end, we analyzed the ratings of the priming validation survey. In my priming validation survey, we included one survey question for each priming condition. We hypothesized that for the participants of a specific priming condition, the corresponding question's rating would be significantly higher than the ratings of any other questions. We performed one-way MANOVA where the independent variable was the groups of different priming conditions and the dependent variable were the four survey questions regarding the sense of good fortune, personal merit, safety, and uncertainty.

There was a statistically significant difference among different priming groups on the combined dependent variables, ($F(10,400) = 8.81, p < 0.01, \text{Wilk's } \lambda = 0.72, \eta^2 = 0.53$ (effect

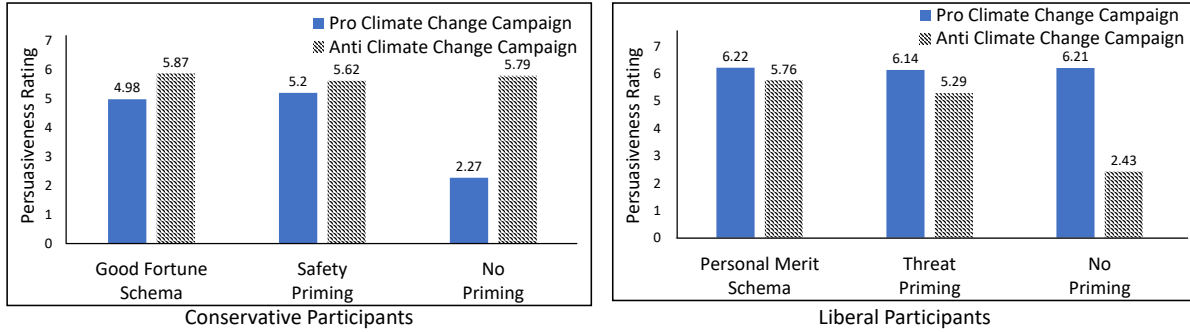


Figure 7.4: Average persuasiveness ratings of participants for schema priming, threat/safety priming, and no priming conditions for conservative (on the left) and liberal (on the right) participants. Safety priming condition was the most effective priming for the conservative participants whereas liberal participants found the personal merit schema as the most effective one.

size)). We further conducted univariate one-way ANOVAs to observe the significance of each dependent variable. We found that there was a statistically significant difference in the sense of good fortune ratings between the participants of different priming condition groups, $F(5, 201) = 11.82, p < .01$; partial $\eta^2 = .44$. Similarly, we found statistically significant differences among the participants of different priming condition groups for sense of personal merit ($F(5, 201) = 11.94, p < .01$; partial $\eta^2 = .58$), sense of safety ($F(5, 201) = 12.64, p < .01$; partial $\eta^2 = .45$), and sense of uncertainty ($F(5, 201) = 11.97, p < .01$; partial $\eta^2 = .68$). Tukey post-hoc tests showed that participants' sense of good fortune ratings in the conservative schema priming group was significantly higher than that of the participants in any other group. We found a similar trend for the sense of personal merit ratings, the sense of safety ratings, and the sense of uncertainty ratings. No other comparisons were statistically significant. These findings matched my initial hypothesis and thus, validated the effectiveness of my priming conditions.

Analysis of the Responses of the Charitable Campaign Surveys (RQ7.2) Next, to answer my main research question, we analyzed the ratings of the charitable campaign surveys. We hypothesized that compared to the non-priming condition, participants in the priming conditions would show less in-group favoritism toward the charitable campaigns.

We had three independent variables. Two of them were between-subject: the political ideology of the participants (liberal/conservative) and priming-condition (schema priming/threat vs safety priming/no priming). The within-subject variable was the type of the charitable campaign: (pro climate change campaign/anti climate change campaign.). Similar to study 1, we considered the same five dependent variables for my analysis: 1) intended

Table 7.6: Opinion of the participants for the pro climate change and anti climate change campaigns captured during the second study. The second column shows the priming conditions for both conservative and liberal participants. The rows marked with the * sign marks the dependent variables for which the ratings of the pro and anti campaigns were significantly different from each other. Ratings of the pro and anti climate change campaigns were significantly different only for the no priming condition. No significant difference was found for the behavioral priming conditions.

Participants' Political Leaning	Behavioral Priming	Dependent Variables	Pro Climate Change Campaign	Anti Climate Change Campaign	Pairwise Comparison	Effect Size
Conservatives	Schema Priming (Good Fortune Schema)	Int. Donation	28.22	36.56	F(1,195)=2.33, p=0.11	0.28
		Persuasiveness	4.98	5.87	F(1,195)=0.89, p=0.29	0.19
		Empathy	4.68	5.55	F(1,195)=1.43, p=0.23	0.22
		Sen. of Community	4.92	5.80	F(1,195)=0.78, p=0.31	0.17
		Comfort Level	4.48	5.36	F(1,195)=0.49, p=0.44	0.06
	Safety priming	Int. Donation	32.26	35.11	F(1,195)=1.65, p=0.22	0.23
		Persuasiveness	5.20	5.62	F(1,195)=0.87, p=0.29	0.19
		Empathy	5.17	5.73	F(1,195)=1.03, p=0.25	0.20
		Sen. of Community	4.89	5.31	F(1,195)=0.59, p=0.36	0.09
		Comfort Level	5.08	5.47	F(1,195)=0.67, p=0.34	0.12
	No Priming	Int. Donation*	11.39	37.88	F(1,195)=11.54, p<0.01	0.78
		Persuasiveness*	2.27	5.79	F(1,195)=5.23, p=0.03	0.69
		Empathy*	2.29	5.82	F(1,195)=5.19, p=0.03	0.65
		Sen. of Community*	2.01	6.18	F(1,195)=6.98, p=0.02	0.75
		Comfort Level*	2.06	5.82	F(1,195)=5.76, p=0.03	0.70
Liberals	Schema Priming (Personal Merit Schema)	Int. Donation	34.11	31.22	F(1,195)=1.71, p=0.19	0.24
		Persuasiveness	6.22	5.76	F(1,195)=0.89, p=0.27	0.19
		Empathy	6.07	5.61	F(1,195)=1.01, p=0.25	0.20
		Sen. of Community	6.01	5.58	F(1,195)=0.79, p=0.31	0.17
		Comfort Level	5.78	5.44	F(1,195)=0.66, p=0.34	0.12
	Threat Priming	Int. Donation	37.45	30.73	F(1,195)=2.27, p=0.13	0.27
		Persuasiveness	6.14	5.29	F(1,195)=0.85, p=0.28	0.19
		Empathy	5.96	5.12	F(1,195)=0.73, p=0.33	0.15
		Sen. of Community	6.10	5.22	F(1,195)=0.52, p=0.40	0.08
		Comfort Level	5.89	5.02	F(1,195)=1.10, p=0.24	0.21
	No Priming	Int. Donation*	38.22	19.11	F(1,195)=9.45, p<0.01	0.75
		Persuasiveness*	6.21	2.43	F(1,195)=5.23, p=0.03	0.66
		Empathy*	6.01	2.29	F(1,195)=5.46, p=0.03	0.67
		Sen. of Community*	5.89	2.17	F(1,195)=6.35, p=0.02	0.72
		Comfort Level*	5.74	2.11	F(1,195)=5.63, p=0.03	0.69

donation amount, 2) persuasiveness, 3) empathy, 4) sense of community, and 5) comfort level. We first performed a MANOVA test to understand the effect of my independent variables on the combined dependent variables. The multivariate analysis revealed a significant three-way interaction among the independent variables on the dependent measures ($F(5,194) = 68.04, p < 0.01, \text{Wilk's } \lambda = 0.68, \eta^2 = 0.52$ (moderate effect size)). To further understand this interaction, we performed separate 2 X 2 X 2 ANOVAs on five dependent variables.

Table 7.6 shows the summary of the results of this stage by showing the pairwise comparison of all the ratings of all dependent variables. We found significant three-way interactions between participants' political ideology, behavioral priming condition, and the type of the campaign for all five dependent measures: intended donation amount ($F(2,201) = 69.13$, $p < 0.01$, $\eta^2 = 0.52$), persuasiveness ($F(2,201) = 41.97$, $p < 0.01$, $\eta^2 = 0.40$), empathy ($F(2,201) = 45.27$, $p < 0.01$, $\eta^2 = 0.42$), sense of community ($F(2,201) = 52.04$, $p < 0.01$, $\eta^2 = 0.47$), and comfort level ($F(2,201) = 56.13$, $p < 0.01$, $\eta^2 = 0.48$). Next, we examined if any two-way interaction was statistically significant. We accepted the statistical significance of two-way interactions at a Bonferroni-adjusted alpha level of 0.025. We found two-way interactions were statistically significant for all dependent variables between political ideology and priming condition for both pro climate change campaign and anti climate change campaigns for no priming condition. However, we did not find statistically significant simple effects for schema priming or threat/safety priming conditions.

Figure 7.4 shows the persuasiveness ratings of participants for all three priming conditions. The figure shows that persuasiveness ratings for participants with conservative and liberal ideologies differed significantly for different priming conditions. When conservative participants did not receive any behavioral priming after getting exposed to an attitude-inconsistent political campaign, they experienced a strong in-group effect. They found their attitude-consistent charitable campaign (anti climate change campaign) significantly more persuasive than the attitude-inconsistent charitable campaign (pro climate change campaign). This behavior was consistent with the outcome of study 1. However, when conservative participants received safety priming, their persuasiveness ratings for two conflicting charitable campaigns became very close to each other. This behavior was exactly the opposite of the behavior that they showed during the non-priming condition. Finally, for the good fortune schema priming, the conservative participants showed comparatively lower polarization in terms of persuasiveness than the non-priming condition; however, they were still more polarized than the safety priming condition. When we analyzed the persuasiveness factor for the liberal participants, we again observed that the priming conditions (personal merit schema priming and threat priming) influenced the reaction of the liberal participants as well. Similar to conservative participants, in priming conditions, the persuasiveness ratings of liberal participants also became much less polarized compared to the non-priming condition.

Finally, we performed a one-sample t-test on the change of attitude measure to observe whether participants experienced any change of attitude during the experiment. We found that the ratings of the participants in the priming condition was not significantly different from 0 ($t(137) = 1.97$, $p = 0.29$, $d = 0.06$). However, ratings of the participants in the non-priming condition were significantly lower than 0 ($t(68) = 4.75$, $p < 0.01$, $d = 0.19$).

These results show that participants in the priming conditions did not experience any change of attitude during the user study but participants of the non-priming condition became less favorable toward the attitude-inconsistent political campaign at the end of the user study. This implies that priming treatments helped participants to not develop an unfavorable attitude toward the attitude-inconsistent political campaign.

These findings indicate that the priming conditions can effectively assist people to mitigate their in-group favoritism to non-political socially sensitive topics even after the exposure to an attitude-inconsistent political campaign. Priming strategies helped participants to cope with their internal sensitization which made their opinion highly polarized in the first study. These findings are consistent with previous literature where researchers argued that political position is not a concrete ideology for most of the people. Rather, a considerable number of people have moderate and divided opinions on different political issues and behavioral priming by political ideas may sway their opinions. One important observation was that conservative participants showed the least polarized attitude for the safety priming condition. However, for liberal participants, the personal merit schema priming condition was the most effective one. One possible explanation is that conservative people naturally get driven by fear of threat [231]. Since the safety priming condition gave them a sense of relief from threat, they found it more appealing and as a result, they became least polarized in that condition. On the contrary, since liberal participants, generally, are characterized by openness to new experiences and do not focus specifically on negative or fear elements, they found the threat priming less effective and experienced the least amount of in-group effect in the personal merit priming condition.

7.5 DISCUSSION AND FUTURE WORK

Political discussions often divide people along ideological lines. A recent nationwide survey conducted by Pew Research Center has found that partisan division has become more extensive than any point in the last two decades [262]. In this work, I examined whether and how the exposure of political crowdfunding campaigns can potentially sensitize people about their political ideology and activate their perception of in-groups and out-groups. I hypothesized that because of this sensitization, people's social opinions for topics that do not have a specific partisan endorsement could also get polarized. Indeed, my results have shown that exposure to attitude-inconsistent political campaigns did make participants more sensitive about their partisan beliefs. Their sensitivity was evident in their increased polarized attitude toward a non-political topic presented outside of the political context.

7.5.1 Online Exposure through Crowdfunding Campaigns

My findings indicate that the impact of political crowdfunding campaigns cannot be understood just by analyzing the campaigns in isolation; rather it may require a more thorough approach to understand the complex dynamic of political campaigns. The convenient accessibility of campaigns in crowdfunding platforms can be seen as a new opportunity for political candidates to reach and influence future potential supporters. This may allow candidates to reach those people who were hard to reach in the past. These platforms can play an even bigger role in the near future especially when the global pandemic situation is making it harder for politicians to reach out to their supporters directly through physical appearances and in-person rallies. Although promising for candidates, online exposure to diverse political crowdfunding campaigns may increase the effect of self-categorization among supporters. Previous work [77, 263] has shown that when diverse opinions about controversial topics are presented side by side, it does not necessarily make people more sympathetic to the opposing point of view. Instead, it can polarize people and strengthen their in-group favoritism. A Pew Research survey conducted right after the 2016 US presidential election also found that nearly two-thirds of Americans reported that online encounters with users on the opposite side of the political spectrum leave them feeling as if they have even less in common than they thought [264]. Although exposing each participant to both Democrat and Republican political crowdfunding campaigns simultaneously was not in the scope of this chapter, the effect of simultaneous exposure on in-group and out-group categorization among the crowd represents an important direction for future work.

7.5.2 Building Awareness around Social Platforms

In this chapter, I studied the effect of self-categorization specifically for political crowdfunding campaigns. This is because, in general, traditional media platforms (e.g., television campaign ads) have been found to impact people's opinions on politically sensitive topics. On the contrary, crowdfunding platforms are typically considered as a platform to gather donations. Little is known how seemingly benign crowdfunding campaigns may subconsciously sensitize our opinions on otherwise non-partisan topics. Crowdfunding platforms for political campaigns are important to study in this context because these campaigns not only show the stance of the politicians on their political agendas but also these campaigns show in real-time how much money is donated by how many people to support a specific politician. I anticipate that my findings will increase the level of critical awareness of the followers of crowdfunding campaigns who would otherwise think of crowdfunding campaigns

as a humble attempt to gather donations. The findings of this work can be used to study political influence on sensitive topics in other platforms where political leaning is not the primary concern.

7.5.3 Socially Sensitive Topics and their Characteristics

In my first experiment, I found that participants who either did not see an initial partisan candidate’s fundraising campaign or saw one that was consistent with their existing beliefs showed much more tolerance for charitable crowdfunding campaigns even when the charitable campaign was inconsistent with their political ideology. This finding was inconsistent with Dey et al. [77]. In their work, they showed that whenever people were exposed to diverse opinions on stigmatized topics, they become more polarized. One explanation is that my experiments were designed around climate change whereas the previous work primarily focused on equal rights for the LGBTIQ community. People’s reactions to different non-political topics can vary significantly on their level of bias about those topics. A similar trend was also observed when researchers studied the applicability of the *contact hypothesis* [265] in reducing social prejudice. Researchers found that the contact hypothesis was an effective way to reduce prejudice against disabled people but could not explain why it did not reduce racial and ethnic tension. A better understanding of the nature of non-political topics can be useful for the designers of crowdfunding platforms. It can help political crowdfunding platforms to organize campaigns in a way that can provoke the least amount of in-group-out-group effect and promote maximum support for the campaign beneficiaries.

7.5.4 Summary of Design Implications

My second study shows important design implications for system designers and campaign owners of donation-based crowdfunding platforms. Previous work has shown that people take signals from their political leadership to build their attitude. Partisan politics often affect people’s perceptions of non-political social issues. For instance, Leiserowitz [266] found that public responses to climate change in the USA are less influenced by scientific facts but more by both psychological and socio-political factors. A recent Gallup poll shows that about a third to almost half of the public believes that the seriousness of global warming is generally exaggerated [267] and the current facts do not match with their political ideology. Not only in case of climate change, but a recent study also found that during the current pandemic, partisanship is a fairly strong predictor of one’s likelihood of wearing masks to prevent viral spread. A poll of over 2,400 American’s revealed that Democrats are more likely than Repub-

licans (75% versus 53%) to report wearing masks in public [268]. Partisans' differences also influence the types of organizations to which people donate to. Conservatives are more likely to donate to religious organizations, while liberals generally prefer to donate their money to secular organizations[268]. Priming strategies such as schema priming and threat/safety priming can become practical approaches for non-profit organization messaging. Donation solicitations designed using priming strategies can assist non-profit organizations to receive more donations, helping to overcome partisan differences.

7.5.5 Influence of the Political Systems

I have conceptualized the influence of political crowdfunding campaigns in the context of the two-party political system practiced in the United States. When recruiting participants from MTurk, I ensured that all participants were US citizens and were familiar with the two-party system. This study design made the scenarios presented in the first and the second study more relatable to participants. However, a two-party political system often faces the challenges of hyper-partisanship [269]. As I observed in my first study, even when a socially sensitive topic such as climate change was discussed outside of the political context after one week of the initial exposure, it still had a differential effect on the opinions of the participants. To generalize these findings in the global context, one key factor to consider is the potential differences in a multi-party political system. A multi-party political system generally focuses on a wide range of agendas and policies by promoting coalition-building skills while discouraging polarization. Evaluating the effect of political crowdfunding campaigns in countries with a multi-party political system such as Canada or the United Kingdom remains for future work. I feel that my findings, obtained from a two-party political system, will provide a basis for future investigation, in which I will consider different types of political systems to increase generalizability.

7.5.6 The Diversity of Online and Offline User Groups

To conduct my user studies, I recruited participants from MTurk. Although MTurkers were found to be a suitable representative of the US population for a political ideology study, there could still be a sample bias in my findings. Participants' average age in my user studies were less than 40 years. This may limit the generalization of my results in some important ways. Older people who are not part of the online workforce may perceive political crowdfunding campaigns from a different perspective. Perhaps, they would be more influenced by political crowdfunding campaigns than regular MTurk workers, as past work

has shown that older adults are more susceptible to inaccurate information [270]. In addition to different age groups, the popularity of political crowdfunding campaigns can also promote in-group vs out-group bias among the group of people who regularly access online material vs the group of people who rarely go online. Moreover, I divided participants into two main groups for my analysis: liberals and conservatives. My initial analysis showed that on average neither the group of conservative participants nor the group of liberal participants was from the extreme end of the spectrum based on their political leaning. However, people from the edge, who are considered as partisan anchors', might have a stronger reaction to political crowdfunding campaigns. My findings will work as a definite first step for future work to identify the long-term impact of priming strategies on people from diverse communities.

7.5.7 Behavioral Priming and the Challenges Ahead

In this chapter, I applied behavioral priming techniques to investigate whether and how these priming strategies impact people's donation decisions for charitable campaigns. I kept a one week gap between two experiments to observe whether the polarized attitude and sensitive behavior remain valid even for a longer duration. However, these experiments cannot answer how long the impact of the priming strategies will last and whether it would occur for judgments of ostensibly apolitical campaigns, such as funding a new product. Will people become less sensitive about their political ideology because of their exposure to these specifically designed content? Will it affect their future donation behavior toward political campaigns? A recent poll showed that 91% of people from the United States said that the country is divided over politics which is higher than the percentage of people who reported that America is divided over issues of race and ethnicity (83 percent) or religion (77 percent) [271]. Could more exposure to primed charitable solicitation also serve to make Americans less sensitized on partisan political arguments? Because of the influence of the political leadership on a long list of social topics, these discussions can no longer remain limited to the domain of political science; rather the CSCW research community can help by furnishing a conceptual framework for understanding the long-term effect of behavioral priming on the online crowd, especially when political crowdfunding campaigns are becoming more accessible to a broader audience.

7.5.8 How does the Sensitivity of Sensitive Topics Evolve?

In this chapter, I focused on a socially sensitive topic: climate change. In Chapter 6, I studied another socially sensitive topic: equal rights for the LGBTIQ community. Although

both of them are considered socially sensitive and politically partisan topics in the United States, they have very unique characteristics. LGBTIQ community are fighting for equal rights and protection against discrimination for a long time. People opposing this movement often find it unethical because of their religious beliefs. However, people do not treat climate change in the same way. Rather in the U.S., people perceive climate change as a politically partisan topic. They align their beliefs on climate change based on the opinion of the politicians, ignoring the opinion of the scientists in most of the cases. They consider scientists as the members of the “elite group” and do not feel confident to believe in scientific opinions without any validation of their political leaders. The differences between these two sensitive topics show that it may not be wise to generalize all sensitive topics; rather we need to evaluate them individually understanding not only the unique characteristics but also the cultural influence on the topic.

In the age of social media, we need to be more vigilant to observe how socially sensitive topics are evolving quicker than ever before. Often misinformation and disinformation spread through social platforms may change the way people perceive these topics. It gets even more complicated when a sensitive topic becomes the talk of the town because of some current incidents. For instance, we have seen several attempts for spreading misinformation and disinformation through Twitter and Facebook during the recent protests supporting the “black lives matter” movement [272, 273, 274]. In many cases, opponents of the protest exploited social media to spread fake news against the protesters in an attempt to dismantle the peaceful protests. Social media is just one medium that can influence the life cycle of sensitive topics. Policies determined by the government and Congress can also be a driving force for sensitive topics too [275]. In some scenarios, replication studies on stigmatized topics may reveal how the sensitivity and overall perception of those topics change because of various external determinants.

7.6 ETHICAL CONCERNS

In this chapter, I proposed behavioral priming as a strategy to mitigate the self-categorization effect. Critical discussions on behavioral priming primarily focused on understanding whether priming experiments can be replicated or not [276, 277, 278]. Not many critical discussions happened regarding weaponizing behavioral priming against a group or community. How will the knowledge of behavioral priming effect potential donor’s feelings? Will they feel betrayed by their trusted organizations? Can organizations take some additional efforts to normalize the priming effect on their donors after receiving the donation? For instance, to prime liberal participants, I stimulated a sense of threat in my experiments. One possible

way to normalize this priming effect can be subsequently triggering a sense of safety among liberal participants. Of course, my work has not covered all these possibilities. There are scopes to investigate further in this direction. Since behavioral priming made participants more inclined to increase their intended donation, naturalizing the priming effect in the end may stimulate a long-lasting feel-good effect. This may also trigger a “feel good-do good” attitude among participants.

In this context, it is equally important to consider the emotional strain of the campaign creators. Because of personal integrity, campaign creators may not feel comfortable to reorganize their campaign materials for stimulating priming effects. This sense of discomfort may become even stronger when campaign creators would be applying these priming effects on non-personal philanthropic campaigns. Intentionally designing priming content may have some demoralizing effect on them. This may hurt their motivation to work for the societal benefit in the long run.

The objective of behavioral priming can also be considered as a topic of ethical concern. Until now, I have discussed behavioral priming assuming that the priming strategies will always be applied to reduce the political polarization effect. However, like everything else, behavioral priming techniques are also not free from vulnerabilities. Someone with a bad intention can use these techniques as a weapon for increasing the polarization effect too. Organized groups such as troll factories may systematically exploit behavioral priming techniques to increase ideological divisions among the mass population. Social platforms may potentially become an essential component in this scheme as these platforms can reach millions of users through paid ads and viral posts. Besides this, such attacks can be more powerful in social platforms because in social platforms, attackers will also have the provision to launch personalized attacks by utilizing users’ previously shared personal content. One significant event that can gain advantage by weaponizing priming strategy is the presidential election campaign.

In this context, one may ask: will it be possible to identify such attacks on social platforms? I believe identifying the effort of weaponizing behavioral priming can be hard. This is because primed content can easily remain hidden among other regular content. Social platforms need to be more vigilant and need to have well-defined regulations to identify and to restrict these attempts. After Mark Zuckerberg congressional hearing in 2018 [279], several efforts were taken to create new regulations for social platforms to stop the misuse and faulty practices. Although promising, I believe regulations alone may not be sufficient to stop the weaponization of priming strategies. Even a solo algorithmic solution to identify such exploitation may also not be effective. Instead, human moderators need to be employed in the beginning to identify such misuses. Later, patterns identified by moderators can be

utilized to design machine learning algorithms for reducing manual efforts significantly.

7.7 LIMITATIONS

I measured people's political identity through political typology and political party quiz. Although in my analysis, I considered all users into two sub-categories: Democrats or Republicans, political party quiz classifies users into several sub-categories based on the extremity of their political identity. This raised the question: how will my findings get affected if we consider users' political extremism? How different the reaction of the participants will be if someone belongs to the extremely conservative Republican group whereas the other person identifies as moderately Republican? I believe the self-categorization effect will be much stronger if we have politically extremist people in this context. Behavioral primings may also have limited to no effect on people with extreme political identity. For example, someone with an extremely conservative identity may avoid reading any donation appeal directly or indirectly related to climate change. In those cases, instead of behavioral priming, a pre-determined mindset may determine the attitude of the person. My findings will be most effective on people with a moderate political identity as they will spend time to carefully read the content with the priming effect.

Another limitation of my experiments is the political bias of the MTurkers. In my study, I recruited participants from MTurk. These people were open to take part in a survey study for remuneration. That inherently excludes people from the high-income groups and most likely, introvert people who are not comfortable participating in online surveys. It is also likely that people may avoid to not express their most extreme point of view in surveys as they may think discussing those ideologies may harm their desired public identity. I believe to better understand the practical implication of behavioral priming on charitable campaigns, we need to apply them on live crowdfunding platforms. However, before that, we need further investigation to better understand the reaction of politically extremist groups. A focus group study can be a practical alternative way to better understand the mindset of political extremists.

7.8 CONCLUSION

In this chapter, I investigated the impact of political crowdfunding campaigns on non-political socially sensitive topics. Through my work, I show that discussion of agendas in political crowdfunding campaigns can make people's political ideology more salient. My work

shows that this salient ideology can trigger in-group favoritism and out-group hostility among the users. Because of this in-group favoritism, people's opinions on non-political sensitive topics also become polarized, even when the topic is discussed outside of the political context. Further investigation shows that behavioral priming strategies such as schema priming and threat/safety priming can mitigate people's in-group favoritism. More importantly, I also show that the effectiveness of behavioral priming techniques depends on people's original political ideology. This work conceptually sheds light on how social platforms impact people's core ideologies. I conclude by highlighting the challenges of characterizing the broader impact of political crowdfunding platforms and the application of behavioral priming techniques on social platforms.

CHAPTER 8: CONCLUSION AND FUTURE WORK

Every day, we interact with various forms of social platforms. Some platforms allow us to make new social ties, some of them allow us to express our opinion, some allow us to share photos, some provide us the affordances to express our solidarity for a cause. Social platforms allow us to reach those people who were nearly impossible to reach in the past without network access and connectivity. While this accessibility opened so many new avenues of opportunities, at the same time, these platforms made our personal information and preferences more publicly available, made us more vulnerable for attacks.

The promises and perils of social platforms motivated my dissertation. The central contribution of this dissertation is twofold. First, with the help of persuasion theory, I investigated how social platforms can benefit us, be it our research or our business ventures. Later, I applied my findings to design a socio-technical system that allows entrepreneurs to make an effective plan for their campaign videos. Second, I investigated how social platforms influence our long-standing opinions on socially stigmatized issues. My work showed that exposure to attitude-inconsistent elements (elements that they do not believe in) can sensitize people's opinions even for a long time. Further investigation revealed that this sensitivity can be optimized and/or mitigated when online content is modified using in-group out-group theories from social psychology. Here, I conclude this dissertation by briefly discussing each finding, discussing the challenges of this work, and finally, summarizing the ethical concerns, and outlining some paths for future work.

8.1 PERSUADING THE CROWD

In Chapter 3, I analyzed the types of expert endorsements that effectively enhances the credibility of scientific crowdfunding campaigns to the general audience. In Chapter 4, I took a step further in this direction and analyzed promotional videos used in crowdfunding campaigns. I identified the key features of these videos and later, applied the elaboration likelihood model to explain the persuasive power of those elements specific to the type of the product shown in those videos. The persuasion theory can be applied to a wide range of applications. Here, I would like to discuss two such applications.

Smartphone-based navigation applications are widely used not only for driving but also in indoor locations such as libraries, shopping malls, airports, hospitals, and even in large office buildings. Prior work has shown that when people use these navigation applications, they completely rely on these apps and do not pay any attention to their surrounding environment.

Because of this attitude, people often fail to create a mental map of their surrounding environment. Developing mental maps is important because it not only helps people to navigate but also it is essential for our cognitive development. Navigation applications designed based on persuasion theory can motivate people to develop mental maps of their surrounding environment. The persuasive interface design of navigation applications that can motivate people to cognitively process navigation hints (instead of blindly following instructions) can potentially be a better way for designing navigation apps for knowing our surrounding environment better.

8.2 INTERACTIVE TOOL FOR PERSUASIVE LEARNING

In Chapter 5, I described the design and building of an interactive tool called VidLyz that can assist entrepreneurs to learn the significance of persuasion factors. VidLyz can also guide entrepreneurs to make a detailed plan for their campaign videos. Prior work has shown that with a detailed plan, the time and money required to shoot and edit a video can be reduced significantly. This design of the tool also allows entrepreneurs to seek multiple rounds of feedback from their friends, family members, and even crowd workers before they finally decide a plan for their videos.

The lessons learned from developing an interactive tool can be expanded in many directions. One such direction can be developing interactive tools for children with learning disabilities. Often, children with learning disabilities go through a long-term cognitive training program. Regularly attending these training sessions at designated centers can be difficult for these children and their parents. Interactive tools can be used in these scenarios where training materials can be partially covered at home with the help of the tool and more sensitive parts can be taught at the training centers. These interactive tools can be customized based on the requirements of a specific child. These tools can also keep track of the progress of the children over a long period which can later be analyzed to figure out the gradual progress of the children.

8.3 PERILS OF SOCIAL PLATFORMS

In Chapter 6, I discussed how exposure to the content available on social platforms can polarize our opinion on socially stigmatized topics. In Chapter 7, I focused on a socially sensitive topic “climate change” and analyzed how political movement driven through political crowdfunding platforms can influence the initiatives related to climate change. I also

introduced priming techniques that can temporarily eliminate the polarization effect among people with diverse political ideologies and beliefs.

In the last few years, the perils of social platforms have become a critical topic in the academic domain. Prior work has shown how AI can assist human moderators of social platforms to disapprove offensive content. Numerous efforts have been taken to mark the unsupported and unauthentic news on social platforms. A large number of misinformation and disinformation available on social platforms have become a frequently discussed topic among the research community and policy departments. Removing all misleading information directly from social media may not be the best practice since it can discourage users to post even true information through social platforms. Moreover, too much restriction can also deter users from sharing useful news through social platforms.

The lessons learned from my dissertation will be useful in the future to find an optimal threshold for moderating content on social platforms. However, one important aspect of this direction of research is that the moderation algorithms need to evolve. In my dissertation, I specially studied people's opinions on two socially sensitive topics: equal rights for LGBTIQ people and climate change. People's opinion on these topics has changed significantly in the last 20 years. The trustworthiness of social platforms had changed a lot in the last five years. The controversy of Cambridge Analytica and discussion on this topic on mainstream news media made people more aware of the privacy and digital safety on social platforms. That's why one master algorithm for eliminating the bias on social platforms may not be a practical approach. Rather, we need a feedback-based system that can consider public norms and feed them periodically to modify the algorithms and priming strategies.

8.4 SUMMARY OF ETHICAL CONCERNS

The discussion of the promises and perils of social platforms cannot be complete without the discussion on ethical concerns. Social platforms initially started as enormous promises to society. However, similar to everything else, the more people got familiar with social platforms, the more they realized the threats that social platforms can pose on our social life [280, 281, 282, 283]. We have heard so many discussions in the last few years how people's data shared through social platforms was misused to manipulate mass behavior [284]. In my dissertation, I have shown how content shared through social platforms may polarize people's long-standing beliefs. I have also shed light on the possibility of weaponizing behavioral priming techniques for further creating ideological division in society. These effects may have the worst impact on people with extreme political orientations, minorities, and children at the growing stage. In the political context, such attempts may impact election results which

can have long-term effects on government policies and regulations [285].

From all these adverse possibilities, one question came up: should we completely abandon all social platforms to eliminate all possible threats? Or is there a way to overcome the adverse effects of social platforms while keeping the promises intact? I believe at this time, it will be almost impossible to live without social platforms. The COVID-19 pandemic showed us how much social platforms can promote social bonding especially at the time of global crisis [286]. Therefore, we do not need a society free from social platforms, rather we need more comprehensive plans to avoid the threats imposed by social platforms and to extract the maximum benefit out of them. It may start with teaching children how to stay safe from threats imposed by social platforms [287]. A more watchful future generation will most likely be more resilient to basic threats of social platforms and can motivate social platforms to have a more thorough plan to control such threats. Government regulations can also be another critical factor for making social platforms more accountable for their actions [288]. Of course, we need to be more careful while we are discussing government regulations since this approach can easily violate people's right to free speech. Finally, we need to adopt a good mix of socio-technical approaches at all levels so that we can identify the threats imposed by social platforms, can take proper action to eliminate them or at least minimize their effects, and can continuously probe how our society at a large scale is getting affected due to such attempts.

In summary, my dissertation shows how theories from other research domains such as social science, political science, and advertising can be used to explain people's attitudes and reactions on social platforms. The lessons I learned throughout this journey, will be equally important outside of social platforms particularly in designing socio-technical systems for maximizing the benefits of various other platforms. While my findings present interesting points, they also raise interesting questions: how can we develop combined initiatives that will not only be resilient to existing threats of social platforms but also be compatible with future possibilities and adversarial attempts?

CHAPTER 9: REFERENCES

- [1] T. A. Pempek, Y. A. Yermolayeva, and S. L. Calvert, “College students’ social networking experiences on facebook,” *Journal of applied developmental psychology*, vol. 30, no. 3, pp. 227–238, 2009.
- [2] M. Burke, R. Kraut, and C. Marlow, “Social capital on facebook: Differentiating uses and users,” in *Proceedings of the SIGCHI conference on human factors in computing systems*, 2011, pp. 571–580.
- [3] A. N. Joinson, “Looking at, looking up or keeping up with people? motives and use of facebook,” in *Proceedings of the SIGCHI conference on Human Factors in Computing Systems*, 2008, pp. 1027–1036.
- [4] S. A. Myers and J. Leskovec, “The bursty dynamics of the twitter information network,” in *Proceedings of the 23rd international conference on World wide web*, 2014, pp. 913–924.
- [5] O. Phelan, K. McCarthy, and B. Smyth, “Using twitter to recommend real-time topical news,” in *Proceedings of the third ACM conference on Recommender systems*, 2009, pp. 385–388.
- [6] A. Hermida, F. Fletcher, D. Korell, and D. Logan, “Share, like, recommend: Decoding the social media news consumer,” *Journalism studies*, vol. 13, no. 5-6, pp. 815–824, 2012.
- [7] C. Phethean, T. Tiropanis, and L. Harris, “Engaging with charities on social media: comparing interaction on facebook and twitter,” in *International conference on internet science*. Springer, 2015, pp. 15–29.
- [8] P. Belleflamme, T. Lambert, and A. Schwienbacher, “Crowdfunding: Tapping the right crowd,” *Journal of business venturing*, vol. 29, no. 5, pp. 585–609, 2014.
- [9] K. Starbird, A. Arif, and T. Wilson, “Disinformation as collaborative work: Surfacing the participatory nature of strategic information operations,” *Proceedings of the ACM on Human-Computer Interaction*, vol. 3, no. CSCW, pp. 1–26, 2019.
- [10] J. M. Rzeszotarski and M. R. Morris, “Estimating the social costs of friendsourcing,” in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 2014, pp. 2735–2744.
- [11] M. R. Morris, S. Counts, A. Hoff, and A. Roseway, “Tweeting is believing? understanding microblog credibility perceptions,” in *Proceedings of CSCW 2012*. ACM, February 2012. [Online]. Available: <https://www.microsoft.com/en-us/research/publication/tweeting-is-believing-understanding-microblog-credibility-perceptions/>

- [12] R. M. Perloff, “Social media effects on young women’s body image concerns: Theoretical perspectives and an agenda for research,” *Sex Roles*, vol. 71, no. 11-12, pp. 363–377, 2014.
- [13] A.-A. Stoica and A. Chaintreau, “Hegemony in social media and the effect of recommendations,” in *Companion Proceedings of The 2019 World Wide Web Conference*, 2019, pp. 575–580.
- [14] N. MacFarquhar, “Inside the russian troll factory: Zombies and a breakneck pace,” 2018, <https://www.nytimes.com/2018/02/18/world/europe/russia-troll-factory.html>.
- [15] D. Rotman, S. Vieweg, S. Yardi, E. Chi, J. Preece, B. Shneiderman, P. Pirolli, and T. Glaisyer, “From slacktivism to activism: participatory culture in the age of social media,” in *CHI’11 Extended Abstracts on Human Factors in Computing Systems*, 2011, pp. 819–822.
- [16] V. Etter, M. Grossglauser, and P. Thiran, “Launch hard or go home!: predicting the success of kickstarter campaigns,” in *Proceedings of the first ACM conference on Online social networks*. ACM, 2013. [Online]. Available: <http://dx.doi.org/10.1145/2512938.2512957> pp. 177–182.
- [17] M. D. Greenberg, B. Pardo, K. Hariharan, and E. Gerber, “Crowdfunding support tools: predicting success & failure,” in *CHI’13 Extended Abstracts on Human Factors in Computing Systems*. ACM, 2013. [Online]. Available: <http://dx.doi.org/10.1145/2468356.2468682> pp. 1815–1820.
- [18] E. Mollick, “The dynamics of crowdfunding: An exploratory study,” *Journal of Business Venturing*, vol. 29, no. 1, pp. 1–16, 2014. [Online]. Available: <http://dx.doi.org/10.1016/j.jbusvent.2013.06.005>
- [19] J. S. Hui, M. D. Greenberg, and E. M. Gerber, “Understanding the role of community in crowdfunding work,” in *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*. ACM, 2014, pp. 62–74.
- [20] R. E. Wheat, Y. Wang, J. E. Byrnes, and J. Ranganathan, “Raising money for scientific research through crowdfunding,” *Trends in ecology & evolution*, vol. 28, no. 2, pp. 71–72, 2013. [Online]. Available: <http://dx.doi.org/10.1016/j.tree.2012.11.001>
- [21] J. S. Hui and E. M. Gerber, “Crowdfunding science: Sharing research with an extended audience,” in *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*. ACM press, 2015. [Online]. Available: <http://dx.doi.org/10.1145/2675133.2675188> pp. 31–43.
- [22] M. Bastian, M. Hayes, W. Vaughan, S. Shah, P. Skomoroch, H. Kim, S. Uryasev, and C. Lloyd, “Linkedin skills: large-scale topic extraction and inference,” in *Proceedings of the 8th ACM Conference on Recommender systems*. ACM, 2014. [Online]. Available: <http://dx.doi.org/10.1145/2645710.2645729> pp. 1–8.

- [23] J. Donath, “Signals in social supernets,” *Journal of Computer-Mediated Communication*, vol. 13, no. 1, pp. 231–251, 2007.
- [24] C. Tripp, T. D. Jensen, and L. Carlson, “The effects of multiple product endorsements by celebrities on consumers’ attitudes and intentions,” *Journal of consumer research*, vol. 20, no. 4, pp. 535–547, 1994. [Online]. Available: <http://dx.doi.org/10.1086/209368>
- [25] J. G. Kim, H. K. Kong, K. Karahalios, W.-T. Fu, and H. Hong, “The power of collective endorsements: Credibility factors in medical crowdfunding campaigns,” in *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. ACM, 2016, pp. 4538–4549.
- [26] L. M. Range, A. Menyhert, M. L. Walsh, K. N. Hardin, J. B. Ellis, and R. Craddick, “Letters of recommendation: Perspectives, recommendations, and ethics.” *Professional Psychology: Research and Practice*, vol. 22, no. 5, p. 389, 1991. [Online]. Available: <http://dx.doi.org/10.1037/0735-7028.22.5.389>
- [27] A. G. Greenburg, J. Doyle, and D. McClure, “Letters of recommendation for surgical residencies: what they say and what they mean,” *Journal of Surgical Research*, vol. 56, no. 2, pp. 192–198, 1994. [Online]. Available: <http://dx.doi.org/10.1006/jsre.1994.1031>
- [28] R. M. Guion, *Assessment, measurement, and prediction for personnel decisions*. Taylor & Francis, 2011.
- [29] A. Xu, X. Yang, H. Rao, W.-T. Fu, S.-W. Huang, and B. P. Bailey, “Show me the money!: An analysis of project updates during crowdfunding campaigns,” in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2014. [Online]. Available: <http://dx.doi.org/10.1145/2556288.2557045> pp. 591–600.
- [30] T. Mitra and E. Gilbert, “The language that gets people to give: Phrases that predict success on kickstarter,” in *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*. ACM, 2014. [Online]. Available: <http://dx.doi.org/10.1145/2531602.2531656> pp. 49–61.
- [31] V. Rakesh, J. Choo, and C. K. Reddy, “Project recommendation using heterogeneous traits in crowdfunding,” in *Ninth International AAAI Conference on Web and Social Media*, 2015.
- [32] M. D. Greenberg and E. M. Gerber, “Learning to fail: experiencing public failure online through crowdfunding,” in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2014, pp. 581–590.
- [33] M. Muller, W. Geyer, T. Soule, S. Daniels, and L.-T. Cheng, “Crowdfunding inside the enterprise: employee-initiatives for innovation and collaboration,” in *Proceedings of the SIGCHI conference on human factors in computing systems*. ACM, 2013, pp. 503–512.

- [34] D. W. Joenssen, A. Michaelis, and T. Müllerleile, “A link to new product preannouncement: Success factors in crowdfunding,” *Available at SSRN 2476841*, 2014.
- [35] Q. Du, W. Fan, Z. Qiao, G. Wang, X. Zhang, and M. Zhou, “Money talks: A predictive model on crowdfunding success using project description,” 2015.
- [36] I. Tirdatov, “Web-based crowd funding: Rhetoric of success,” *Technical Communication*, vol. 61, no. 1, pp. 3–24, 2014.
- [37] R. B. Felson, “The (somewhat) social self: How others affect self-appraisals,” *Psychological perspectives on the self*, vol. 4, pp. 1–26, 1993.
- [38] E. Goffman et al., “The presentation of self in everyday life,” 1959.
- [39] H. H. Blumberg, “Communication of interpersonal evaluations.” *Journal of Personality and Social Psychology*, vol. 23, no. 2, p. 157, 1972.
- [40] K. Sheldon, “How to make a kickass kickstarter video,” December 2012, <http://www.fastcompany.com/3003858/how-make-kickass-kickstarter-video>.
- [41] S. Briggman, “10 tips for a winning kickstarter video,” July 2014, <http://www.crowdcru.com/tips-for-a-winning-kickstarter-video/>.
- [42] K. English, K. D. Sweetser, and M. Ancu, “Youtube-ification of political talk: An examination of persuasion appeals in viral video,” *American Behavioral Scientist*, p. 0002764211398090, 2011.
- [43] J.-K. Hsieh, Y.-C. Hsieh, and Y.-C. Tang, “Exploring the disseminating behaviors of ewom marketing: persuasion in online video,” *Electronic Commerce Research*, vol. 12, no. 2, pp. 201–224, 2012.
- [44] H. E. Krugman, “The impact of television advertising: Learning without involvement,” *Public opinion quarterly*, vol. 29, no. 3, pp. 349–356, 1965.
- [45] B. J. Fogg, “A behavior model for persuasive design,” in *Proceedings of the 4th international Conference on Persuasive Technology*. ACM, 2009, p. 40.
- [46] H. Oinas-Kukkonen and M. Harjumaa, “Persuasive systems design: key issues, process model and system features,” in *Routledge Handbook of Policy Design*. Routledge, 2018, pp. 105–123.
- [47] G. J. Tellis, *Effective advertising: Understanding when, how, and why advertising works*. Sage Publications, 2003.
- [48] R. E. Smith, S. B. MacKenzie, X. Yang, L. M. Buchholz, and W. K. Darley, “Modeling the determinants and effects of creativity in advertising,” *Marketing science*, vol. 26, no. 6, pp. 819–833, 2007.

- [49] R. E. Petty, J. T. Cacioppo, and D. Schumann, “Central and peripheral routes to advertising effectiveness: The moderating role of involvement,” *Journal of consumer research*, pp. 135–146, 1983.
- [50] L. Percy and J. R. Rossiter, “A model of brand awareness and brand attitude advertising strategies,” *Psychology & Marketing*, vol. 9, no. 4, pp. 263–274, 1992.
- [51] D. B. Lucas and S. H. Britt, “Measuring advertising effectiveness.” 1963.
- [52] W. D. Wells, *Measuring advertising effectiveness*. Psychology Press, 2014.
- [53] S. Teng, K. W. Khong, and W. W. Goh, “Persuasive communication: A study of major attitude-behavior theories in a social media context,” *Journal of Internet Commerce*, vol. 14, no. 1, pp. 42–64, 2015.
- [54] R. Petty and J. T. Cacioppo, *Communication and persuasion: Central and peripheral routes to attitude change*. Springer Science & Business Media, 2012.
- [55] R. E. Petty and J. T. Cacioppo, “The elaboration likelihood model of persuasion,” in *Communication and persuasion*. Springer, 1986, pp. 1–24.
- [56] A. Hanjalic and L.-Q. Xu, “Affective video content representation and modeling,” *IEEE Transactions on multimedia*, vol. 7, no. 1, pp. 143–154, 2005.
- [57] W. D. Beeland Jr, “Student engagement, visual learning and technology: can interactive whiteboards help?” 2002.
- [58] G. W. Yip and K. Rajendran, “Snapanatomy, a computer-based interactive tool for independent learning of human anatomy,” *Journal of visual communication in medicine*, vol. 31, no. 2, pp. 46–50, 2008.
- [59] T. Crunch, “Meet oppia, googl’s new open source project that allows anyone to create an interactive learning experience,” February 2014, <https://techcrunch.com/2014/02/26/meet-oppia-googles-new-open-source-project-that-lets/-anyone-create-an-interactive-learning-experience/>.
- [60] I. Adly, M. Fadel, A. El-Baz, and H. Amin, “Interactive mobile learning platform at the british university in egypt,” in *Proceedings of the 7th International Conference on Software and Information Engineering*, ser. ICSIE ’18. New York, NY, USA: ACM, 2018. [Online]. Available: <http://doi.acm.org/10.1145/3220267.3220279> pp. 97–101.
- [61] L. E. Richland, R. A. Bjork, J. R. Finley, and M. C. Linn, “Linking cognitive science to education: Generation and interleaving effects,” in *Proceedings of the twenty-seventh annual conference of the Cognitive Science Society*, 2005, pp. 1850–1855.
- [62] J. S. Nairne and R. L. Widner, “Generation effects with nonwords: The role of test appropriateness.” *Journal of Experimental Psychology: Learning, Memory, and Cognition*, vol. 13, no. 1, p. 164, 1987.

- [63] V. A. Aleven and K. R. Koedinger, “An effective metacognitive strategy: Learning by doing and explaining with a computer-based cognitive tutor,” *Cognitive science*, vol. 26, no. 2, pp. 147–179, 2002.
- [64] J. Hart, *The Art of the Storyboard: A filmmaker’s introduction*. Focal Press, 2013.
- [65] S. Cartwright, *Pre-production planning for video, film, and multimedia*. Focal Press, 2012.
- [66] E. Goffman, *Stigma: Notes on the management of spoiled identity*. Simon and Schuster, 2009.
- [67] B. G. Link and J. C. Phelan, “Conceptualizing stigma,” *Annual review of Sociology*, vol. 27, no. 1, pp. 363–385, 2001.
- [68] G. M. Herek, “Sexual stigma and sexual prejudice in the united states: A conceptual framework,” in *Contemporary perspectives on lesbian, gay, and bisexual identities*. Springer, 2009, pp. 65–111.
- [69] P. Hegarty and F. Pratto, “The differences that norms make: Empiricism, social constructionism, and the interpretation of group differences,” *Sex Roles*, vol. 50, no. 7, pp. 445–453, 2004.
- [70] G. M. Herek, “Confronting sexual stigma and prejudice: Theory and practice,” *Journal of Social Issues*, vol. 63, no. 4, pp. 905–925, 2007.
- [71] S. Dey, B. Duff, K. Karahalios, and W.-T. Fu, “The art and science of persuasion: Not all crowdfunding campaign videos are the same,” in *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. ACM, 2017, pp. 755–769.
- [72] E. Harburg, J. Hui, M. Greenberg, and E. M. Gerber, “Understanding the effects of crowdfunding on entrepreneurial self-efficacy,” in *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*. ACM, 2015. [Online]. Available: <http://dx.doi.org/10.1145/2675133.2675142> pp. 3–16.
- [73] E. M. Gerber and J. Hui, “Crowdfunding: Motivations and deterrents for participation,” *ACM Transactions on Computer-Human Interaction (TOCHI)*, vol. 20, no. 6, p. 34, 2013.
- [74] J. G. Kim, K. Vaccaro, K. Karahalios, and H. Hong, ““ not by money alone”: Social support opportunities in medical crowdfunding campaigns.” in *CSCW*, 2017, pp. 1997–2009.
- [75] M. Farnel, “Kickstarting trans*: The crowdfunding of gender/sexual reassignment surgeries,” *new media & society*, vol. 17, no. 2, pp. 215–230, 2015.

- [76] A. Gonzales and N. Fritz, “Prioritizing flexibility and intangibles: Medical crowdfunding for stigmatized individuals,” in *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. ACM, 2017, pp. 2371–2375.
- [77] S. Dey, K. Karahalios, and W.-T. Fu, “Effects of socially stigmatized crowdfunding campaigns in shaping opinions,” in *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. ACM, 2018, p. 242.
- [78] D. C. Brabham, “How crowdfunding discourse threatens public arts,” *New Media & Society*, vol. 19, no. 7, pp. 983–999, 2017.
- [79] T. Starnes, “Christian bakers fined \$135,000 for refusing to make wedding cake for lesbians,” 2015, <http://www.foxnews.com/opinion/2015/07/03/christian-bakers-fined-135000-for-refusing-to-make-wedding-cake-for-lesbians.html>.
- [80] A. Ohlheiser, “After gofundme shuts down christian bakery crowdfunding, it bans ‘discriminatory’ campaigns,” 2015, <https://www.washingtonpost.com/news/acts-of-faith/wp/2015/05/01/after-gofundme-shuts-down-christian-bakery-crowdfunding-it-bans-discriminatory-fundraising-camp>
- [81] S. Grasso, “Nearly \$1 million raised so far for charlottesville victims on gofundme,” 2017, <https://www.dailydot.com/irl/gofundme-charlottesville-victims/>.
- [82] WeSearchr, “Wesearchr,” 2017, <https://www.wesearchr.com/>.
- [83] S. Dang, “No cash for hate, say mainstream crowdfunding firms,” 2017, <https://www.reuters.com/article/us-virginia-protests-crowdfunding/no-cash-for-hate-say-mainstream-crowdfunding-firms-idUSKCN1AU2HE>.
- [84] S.-Y. D. Lee, A. M. Arozullah, and Y. I. Cho, “Health literacy, social support, and health: a research agenda,” *Social science & medicine*, vol. 58, no. 7, pp. 1309–1321, 2004.
- [85] K. Lovejoy, R. D. Waters, and G. D. Saxton, “Engaging stakeholders through twitter: How nonprofit organizations are getting more out of 140 characters or less,” *Public Relations Review*, vol. 38, no. 2, pp. 313–318, 2012.
- [86] M. Maruyama, “Social watching a civic broadcast: Understanding the effects of positive feedback and other users’ opinions,” in *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. ACM, 2017, pp. 794–807.
- [87] R. Gerodimos and J. Justinussen, “Obama’s 2012 facebook campaign: Political communication in the age of the like button,” *Journal of Information Technology & Politics*, vol. 12, no. 2, pp. 113–132, 2015.
- [88] D. O. Frohlich and A. Zmyslinski-Seelig, “The presence of social support messages on youtube videos about inflammatory bowel disease and ostomies,” *Health Communication*, vol. 27, no. 5, pp. 421–428, 2012.

- [89] J. S. Fox, “Push polling: The art of political persuasion,” *Fla. L. Rev.*, vol. 49, p. 563, 1997.
- [90] C. G. Lord, L. Ross, and M. R. Lepper, “Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence.” *Journal of personality and social psychology*, vol. 37, no. 11, p. 2098, 1979.
- [91] E. M. Pomerantz, S. Chaiken, and R. S. Tordesillas, “Attitude strength and resistance processes.” *Journal of personality and social psychology*, vol. 69, no. 3, p. 408, 1995.
- [92] A. Corner, L. Whitmarsh, and D. Xenias, “Uncertainty, scepticism and attitudes towards climate change: biased assimilation and attitude polarisation,” *Climatic change*, vol. 114, no. 3-4, pp. 463–478, 2012.
- [93] J. W. McHoskey, “Case closed? on the john f. kennedy assassination: Biased assimilation of evidence and attitude polarization,” *Basic and Applied Social Psychology*, vol. 17, no. 3, pp. 395–409, 1995.
- [94] G. D. Munro, P. H. Ditto, L. K. Lockhart, A. Fagerlin, M. Gready, and E. Peterson, “Biased assimilation of sociopolitical arguments: Evaluating the 1996 us presidential debate,” *Basic and Applied Social Psychology*, vol. 24, no. 1, pp. 15–26, 2002.
- [95] S. Plous, “Biases in the assimilation of technological breakdowns: Do accidents make us safer?” *Journal of Applied Social Psychology*, vol. 21, no. 13, pp. 1058–1082, 1991.
- [96] G. A. Boysen and D. L. Vogel, “Biased assimilation and attitude polarization in response to learning about biological explanations of homosexuality,” *Sex Roles*, vol. 57, no. 9-10, pp. 755–762, 2007.
- [97] J. Berger and L. Rand, “Shifting signals to help health: Using identity signaling to reduce risky health behaviors,” *Journal of Consumer Research*, vol. 35, no. 3, pp. 509–518, 2008.
- [98] E. Cairns, J. Kenworthy, A. Campbell, and M. Hewstone, “The role of in-group identification, religious group membership and intergroup conflict in moderating in-group and out-group affect,” *British Journal of Social Psychology*, vol. 45, no. 4, pp. 701–716, 2006.
- [99] S. A. Reid, “A self-categorization explanation for the hostile media effect,” *Journal of Communication*, vol. 62, no. 3, pp. 381–399, 2012.
- [100] N. Dasgupta, “Implicit ingroup favoritism, outgroup favoritism, and their behavioral manifestations,” *Social justice research*, vol. 17, no. 2, pp. 143–169, 2004.
- [101] Y. Wang and G. Mark, “Engaging with political and social issues on facebook in college life,” in *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*, 2017, pp. 433–445.

- [102] R. K. Garrett, “Echo chambers online?: Politically motivated selective exposure among internet news users,” *Journal of Computer-Mediated Communication*, vol. 14, no. 2, pp. 265–285, 2009.
- [103] S. Messing and S. J. Westwood, “Selective exposure in the age of social media: Endorsements trump partisan source affiliation when selecting news online,” *Communication research*, vol. 41, no. 8, pp. 1042–1063, 2014.
- [104] Z. Papacharissi and M. de Fatima Oliveira, “Affective news and networked publics: The rhythms of news storytelling on# egypt,” *Journal of communication*, vol. 62, no. 2, pp. 266–282, 2012.
- [105] A. Mitchell, *Political polarization & media habits*. Pew Research Center, 2014.
- [106] Y. Tsfati and J. N. Cappella, “Do people watch what they do not trust? exploring the association between news media skepticism and exposure,” *Communication Research*, vol. 30, no. 5, pp. 504–529, 2003.
- [107] Y. Hua, M. Naaman, and T. Ristenpart, “Characterizing twitter users who engage in adversarial interactions against political candidates,” in *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 2020, pp. 1–13.
- [108] A. Arif, L. G. Stewart, and K. Starbird, “Acting the part: Examining information operations within# blacklivesmatter discourse,” *Proceedings of the ACM on Human-Computer Interaction*, vol. 2, no. CSCW, pp. 1–27, 2018.
- [109] B. News, “The statue of liberty and america’s crowdfunding pioneer,” 2013, <https://www.bbc.com/news/magazine-21932675>.
- [110] “Crowdpac,” 2019, <https://www.crowdpac.com/>.
- [111] M. Calvey, “Oakland port commissioner turns to crowdfunding in bid to oust mayor quan,” 2013, <https://www.bizjournals.com/sanfrancisco/blog/2013/06/oakland-mayor-campaign-crowdfunding.html>.
- [112] “ucampaign,” 2019, <https://ucampaignapp.com/>.
- [113] 2019, <https://flippable.org/>.
- [114] L. Tania, “Science isn’t partisan, but public perception of science often is,” 2017, <https://www.npr.org/sections/13.7/2017/04/24/525360310/science-isn-t-partisan-but-public-perception-of-science-often-is>.
- [115] C. Funk, M. Hefferon, B. Kennedy, and C. Jhonson, “Partisanship influences views on the role and value of scientific experts in policy debates,” 2019, <https://www.pewresearch.org/science/2019/08/02/partisanship-influences-views-on-the-role-and-value-of-scientific-experts-in-policy-debates/>.

- [116] J. Mervis, “Politics, science, and public attitudes: What we’re learning, and why it matters,” 2015, <https://www.sciencemag.org/news/2015/02/politics-science-and-public-attitudes-what-we-re-learning-and-why-it-matters>.
- [117] S. Lehne and H. Grabbe, “Climate politics in a fragmented europe,” 2019, <https://carnegieeurope.eu/2019/12/18/climate-politics-in-fragmented-europe-pub-80616>.
- [118] K. S. Fielding, B. W. Head, W. Laffan, M. Western, and O. Hoegh-Guldberg, “Australian politicians’ beliefs about climate change: political partisanship and political ideology,” *Environmental Politics*, vol. 21, no. 5, pp. 712–733, 2012.
- [119] Y. Kate, “What should we call ‘climate change’? it’s political.” 2019, <https://grist.org/article/what-should-we-call-climate-change-its-political/>.
- [120] J. R. Kluegel and E. R. Smith, *Beliefs about inequality: Americans’ views of what is and what ought to be*. Routledge, 2017.
- [121] L. Bobo, “Social responsibility, individualism, and redistributive policies,” in *Sociological Forum*, vol. 6, no. 1. Springer, 1991, pp. 71–92.
- [122] S. Feldman, “Structure and consistency in public opinion: The role of core beliefs and values,” *American Journal of political science*, pp. 416–440, 1988.
- [123] S. Feldman and J. Zaller, “The political culture of ambivalence: Ideological responses to the welfare state,” *American Journal of Political Science*, pp. 268–307, 1992.
- [124] H. McClosky and J. Zaller, *The American ethos: Public attitudes toward capitalism and democracy*. Harvard Univ Pr, 1984.
- [125] C. J. Bryan, C. S. Dweck, L. Ross, A. C. Kay, and N. O. Mislavsky, “Political mindset: Effects of schema priming on liberal-conservative political positions,” *Journal of Experimental Social Psychology*, vol. 45, no. 4, pp. 890–895, 2009.
- [126] J. Duckitt, C. Wagner, I. Du Plessis, and I. Birum, “The psychological bases of ideology and prejudice: Testing a dual process model.” *Journal of personality and social psychology*, vol. 83, no. 1, p. 75, 2002.
- [127] L. Carraro, L. Castelli, and C. Macchiella, “The automatic conservative: Ideology-based attentional asymmetries in the processing of valenced information,” *PLoS One*, vol. 6, no. 11, p. e26456, 2011.
- [128] N. J. Shook and R. Clay, “Valence asymmetry in attitude formation: A correlate of political ideology,” *Social Psychological and Personality Science*, vol. 2, no. 6, pp. 650–655, 2011.
- [129] J. M. Vigil, “Political leanings vary with facial expression processing and psychosocial functioning,” *Group Processes & Intergroup Relations*, vol. 13, no. 5, pp. 547–558, 2010.

- [130] P. R. Nail, I. McGregor, A. E. Drinkwater, G. M. Steele, and A. W. Thompson, “Threat causes liberals to think like conservatives,” *Journal of Experimental Social Psychology*, vol. 45, no. 4, pp. 901–907, 2009.
- [131] J. L. Napier, J. Huang, A. J. Vonasch, and J. A. Bargh, “Superheroes for change: Physical safety promotes socially (but not economically) progressive attitudes among conservatives,” *European Journal of Social Psychology*, vol. 48, no. 2, pp. 187–195, 2018.
- [132] NSF, “Report to the national science board on the national science foundation’s merit review process fiscal year 2014,” 2015, <http://www.nsf.gov/nsb/publications/2015/nsb201514.pdf>.
- [133] M. Lauer, “Grant renewal success rates: Then and now,” 2016, <https://nexus.od.nih.gov/all/2016/05/26/grant-renewal-success-rates-then-and-now/>.
- [134] Experiment, “<https://experiment.com/>,” 2016.
- [135] Rockethub, “<https://www.rockethub.com/>,” 2016.
- [136] crowd.science, “<https://crowd.science/>,” 2016.
- [137] B. Klusas, “<https://medium.com/@bkluas/freedom-through-crowdfunding-35a01b0fca14>,” Feb 2016.
- [138] E. Blog, “<http://blog.experiment.com/post/102283938857/endorsements-explained>,” Jan 2014.
- [139] D. R. Thomas, “A general inductive approach for analyzing qualitative evaluation data,” *American journal of evaluation*, vol. 27, no. 2, pp. 237–246, 2006.
- [140] J. Cohen, “A coefficient of agreement for nominal scales. educational and psychosocial measurement, 20, 37-46,” 1960.
- [141] N. J. Nagelkerke, “A note on a general definition of the coefficient of determination,” *Biometrika*, vol. 78, no. 3, pp. 691–692, 1991.
- [142] S. R. Harper, “Niggers no more: A critical race counternarrative on black male student achievement at predominantly white colleges and universities,” *International Journal of Qualitative Studies in Education*, vol. 22, no. 6, pp. 697–712, 2009.
- [143] C. Libassi, “The neglected college race gap: Racial disparities among college completers,” 2018, <https://www.americanprogress.org/issues/education-postsecondary/reports/2018/05/23/451186/neglected-college-race-gap-racial-disparities-among-college-completers/>.
- [144] N. W. Storer, *The social system of science*. New York : Holt, Rinehart and Winston, 1966.

- [145] P. D. Allison, J. S. Long, and T. K. Krauze, “Cumulative advantage and inequality in science,” *American Sociological Review*, pp. 615–625, 1982.
- [146] R. K. Merton, “The matthew effect in science: The reward and communication systems of science are considered,” *Science*, vol. 159, no. 3810, pp. 56–63, 1968.
- [147] F. Keller, D. Schoch, S. Stier, and S. Yang, “It’s not easy to spot disinformation on twitter. here’s what we learned from 8 political “astroturfing” campaigns,” 2019, <https://www.washingtonpost.com/politics/2019/10/28/its-not-easy-spot-disinformation-twitter-heres-what-we-learned-political-astroturfing-campaigns/>.
- [148] Fundable, “<https://www.fundable.com/>,” 2016.
- [149] crowdfunder, “<https://www.crowdfunder.com/>,” 2016.
- [150] T. Müllerleile and D. W. Joenssen, “Key success-determinants of crowdfunded projects: An exploratory analysis,” in *Data Science, Learning by Latent Structures, and Knowledge Discovery*. Springer, 2015, pp. 271–281.
- [151] Kichstarter, “Kichstarter stats,” July 2016, <https://www.kickstarter.com/help/stats?ref=footer/>.
- [152] C.-T. Lu, S. Xie, X. Kong, and P. S. Yu, “Inferring the impacts of social media on crowdfunding,” in *Proceedings of the 7th ACM international conference on Web search and data mining*. ACM, 2014, pp. 573–582.
- [153] T. Clark and J. Stewart, “Promoting academic programs using online videos,” *Business Communication Quarterly*, vol. 70, no. 4, p. 478, 2007.
- [154] Kichstarter, “Creator handbook: Getting started,” 2016, https://www.kickstarter.com/help/handbook/getting_started/.
- [155] F. Benenson and Y. Strickler, “Creator video analytics,” June 2012, <https://www.kickstarter.com/blog/creator-video-analytics>.
- [156] D. G. Bobrow and D. A. Norman, “Some principles of memory schemata,” pp. 131–150, 1975.
- [157] A. Lang, J. Borse, K. Wise, and P. David, “Captured by the world wide web orienting to structural and content features of computer-presented information,” *Communication Research*, vol. 29, no. 3, pp. 215–245, 2002.
- [158] R. E. Smith and X. Yang, “Toward a general theory of creativity in advertising: Examining the role of divergence,” *Marketing Theory*, vol. 4, no. 1-2, pp. 31–58, 2004.
- [159] G. J. Tellis, *Advertising and sales promotion strategy*. Prentice Hall, 1998.
- [160] M. E. Creusen, R. W. Veryzer, and J. P. Schoormans, “Product value importance and consumer preference for visual complexity and symmetry,” *European Journal of Marketing*, vol. 44, no. 9/10, pp. 1437–1452, 2010.

- [161] G. D. Upah, "Product complexity effects on information source preference by retail buyers," *Journal of Business Research*, vol. 11, no. 1, pp. 107–126, 1983.
- [162] J. L. Zaichkowsky, "Conceptualizing involvement," *Journal of advertising*, vol. 15, no. 2, pp. 4–34, 1986.
- [163] M. L. Rothschild, "Perspectives on involvement: current problems and future directions," *Advances in consumer research*, vol. 11, no. 1, pp. 216–217, 1984.
- [164] J. L. Zaichkowsky, "The personal involvement inventory: Reduction, revision, and application to advertising," *Journal of advertising*, vol. 23, no. 4, pp. 59–70, 1994.
- [165] R. P. Bagozzi, A. M. Tybout, C. S. Craig, and B. Sternthal, "The construct validity of the tripartite classification of attitudes," *Journal of Marketing Research*, pp. 88–95, 1979.
- [166] H. Li, T. Daugherty, and F. Biocca, "Impact of 3-d advertising on product knowledge, brand attitude, and purchase intention: The mediating role of presence," *Journal of Advertising*, vol. 31, no. 3, pp. 43–57, 2002.
- [167] A. Gruber, "Purchase intent and purchase probability," *Journal of Advertising Research*, vol. 10, pp. 23–77, 1971.
- [168] W. Heilpern, "18 false advertising scandals that cost some brands millions," 2016, <https://www.psychologicalscience.org/observer/the-science-of-self-report>.
- [169] A. Angrilli, P. Cherubini, A. Pavese, and S. Manfredini, "The influence of affective factors on time perception," *Perception & psychophysics*, vol. 59, no. 6, pp. 972–982, 1997.
- [170] G. Underwood and R. Swain, "Selectivity of attention and the perception of duration," *Perception*, vol. 2, no. 1, pp. 101–5, 1973.
- [171] S. Chinchachokchai, B. Duff, and S. Sar, "Time flies when you're doing more than one: Multitasking, holistic processing and perception of time," *Computers in Human Behavior*, vol. 45, pp. 185–191, 2015.
- [172] J. G. Beerends and F. E. De Caluwe, "The influence of video quality on perceived audio quality and vice versa," *Journal of the Audio Engineering Society*, vol. 47, no. 5, pp. 355–362, 1999.
- [173] S. B. MacKenzie and R. J. Lutz, "An empirical examination of the structural antecedents of attitude toward the ad in an advertising pretesting context," *The Journal of Marketing*, pp. 48–65, 1989.
- [174] A. Chattopadhyay and P. Nedungadi, "Does attitude toward the ad endure? the moderating effects of attention and delay," *Journal of Consumer Research*, pp. 26–33, 1992.

- [175] M. S. Bernstein, G. Little, R. C. Miller, B. Hartmann, M. S. Ackerman, D. R. Karger, D. Crowell, and K. Panovich, “Soylent: a word processor with a crowd inside,” *Communications of the ACM*, vol. 58, no. 8, pp. 85–94, 2015.
- [176] A. Xu, S.-W. Huang, and B. Bailey, “Voyant: generating structured feedback on visual designs using a crowd of non-experts,” in *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*. ACM, 2014, pp. 1433–1444.
- [177] M. Buhrmester, T. Kwang, and S. D. Gosling, “Amazon’s mechanical turk a new source of inexpensive, yet high-quality, data?” *Perspectives on psychological science*, vol. 6, no. 1, pp. 3–5, 2011.
- [178] A. Xu, H. Rao, S. P. Dow, and B. P. Bailey, “A classroom study of using crowd feedback in the iterative design process,” in *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*. ACM, 2015, pp. 1637–1648.
- [179] K. Luther, J.-L. Tolentino, W. Wu, A. Pavel, B. P. Bailey, M. Agrawala, B. Hartmann, and S. P. Dow, “Structuring, aggregating, and evaluating crowdsourced design critique,” in *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*. ACM, 2015, pp. 473–485.
- [180] M. S. Bernstein, G. Little, R. C. Miller, B. Hartmann, M. S. Ackerman, D. R. Karger, D. Crowell, and K. Panovich, “Soylent: a word processor with a crowd inside,” *Communications of the ACM*, vol. 58, no. 8, pp. 85–94, 2015.
- [181] A. Carvalho, S. Dimitrov, and K. Larson, “How many crowdsourced workers should a requester hire?” *Annals of Mathematics and Artificial Intelligence*, pp. 1–28, 2016.
- [182] H. Song and N. Schwarz, “If it’s difficult to pronounce, it must be risky fluency, familiarity, and risk perception,” *Psychological Science*, vol. 20, no. 2, pp. 135–138, 2009.
- [183] G. E. Box and P. W. Tidwell, “Transformation of the independent variables,” *Technometrics*, vol. 4, no. 4, pp. 531–550, 1962.
- [184] T. K. Blog, “2011: The videos,” January 2012, <https://www.kickstarter.com/blog/2011-the-videos/>.
- [185] S. Halpern, “The problem of political advertising on social media,” 2019, <https://www.newyorker.com/tech/annals-of-technology/the-problem-of-political-advertising-on-social-media>.
- [186] B. Stelter, “Cnn sends trump campaign cease-and-desist letter for misleading ad,” 2020, <https://www.cnn.com/2020/05/04/media/trump-campaign-ad-cease-and-desist/index.html>.
- [187] D. Alba, “Youtube says it will ban misleading election-related content,” 2020, <https://www.nytimes.com/2020/02/03/technology/youtube-misinformation-election.html>.

- [188] A. Ward, “Mike bloomberg tweeted a doctored debate video. is it political spin or disinformation?” 2020, <https://www.vox.com/2020/2/20/21145926/mike-bloomberg-debate-video-twitter-fake>.
- [189] W. Heilpern, “18 false advertising scandals that cost some brands millions,” 2016, <https://www.businessinsider.com/false-advertising-scandals-2016-3>.
- [190] M. R. Nelson, “Developing persuasion knowledge by teaching advertising literacy in primary school,” *Journal of Advertising*, vol. 45, no. 2, pp. 169–182, 2016.
- [191] L. Hudders, P. De Pauw, V. Cauberghe, K. Panic, B. Zarouali, and E. Rozendaal, “Shedding new light on how advertising literacy can affect children’s processing of embedded advertising formats: a future research agenda,” *Journal of Advertising*, vol. 46, no. 2, pp. 333–349, 2017.
- [192] D. Gilbert, “Facebook just failed its first ever civil rights audit,” 2020, https://www.vice.com/en_us/article/akz7qa/facebook-finally-agreed-to-a-civil-rights-audit-and-surprise-surprise-it-failed.
- [193] L. Plaugic, “Gofundme removes campaign for baltimore officers charged in freddie gray case,” 2015, <https://www.theverge.com/2015/5/2/8534837/freddie-gray-gofundme-baltimore-police-fundraising>.
- [194] D. Funke, “Warnings from fact-checkers could discourage people from sharing false facebook posts, study says,” 2019, <https://www.poynter.org/fact-checking/2019/warnings-from-fact-checkers-could-discourage-people-from-sharing-false-facebook-posts-study-says/>
- [195] M. J. Rosen, “Doing well by doing right: a fundraiser’s guide to ethical decision-making,” *International Journal of Nonprofit and Voluntary Sector Marketing*, vol. 10, no. 3, pp. 175–181, 2005.
- [196] J. G. Pettey, *Ethical Fundraising: A Guide for Nonprofit Boards and Fundraisers (AFP Fund Development Series)*. John Wiley & Sons, 2008, vol. 175.
- [197] E. R. Tempel, T. L. Seiler, and D. F. Burlingame, *Achieving excellence in fundraising*. John Wiley & Sons, 2016.
- [198] J.-A. LeFevre and P. Dixon, “Do written instructions need examples?” *Cognition and Instruction*, vol. 3, no. 1, pp. 1–30, 1986.
- [199] P. L. Pirolli and J. R. Anderson, “The role of learning from examples in the acquisition of recursive programming skills.” *Canadian Journal of Psychology/Revue canadienne de psychologie*, vol. 39, no. 2, p. 240, 1985.
- [200] L. M. Reder, D. H. Charney, and K. I. Morgan, “The role of elaborations in learning a skill from an instructional text,” *Memory & Cognition*, vol. 14, no. 1, pp. 64–78, 1986.
- [201] W. F. Dennison and R. E. Kirk, *Do, review, learn, apply: A simple guide to experiential learning*. Blackwell Education, 1990.

- [202] C. Kocek, *The practical pocket guide to account planning*. BookBaby, 2013.
- [203] R. Vaish, S. Goyal, A. Saberi, and S. Goel, “Creating crowdsourced research talks at scale,” in *Proceedings of the 2018 World Wide Web Conference on World Wide Web*. International World Wide Web Conferences Steering Committee, 2018, pp. 1–11.
- [204] A. L. Strauss, *Qualitative analysis for social scientists*. Cambridge university press, 1987.
- [205] A. Strauss and J. Corbin, *Basics of qualitative research techniques*. Sage publications Thousand Oaks, CA, 1998.
- [206] N. K. Denzin and Y. S. Lincoln, *The Sage handbook of qualitative research*. Sage, 2011.
- [207] M. B. Miles, A. M. Huberman, M. A. Huberman, and M. Huberman, *Qualitative data analysis: An expanded sourcebook*. sage, 1994.
- [208] M. Q. Patton, “Qualitative research and evaluation methods. thousand oaks,” *Cal.: Sage Publications*, 2002.
- [209] E. B. Goldstein, *Cognitive psychology: Connecting mind, research and everyday experience*. Nelson Education, 2014.
- [210] S. Kleinman, “Strategies for encouraging active learning, interaction, and academic integrity in online courses,” *Communication Teacher*, vol. 19, no. 1, pp. 13–18, 2005.
- [211] R. B. Felson, “The (somewhat) social self: How others affect self-appraisals,” in *Psychological Perspectives on the Self, Volume 4*. Psychology Press, 2014, pp. 13–38.
- [212] L. B. Jones, “Support memories pizza,” 2015, <https://www.gofundme.com/MemoriesPizza>.
- [213] A. Klin and D. Lemish, “Mental disorders stigma in the media: Review of studies on production, content, and influences,” *Journal of health communication*, vol. 13, no. 5, pp. 434–449, 2008.
- [214] A. Hermida, S. C. Lewis, and R. Zamith, “Sourcing the arab spring: A case study of andy carvin’s sources on twitter during the tunisian and egyptian revolutions,” *Journal of Computer-Mediated Communication*, vol. 19, no. 3, pp. 479–499, 2014.
- [215] J. Nolen, “Support lgbt youth in indiana,” 2015, <https://www.gofundme.com/lgbtIN>.
- [216] U. Hahn, A. J. Harris, and A. Corner, “Argument content and argument source: An exploration,” *Informal Logic*, vol. 29, no. 4, pp. 337–367, 2009.
- [217] R. E. Petty and J. T. Cacioppo, “The effects of involvement on responses to argument quantity and quality: Central and peripheral routes to persuasion.” *Journal of personality and social psychology*, vol. 46, no. 1, p. 69, 1984.

- [218] N. Black, “Christian consultant fired by bank of america over gay marriage book,” 2011, <http://www.christianpost.com/news/christian-consultant-fired-by-bank-of-america-over-gay-marriage-book-55047/>.
- [219] L. Shapiro, “5 cases of anti-gay workplace discrimination that won’t be covered by enda,” 2016, http://www.huffingtonpost.com/2013/11/07/enda-religious-exemption_n_4229247.html.
- [220] J. CILAS, “8 most successful gofundme campaigns of all time,” 2016, <http://www.insidermonkey.com/blog/8-most-successful-gofundme-campaigns-of-all-time-483003/>.
- [221] C. I. Hovland, I. L. Janis, and H. H. Kelley, “Communication and persuasion; psychological studies of opinion change.” 1953.
- [222] I. L. Janis and S. Feshbach, “Effects of fear-arousing communications.” *The Journal of Abnormal and Social Psychology*, vol. 48, no. 1, p. 78, 1953.
- [223] H. Leventhal, “Findings and theory in the study of fear communications,” *Advances in experimental social psychology*, vol. 5, pp. 119–186, 1970.
- [224] R. W. Rogers, “Cognitive and psychological processes in fear appeals and attitude change: A revised theory of protection motivation,” *Social psychophysiology: A sourcebook*, pp. 153–176, 1983.
- [225] H. Lavine, D. Burgess, M. Snyder, J. Transue, J. L. Sullivan, B. Haney, and S. H. Wagner, “Threat, authoritarianism, and voting: An investigation of personality and persuasion,” *Personality and Social Psychology Bulletin*, vol. 25, no. 3, pp. 337–347, 1999.
- [226] L. Saad, “Four moral issues sharply divide americans,” 2010, <http://www.gallup.com/poll/137357/four-moral-issues-sharply-divide-americans.aspx>.
- [227] L. Festinger, *A theory of cognitive dissonance*. Stanford university press, 1962, vol. 2.
- [228] S. Iyengar, K. S. Hahn, J. A. Krosnick, and J. Walker, “Selective exposure to campaign communication: The role of anticipated agreement and issue public membership,” *The Journal of Politics*, vol. 70, no. 1, pp. 186–200, 2008.
- [229] S. A. Munson and P. Resnick, “Presenting diverse political opinions: how and how much,” in *Proceedings of the SIGCHI conference on human factors in computing systems*. ACM, 2010, pp. 1457–1466.
- [230] L. J. Skitka and P. E. Tetlock, “Providing public assistance: Cognitive and motivational processes underlying liberal and conservative policy preferences.” *Journal of Personality and Social Psychology*, vol. 65, no. 6, p. 1205, 1993.
- [231] J. T. Jost, J. Glaser, A. W. Kruglanski, and F. J. Sulloway, “Political conservatism as motivated social cognition.” *Psychological bulletin*, vol. 129, no. 3, p. 339, 2003.

- [232] J. T. Jost, E. P. Hennes, and H. Lavine, “Hot political cognition: Its self-, group-, and systemserving purposes,” *Oxford handbook of social cognition*, pp. 851–875, 2013.
- [233] E. Durkheim, *The division of labor in society*. Simon and Schuster, 2014.
- [234] B. Wellman and M. Gulia, “The network basis of social support: A network is more than the sum of its ties,” *Networks in the global village*, pp. 83–118, 1999.
- [235] S. R. Hiltz and B. Wellman, “Asynchronous learning networks as a virtual classroom,” *Communications of the ACM*, vol. 40, no. 9, pp. 44–49, 1997.
- [236] P. Patton, *Open Road: A Celebration of the American Highway*. Simon & Schuster, 1986.
- [237] B. Wellman and M. Gulia, “Net surfers don’t ride alone: Virtual communities as communities,” *Networks in the global village*, pp. 331–366, 1999.
- [238] S. Park, S. Kang, S. Chung, and J. Song, “Newscube: delivering multiple aspects of news to mitigate media bias,” in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2009, pp. 443–452.
- [239] J. Chen, E. M. Haber, R. Kang, G. Hsieh, and J. Mahmud, “Making use of derived personality: The case of social media ad targeting,” in *ICWSM*, 2015, pp. 51–60.
- [240] J. Graham, J. Haidt, S. Koleva, M. Motyl, R. Iyer, S. P. Wojcik, and P. H. Ditto, “Moral foundations theory: The pragmatic validity of moral pluralism,” in *Advances in experimental social psychology*. Elsevier, 2013, vol. 47, pp. 55–130.
- [241] Hatreon, “Hatreon,” 2017, <https://hatreon.us/>.
- [242] T. P. R. Center, “Partisanship and political animosity in 2016,” 2016, <https://www.people-press.org/2016/06/22/partisanship-and-political-animosity-in-2016/>.
- [243] S. Chinoy, “Quiz: Let us predict whether you’re a democrat or a republican,” 2019, <https://www.nytimes.com/interactive/2019/08/08/opinion/sunday/party-polarization-quiz.html>.
- [244] Z. Jilani and J. A. Smith, “What is the true cost of polarization in america?” 2019, https://greatergood.berkeley.edu/article/itemwhat_is_the_true_cost_of_polarization_in_america.
- [245] F. B. Team, “Advanced targeting strategies for performance marketers,” 2020, <https://www.facebook.com/business/a/performance-marketing/>.
- [246] D. Quercia, M. Kosinski, D. Stillwell, and J. Crowcroft, “Our twitter profiles, our selves: Predicting personality with twitter,” in *2011 IEEE third international conference on privacy, security, risk and trust and 2011 IEEE third international conference on social computing*. IEEE, 2011, pp. 180–185.

- [247] D. J. Hughes, M. Rowe, M. Batey, and A. Lee, “A tale of two sites: Twitter vs. facebook and the personality predictors of social media usage,” *Computers in Human Behavior*, vol. 28, no. 2, pp. 561–569, 2012.
- [248] L. Gou, M. X. Zhou, and H. Yang, “Knowme and shareme: understanding automatically discovered personality traits from social media and user sharing preferences,” in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 2014, pp. 955–964.
- [249] D. Marom, “A framework for political crowdfunding: Lessons from president obama,” 2012, <https://crowdsourcingweek.com/blog/a-framework-for-political-crowdfunding-lessons-from-president-obama/>.
- [250] “Firefund,” 2019, <https://www.firefund.net/>.
- [251] G. Olivares, J. P. Cárdenas, J. C. Losada, and J. Borondo, “Opinion polarization during a dichotomous electoral process,” *Complexity*, vol. 2019, 2019.
- [252] J. Klayman, “Varieties of confirmation bias,” in *Psychology of learning and motivation*. Elsevier, 1995, vol. 32, pp. 385–418.
- [253] R. S. Nickerson, “Confirmation bias: A ubiquitous phenomenon in many guises,” *Review of general psychology*, vol. 2, no. 2, pp. 175–220, 1998.
- [254] S. P. Nicholson, “Polarizing cues,” *American Journal of Political Science*, vol. 56, no. 1, pp. 52–66, 2012.
- [255] J. Zaid and A. S. Jeremy, “What is the true cost of polarization in america?” 2019, https://greatergood.berkeley.edu/article/item/what_is_the_true_cost_of_polarization_in_america.
- [256] S. J. Maglio, “Psychological distance in consumer psychology: Consequences and antecedents,” *Consumer Psychology Review*, vol. 3, no. 1, pp. 108–125, 2020.
- [257] “Democrat vs. republican,” https://www.diffen.com/difference/Democrat_vs_Republican.
- [258] L. SAAD, “Conservatives remain the largest ideological group in u.s.” 2012, <https://news.gallup.com/poll/152021/conservatives-remain-largest-ideological-group.aspx>.
- [259] P. R. Center, “Political typology quiz by pew research center,” <https://www.people-press.org/quiz/political-typology/>.
- [260] P. R. Center, “Political party quiz by pew research center,” <https://www.people-press.org/quiz/political-party-quiz/>.
- [261] E. R. Smith, *Beliefs about Inequality: Americans’ Views of what is and what Ought to be*. New York: A. de Gruyter, 1986.

- [262] A. Wills, “How increasing ideological uniformity and partisan antipathy affect politics, compromise and everyday life,” 2014, <https://www.people-press.org/2014/06/12/political-polarization-in-the-american-public/>.
- [263] C. A. Bail, L. P. Argyle, T. W. Brown, J. P. Bumpus, H. Chen, M. F. Hunzaker, J. Lee, M. Mann, F. Merhout, and A. Volfovsky, “Exposure to opposing views on social media can increase political polarization,” *Proceedings of the National Academy of Sciences*, vol. 115, no. 37, pp. 9216–9221, 2018.
- [264] M. Duggan and A. Smith, “The political environment on social media,” 2016, <https://www.pewresearch.org/internet/2016/10/25/the-political-environment-on-social-media/>.
- [265] E. L. Paluck, S. A. Green, and D. P. Green, “The contact hypothesis re-evaluated,” *Behavioural Public Policy*, pp. 1–30, 2018.
- [266] A. Leiserowitz, “Climate change risk perception and policy preferences: The role of affect, imagery, and values,” *Climatic change*, vol. 77, no. 1-2, pp. 45–72, 2006.
- [267] Gallup, “Environment,” 2019, <https://news.gallup.com/poll/1615/environment.aspx>.
- [268] S. Kushner Gadarian, S. W. Goodman, and T. B. Pepinsky, “Partisanship, health behavior, and policy attitudes in the early stages of the covid-19 pandemic,” *Health Behavior, and Policy Attitudes in the Early Stages of the COVID-19 Pandemic (March 27, 2020)*, 2020.
- [269] L. Drutman, “America is now the divided republic the framers feared,” 2020, <https://www.theatlantic.com/ideas/archive/2020/01/two-party-system-broke-constitution/604213/>.
- [270] B. Swire, U. K. Ecker, and S. Lewandowsky, “The role of familiarity in correcting inaccurate information.” *Journal of experimental psychology: learning, memory, and cognition*, vol. 43, no. 12, p. 1948, 2017.
- [271] N. Maxine and J. R. P., “American democracy in crisis: The fate of pluralism in a divided nation,” 2019, <https://www.prii.org/research/american-democracy-in-crisis-the-fate-of-pluralism-in-a-divided-nation/>.
- [272] D. Alba, “Misinformation about george floyd protests surges on social media,” 2020, <https://www.nytimes.com/2020/06/01/technology/george-floyd-misinformation-online.html>.
- [273] D. Kerr and S. Tibken, “Amid george floyd protests, weaponized misinformation floods social media,” 2020, <https://www.cnet.com/news/amid-george-floyd-protests-social-media-is-weaponizing-misinformation/>.
- [274] J. Guynn, “George floyd protests: How to avoid disinformation and misinformation on facebook and twitter,” 2020, <https://www.usatoday.com/story/tech/2020/06/01/george-floyd-protests-disinformation-misinformation-surg-ing-online/5313920002/>.

- [275] S. Simmins-Duffin, “Transgender health protections reversed by trump administration,” 2020, <https://www.npr.org/sections/health-shots/2020/06/12/868073068/transgender-health-protections-reversed-by-trump-administration>.
- [276] S. Doyen, O. Klein, C.-L. Pichon, and A. Cleeremans, “Behavioral priming: it’s all in the mind, but whose mind?” *PloS one*, vol. 7, no. 1, p. e29081, 2012.
- [277] B. K. Payne, J. L. Brown-Iannuzzi, and C. Loersch, “Replicable effects of primes on human behavior.” *Journal of Experimental Psychology: General*, vol. 145, no. 10, p. 1269, 2016.
- [278] A. M. Rivers and J. Sherman, “Experimental design and the reliability of priming effects: Reconsidering the” train wreck”,” 2018.
- [279] T. Romm, “Facebook’s zuckerberg just survived 10 hours of questioning by congress,” 2018, <https://www.washingtonpost.com/news/the-switch/wp/2018/04/11/zuckerberg-facebook-hearing-congress-house-testimony/>.
- [280] T. Green and B. Bailey, “Academic uses of facebook: Endless possibilities or endless perils?” *TechTrends*, vol. 54, no. 3, pp. 20–22, 2010.
- [281] K. K. Cole, ““it’s like she’s eager to be verbally abused”: Twitter, trolls, and (en) gendering disciplinary rhetoric,” *Feminist Media Studies*, vol. 15, no. 2, pp. 356–358, 2015.
- [282] S. Utz, N. Muscanell, and C. Khalid, “Snapchat elicits more jealousy than facebook: A comparison of snapchat and facebook use,” *Cyberpsychology, Behavior, and Social Networking*, vol. 18, no. 3, pp. 141–146, 2015.
- [283] A. Vashistha, A. Garg, R. Anderson, and A. A. Raza, “Threats, abuses, flirting, and blackmail: Gender inequity in social media voice forums,” in *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 2019, pp. 1–13.
- [284] I. Lapowsky, “How cambridge analytica sparked the great privacy awakening,” 2019, <https://www.wired.com/story/cambridge-analytica-facebook-privacy-awakening/>.
- [285] R. K. Garrett, “Social media’s contribution to political misperceptions in us presidential elections,” *PloS one*, vol. 14, no. 3, p. e0213500, 2019.
- [286] C. Newton, “How social networks can do good while we’re all trapped indoors,” 2020, <https://www.theverge.com/interface/2020/3/13/21176880/covid-19-quarantine-social-distancing-isolation-loneliness-zoom-fortnite>.
- [287] G. S. O’Keeffe, K. Clarke-Pearson et al., “The impact of social media on children, adolescents, and families,” *Pediatrics*, vol. 127, no. 4, pp. 800–804, 2011.
- [288] R. C. team, “Social media: How do other governments regulate it?” 2020, <https://www.bbc.com/news/technology-47135058>.