Is Social Media Worth the Investment? Seeking Relationship between Social-Mediated Stakeholder Engagement and Nonprofit Public Donation

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IS SOCIAL MEDIA WORTH THE INVESTMENT? SEEKING RELATIONSHIP BETWEEN SOCIAL-MEDIATED STAKEHOLDER ENGAGEMENT AND NONPROFIT PUBLIC DONATION

By

Yi Ji

A DISSERTATION

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IS SOCIAL MEDIA WORTH THE INVESTMENT? SEEKING RELATIONSHIP
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This dissertation examined the association between social media-based stakeholder engagement and organization financial performance in the nonprofit sector. Two studies were designed. Study 1 was employed with “Big Data” approaches. Using Ordinary Least Square estimation method with lagged variables, it modeled nine-year longitudinal social media and financial panel data from the largest 100 nonprofit organizations (NPOs) in the United States. Results offered a nine-year overview of NPOs presence and stakeholder engagement with them on Facebook. Findings from hypotheses tested suggested that not all stakeholder engagements were significant predictors for NPO donations. Only liking and commenting engagement behaviors were positively associated with public donation, but sharing behavior did not improve fundraising success. More interestingly, over posting could associate with a decrease in public donation. To further test the causal link between stakeholder engagement and public donation, study 2 was designed as an online experiment. Counterintuitive effects were detected. A large number of likes displayed under a NPO’s Facebook post featuring a fundraising cause led to less public donation compared to a small number of likes when the gap between the amount of likes and shares was narrow. Decreased self-perceived contribution in the given funding event
was discovered as the mediator, explaining the effect. The findings bring new empirical insights to the existing literature in multiple areas, including nonprofit public relations, stakeholder engagement, machine heuristic, and social loafing. Practical implications generated from the current dissertation were also discussed.
To Mom and Dad: Thanks for being there since the very beginning of this journey.

Kaming Lo: thank you for your love and more importantly, tolerance. Jane: thanks my biggest cheerleader for supporting me pursuing dreams in this foreign land.

And thanks to Fudge, my “therapy animal”.
Statement of Acknowledgement

I can still vividly remember my day one at the University of Miami meeting Dr. Don W. Stacks in his office, on the third floor back then, almost six years ago. It was the very first time I have ever met any other people on campus. I could never have imagined that he would become my advisor, mentor, and one of the most influential people in my life.

Dr. Stacks and I worked together on countless projects over the years that I studied at the University of Miami. He has truly been there from the very beginning. It was him who introduced me to the world of public relations research and helped me to start my career in the academy as early as a graduate student. Because of his resourcefulness and generosity, I was able to have had so many incredible opportunities, such as working as editorial assistant for an academic journal and coordinating a major international public relations conference.

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# TABLE OF CONTENTS

**CHAPTER ONE** .............................................................................................................. 1

**INTRODUCTION** .......................................................................................................... 1

**CHAPTER TWO** .......................................................................................................... 7

**LITERATURE REVIEW** ................................................................................................. 7

Emergence of Social Media in Public Relations Research and Practice ......................... 7

Social-Mediated Stakeholder Engagement ....................................................................... 11

Definition of engagement .................................................................................................. 11

Antecedents of social-mediated stakeholder engagement ............................................... 12

Outcomes of social-mediated stakeholder engagement .................................................... 15

Social-Mediated Stakeholder Engagement: A Stakeholder Perspective ....................... 17

Linking ROE and ROI in Social Media Context ............................................................... 20

Measure Social-Mediated Stakeholder Engagement ....................................................... 21

Existing typologies ........................................................................................................... 22

Economic Factors in Nonprofit Giving ............................................................................. 25

Developing a New Model: Social-Mediated Stakeholder Engagement and Giving ........ 27

Heuristic Cues in Computer-Mediated Communication .................................................. 28

The MAIN model ............................................................................................................... 29

System-generated Cues ..................................................................................................... 30

Status cues ......................................................................................................................... 32

Number of likes vs. number of shares .............................................................................. 33

Credibility as a Mediator of Donation Behavior ............................................................... 34

Social Information Processing Theory ............................................................................. 35

Social Loafing .................................................................................................................... 36
ONLINE CREDIBILITY JUDGMENT VIA SYSTEM-GENERATED CUES................................. 87
LIMITATIONS AND FUTURE RESEARCH.............................................................. 89
CONCLUSION........................................................................................................ 91
REFERENCES....................................................................................................... 93
TABLES.................................................................................................................. 103
FIGURES................................................................................................................ 119
APPENDICES......................................................................................................... 127
Chapter One

Introduction

“At 1.65 billion (over 1/5 of the world’s population), Facebook has more monthly active users than any other social network. With such a large number of users, Facebook prevails as the king of social networks. Therefore, creating great Facebook posts is a vital part of a successful social media campaign for nonprofits and social causes”. (Chan, 2016)

Public relations professionals in the nonprofit sectors or serving charity clients at agencies probably have heard or read a similar line to this quote countless times. With more than a billion users, a huge market value, and numerous innovative products, Facebook is no longer the interpersonal social network tool that we used to talk about almost 10 years ago. Today, besides its constantly growing stock price, the most prominent value that Facebook contributes to the society is probably interconnectedness. Such interconnectedness is indeed multifaceted.

Facebook’s allure manifests when the social media platform functions as a closely linked community not only of businesses, but also of nonprofit organizations (NPOs). Neverthirst, for example, an international NPO dedicated to bringing clean and living water to the poor, uses Facebook to send out powerful language, images, and videos to let people living in the first world countries relate to those living in poverty without clean access to water. One Neverthirst campaign video posted on Facebook targeting moms educated them about other moms’ struggles to provide clean water for their family resulted in remarkable responses. Audiences who contributed to the 15,000 video
viewerships could also directly make a donation on Neverthirst’s Facebook page. When Teach for America wanted to recruit brilliant college graduates and professionals to teach in low-income communities around the country, they employed the lead ads service provided by Facebook targeting 20-25 years old Americans (Facebook, 2017). Everyone who was interested in the opportunity could click on the promoted post and auto-fill an application form. To share stories on how the bicycles have impacted individual lives, World Bicycle Relief distributed pictures featuring donation beneficiaries’ stories. Those stories generated 53% more likes and 104% more comments (Chan, 2016).

These positive examples demonstrate how nonprofit organizations can effectively chase after stakeholders on Facebook. However, not all Facebook interactions between NPOs and their stakeholders are positive. After Planned Parenthood (PP) endorsed Hillary Clinton in the 2016 presidential election, many of its former supporters were outraged. Their anger and disappointment flooded PP’s Facebook page and thousands of negative comments were left under their threads even of those that were totally non-relevant. (Brown, 2016). Many of these comments were critical of the endorsement as evidence of cronyism and corruptions. Irritated stakeholders were indicating they were withdrawing their financial support from PP and unsubscribing from its Facebook page (Brown, 2016).

Facebook has obvious effective communication applications by allowing a NPO to post and share information about its mission or financial situation, announce fundraising and donor appreciation events, and interact with all kinds of stakeholders, including but not limit to donors and volunteers. However, the exact effect of such organization-stakeholder relationship activities is largely unknown. To date, empirical
studies examining Facebook have mainly focused on the perspective of interpersonal communication, investigating psychological reasoning of Facebook-based social interactions. For instance, a majority of prior research examined the motivations of individuals’ adoption of Facebook (Ellision, Steinfield, & Lampe 2007; Khang, Ki, & Ye 2012; Wilson, Gosling, & Graham 2012). However, even among the literature that took the stance from organization-public relations perspective there exist some theoretical and methodological flaws.

Up date, public relations scholars have not yet completed enough investigations on how stakeholders are responding to the new online issues stemming from social media. In reviewing the current body of literature in Internet-mediated organization-public reputation/relationship management in nonprofit sectors, the majority of studies centered on analyzing organizations’ online profiles and communication models (e.g. Bortree, & Seltzer, 2009; Park & Reber, 2008; Rybalko & Seltzer, 2010; Seltzer & Mitrook, 2007; Taylor & Kent, 2010). In addition, previous research has not directly examined if social media adoption can affect a nonprofit’s financial performance. With nonprofits increasingly investing in social media to build and nurture relationships with its stakeholders, we still do not understand what is the value of “increased engagement” worth? In other words, is it worthwhile for nonprofits to allocate their limited resource in social media publicity, and would that lead to considerable return on investment for NPOs? The answer is unknown.

To address these research gaps, an empirical investigation of the longitudinal effects of social media adoption on a NPOs’ financial performance is in demand. In particular, the aim of the first study in the current dissertation is to first have a long-term
overview of NPOs’ presence and stakeholder engagement actives with them on Facebook from its establishment in 2007 to 2015. Second, this research intends to detect whether there is a direct association between stakeholder engagement on a NPO Facebook and its financial outcome. In addition, the research hopes to quantify how much of a Facebook-based stakeholder engagement effect, if any, has on NPO donation amounts. Via “Big Data” approaches, including data mining and longitudinal panel data analysis, study 1 modeled nine years’ worth of social media data from American’s largest 100 NPOs with their financial data. Study 1 is the first to make use of a Big Data set containing NPOs’ stakeholder Facebook engagement data in conjunction with financial performance information. A Big Data approach enables the researcher to explore stakeholder communicative engagement behavior in an unobtrusive and naturalistic setting. Thus, it allows the author to examine the impact of social-mediate stakeholder engagement on fundraising success, adding contributions to nonprofit public relations and social media marketing literature.

Originating from computer-mediated communication and interpersonal communication, the theoretical concept of system-generated heuristic cues has rarely been applied in public relations research to understand stakeholders’ decision-making processes. To test the causal link between stakeholder engagement and public donation, study 2 conceptualizes engagement indicators in a different manner. Rather than being theorized as representations of favorable organization-stakeholder relational outcomes, these indicators are seen as possible heuristic information that cue stakeholders when processing information online and consequently making judgments and decisions associated with a target NPO. Based on social psychological and computer-mediated
communication theories, this research aims to answer an important but unanswered research question: *In which circumstance target stakeholders will or will not donate to a social-mediated fundraising cause?*

Study 2 aims to shed new light in this research direction. Specifically, a review of online heuristic cues research in other disciplines identifies the need to examine the effect of two different system cues on Facebook and their impact on attitudinal and behavioral outcomes. The study, a $2 \times 2$ between-subjects experiment without a control group, tested the interaction effect between number of likes (small vs. large) and gap between number of likes and number of shares (narrow vs. wide) on a financial outcome—donation amount. Perceived message credibility and personal contribution, two underlying mechanisms that may explain why such moderation effect exists were examined. Findings from this experiment offer both theoretical and practical implications to multiple disciplines.

To sum up, in general two studies were designed to address the following three questions:

1. Are social media worth the investment by nonprofit organizations?
2. Can stakeholders’ engagement behavior on social media predict nonprofit organizations’ fundraising performance?
3. Does stakeholders’ social media based engagement always exert positive impact on online fundraising for prosocial cause?

The second question was answered through a Big Data approach. The third question was addressed with an online experiment. Findings of both studies offer
theoretical accounts with conjunctures to answer the first inquiry. The literature and theoretical framework for both studies are discussed in Chapter 2.
Chapter Two

Literature Review

Emergence of Social Media in Public Relations Research and Practice

Social media research in public relations may have started as early as the late 1990s. As defined as a group of online applications that enables users to create and exchange information (Kaplan & Haenlein, 2010), social media have attracted extensive attention from both scholars and professionals. Among the pioneers, Kent and Taylor (1998) first pointed that Internet technology can be adopted by public relations professionals as a vehicle for relationship building and nurturing. The common features shared by various social media platforms, such as participation, openness, conversation, communities, and connectedness, not only facilitate interpersonal communication online (Boyd & Ellison, 2007; Raacke & Bonds-Raacke, 2008), but also allow organizations to communicate and engagement with their stakeholders.

The prevalent adoption of social media by both individuals and organizations has tremendously changed how people communicate with and about organizations (Ji, Chen, Li, & Stacks, forthcoming). Different from traditional mass media, social media are designed with interactive and spontaneous technological features that allow users to keep updated with organizational news initiated by both their “friends” and organizations that they follow.
According to a recent report by Neilson (2016), 39% of highly active social media users seek brand and product information on social media, 29% show support of their favorite brand, and 25% rate products and services on social media. By the same token, stakeholders are equipped with direct and instant communication, which enable them to provide feedbacks to organizations with much shortened distance of time and space. Therefore, their opinions and voice about products and services are easier to be heard. The interconnectedness of social media has made the impact of stakeholder decision-making even more profound and salient. Stakeholders such as employees, customers, and regulators now have direct paths for their electronic word of mouth communication, and meanwhile are also influenced by opinions from various individual sources other than organizations or brands themselves (DiStaso & McCorkindale, 2013). For example, when a social media influencer describes about one’s experiences with an organization, even those who never had direct contact with the organization or do not follow it on social media have a chance to be made aware of the experiences. As researchers have previously noted, social media truly implement co-orientation management via providing continual feedback loops (Botan & Taylor, 2004; Heath, 2014). Organizations and their target stakeholders can jointly build and nurture relationships with each other and consequently reach mutually beneficial agreements and goals.

While social media continuously remain one of the most popular topics in public relations research, relatively sparse attention has been given to nonprofit sectors. As shown in a recent meta-literature review of new media research in public relations from 1981 to 2014 (Duhe, 2015), among all 321 articles, only 23 of them (approximately 7%) shared focus on nonprofit organizations (NPOs). Research has shown that nonprofits
have a long history of web presence using Internet technology and new media (e.g., Kang & Norton, 2004). However, the decline of government support and increase of competition urge them to find the most effective ways to seek donations from potential donors among the general public. Thus, more investigations on NPOs and social media are needed to provide theoretical groundings and practical insights for practitioners in the field.

However, even among the studies that examined topics about charities and new media there exist common issues that leave some important questions unaddressed. Scholars argued NPOs needed to understand how to maximize the power of social media, a cost-efficient channel, to increase exposures, recruit volunteers, and raise funds (Seltzer & Mitrook, 2007; Waters, Burnett, Lamm, & Lucas, 2009). Nevertheless, looking into the exiting literature of NPO public relations and new media, it is not hard to find that researchers repetitively lament that nonprofit organizations were yet to embrace the power of new media to its full potential. For instance, Kang and Norton’s (2004) study of how the largest NPOs utilized the web to accomplish organizational goals found most organizations did not adopt the unique features of the web to generate more visits. Waters and colleagues (2009) also discovered similar patterns. Their investigation of NPOs’ Facebook profiles revealed that when using Facebook, they did not proactively distribute organizational news. A survey administered to public relations professionals in nonprofit sectors reported that only 54.5% of them adopted social networks (Curtis et al., 2010). Interviews with public relations professionals at American Red Cross also unveiled that lack of time and personnel allocated to social media implementation was one of the major challenges for NPOs to fully adopt to the web (Briones et al., 2011). Waters (2009) once
summarized that social media adoption in nonprofit sectors was falling behind because they were waiting to see how other industries used those new communication platforms.

However, it might be an unfair statement for today’s NPOs at large about their usage and presence on social media. Most of the studies mentioned above were either (1) case studies (e.g., Bortree & Selzter, 2009; Briones et al., 2011; Muralidharan, Rasmussen, Patterson, & Shin, 2011) that involved limited number of NPOs or (2) one-shot content analyses conducted in the earlier stages of social media development with an absence of macro-level observations (e.g., Curtis et al., 2010; Kang & Norton, 2004). And, (3) many of those investigations simply assumed that failing to grasp the characteristics of new media would cause limited interactions and engagement activates between charities and stakeholders online. These conclusions also presumed that social media based stakeholder engagement was an antecedent of favorable public relational outcomes that more interactions one organization had with its stakeholders it would had better relationships with them. However, early research focus was merely on the organizational side of communication. Without investigating stakeholders’ actual communication activates with NPOs, these assertions would rather be unconvincing and the real power of social media will be underestimated (Saxton & Waters, 2014).

To fill in these research gaps, this research first sets out to explore how the largest NPOs in the United States have presented themselves on Facebook, one of the most dominant social media platforms, with a longitudinal perspective. Situated in the context of the fast development of technology and pervasive adoption of Facebook, the current study is interested in examining whether NPOs have kept up the pace with the rest of the world in Facebook usage over the years. Furthermore, this research takes the
investigation to a stakeholders’ perspective. Different from prior studies, the present investigation inspects stakeholders’ actual social-mediated engagement activities in order to evaluate NPOs’ effectiveness of Facebook adoption. Therefore, the following research questions are addressed:

**RQ1**: What is *NPT 100* NPOs’ presence on Facebook from 2007-2015?

**RQ2**: How, if at all, has *NPT 100* NPOs’ presence on Facebook changed over the years from 2007-2015?

**RQ3**: What are stakeholders’ general engagement activates a) liking, b) sharing, and c) commenting on organizational posts with *NPT 100* NPOs on Facebook from 2007 to 2015?

**RQ4**: How, if at all, have stakeholders’ general engagement activities a) liking, b) sharing, and c) commenting on organizational posts *NPT 100* NPOs on Facebook changed from 2007 to 2015?

**Social-Mediated Stakeholder Engagement**

**Definition of engagement**

Public or stakeholder engagement seems to have become a buzzword in recent public relations research. However, as a multi-dimensional concept, it has been studied by public relations scholars within various contexts for more than 20 years (Johnston, 2014). Bruce and Shelly (2010) defined stakeholder engagement as the interaction between an organization and individuals and groups that are impacted or influenced by it. Botan and Taylor (2004) and Heath (2014) theorized engagement as a communication process, in which both organizations and publics are jointly co-managing relationships and constructing meanings to reach mutually beneficial agreements and goals. Johnston
(2014) also considered stakeholder engagement as a valuable factor helping to balance
the power relations between organizations and diverse stakeholders, thus the former
needs to open up for interaction with the latter.

Perhaps, the very recent heated discussions on engagement were revitalized by the
popularity of social media with its innovative features. Foreseeing the revolution social
media bringing to communication practices, Edelman (2008) called for a paradigm shift
from public relations to public engagement. The significant influence of social media
engagement has led to a growing number of studies examining the antecedents and
outcomes of stakeholder engagement. Two streams have emerged from precursory
factors. The first is grounded in the classic public relations theories, such as two-way
symmetric communication and dialogic communication. The other is closely associated
with interactivity, a theoretical construct that stems from computer-mediated
communication.

**Antecedents of social-mediated stakeholder engagement**

Conceivably, Grunig and Hunt (1984)’s models of public relations and Kent &
Taylor (1988)’s *dialogic communication* are the most cited conceptual public relations
frameworks in online stakeholder engagement studies. The argument that compared to
*one-way models, two-way communication models* were more advanced initiating
interactions between an organization and its stakeholders through constant information
exchange (Grunig & Hunt, 1984) has offered profound theoretical ground for researchers.
This framework has served as a standardized gauge to evaluate the effectiveness of
organizational communication on new media. For example, Saxton and colleagues
(Lovejoy & Saxton, 2012; Saxton et al., 2011; Saxton and Waters, 2014) developed and
validated a coding scheme categorizing organizational online communication strategies into three subgroups. They argued that when posting a status, online organizations tend to adopt one of three content strategies: information, promotion and mobilization, or dialogue. According to them, the first two classifications highlight the one-way information dissemination strategy. Via simply sharing organizational-related information, (e.g., upcoming events, campaign summaries, and organization daily activities) organizations can maximize their visibility on social media and thus increase their impact on target stakeholders (Water et al., 2009). In addition, the one-way disseminated information to some extent can encourage stakeholders to be more involved in organization-initiated activities through event participation, volunteering, and product and service purchasing (Saxton & Waters, 2014). The dialogue category of communication strategies emphasizes involving stakeholders in the online dialogic loop (Ken & Taylor, 1998; Saxton & Waters, 2014). With an emphasis on the importance of mutual contingency, bilateral message flow of dialog is qualified as two-way communication (Ken & Taylor, 1998). Researchers (Ken et al., 2003; Lovejoy & Saxton, 2012) have stated that dialogue-creation and dialogic invitation components of organizational communication are able to attract stakeholders to be part of interactive conversations and further strengthen relationships between an organization and its stakeholders.

Another often mentioned conceptual framework in stakeholder online engagement literature is interactivity theory from computer-mediated communication. Public relations researchers have noticed the significant impact of interactivity on public relations practices and considered it one of the most salient attributes of new media-facilitated
communication since the early stage of Internet development (Hallahan, 2003; Grunig, 2009). Conceptualized as a multi-dimensional construct, interactivity can be classified into two perspectives: *functional interactivity* and *contingency/message interactivity* (Sundar, Hesser, Kalyanaraman, & Brown, 1998). While assessing organizations’ strategic use of new media, both have been applied by researchers as antecedents of stakeholder engagement online.

The *functional* view is closely related to the attributes of the technological interface, specifically referring to the number of functions provided by an online platform (Massey & Levy, 1999; Sundar et al., 1998). The more functions an online platform carries, the more functionally interactive it is perceived to be and therefore generates more online engagement activities from stakeholders. Following this view, researchers deemed the variety of technology-based interactivity features carried by websites as an important criterion in determining if organizations have strategically utilized new media platforms to interact with target stakeholder groups (e.g., Kang & Norton, 2004; Park & Reber, 2008). Kelleher (2009) postulated that in public relations, although interactivity has been contemplated as the most distinguished operationalization of “dialogue” enhancing organization-public engagement (Bortree & Seltzer, 2009), it has been mostly examined via functional features and little attention has been given to its contingency characteristics. However, as Kelleher and colleague (2009, Kelleher & Sweetser, 2012) contended, functional interactivities only facilitate communication between machine and users, it is the contingent features of new media that catalyze interaction between an organization and its online public.
Sundar et al. (2003) proposed a *contingency* view of interactivity to conceptualize the “looping mechanism,” in which interactivity is associated with user, media, and message. This conceptualization appears to be consistent with classic public relations theories including Grunig and Hunt (1984)’s work of two-way communication and Kent and Taylor (1998)’s dialogic communication mentioned above. The introduction of contingency interactivity has shifted the public relations research angle. Scholars have found that online “dialogue” can enhance organization-public engagement (Bortree & Seltzer, 2009) and interactive and conversational blog-based communication between organizations and stakeholders was positively associated with favorable relational outcomes (Kelleher, 2008, 2009; Kelleher & Miller, 2006; Lee & Park, 2013). Similar patterns were detected on social media: Stakeholders rated companies more favorably when they had highly contingent interactions on Facebook or Twitter (Li & Li, 2014; Sung & Kim, 2014).

**Outcomes of social-mediated stakeholder engagement**

In their normative model of public-organization social media engagement, Men and Tsai (2016) summarized that engagement with stakeholders on social media can contribute to important perceptual, relational, and behavioral outcomes. According to Men and Tsai (2016), the perceptual outcomes of social media engagement include authenticity and transparency. *Authenticity* reflects stakeholders’ perception of organization’s central and distinctive character (Albert & Whetten, 1985) and congruency with its mission, values, and principles (Molleda & Roberts, 2008). *Transparency* encompasses the aspects of substantial information, participation, and accountability (Rawlins, 2009). Empirical research have showed that once stakeholders have
experienced high level of engagement with an organization, they tend to evaluate the organization’s communication to be more authentic and transparent (Men & Tsai, 2014; Tsai & Men, 2013).

Another frequently found impact of stakeholder-engagement is related to an organization’s relational outcomes. Findings from several public relations studies suggest that stakeholders’ active communication and involvement behavior with an organization is an antecedent of their positive evaluations of the relationship with the organization (e.g., Bruning & Ledingham, 1999; Ferguson, 1984; Grunig & Huang, 2000; Grunig & Hung, 2002; Yang & Grunig, 2005). The collaborative features of social media maximize the possibility for organizations to directly build relationships with their online stakeholders (Smith, 2010; Men & Tsai, 2016). In addition, the dialogic and interactive characteristics also help organizations to cultivate quality relationships (Men & Tsai, 2016; Taylor, Kent, & White, 2001). Men and Tsai (2014) and Bortree (2011) found that online stakeholders who are more engaged in viewing, sharing, and generating content with an organization tend to have more positive relationships with it, specifically as higher trust, satisfaction, and commitment.

Moreover, social media engagement also creates more positive behavioral outcomes from stakeholders, such as advocacy and positive word-of-mouth (Kang, 2014; Men & Tsai, 2016). For instance, “active publics” are found to be the primary source to distribute organizational reputation (Kim et al., 2013). Mediated by new media, their perceptions, cognition, motivation, and communicative actions to an organization will determine the content, amount, and tonality of what and how people remember and talk about that organization online, and thus gradually cast a larger impact (Dang-Xuan &
Stieglitz, 2012). As Gotsi and Wilson (2001) suggested, when stakeholders are evaluating an organization and its products and services, information that they rely upon could either be their direct experiences with the company, or any communication-mediated information about the organization.

Yet, with numerous studies demonstrating the beneficial outcomes of online stakeholder engagement and introducing strategies of how to involve stakeholders on various new media platforms, NPOs still have not been found to strategically adopt the online communication tools. Specifically, crossing different studies, researchers discovered that nonprofits continued to use social media as one-way communication channels with limited utilization of conversation or dialogical voice to maximum stakeholder engagement on online community (e.g., Bortree & Seltzer, 2009; Lovejoy et al., 2009; Muralidharan et al., 2011; Seltzer & Mitrook, 2007; Waters et al., 2009; Waters & Jamal, 2012).

It may be that these findings stem from unclosed gaps in the literature. First, most research has adopted unidirectional investigations concerned only with organizational aspects. This way to measure the effectiveness of social media communication might not be able to provide valid evidences due to a lack of indications of stakeholder reactions. Second, scarce NPO-based research affirming that social media use produces financial benefits (Lovejoy et al., 2012), the existing literature provides professionals limited evidences and sights for application.

**Social-Mediated Stakeholder Engagement: A Stakeholder Perspective**

A large body of literature has examined the diverse strategies that organizations adopt to engage their stakeholders on new media. However, the majority of studies in this
area were conducted from the organization’s perspective. How stakeholders react in the communication loop remains under-researched. For example, a large amount of research has investigated if organizations adopt dialogic, two-way communication to interact with their stakeholders. A series of articles discussed the two-way interactive and dialogical capacity of the World Wide Web and social media (e.g. Bortree, & Seltzer, 2009; Dijkmans, Kerkhof, Buyukcan-Tetik, & Beukeboom, 2015; Park & Reber, 2008; Rybalko & Seltzer, 2010; Seltzer & Mitrook, 2007; Taylor & Kent, 2010). A second trend examines whether online platforms are able to foster enhanced transparency and credibility in organizational communication initiatives, depending on the degree of ease to navigate the site, encouraging stays, generating revisits, providing valuable information, and offering opportunities to ask questions and give feedback (e.g. Callison, 2003; Kent & Taylor, 1998; Zerfass & Schramm, 2014).

With little research has addressed stakeholders’ online behavior and its further impact, the real potential of social media may be underestimated (Ji et al., 2017). Outside the scholarship of communication, there are also debates about whether social media are valuable toward social science research and whether data collected from social media are valid indicators of social phenomena that occur offline (DiGrazia, McKelvey, Bollen, & Rojas, 2013). Although results remain controversial, it seems that a new paradigm is shifting in social media studies. For example, in marketing research, scholars used to consider Facebook “likes” as unmeaningful to financial outcomes (Lake, 2011), whereas other studies have pointed out that social media adoption can increase sales and even limited connections with consumers are able to generate positive brand evaluations and purchase intentions (Naylor, Lamberton, & West, 2012; Stephen & Galak, 2012). A
similar pattern has occurred in political science as well. Researchers in both the U.S. and Europe have found a significant association between the number of tweets mentioning a political candidate and the final election result (DiGrazia et al., 2013; Tumasjan, Sprenger, Sandner, & Welpe, 2010).

Several public relations studies suggested that stakeholders’ active communication and involvement behavior with an organization is an antecedent of their positive evaluations of the relationship with the organization (e.g., Bruning & Ledingham, 1999; Ferguson, 1984; Grunig & Huang, 2000; Grunig & Hung, 2002; Yang & Grunig, 2005). To elaborate, Kim and colleagues (2013) argued that “active publics” are most likely to be the primary source to distribute organizational reputation. Their perceptions, cognition, motivation, and communicative actions with regard to an organization will determine the content, amount, and tonality of what people remember and talk about that organization. According to Gotsi and Wilson (2001), when stakeholders are evaluating an organization’s reputation, criteria that they rely upon could either be their direct experiences with the company, or any communication-mediated information about the organization’s actions compared to other leading companies. Yang (2007) found that stakeholders’ active communication behavior, together with an organization’s effective relationship management, is strongly associated with enhanced positive organizational reputation. With the increasing development of social media, the researchers stated that there are more possibilities for organizations to invite stakeholders for direct communication online.
Linking ROE and ROI in Social Media Context

Public relations is a communication management function that leads to mutually beneficial relationships concerning an organization and its publics (Cutlip, Center, & Broom, 1985; Grunig & Hunt, 1984). As Stacks (2006) pointed out, one of the greatest challenges for public relations is to demonstrate its effects of communication programs on a business’ bottom line—return on investment (ROI). The increasing demand to authenticate and quantify the value of public relations on business bottom lines makes such challenge even more pressing (Arthur W. Page Society, 2007). Stacks (2006) suggested that public relations efforts and outcomes could serve as precursors that affect stakeholders’ awareness, perceptions, and attitude, thereby producing a return on expectations (ROE). These expectations then drive financial outcomes, such as increased profits. In his conceptual model linking ROE and ROI, the latent exogenous variable ROE is constructed by the common variances extracted from intangible public relational outcomes measured by credibility, relationship, reputation, trust, and confidence. They together predict ROI manifested by tangible financial outcomes (Stacks, 2006).

At this time, still not much is known regarding the association between social media-based stakeholder engagement and its impact on financial outcomes in nonprofit sectors. As a channel of influence, social media use should and would impact an organization’s financial outcomes as they allow an entire mix of nonfinancial outcomes driven by the interaction and conversation between an organization and its stakeholders (Ji, Chen, Li, & Stacks, forthcoming). Prior researchers asserted that one of the great opportunities that social media have provided for public relations researchers and professionals is to directly observe, measure, and record the interactions and
conversations between organizations and stakeholders (Ji et al., forthcoming; Li & Stacks, 2015; Saxton & Waters, 2014). Those engagement activities measured through key performance indicators (KPIs), such as numbers of likes, tweets, followers, shares, and comments, can be further used to indicate the primary nonfinancial indicators such as: reputation, relationship, trust, credibility, and confidence (Li & Stacks, 2015). The five nonfinancial indicators are the factors for ROE that predicts ROI (Stacks, 2006; Li & Stacks, 2015).

**Measure Social-Mediated Stakeholder Engagement**

Although no consensus has yet been reached about how to best measure social-mediated stakeholder engagement, several attempts have been made from various perspectives. For instance, in marketing, social-mediated customer engagement has been recognized as a primary research topic by the Marketing Science Institute (Bolton, 2011). In political science, researchers measured the engagement activity of mention on tweet and its impact on political election results in both the U.S. and Europe (DiGrazia et al., 2013; Tumasjan, Sprenger, Sandner, & Welpe, 2010). Within the field of public relations, Saxton and Waters (2014) once argued the wide adoption of social media by both organizations and general users offers researchers an enormous opportunity to observe stakeholders’ online engagement. The technology features presented on social media allow individuals to play the role of gatekeepers, therefore they not only engage with organizations through passive information viewing, but also proactively create content (Men & Tsai, 2014; Muntinga, Moorman, & Smit, 2011).
Existing typologies

Chronologically, there exist three typologies attempting to measure social media-based stakeholder engagement. As one of the earliest attempts, Muntinga, Moorman, and Smit (2011) proposed a theoretical typology that classifies users’ online engagement into three levels across different social media platforms, which include content consuming, content contributing, and content creating (Muntinga et al., 2011). Based on this, Tsai & Men (2013) conducted a series of panel studies and a survey to ultimately extract two categories as reactive engagement behavior and proactive engagement behavior. However, researchers argued that survey and laboratory experiments might not be the best way of measuring stakeholders’ engagement behavior due to measurement and observer effects (Saxton & Waters, 2014). They further suggested researchers embrace a more practical approach of investigating social-mediated public relations activities in natural settings.

Addressing this argument, a different measurement was proposed to measure stakeholder engagement based on the natural matrix offered by social media platforms (e.g., Ji et al., 2017; Li & Stacks, 2015; Naylor, Lamberton, & West, 2012; Saxton & Waters, 2014; Swani, Milne, & Brown, 2013). Practically, different from websites, social media platforms provide measures of how users interact with posts or statuses made by different organizations through indicators such as likes, shares, and comments on Facebook; replies, favorites on Twitter; likes, shares, comments, and subscribers on YouTube, to name a few (Cho, Schweickart, & Haase, 2014; Li & Stacks, 2015; Saxton & Waters, 2014). For instance, investigating U.S. top 100 nonprofit organizations’ stakeholders engagement on Facebook, researchers measured viewership and positive
affect toward organization posts through the number of likes under each post; the number of shares was adopted to assess the stakeholder’s willingness to become an advocator for the message; while the number of comments indicated the level of engagement generated by the organization’s message (Saxton & Waters, 2014). In the context of Fortune 500 companies, these indicators were applied to measure organization’s social key performance indicators (KPIs) and operationalized a latent construct of return on expectations representing reputation, relationship, trust, credibility, and confidence (Ji et al., 2016; Li & Stacks, 2015).

Following the same approach, the current study adopts the natural KPI measurement on Facebook to gauge stakeholder’ engagement activities and engagement levels with the largest 100 NPOs in the U.S. The specific communicative engagement KPIs include liking, sharing, and commenting on organizational posts. These social media engagement data are modeled with charities’ financial data to find empirical evidences about the association between social-mediated stakeholder engagement and NPO donations.

Specifically, liking an organization’s Facebook posts implies a favorable attitude toward the content (Swani, Milne, & Brown, 2013). In marketing, researchers discovered that such positive attitude expressed through liking a company’s post leads to an increased likelihood of purchasing (Naylor, Lamberton, & West, 2012). By the same token, situated in nonprofit sectors, the current research proposed that clicking the like bottom of a charity’s Facebook post will generate an increased likelihood to make a donation. In addition, the general public can perceive such positive communication activity generated by active stakeholders to a NPO as a proxy of favorable relationships.
Thus, they will have a higher chance to donate to the given NPO. Consequently, the following hypothesis is derived:

**H1**: The number of likes a NPO post received from its stakeholders is positively related to the NPO’s public donations.

Similar to engaging with charities on Facebook via liking, sharing a company’s posts involves relevantly less effort compared to commenting (Cho et al., 2015; Swani, Milne, & Brown, 2013). However, beyond showing the number of individuals that are interested in a post and endorsing its content, the number of shares also indicates how viral a post can be (Alhabash et al. 2013). Thus, it represents the visibility of a post among the general public.

Furthermore, in the context of charitable organizations, number of shares also reflects active stakeholders’ willingness to advocate for a cause (Saxton & Waters, 2014). Consequently, it reflects positive organizational-public relationships. Following that increased stakeholder awareness (Godes & Mayzlin, 2004) and positive relationships will lead to supportive behavior towards an organization (Men & Tsai, 2016; Kang, 2014), the following hypothesis is derived:

**H2**: The number of shares a NPO post received from its stakeholders is positively related to the NPO’s public donations.

Commenting requires the most physical effort, especially when compared to liking and sharing (Cho et al., 2014). Beyond physical efforts, commenting is also considered as involving more cognitive processing, thus information generated via commenting behavior can be perceived as more valuable when viewed by other users (Ji et al., 2017; Kang, Tang, & Fiorce, 2014; Swani, Milne, & Brown, 2013). Though
associated textual content may contain discrete emotions and emotional valences, in general the volume of comments cast positive attitudinal and behavioral organizational outcomes. First, in the public relations literature, frequent information exchanges and interactions between an organization and its stakeholders can feature the organization being open and authentic (Men & Tsai, 2014; Tsai & Men, 2013). In the entertainment industry for instance, it was discovered that regardless of valence, the more a movie is warmly discussed, the higher box office purchases it will make (Liu, 2006). Based on above discussion, researcher proposes the following hypothesis:

**H3**: The number of comments a NPO post received from is stakeholders is positively related to the NPO’s public donations.

**Economic Factors in Nonprofit Giving**

Weisbroad and Dominguez (1986) developed a robust economic model to predict annual donation that can be awarded to nonprofit organizations by the general public. Although some assumptions remain debatable, the core of the parsimonious model has been empirically adopted and validated in various settings predicting momentary donation (e.g., Gandia, 2011; Gordon, Knock, & Neely, 2009; Marudas & Jacobs, 2004; Posnett & Sandler, 1989). Weisbroad and Dominguez (1986) argued that when donors give monetary contributions to a NPO what they expect in return is dollar-worth collective-good provided by the nonprofit to society. Based on this theory, three economic variables were identified that are responsive to public donation: price, quality, and information about price and quality that is available to existing and potential donors.
Specifically, “price” is defined as the efficiency with which NPOs can turn the cost of a donation worthy organizational output. The “price” a donor pays to receive a dollar of the organization’s output is a function of the efficiency with which the organization turns donations into programmatic output (Oken & Weisbroad, 2000; Weisbroad and Dominguez, 1986). The lower the “price,” the more efficient the organization is deemed to be in providing program services. The “quality” factor in the model is interpreted as the characteristics and level of the collective-good output. It is not only related to a NPO’s programs and services, but also to the attributes of its beneficiaries (Weisbroad and Dominguez, 1986). In the econometric model, quality is measured through charity’s age as a proxy of organizational reputation and wealth (Oken & Weisbroad, 2000). Weisbrod and Dominguez (1986) proposed that the age of a NPO to some extent demonstrates the quality of its output, thus nonprofit organizations that have exited for longer years tend to receive more public donation. In addition, the product term of age and fundraising expenditure in the previous year also reflects the impact of organizations’ age on donation. Last but not least, “information” is the third core variable in the model, which refers to the transfer of information on the qualities of a charity’s outputs. In private-goods markets, the transfer of information on the qualities of a firm’s output is often accomplished through advertising (Nelson 1970, 1974). Weisbroad and Dominguez (1986) postulated that in nonprofit sectors, fundraising plays a similar role of advertising in the proprietary-good markets. Fundraising helps spread information about the quality and price of the organization’s programs. Thus, to increase donation NPOs are responsible to provide potential donors organizational information about the qualities and marginal social products of their outputs.
Developing a New Model: Social-Mediated Stakeholder Engagement and Giving

It is proposed here that social-mediated stakeholder engagement on Facebook presents the collaborative effort in information dissemination and exchange about a charitable organization’s price and quality in the contemporary world. Thus, in the current study, the “information” component from the Weisbrod and Dominguez’s model (1986) is redefined.

The current research postulates that in social media-based stakeholder engagement context, a NPO’s “information” goes beyond the basic facts about a charity and its causes. It also conveys evidences reflecting its reputation and relationships with its stakeholders. In addition to the organizational efforts in information disseminating, active stakeholders’ engagement communicative behavior plays a more critical role. As discussed earlier, stakeholder proactive dynamic interactions are hypothesized to create higher visibility, credibility, and ultimately more donations to the NPO. Building on the base of the Weisbrod and Dominguez’s (1986) model, this study expands the economic framework to incorporate the impact of joint contributions of stakeholders’ online communication activities. In this way, this research is able to investigate and denote the investment that NPOs make in strategic use of social media can benefit future public donation via social-mediated stakeholder engagement, after controlling for traditional economic factors. In addition, government grants and program services sales were also included in the model, given that the availability of revenue from other sources have been empirically found to be critical influencers on the amount of donation received by a charity (e.g., Khanna and Sandler, 1997; Oken & Weisbroad, 2000).
Stakeholders’ active online engagement behaviors may indicate the relationship between a charity and its stakeholders is generally positive, healthy, and mutually beneficial. Would in some particular circumstance that the indicators for such engagement can also be considered as heuristic cues by aware publics, who have yet taken any actions but are processing all possible information available? Moreover would a high number of heuristic cues (high number of likes or shares, for example) backfire on their decision-making, thus causing them to withdraw the favorable behavior change associated with a nonprofit? It is suspected that being exposed to a social media-based fundraising post from a NPO would be such occasion. Several theoretical reasonings are explained in the next section.

**Heuristic Cues in Computer-Mediated Communication**

The prevalent adoption of new media has offered great ease and convenience for people to access news and information without constrains of time or geographic location. At the same time, this technological revolution makes it possible for almost everyone, including both individuals and organizations, to become source providers on the Internet. While we are witnessing an era of “citizen journalism,” we may also confront a large body of poor quality and uncredible information that is published without any gatekeeping filtering process. In traditional media, information that ultimately gets published in either television programs or newspaper usually has been refined through some steps of gatekeeping. Gatekeepers, such as journalists, editors, and even public relations professionals, decide what and how a piece of information can be published to be seen, which ensures the credibility of the information (Shoemaker & Vos, 2009). Nevertheless, the free-floating and crowdsourcing features of web-based information
generation process seem to be contradictory to gatekeeping, thus make information veridicality suspicious (Sundar, 2008). Therefore, information credibility becomes a primary concern of general users when consuming information online. Different from traditional media where source, message, and medium credibility are relatively more accessible, thus can serve as normal cues for judging information credibility, the Internet does not provide sufficient short cuts in such formats. For example in the situation introduced above, when exposed to a fundraising post made by a NPO with low familiarity, there seems to be very limited information that stakeholders can rely on to make their judgment. However, on the other hand, such post does render unique cues for users to conclude a given message’s credibility.

**The MAIN model**

The MAIN model constructed by Sundar (2008) provides a theoretical framework summarizing various cues that people use to make credibility judgment. Those cues are classified under four psychological affordances showing significant effects including Modality (M), Agency (A), Interactivity (I), and Negativity (N). *Machine heuristic* under agency affordance is one of the many tools that assist users to process information credibility online. According to the MAIN model, in the online setting, very often information receivers are confused by who is the source of a piece of information, which on the contrary may be more salient in the offline context. Thus, the device itself sometimes would serve as an agent that communicates the identity of the source. In this case, agency affordance can provide machine-generated information or criteria to be adopted by users as possible heuristics for information credibility judgment. For example, in one of earliest investigations of machine heuristic, Sundar and Nass (2001) found that
when the same piece of news was distributed by news editors, the computer, other users, or readers themselves, participants assigned in the computer-generated news condition rated the article more trustworthy than others in the rest three groups. As Sundar (2008) explained, it is likely due to the nature of machine heuristic that information receivers would perceive machine-selected information as objective and free of ideology bias. Thus, when an Internet-based information-providing interface conveys any machine-like features, people would consider the news and information published on that platform as highly credible (Sundar, 2008). In this context, those machine-like features are cues that result in machine heuristics.

**System-generated Cues**

Recently, more research examined how people utilize heuristics based cues, such as *system-generated cues*. Findings from these studies provided additional evidences for agency cues depicted in the MAIN model. System-generated cues are also presented as information in the online environment. As other agency cues, they are not directly generated by users, but are collected and presented by technological systems (Ven Der Heide & Schumaker, 2013). A common example would be the *number of followers* a Twitter account possesses; however such numbers displayed on the social network platform are not provided by the twitter user owning the account, but by the system algorism after calculation. According to Ven Der Heide and Schumaker (2013), these cues arise from users’ actual behaviors, thus are useful in providing heuristically valuable information assisting information receivers to make attributions. Previous studies have provided empirical supports for this statement. Westerman and colleagues (2012) investigated how system cues on Twitter, specifically the number of followers and
number of follows, would affect perceived source credibility. They developed six mock-up profiles and found curvilinear effects of number of follows on expertise and trustworthiness and a positive linear relationship in the narrow gap between follows and followers condition. Similar patterns were also found in recent two investigations coauthored by Lim and Van Der Heidi (2015, 2016) situated on Yelp. They discovered that number of friends and number of reviews had an interaction effect on credibility, however these cues were only existing among Yelp users. This interaction was not significant among non-users. Edwards and colleagues (2013) manipulated system-generated cues by adding Klout scores to twitter profiles. Klout score is an aggregation indicator representing one’s influential level on social networks. It was discovered that Klout scores could influence perceptions of source credibility such that a Twitter page with a high score was perceived with higher credibility compared to identical pages that displayed medium and low scores. Westerman, Spence, and Ven Der Heide (2014) argued that besides the above-mentioned cues, the recency of updates could also be deemed as system-generated information carrying heuristic values. To test how immediacy of updates acts as a cue that impact credibility, three fictitious Twitter pages were designed with variation of update regency: fast, medium, and slow. Researchers found that there was a linear effect between recency of updating and perceived credibility, that faster updates resulted higher credibility. This association was also found to be mediated by cognitive elaboration. Later, Spence and colleagues (2016) successfully replicated these results in another Twitter-based study. System generated cues were not only discovered on social networks that are dominant in the West; more recently, researchers have started to investigate such cues existing in Chinese social
media, such as Weibo. Weibo, a micro-blogging social media platform, is the Chinese equivalent of Twitter. In their study, rather than studying profile cues, Gao, Tian, and Tu (2015) were interested in whether status cues, specifically number of reposts of a status, displayed by the weibo system would impact perceived message credibility. Although results were mixed contingent upon message topics, they suggested a likely trend that perceived message credibility was associated with number of reposts.

**Status cues**

As Gao and colleagues (2015) posited, message cues similar to profile cues are also generated by systems; however, reflecting users online interactions with a message, this would trigger information receivers’ heuristics evaluating message credibility. In Facebook settings, when an organization generates a post, besides normal cues, such as who is the information sender and what is the particular content, the engagement indicators (i.e. number of likes, shares, and comment) displayed under each post may also serve as information that affect users’ information processing. Those engagement cues are number of likes, shares, and comments. Given the information of number of comments is more sophisticated and usually co-exist with textual information, normal cues, cues that are directly provided by individuals rather than machine or system, the current study only identifies number of likes and shares as system-garneted cues associated with a Facebook status.

In the current study, it is postulated that number of likes and number shares are another set of heuristic cues imbedded in online status-level messages. To date, no study has focused on how these two indicators conceptualized as heuristic cues can affect users’ information processing. Thus, an investigation of whether and to what degree
number of likes and shares can influence publics’ message credibility perception and associated behavioral outcome casts both meaningful theoretical and practical contributions.

**Number of likes vs. number of shares**

Together with the number of likes that a Facebook status has amassed, the gap between this number and how many others have shared the current post has a potential impact on the credibility of message. Generally, in a non-situational context, as discussed earlier, the number of likes can indicate the likability or favorability of a message; while number of shares can represent the social value via digital approval of it (Gao et al., 2015). However, specifically in an online fundraising situation, such two status cues may carry more heuristics. In some regards, they can be understood as information regarding the endorsement or approval rate by readers as they have read and further acknowledge the importance of a cause described in a status (number of likes) and the level of actual participation through advocating for such cause to generate more awareness (number of shares). A cause that has high acknowledgement is often one that interests publics to obtain information from. Whereas a cause that has high advocacy rate is one that publics consider it truly important and needs to be known by others, thus helping with fundraising.

Of interest in Study 2 is how information receivers react to a fundraising Facebook post that is providing information about both its value of recognition and participation. Previous research, though scarce, drew interest in investigating the power of likes and shares on relationship and financial outcomes. However, the majority of studies considered them as *independent* factors that do not intertwine with each other and
always exert positive impact. Few if any have conceptualized these two engagement indicators as system-generated cues. There is little theoretical guidance as to how the gap between number of shares and likes (i.e. potential cues for recognition and participation) will impact attitudinal and further behavior changes of a Facebook user. Based on the discussion about the nature characteristics of liking and sharing behaviors and the theory of system-generated cues the following hypotheses were derived.

**H4**: There will be significant interaction effect between the number of likes and the gap between likes and shares on donations.

**H5**: There will be a significant interaction effect between the number of like and the gap between likes and shares on credibility.

**Credibility as a Mediator of Donation Behavior**

In the existing literature, many of the previous investigations have paid great focus on how and whether cues that featuring technological characteristics impact on individuals’ judgments about message, source, and media credibility (e.g., Edward et al., 2012; Gao et al., 2015; Hu & Sundar, 2010; Lim & Ven Der Heide, 2015; Ven Der Heide & Lim, 2016; Westerman et al., 2012; 2014). However, as Van Der Heidi and Lim (2016) pointed out, only very few shed light on how the consequence of people’s credibility judgment mediates the association between heuristic cues and attitudinal or behavior outcomes. Given that credibility is a key mediator of attitude, behavioral intention, and even actual behavior (Hovland et al., 1953; O’Keefe, 2002), this research responds to Van Der Heide and Lim’s call to examine whether such a mediation effect would align with previous research existing in the current context through mediation analysis. The research will contribute to the continues refinement of our understanding about the
nuances that credibility judgment forms online and how it further affects user’ attitude and behavior. Therefore, the following hypothesis was derived.

**H6:** Perceived message credibility will mediate the effect of the number of likes and the gap between likes and shares on donation amounts.

**Social Information Processing Theory**

Besides the MAIN model devolved by Sundar (2008), social information processing theory, also known as SIPT, is another commonly cited theoretical framework in literature investigating commuter-mediated heuristic cues. Coined by Walther (1992), SIPT explains how individuals form and manage interpersonal communication in Internet environments without the assistance from nonverbal cues. Aside from the outcome, on which the MAIN model focuses, SIPT looks at how social information presented as system-generated cues on social media help individuals to form perceptions about others’ presence on the Internet. For instance, Kleck and colleagues (2007) investigated at the association between number of friends one has on social media and one’s popularity perceived by other users. It was revealed that there was a positive relationship between a profile displaying a large number of friends and the perceived popularity of that person. A similar pattern was also detected in Utz’s (2008) investigation. Following the same theoretical grounding, Tong and team (2008) investigated whether a higher number of friends on the online profile would lead to the person being perceived as more attractive and extraverted. A curvilinear relationship was detected between the heuristic cue and the impressions.

However, an exhaustive literature review revealed that no study has examined whether such interpersonal impression making among a group of stakeholders online
cued by heuristic information would further affect the communication effectiveness between an organization and its target online public. In other words, following SIPT, would perceptions obtained by stakeholders about their relationships within a virtual group online affect their behavior related to organizational outcomes? In addition, can an interpersonal communication theory be applied to organization-public communication context and help a nonprofit organization with its best practice on social media? It clearly is a possible that such an interpretation exists.

In an online prosocial fundraising context, potential donors will evaluate their personal contribution in such event based on cues such as number of likes and number of shares generated by the system inferring other users’ participatory involvement. This evaluation of one’s personal role ultimately can lead to how much money they would like to donate. In the next section, several psychological constructs are introduced to offer alternative explanations and theoretical groundings for Facebook-based fundraising outcomes.

**Social Loafing**

Social loafing, bystander effect, or social inhibition describes a phenomenon that individuals offer less effort in helping when working collectively with others than by themselves (Karau & Williams, 1993). For example, in a pedagogical setting, a student may be found to have put one hundred percent effort in finishing one’s own homework, but his or her teammates may complain that he or she barely made any contribution to a group project. This student can be deemed as a lack of inhabitation in offering help and contribution. In our society, many significant tasks need to be accomplished through teamwork. A prosocial fundraising event is a good example. All stakeholders who cast
interest and show care about a cause need to work together to raise funds or donate money and time to help a charity reach a fundraising goal. However, counter-intuitively, social loafing suggests that with an increase in the group size or the number of bystanders’ presence, the likelihood of contribution and help decreases from the group members. Several researchers have offered theoretical accounts for such phenomenon. Among them the most studied psychological process is diffusion of responsibility.

Latane and Darley (1970) coined that diffusion of responsibility was one of the psychological underpinnings for why people are unwilling to help in a collaborative event. It is argued that the more standbys present in an incident, the less responsible each person feels they are. According social impact theory (Letane, 1981), the number of people present in a situation can be a proxy of the amount of social impact available. Subjectively, individuals would calculate the cost associated with non-helping based on the group size (i.e. number of bystanders) (Fischer et al., 2011; Voelpel et al., 2008). When the sense of accountability is dispersed among others present, a person who is asked to finish a task would tend to ask “why should I offer help, when there are so many others who are able to help?” In previous literature, researchers have found that within a group setting, research participants were less likely to give money to begging child (Thalhofer, 1971), answer the door (Levy et al, 1972), offer help to fix a flat tire (Hurley & Allen, 1974), leave more tips for service (Freeman, et al., 1875), or donate to a charity (Wiesenethal, et al., 1983) due to diffusion of responsibility.

There also exist other theoretical accounts of social loafing. For example, social influence (Darley & Latane, 1968) or pluralistic ignorance (Prentice & Miller, 1996) explains that when evaluating the emergency situation, people tend to base their
judgment on other individuals’ reactions before providing any assistance. When all bystanders are looking for social cues from other people this may lead to a presence of non-action (Voelpel et al., 2008). Another possible reason is identified as *audience inhabitation* (Voelpe et al., 2008) or *confusion of responsibility* (Cacioppo et al., 1986). This account states that people hesitate to help because they are afraid that the audience would negatively evaluate their help or misunderstand the action as a consequence of compensating the victims’ suffering, namely the one who is helping was the one who caused the tragedy. However the above-mentioned two expositions are mostly situated in risk or emergent contexts (Garcia et al., 2002).

**Social loafing in computer-mediated communication**

Some recent studies, though few, also started to examine related topics with social loafing in computer-mediated communication context with virtual publics. Studies have been taken at online environments including online forum and e-mail. Although some mix findings exist (Lewis et al., 2004, Voelpel, et al., 2008), there is a strong association between the size of bystanders and inhibition of helping. Markey’s (2002) study demonstrated the bystander interventions in Internet chat groups followed the same patterns of research conducted at offline settings. Markey revealed that when the number of people present in a chat room increased, it took participants longer to respond to a help solicitor. Moving from the chat room, later studies started to bring the topic in the context of e-mail based communication; similar directions were found. Barron and Ychiam (2002) conducted a field experiment to study the diffusion of responsibility effect in the context of sending requests via e-mail. In their study, they sent out a request email asking receipts to complete an online survey to two experimental groups: individuals or
Listservs. They found that compared to those who were reached out individually, fewer people in the Listservs group accessed the survey link. Blair and colleagues (Blair et al., 2005) narrowed down their focus on private email communication. In their study, a confederate sent an e-mail asking for help to different groups with various numbers of recipients showing up in the header. Results again supported the notion that in a virtual setting the presence of many others inhibited responsiveness.

However, after studying the existing literature, gaps still appear. First, it seems, no study has yet explored social inhabitation in the context of social media. Second, the majority of the studies examined such effect were mainly in interpersonal communication settings. Third, as for the specific incidence designed in previous experiments, they were either negative emotional events, such as emergencies (i.e., someone suffered a seizure) or non-emotional occurrence (i.e., seeking for answers for a neutral question). Few if any has situated social loafing in a circumstance featured with a positive emotion, for instance a prosaical fundraising event.

Thus, the current study raises several unexplored questions about social loafing would still exist in a prosocial event. Specially, in the social media context, will inhabitation of giving vary with the change of number of bystanders? In addition, would there be an alternative reason for such phenomenon in this specific context?

While diffusion of responsibility is a strong explanation, offering a psychological reasoning of why individuals withdraw their contribution in a group-based task. The current study stipulates an alternative explanation for such effect. This research is based on the concept that people also would evaluate their own contributions in a collaborative
project besides weighing the cost of responsibility. This process of evaluating may become more salient in a task that leads to positive prosocial outcomes, thereby driving the direction of decision-making.

**Perceived Personal Role**

In earlier social psychology studies about self-perceived contribution, researchers discovered that people tend to magnify their own contribution in collaborative tasks (Burger & Rodman 1983; Chambers and Windschitl, 2004; Ross & Sicoly 1979). For example, Ross and Sicoly’s (1979) investigation found that when people were working on a group project and making positive achievements, they credited themselves more about the positive outcomes and recalled more of their contribution to the project. Whereas they gave lower evaluations of the efforts put by their coworkers in the task.

Two reasons may explain this phenomenon. First, according to Leary and Forsyth (1987), people are motivated to perceive themselves as a major contributor who makes positive impacts on a cause to accomplish a goal. Therefore, they unconsciously may rate themselves better than they actually performed. In addition, according to Burger and Rodman (1979), people store information about our own behavior in a more accessible manner than we do information about other. Therefore, when we are asked to evaluate our own contributions to a group task, they are more salient, thus readily to be retrieved than are the contributions of our partners. Second, when it comes to comparison with other people, one’s own acts are more prominent than others (Ross & Sicoly 1979), which lead to the fact that one would overestimate their own contribution to a joint task, but underweighted others’ than they actually have performed. For example, in Ross and
Sicoly’s (1979) first experiment, married couples tended to claim that they did more households work than their partners.

Interestingly, this effect became more severe when a collaborative task led to positive outcomes compared to negative ones. Kruger and Savitsky (2009) argued that it was because a greater contribution to joint work achieving favorable results entitles individuals with a sense of accomplishment and rewarding. This effect was also sustained in cause-related marketing, where group tasks often were featured as prosocial fundraising events. Robinson and colleagues (2012) designed a serious of experiments to investigate in which circumstances individuals would be more involved in a company-initiated cause-related marketing campaign, thus purchase more products from the company. They found that when participants were triggered to perceive that they had an enhanced personal role in such event, for example decide which cause to donate to, they would have higher purchase intentions with the target company (Robinson, Irmak, & Jayachandran, 2012). Similar patterns were discovered by Botti and McGill (2006) and Franke and colleagues (2009). Their research demonstrated that when participants perceived greater personal causality that were meaningful contributors in their experience, they would rate the associated outcomes in more positive manner. However, would their evaluation and associated behavior decrease when people sense that their personal role or contribution in a prosaic event is not as highly weighed as they expect to be? The answer is, most likely, yes.

By the same token, the effect of perceived personal role can be applied to charity fundraising events. Individual’s self-perceived contribution would impact on one’s donation, which is perceived as a collective task that needs efforts from a group of people
rather than a single individual. Moreover, when these events are managed online, the information for stakeholders to evaluate their contribution becomes more accessible compared to offline fundraising events in terms of how many people have noticed about the event (number of likes) and how many of them already made efforts to contribute and advocate for the cause, for instance spread the word (number of shares). In this case, the current study proposes that there exist a subtle manipulation of self-perceived contribution based on the change of gap between number of shares and number of likes. This prediction can be grounded into two factors. Generally, Facebook users weigh number of shares higher than number of likes. Because technologically, sharing has relatively larger impact than liking, as it is more noticeable among Facebook friends and while people are sharing a post compared to liking one. Additionally, users are also allowed to write down their own thoughts, which requires more effort. Based on these arguments, the larger impact and more required-effort of sharing may activate stakeholders’ cognitive process of considering their self-contribution in a Facebook-based fundraising event and eventually impact their donation amount. Specifically, it is predicted that when the gap between number of shares and number of likes is narrow, meaning a large portion of people in the current virtual group has made contributions to a given cause, people would be motivated to consider their personal role. Such effect will moderate the association between number of likes on donations such that more likes will lead to less donation or increased social loafing. However such difference will not exist when the gap between like and share is wide.

Based on the discussions presented above, in current study, it is also posited that decreased perception of one’s personal contribution in helping a cause is likely to be a
key mechanism causing social loafing, namely reduced amount of donation in such circumstance. Therefore the following hypotheses were derived:

**H7**: There will be a significant interaction effect between the number of likes and the gap between likes and shares on self-perceived contribution.

**H8**: Self-perceived contribution will mediate the effect of the number of likes and the gap between likes and shares on donation amounts.

Figure 1 depicts the moderated mediation model.
Chapter Three

Method

To test the overarching question “is social media worth investment for nonprofit organization?” two studies were designed that allowed for inspection with different theoretical perspectives of the phenomenon. The first study used a Big Data approach, in which stakeholders’ naturally occurring communicative engagement activities were mined unobtrusively. Those behavioral data were modeled with NPOs’ financial data with panel data analysis using Ordinary Least Square estimation with lag variables. This method allows author to detect the association between stakeholder engagement and NPO fundraising successfulness with a longitudinal prospect.

Results from Study 1 provided evidence to answer Research Questions 1 to 4 and test Hypotheses 1 to 3. To further explore the association between stakeholder engagement and donation and understand the psychological mechanisms behind it, Study 2, an online experiment, was implemented. The engagement indicators were conceptualized as system-generated heuristic cues that assisted potential donors to process social media-based fundraising information. In the second study, participants were asked to respond to a hypothetical scenario. The second study provided empirical support to test for Hypotheses 4-8. The two studies are each introduced in the following sections.
**Study 1**

This research used a Big Data approach and panel data analysis to test the proposed research questions and hypotheses. Given the topic of the current study, the largest 100 nonprofit organizations in the United States were selected as the sample frame. It is based on the *NonProfit Times (NPT) 100* 2014’s report. Both their Facebook stakeholder engagement data from 2007 to 2014 and financial data from 2008 to 2015 were recorded and analyzed. In particular, the dataset has two folds. First it contains every organizational post retrieved via data mining tactics, and how stakeholders reacted to the posts reflected in the engagement metrics (i.e. numbers of likes, shares, and comments) were recorded. Second, the dataset also stores charities’ financial data at yearly level. These two types of data were later merged for penal data modeling analysis.

**Sampling Procedure**

The nonprofit organizations used as sample frame in the present study were the largest 100 NPOs rated by *Nonprofit Times* in 2014. This list includes the largest NPOs based on their financial performance in 2013. Specifically, as in prior studies (Kang & Norton, 2004; Lovejoy & Saxton, 2012; Saxon & Waters, 2014; Yeon, Choi, & Kiousis, 2007), nonprofit organizations from the most recent version of the *NPT 100* list available at the start of the current study period were examined. Every November, *NPT* publishes a list called *NPT 100* that ranks the largest 100 non-educational NPOs in the U.S based on their past years’ overall financial performance. In addition, each NPO has to obtain at
least 10 percent of its revenue from public donations to be considered eligible for the list (Nonprofit Times 100, 2014). The complete list can be found in the Appendix.

Given that these NPOs’ operation is largely relying upon general support from the public, their relationship-building becomes one of the most critical intercessory factors to generate more public donations. Therefore, a test of how their social media performance, a commonly adopted communication tactic in relationship cultivation, affects their financial outcomes bears many practical implications. In addition, data collected for present research represent a wide range of time and NPO sectors. Findings from modeling these naturally occurring data to test public relations theories should provide reasonably robust results.

**Pretest**

Before collecting Facebook data for the main study, a pretest was conducted to determine the general presence of each of the *NPT 100* NPOs on Facebook. During the pretest, it was found that some organizations have multiple Facebook accounts. For example, for some NPOs, in addition to their national offices, many of their local offices manage a Facebook page by themselves. To determine which page should be included in the final sample, several strategies were applied as in prior study (Ji, et al., 2017). First, Facebook accounts with a blue check mark were included, meaning they are official verified Facebook accounts, implying a high level of credibility. Second, the researcher visited NPOs’ official websites to find a hyperlink to their Facebook page. For the rest of those companies, to make a judgment, the researcher read through the organizational posts and company information and ultimately selected the one that could best represent a NPO. Overall, out of 100 *NPT 100* NPOs, 99 organizations were identified to have their
organizational account on Facebook during the data collection period. Their basic information of Facebook presence was recorded; such as whether the page is verified and number of subscribers (number of people who “liked” the company’s Facebook page).

**Facebook data**

Similar to the data mining procedure used in prior communication research (e.g. Lovejoy & Saxton, 2012; Neuman et al., 2014; Saxton & Waters, 2013; Vargo et al., 2014), NPOs’ Facebook data were retrieved. In the communication field, more and more researchers started to embrace the power of data mining and programming language to collect behavioral engagement data from social webs in real-time naturalistic settings. Researchers have been aware of researcher-effect and measurement-effect as byproducts of self-reported data generated from traditional research methods, such as survey and lab experiments (e.g. Li, 2011; Neuman et al., 2014; Park, 2014). Fortunately, the wide adoption of social media provides researchers “rich” data both in terms of volume and variety to test and develop communication theories proposed with traditional methods (Mahrt & Scharkow, 2013; Neuman et al., 2014).

In the current project, Python programming was utilized for code scripting and data mining through Facebook Graph application program interface (API). Python is a programming language with high-level structures and is object-oriented. Thanks to the features that its syntax is readable and interpretable, Python has been vastly adopted today in scripting, data manipulation, and developing applications on various platforms (Russell, 2013; Python, 2016).

Facebook Graph API is the primary way for researchers and practitioners to mine data from Facebook platform. It presents and organizes interactions generated by
organization, groups, and individual as nodes and connections between nodes, which are accessible and analyzable (Facebook, 2016; Russell, 2013). To query and measure the focal variables, the code developed for the current study was based on Graph API references provided by Facebook (Facebook, 2016).

To test the scope of data collected from NPT 100’s public fan pages through the code yielded another pretest. In this trial, five NPOs were randomly selected among the 99 organizations using Facebook to compare the data mined from Facebook Graph API through Python programming and those appearing on those organizations Facebook page. The results revealed that the program downloaded data accurately; and the research proceeded with data mining. An access token was obtained through registering an application on Facebook in order to enter into the Facebook developer platform.

This data collection process lasted for a few weeks from January 19, 2016, to February 3, 2016. Each NPO’s complete posting history on Facebook was recorded, from the very first day when a charity started posting to December 2015. The specific timespan of how long each NPO staying active on Facebook varied. Each Facebook post’s content and relevant information was recorded and stored in a SQL (structured query language) based relational database, including its posting date, type, textual information, and numbers of likes, shares, and comments.

During this data mining process, it was found that access to one NPO’s Facebook API was denied (only authorized access can make data available [Russell, 2013]), thus, its Facebook data had to be considered missing. The final sample size of NPOs that contributed Facebook data to this research was 99 with 261,351 posts over the nine years.
Facebook was selected for hypotheses testing in this research, although it was not the most frequently adopted, for three reasons. First, Facebook has a longer history than other competitors and it is widely believed to be the most representative and influential social media representing one seventh of the population in the world. According to a recent survey conducted by Pew Research Center (2014), 71% of Internet users are on Facebook, remaining the most popular social media site comparing to twitter and all the other platforms. Second, a Tweet on Twitter has a length limit (i.e., 140 characters) but a post on Facebook does not. Thus, Facebook posts are more flexible in formats and potentially more informative. Last but not least, unlike Twitter, Facebook API does not have a limit rate in accessing data; however, Twitter does have such restriction (Twitter, 2016) that automatically limits the number of tweets that can be retrieved if the rate limit is exceeded. In this case, on Facebook, researchers are able to obtain a more complete picture of how public interacting with companies comparing to Twitter.

**Financial data**

The financial data modeled with Facebook engagement data in the current study were directly collected from or computed using secondary data included in *NTP 100*’s annual reports published from 2008 to the most recent one in 2016. *NTP* compiles the largest U.S. NPOs fiscal data through requesting their IRS Form 990. Each report covers one hundred largest charitable organizations’ financial activates in the past year. Taking the latest *NTP 100* report published in 2016 for example, data published in this report representing the largest 100 U.S. NPOs’ economic information in 2015. Following suggestions from prior research (Okten & Weisbrod, 2000; Weisbrod & Dominguez, 1986), the following financial variables were obtained: public support, total expenditure,
fundraising expenditures, government grant, and program service revenue.

**Independent Variables**

There are three indicators on each post that operationalize stakeholders’ engagements and interactions with NPOs: number of likes, number of shares, and number of comments. Each of the three indicators was measured by directly recording numbers attached to each organizational post. A covariate, number of posts, was also measured to control for organizational communication influence. Number of posts was measured by counting how many posts a NPO made each given year. Considering the dependent variable was measured at annual level the three indicators were further computed into annual summations of likes, shares, and comments.

Following the nonprofit economic model (c.f., Okten & Weisbrod, 2000; Weisbrod & Dominguez, 1986), four economic variables that would have impact on public donation were also measured and computed as additional control variables. First, government support was measured by the amount of grants awarded by governmental agencies. Second, program service revenue was gauged by self-generated fees and revenue of each NPO. Third, fund raising expenditure was assessed as expenses occurred that were associated development function. The fourth economic variable was price, which was computed as: \( \text{PRICE} = \frac{\text{FUND RAISING EXPENDITURE}}{\text{TOTAL EXPENDITURE}} \), indicating fundraising effectiveness. In addition, as prior research suggested, history of a NPO is a critical determinant for its public donation (Okten & Weisbrod, 2000; Weisbrod & Dominguez, 1986), therefore the data for NPO history that indicated how long (number of years) each NPO has existed were also collected. To obtain the age data, the researchers visited each NPO’s official website and collected the
year of establishment for each organization. The final age variable was computed as:

\[ \text{AGE}_i = \text{YEAR}_i - \text{ESTABLISHMENT YEAR}. \]

An interaction term between fund raising and expenditure was also calculated as \( \text{FUND RAISING EXPENDITURE} \times \text{AGE} \).

**Dependent Variable**

Our dependent variable, total public donation, indicated the annual public monetary support a NPO received from donations from the general public, various foundations and corporates, and others such as Combined Federal Campaign, United Way or affiliated organizations (NonProfit Times, 2009). To conceptualize public support from a longitudinal perspective, the current study adopted eight-year worth of data from *NPT 100* from 2009 to 2016, corresponding to the actual fiscal years from 2008 to 2015.

**Data Match**

For the purpose of modeling, the independent and control variables and dependent variable were matched at yearly level. Specifically, a NPO’s total number of Facebook posts each year (from the first year when it started posting on Facebook to December 2014) was calculated. Accordingly, the numbers of likes, shares, and comments received each year were also calculated. These annual-level Facebook data were then matched to the annually financial and organizational data. It is worth pointing out that as most of the Facebook engagement data are count data, distributing in a non-normal manner and for the ease to interpret the results in a more intuitive way, all Facebook engagement and financial variables were natural log transformed, except AGE. DB browser for SQLite 3.7.0 and SAS 9.3 (SAS Institute, Cary, NC) were used for data management, computation, and modeling.
Study 2

The second study was conducted as an online experiment with a 2 (number of likes: small vs. large) × 2 (gap between like and shares: narrow vs. wide) between-subjects design without a control group. Both factors are manipulated.

Stimuli Materials

To avoid potential confounding effects of participants’ familiarity with existing nonprofit organizations, a Facebook account for a fictitious NPO called Marine Life Foundation (MLF) was created. The posts were designed as a social media fundraising campaign organized by MLF, raising money for marine animals. Four versions of Facebook posts were created corresponding to four experimental conditions, reflecting different levels of number of likes and gaps between likes and shares. To simulate real-life communication on Facebook, post contents were modified from real Facebook posts made by charitable organizations. To make study participants more involved in when processing content information, call for action verbs and images were included in the posts. The four posts represented a full cross of conditions with different numbers of likes (low ≈ 70, large ≈ 70,000) and different gaps between the number of likes and shares (narrow gap: the number of shares ≈ 90% of likes, wide gap: the number of shares ≈10% of likes).

The content of the post was about a fundraising event organized by MLF. The event was designed to raise awareness and funds to save endangered marine animals. In the post, the organization invites the public to spread the word for the depicted event through liking and sharing. It also encourages the public to make a donation. Two options are provided with visual assistance with one photo of a killer whale, another of a
leatherback sea turtle. Potential donors could select which animal to donate to based on
their personal reference. The posts intended to mimic a real fundraising post that by
clicking the “donate now” button imbedded in the photos donors were directed to a
fundraising page to make a momentary donation following their choice.

Two strategies were applied to ensure the successfulness of manipulation check. First, Westerman, Spence, and Heide’s (2012) study was adopted. Westerman and colleagues (2012) used the same approach to manipulate the number of follows and the ratio between the number of follows and followers on a Twitter profile. The labels such as “small” and “large” were only used in the manuscript for clarifying the manipulation conditions. In the stimuli, participants were not exposed to those labels. Second, by comparing these numbers with field data collect in the previous study, it appears that these numbers were also chosen to be realistic. Following Westerman and colleagues, a well-known NPO’s Facebook post could not be used as a stimulus in current study, as many participants would likely have judged it as fake; accordingly, numbers of likes and shares in the hundreds of thousands or millions by an unknown NPO was also likely to be seen as fake.

To control that the four Facebook posts only differed in number of likes and the gap between likes and shares, the stimuli were designed with great caution. For instance, MLF’s Facebook posts were written with a neutral content. All the visual and textual information appearing in the posts were kept exactly the same across all four experimental conditions. The four stimuli are presented in Appendix A.
Pretest

A pretest was conducted as a manipulation check, scale reliability check, and to determine sample size for the main experiment. The questionnaire for pretest included manipulation checking questions and demographic questions. To ensure data quality, an attention check question was included. At the end of the questionnaire participants were asked to recall the name of the charity that appeared in the earlier stage. Forty-one participants were recruited for the pretest. One participant failed the attention check questions, thus was eliminated from the pool. In general, results of the pretest indicated satisfactory reliability for all measures. However, the measure for donation amount yielded non-normally distributed data. Thus, this measure was adjusted specifically in the main experiment. The demographic information for pretest one can be found in Table 1.

Manipulation checks

To test if stimulus manipulation was successful, participants’ perceptions of whether a post received small or large amount of likes and whether the gap between number of likes and number of shares were narrow or wide was measured in the pretest for manipulation checks. Forty one participants were recruited from Amazon Mechanical Turk online. They were randomly distributed to the four experimental conditions. They were first told a non-profit organization called Marine Life Foundation was conducting a fundraising campaign on Facebook and would like to ask them about their perception of the campaign post. Each was exposed to one of the four the stimulus materials. After exposure to a fictitious Facebook post, participants were asked to complete a
questionnaire. The manipulation of number of likes was checked with a 9-point bipolar scale ranging from small to large (1= small and 9= large), asking participants to rate how do they feel about the amount of likes received by the post. To check the manipulation of gap between like and share, participants were asked what was the percentage of the number of shares to the number of likes in the post and how to think about this percentage from small to large (1= small and 9= large).

**Power analysis**

To obtain a reference determining the sample size for the main study, three power analyses were conducted corresponding to two null interaction hypotheses. Two-way ANCOVA was adopted to power for the interaction effects between like and gap on three dependent variables donation, credibility, and self-perceived contribution respectively with involvement as the covariate, suggesting at least 300 participants were needed for the study.

**Main Experiment**

For Study 2, an online survey was designed. All responses were collected as an online experiment. It was designed with Qualtrics survey software and then distributed through the Amazon Mechanical Turk (MTurk). Based on the results from power analysis and research budget, a total of 300 participants were recruited for the main study.

**Inclusion and exclusion criteria**

To control for data quality, several inclusion and exclusion criteria were applied in participant’ recruitment. Mason and Suri (2012)’s suggested that MTurk workers who have an approving rate higher than 90% should be considered as qualified participants. In
Study 2, more stringent qualification criteria were adopted. Specifically, only workers who have an approving rate higher than 98% were allowed to take the survey. To avoid “professional survey-takers” only workers who have taken less than 50 surveys, the lowest option, on MTurk were able to access the survey link. In addition, five attention check questions were included in the questionnaire imbedded in different sections in the survey. Two asked participants to select a particular response, for example “extremely agree.” The other three were memory recall questions. Other requirements included participants having to be older than 18 years, Facebook users, and who were located in the United States. Based on the exclusion criteria, a data screening was performed upon data collection completion. A final sample of 189 effective responses was retained for future data analyses. This yielded an effective response rate at 63%.

**Participants**

The final sample consisted of 36.5% males and 64.5% females with an average age of 31.1 years old. Caucasian (77.8%) was the dominant ethnicity among the participants. Thirty-seven percent of the participants have a bachelor’s degree and 78.3% reported their annual income was below $59,999. As for general Facebook usage activity, on average research participants had a Facebook account for more than 8 years. The majority of them checked their Facebook account more than twice per day (64.6%). Detailed demographic information is reported in Table 2.

**Dependent variable measures**

To measure donation amount, Liu and Aaker’s (2008) strategy was used. In the middle of the survey, a pop-up message was presented to the participants that two percent
of the total participants would be randomly selected to receive a bonus payment of $35. In the next page, participants were asked if they were chosen as a winner, how much of the $35 would they like to donate to the cause they just saw on Facebook. They were directed to type the amount in a message box.

**Mediation variable measures**

Perceived self-contribution in the fundraising event was measured with a three-item nine-point bipolar scale (1 = *not at all* and 9 = *very much*). This scale was modified from the original measurement developed by Robinson, Irmak, and Jayachandran (2012). The items included: “If you donate to the event, to what extent would you feel that you added value to the cause?” “If you donate to the event, to what extent would you feel that you helped the cause?” and “If you donate to the event, to what extent would you feel that you contribute to the cause?” The scale’s reliability was .96.

Perceived information credibility was measured with a three-item 9-point bipolar scale modified from MacKenzie and Lutz (1989) (1 = *extremely disagree* and 9 = *extremely agree*). Sample items included “I find MLF’s Facebook post convincing (9)/unconvincing (1)”; “I find MLF’s Facebook post believable (9)/unbelievable (1)” ; “I find MLF’s Facebook post biased (1)/unbiased (9).” The reliability for credibility was .70.

**Control variable measures**

To partial out any individual effects several control variables were measured in the questionnaire. First, participants were asked about their perceived involvement with the current issue. The measurement was modified from Zaichkowsky’s study (1994). The
scale consists of 10-item nine-point bipolar scales, with 6 items stated reversely. Samples items included: “To me, in general saving and marine species life improving their living condition is important–unimportant (reverse)”, boring–interesting, and relevant–irrelevant (reverse). The reliability for involvement was .94.

Additionally, given the context of the present study is associated with Facebook-based nonprofit-public communication, participants’ Facebook usage, activity level, and donation history was also measured as potential control variables. All measures are included in Appendix B.

**Procedure**

The experiment was conducted via Amazon Mechanical Turk with Qualtrics. Before starting, participants were presented with a brief introduction of the study along with a consent form. Upon agreement to participate, they were asked to complete two short pre-screening questions to determine if their answers would be ultimately kept in the final dataset.

After filtering, qualified participants were directed to a new page with a thorough introduction of the Marine Life Foundation. It was designed to give participants the basic information about charity:

Marine Life Foundation (MLF) is a 501(c)(3) non-profit organization led by marine scientists, environmentalists, and educators. We support research that helps provide solutions to the most critical challenges facing marine species. Founded in 1962, MLF has funded studies in 35 countries worldwide. We are listed in the Nonprofit Times’ Top 100 U.S. NPOs. MLF receives 56% of its funding from individuals, 19% from
government sources, and 7% from corporations. Our mission is “to stop the degradation of the marine environment and to build a harmonious relationship between oceans and humans.” Currently, much of our work concentrates on the conservation of oceans for endangered marine species.

Participants were advised that on the following page, they would be shown a screenshot taken from MLF’s Facebook page. They were asked to read the screenshot carefully and told later they would be asked to answer related questions.

In the manipulation section, all participants were randomly assigned to one of the four experimental conditions with a Facebook post (i.e., large likes/narrow gap, large likes/wide gap, small likes/narrow gap, and small likes/wide gap) and were instructed to read the post carefully. After the Facebook post exposure, participants were asked to answer questions related to the manipulation checks and an attention check question.

After that, a message appeared to the participants. Adopting Liu and Aker’s (2008) method, the message informed them that they could be a winner in a $35.00 drawing. They could donate any part of this money to MLF in the event that they won. Participants were asked to write down how much of the $35.00 they would donate.

Then participants were directed to complete the dependent measures, control measures, and demographic questions. To avoid any order effects, in each section of the questionnaire, items were designed to be presented randomly through Qualtrics’ AI function. Finally participants were asked to guess the purpose of the study. This question served as an additional filter question to eliminate responses with demand features.
Upon completion of the study, participants were debriefed, thanked, and rewarded with $1.25. A random draw was taken to select six winners to receive $35.
Chapter Four

Results

This research examined three major roads of inquiry: (1) Is social media worth investing by nonprofit organizations? (2) Can stakeholders’ engagement behavior on social media predict nonprofit organizations’ fundraising performance? And, (3) does stakeholders’ social media based engagement always exert positive impact on online fundraising for prosocial cause? These three broad inquiries led to four research questions and eight hypotheses, which were investigated through two studies. The second inquiry was answered through a Big Data study where nine-year stakeholder Facebook-based engagement data with the largest 100 NPOs in the U.S. were modeled with organizations’ fundraising successfulness. Third inquiry was answered via an online experiment where various system-generated cues rising from stakeholder engagement activities were controlled and imposed to study participants. Findings of both studies offer distinct theoretical grounds to answer the first inquiry in a critical manner. Results of the two studies are discussed separately below.

Study 1: Big Data Modeling

Descriptive Analysis and Answers for Research Questions

RQ1: What is NPT 100 NPOs’ presence on Facebook from 2007-2015?

Medians and interquartile ranges are reported in Table 3 as descriptive statistics due to the count data nature of the variables, which usually do not follow normal
distribution. As shown in Table 3, nonprofit organizations’ overall presence on Facebook have changed dramatically over the past nine years. First, among the largest 100 NPOs published in 2014, there was a general increase regarding the amount of organizations that were active on the platform. For instance, in the early years of social media development, only 4 of the 100 had their official account or were managing their communication on Facebook. This number was nine times more in 2008 at 36 and was further more than doubled in 2010. The number of NPOs staying current on Facebook reached its peak at 2013. During the most recent four years in the sample time frame, though fluctuations occurred, there were always more than 85% of the total NPOs listed in NPR 100 2014 made dynamic appearances on Facebook.

Second, aside from the fact that more charitable organizations started to use Facebook, their involvement level also experienced steep growth. Specifically, there were only seven posts garneted by the largest NPT100 in the 2007. As more NPOs opened Facebook accounts, this number kept rising. By the end of 2015, the total number of statuses posted by NPOs reached 56,010, more than 8000 times from the starting point. To break it down to organizational level, the median number of posts an organization made in 2015 was 501. Compared to the 2007 median, it was 500 times larger.

**RQ2:** How, if any, has NPT 100 NPOs’ presence on Facebook changed over the years from 2007-2015?

To answer the second research question, a generalized estimating equation based negative binomial model was fitted to look at time effect while accounting for the correlation within companies. Time was entered into the equation as a predictor. Number of posts (in its natural log form) made by NPT 100 at annual level was treated as a
dependent variable. A negative binomial distribution was chosen, because the outcome variable post was an overdispersed count data.

\[ \ln \text{POST}_i = \text{CONST} + \alpha \text{YEAR}_i + \varepsilon_i \]

Results showed that time was a significant predictor of number of posts (coefficient = .24, \( p < .001 \)). The result suggested for one unit increase in year, there is .24 times increase in number of posts in its natural log form. The change of \textit{NPT 100’s} involvement on Facebook from 2007 to 2015 can be found in Figure 2.

**RQ3:** What are stakeholders’ general engagement activates \textbf{a)} liking, \textbf{b)} sharing, and \textbf{c)} commenting on organizational posts with \textit{NPT 100} NPOs on Facebook from 2007 to 2015?

Similar to the results of RQ1, the focal variables associated with RQ3 were also count data, thus medians and interquartile ranges were used as descriptive statistics. Specifically, RQ3 was answered in three-fold with outcomes variables number of likes, shares, and comments, representing three different engagement activities exerted by stakeholders. As for RQ3a, it was revealed that over the nine-year span stakeholders have given NPOs notably more likes. While four charities only received 18 likes from the total 7 posts they made, the 86 charities staying active on Facebook obtained a total of 82,111,751 likes from the users on 56,010 posts. Even the least ranked organization was given 348 likes on its organizational status. And the median number of likes a nonprofit possess from its stakeholders in 2015 was at 233,235.5, which was 1.2 times 2014 statistics, more than doubled from 2013, almost 6 times more than 2012, more than 13 times than 2011, not to mention even earlier years. Stakeholder engagement behavior of liking can be found in Table 4.
Results regarding sharing were also noticeable. Although not as drastic as that of likes, generally, the total number of posts that stakeholders shared with friends and family grew every year during the nine-year time span. Chronologically, the total posts made by NPOs in 2007 were only shared three times by users. In 2008 the share number reached to 1552, followed by about 1.5 times more in 2009, and then tripled in 2010. This number dramatically increased starting from 2011 that all the posts made in that year were shared 1,052,365 times, which was 138 times the last year’s record. By the end of 2017, the total number of shares that all stakeholders gave to the posts made by NPT 100 reached more than 20,519,475 times. The median number of an organization’s posts’ shareability was 55,503. Detailed information about sharing activates is presented in Table 5.

The number of comments that stakeholders left under organizational posts also experienced a substantial elevation. Compared to the “old” days when only one individual left one comment on NPO 100’s post in 2007, 3,320,889 comments was an extremely impressive elevation 9 years later. Although overall stakeholders were to some extent inactive in making comments comparing to liking and sharing a post, they have become more engaged with NPOs on Facebook through commenting. Specifically, the median number of comments a charity received in 2015 was 6,531. This median was observed to have kept growing consistently over the entire nine years from 2007 to 2015. Results associated with stakeholders’ commenting engagement activities are showed in Table 6.
**RQ4:** How, if any, have stakeholders’ general engagement activities **a)** liking, **b)** sharing, and **c)** commenting on organizational posts *NPT 100* NPOs on Facebook changed from 2007 to 2015?

Following similar procedure in RQ2 to answer RQ4, three generalized estimating equations were computed with number of likes, shares, and comments (all in their natural log form) received by NPO posts annually as dependent variables respectively:

For **RQ4a:** \( \ln \text{LIKE}_i = \text{CONST} + \alpha \text{YEAR}_i + \epsilon_i \)

For **RQ4b:** \( \ln \text{SHARE}_i = \text{CONST} + \alpha \text{YEAR}_i + \epsilon_i \)

For **RQ4c:** \( \ln \text{COMM}_i = \text{CONST} + \alpha \text{YEAR}_i + \epsilon_i \)

Results revealed that time was a significant predictor in all three models, affecting likes (coefficient = .80, \( p < .001 \)), shares (coefficient =1.26, \( p < .001 \)), and comments (coefficient = .34, \( p < .001 \)). As results indicated that one unit change in year would lead to .80 times increase of likes, 1.26 times increase of shares, and .34 times increase of comments. All results for RQ4 can be found in Table 7. The changes of stakeholder engagement with *NPT 100*’s Facebook communication from 2007 to 2015 are display in Figures 3, Figure 4, and Figure 5.

**Model Estimation**

To examine the annual effects of stakeholder Facebook engagement with *NPT 100* NPOs on their public donation, a panel model was fitted with lagged variables:

\[
\ln \text{DON}_{i,t} = \text{CONST} + \alpha_1 \ln \text{LIKE}_{i,t-1} + \alpha_2 \ln \text{SHARE}_{i,t-1} + \alpha_3 \ln \text{COMM}_{i,t-1} + \alpha_4 \ln \text{POST}_{i,t-1} + \alpha_5 \ln \text{FUND}_{i,t-1} + \alpha_6 \ln \text{PRICE}_{i,t} + \alpha_7 \text{AGE}_{i,t} + \alpha_8 \left( \text{AGE} \times \ln \text{FUND}_{i,t-1} \right)
\]
\[ + \alpha_9 \ln \text{GRANT}_{i,t-1} + \alpha_{10} \ln \text{PSR}_{i,t-1} + \varepsilon_{i,t}, \]

where \( \ln \text{DON}_{i,t} \) is the dependent variable, which represents the natural logarithm of the dollar amount of general individual stakeholders’ donations received by NPO \( i \) in year \( t \). \( \ln \text{LIKE}_{i,t-1}, \ln \text{SHARE}_{i,t-1}, \) and \( \ln \text{COMM}_{i,t-1} \) are the three focal variables in the equation manifesting stakeholder engagement with \textit{NTP 100} NPOs on Facebook. They were measured by number of likes, shares, and comments the \( i \)th NPO’s posts received in the prior year respectively.

Control variables, starting from the third line, were included. The first covariate was \( \ln \text{POST}_{i,t-1} \), standing for number of posts \( i \)th NPO made on Facebook in the previous year, controlling for organizational communication effect on donation. The rest of the control variables are economic variables with \( \ln \text{FUND}_{i,t-1} \) being a NPO’s fundraising expenditure in the past year, \( \ln \text{PRICE} \) indicating fundraising effectiveness computed as \( \text{PRICE}_{i,t} = \frac{\text{FUND}}{\text{TOTAL EXPENDITURE}} \), \( \text{AGE} \) stipulating NPO history, \( \ln \text{GRANT}_{i,t-1} \) representing the dollar amount a NPO received from government fund agencies the previous year, and \( \ln \text{PSR}_{i,t-1} \) measuring a NPO’s public service revenue in the past year. In addition, a product term of \( \text{AGE} \) and \( \text{FUND} \) was also included in the equation. These proxy variables were inserted to control for any organization-level influences (Okten & Weisbrod, 2000; Saxton & Wang, 2014; Weisbrod & Dominguez, 1986). In the empirical mode, \( \varepsilon_{i,t} \) is assumed to be distributed independently and identically. Finally, all the variables used in the analysis are presented in Table 8.

Before testing the derived hypotheses, following Wooldridge’s suggestions (2010), assumption testing was conducted to detect multicollinearity problems. Variance
of inflation (VIF) indexes showed that among all independent variables, ln FUND (VIF = 174.38) and AGE * ln FUND (VIF = 188.83), and ln LIKE (VIF =28.74) and ln COMM (VIF = 17.56) suffered multicollinearity issues with their elevated values above the commonly used threshold of 10. Therefore, in the final model, the interaction term between AGE and ln FUND were omitted. However, dropping either ln LIKE or ln COMM would not allow to fully test the hypotheses, as they were the model’s focal variables. Therefore, to test for the hypotheses two models were adopted, omitting ln COMM (Model 1) and ln LIKE (Model 2) respectively. Table 9 presents the descriptive statistics for all independent, dependent, and covariate variables in the model.

Pooled ordinary least squares (pooled OLS) regression was performed on the current data for both equations. The first model omitting ln COMM estimated with pooled OLS explained 24.47% variance in the model, as the second model omitting ln LIKE explained 24.38% of the total variance.

Hypotheses Testing

H1: The number of likes a NPO post received from its stakeholders is positively related with the NPO’s public donation.

For H1, the number of likes given by stakeholders to organizational post in the previous year had a significant positive effect on annual public donation. The coefficient for the number of likes was .03 (p < .05). Therefore H1 was supported. Specifically, results from H1 testing suggested that on average one unit increase in the log of number of likes a NPO received in the past year would lead to about .03 unit increase in the log of public donation in the following year, while holding all other variables constant.

H2: The number of shares a NPO post received from its stakeholders is positively
related with the NPO’s public donation.

For H2, the number of shares a NPOs’ Facebook posts received in the past year had an insignificant effect on the given NPO’s public donation. This result was consistent in both models. The coefficient for the number of shares in the first model omitting ln COMM was -.01 (p = .54). The coefficient for ln SHARE in the second model omitting ln LIKE was .006 (p = .67). Thus, H2 was not supported.

H3: The number of comments a NPO post received from is stakeholders is positively related with the NPO’s public donation.

For H3, the number of comments stakeholders left under a NPOs’ Facebook posts in the previous year had a significant positive effect on its public donation in the coming year. The coefficient for the number of comments was .07 (p < .001). Thus, H3 was supported. The results indicated that on average one unit increase in the log of the number of comments a NPO received in the antecedent year would lead to about .07 unit increase in the log of public donation in the upcoming year, while holding all other variables constant. Results for hypotheses testing are presented in Table 10.

Study 2 Online Experiment

Pretest

Power analysis

Three power analyses were conducted corresponding to three interaction hypotheses between like and gap on donation, credibility, and self-perceived contribution, controlling for involvement. The results of the first analysis on donation revealed that a total sample of 362 was obtained for the four groups whose means are to
be compared. The correlation coefficient between the covariate and the outcome was assumed to be 0.42. Root-mean-square-error (RMSE) prior to controlling for involvement was assumed to be 5.09. The calculated total sample achieves 80% power to detect differences among the means versus the alternative of equal means using an F test with a .05 significance level. The second power analysis on credibility resulted a total sample size at 84 to achieve 80% power. The covariate involvement was assumed to have a correlation coefficient with credibility at 0.69. RMSE prior to controlling for involvement was assumed to be 1.08. The power analysis for self-perceived contribution yielded a total sample size at 462, which achieves 80% power to detect the mean differences. The covariate was assumed to have a correlation coefficient with self-perceived contribution at 0.23 and RMSE prior to controlling for involvement was assumed to be 2.34.

**Manipulation checks**

In order to check participants’ perceptions of the number of like the fundraising posts received, an independent sample t-test was performed. In the analysis, respondents’ ratings about likes was entered the dependent variable. Results showed that participants who were randomly assigned to the small condition consider the amount of likes (\(M = 2.67, SD = 1.72\)) was significantly smaller than that (\(M = 6.75, SD = 1.25\)) in the large condition, \(t(39) = -8.68, p < .001\)). These results confirmed that the manipulation of number of likes in this study was successful.

To check participants’ perceptions of the gap between the numbers of likes and shares under the fundraising posts, an independent-sample t-test was conducted with participants’ evaluations of the percentage of number of shares to number of likes as the dependent variable. It was found that participants who were exposed to the narrow gap
condition rated the percentage of shares to likes ($M = 6.73, SD = 2.25$) significantly higher than those exposed to the wide gap condition ($M = 4.50, SD = 2.37$), $t(39) = 2.80$, $p < .01$. $t$-test results confirmed that the manipulation of gap between number of likes and number of shares in this study was successful. Thus the manipulation method and stimuli were implemented in the main experiment.

**Main Experiment**

**Manipulation checks**

In order to check participants’ perceptions of the amount of likes and the gap been likes and shares, two independent samples $t$-tests were performed with the data collected for the main experiment. The first $t$-test was conducted with participants’ evaluations of the number of likes as the dependent variable. It was found that participants who were exposed to the small condition ($M = 2.24, SD = 1.55$) scored significant lower than those were exposed to the large condition ($M = 6.27, SD = 1.94$), $t(186.92) = -14.33$, $p < .001$. The second $t$-test was conducted with perceived gap between like and shares as the dependent variable. The result showed that participants in the narrow condition ($M = 7.38, SD = 1.73$) scored significantly higher on percentage than participants in the wide condition ($M = 3.59, SD = 1.93$), $t(184.42) = 14.42$, $p < .001$. These $t$-test results confirmed that the manipulation of stimuli in this study were successful.

**Hypotheses testing**

**H4**: There will be a significant interaction effect between like and gap on donation amount.

To test H4, a two-way ANCOVA was conducted by entering like and gap as the
two fixed factors, involvement as the covariate, and donation as the dependent variable into the model respectively. As seen in Table 11, results suggested a likely two-way interaction between like and gap on donation, after controlling for involvement with a .10 significance level, $F(1, 184) = 3.24, p = .07, \eta^2 p = .02$. Further analyses on the interaction effect through multiple comparisons with Sidak adjustment were performed. The results revealed that for participants who were exposed to a wide gap between the number of likes and number of shares, the larger amount of likes generated a more donation than smaller amount of likes condition, $M_{diff} = 3.99, p = .068$. However, for participants who viewed the narrow gap there was no such a difference ($M_{diff} = 1.53, p = .48$). From another angle, for participants who viewed small like condition, the narrower gap between like and share led participants to donate more than the wider gap condition, $M_{diff} = 3.88, p = .09$. However, for participants who were assigned to the smaller number of likes condition, no such difference was observed ($M_{diff} = 1.65, p = .42$). Thus, H4 was supported at a .10 significance level. The interaction results on donation are depicted in Figure 6.

**H5:** There will be a significant interaction effect between like and gap on credibility.

For H5, a two-way ANCOVA was performed to detect proposed interaction effect between like and gap on credibility after controlling for involvement. Results suggested a likely interaction effect, $F(1, 184) = 2.19, p = .14, \eta^2 p = .012$. Results from pairwise comparison using Sidak adjustment indicated that when there was a large amount of likes, participants rated the post as more credible when the gap between like and share
was wide than when the gap was narrow ($M_{\text{diff}} = .580, p < .05$). However no significant difference was observed in the small like situation ($M_{\text{diff}} = .06, p = .85$). Thus, H5 was partially supported. The interaction results on credibility are displayed in Figure 7.

**H7:** There will be a significant interaction effect between like and gap on self-perceived contribution.

To test H7, another two-way ANCOVA was conducted with self-perceived control being the dependent variable, like and share being the two fixed factors, and involvement being the covariate. A significant two-way interaction was discovered, $F(1, 184) = 3.68, p = .057, \eta^2_p = .02$. Given the interaction was significant with a .10 significance level, further analyses were conducted. To further explore this interaction effect, it was found that participants who were exposed to the narrow gap condition rated their contribution to the cause higher in the low like condition than in the high like condition, $M_{\text{diff}} = 1.15, p < .05$, but no significant difference ($M_{\text{diff}} = .19, p = .70$) was found between the two levels of like when participants viewed the wide gap stimuli. Therefore, H7 was supported with a .10 significance level. Interaction results can be found in Figure 8.

All ANCOVA test results are presented in Table 11.

**H6:** Perceived message credibility will mediate the effect of like and gap on donation amount.

**H8:** Self-perceived contribution will mediate the effect of like and gap on donation amount.

H6 and H8 proposed a moderated mediation model: credibility and self-perceived
contribution mediate the relationship between like and gap on donation amount. To test this hypothesis, a bootstrapping analysis was conducted by adopting the SPSS PROCESS Macro (Hayes, 2013). Among several different ways to test for mediation, bootstrapping was found to be the most powerful one, due to the fact that it does not need to meet the assumption of normal sampling distribution (Hayes, 2013; Preacher & Hayes, 2008). In this study, bias-corrected bootstrap confidence intervals based on 1,000 bootstrap samples were used to test direct and indirect mediation effects.

Following Hayes’s (2013) suggestion, Model 8 was adopted. In the model, like was entered as the predictor, gap was entered as the moderator, credibility and self-perceived contribution were two paralleled mediators, and donation amount was the dependent variable with a covariate of involvement. Both like (small = 0, large = 1) and gap (narrow = 0, wide = 1) were dummy-coded.

Results from the analysis suggested that the model was statistically significant and all predictors together explained 14% variance of the dependent variable, $R^2 = .14$, $F(6, 182) = 5.05, p < .001$. As for the proposed moderated mediation, results in Table 12, Table 13, and Table 14 revealed that self-perceived contribution was a significant conditional mediator between like and donation. However, credibility was not.

To elaborate, like exerted a significant negative indirect effect on donation through self-perceived contribution only when the gap condition was narrow, $B = -.78$, $SE = .41$, 95%CI [- 1.92, -.18]. When the gap condition was wide, the indirect effect was not significant, $B = .13$, $SE = .34$, 95%CI [-.54, .81]. At the meantime, like exhibited a significant (significance level at .10) positive direct effect on donation that higher amount of likes led to more donation than lower amount of likes, when the gap condition was
narrow, $B = 1.89$, $SE = 1.05$, $t = 1.80$, $p = .07$, but no significant direct effect was
discovered in the gap narrow condition, $B = .01$, $SE = 1.04$, $t = .01$, $p = .99$. To
summarize, self-perceived contribution was a conditional mediator between like and
donation, moderated by gap. Thus, H6 was not supported and H8 was supported.
Chapter Five

Discussion

This chapter discusses the findings from both studies examining the impact of social media based stakeholder engagement on nonprofit organizations (NPOs) financial outcomes. First, the statistical results from Study 1 are summarized and interpreted, followed by its theoretical and practical implications. Study 2 results are then discussed. Finally, research limitations are discussed.

Study 1

Facebook provides nonprofit organizations a cost-efficient communication platform to post information, generate awareness, change public perception, and cultivate and nurture relationships with various stakeholder groups. Through content analysis and interviews, previous studies concluded that nonprofit organizations were left behind in the technological revolution associated with the advent of social media (e.g., Bortree & Selzter, 2009; Briones et al., 2011; Curtis et al., 2010; Kang and Norton, 2004; Muralidharan et al., 2011). In those investigations, NPOs were found to lack strategic adoption of the most innovative communication platforms, not to mention initiating effective interactions with their stakeholders online. Employment of “Big Data” approaches that examined the real-time communication activities of the largest one hundred NPOs in the U.S. from 2007 to 2015, results from Study 1 on one hand echoed
with prior findings, but at same showed significant progress of NPO’s usage of Facebook.

**Findings from RQs**

First, the research found that in the early days of social media development NPOs were indeed *not* prepared to adapt to the newest form of technological communication. Findings revealed that in the earliest two years, 2007 and 2008, less than 40% of the organizations in the sample were active on Facebook. For instance, in 2007 only 4 out of the largest 100 NPOs had an account or posted any information. In addition, for those organizations that had Facebook presences in the first two years of this study, they only made 7 posts in 2007 and 1,018 in 2008.

Although the inactiveness of NPOs’ Facebook-based communication may be related with the lower popularity of Facebook among general users in the early 2000s, results from the current data did align with previously published criticisms. However, starting in 2009, the situation changed dramatically. The number of NPOs active on Facebook was double than it was in the previous year; and the number of posts made was nine times found in 2008. Since then, NPOs’ self-exposure and involvement on Facebook continued to increase, so that in 2013 the number of organizations among the sample organizations staying active on Facebook reached its peak at 95. By the end of 2015, among the 86 charities that were “buzzing” on Facebook generated 56,010 posts, a trend that was statically supported by the negative binomial regression analysis. It showcased that NPOs’ presence on Facebook has significantly accelerated over the nine years. To interpret the result in a more intuitive way additional computation was performed: in
general the model predicted that on average a nonprofit organization posted 27.52% more posts than the previous year.

At the same time, an even more remarkable growth of organization-stakeholder interactions was discovered through the stakeholder perspective. Via examining stakeholder communicative engagement with charities, such as liking, sharing, and commenting, findings from Study 1 contradicted the assertion that NPOs failed to generate interactions with stakeholders on social media. Results from three negative binomial regressions indicated that stakeholders liking, sharing, and commenting behaviors appeared significantly more on NPOs’ posts. Additional calculations presented more intuitive explanations: on average stakeholders gave (1) a NPO 2.22 times more likes, (2) 3.52 times more shares, and (3) 41.06% more comments than the previous year. These results suggested that overall stakeholder engagement with NPT 100 organizations on Facebook rose over the nine years studied. Based on these findings, the growth was profound. As noted, this is opposed to the findings from prior literature. Three reasons might have contributed to the disagreements.

As noted earlier, most of the research investigated nonprofits adoption (or non-adoption) of new media took place in the early 2000s, a time when new media just started to blossom. Not many individuals were ready to interact with companies or organizations on Facebook, which was originally designed and utilized for interpersonal connection (Vorvoreanu, 2009). In addition, few early studies demonstrated the empirical linkage between organizations’ new media usage and positive public relations outcomes. As Kent (2008) once advised, organizations needed to be cautious when investing in social media as no solid evidence had yet shown its effectiveness.
However, while the first reason might explain part of the discrepancies between the findings of Study 1 and those of the exiting literature, it does not seem to explain the entire picture. There are other major causes. One of them is the research scope: The majority of earlier research was either content analysis-based research that only investigated the message content from organizational perspective or survey or interviews that may suffer from response and researcher bias. Such methodological approaches may have led to conclusions that NPOs were predominantly using one-way information dissemination strategies on social media. Nevertheless, they were not able to provide objective behavioral inference to how and in which direction those distinct message strategies would affect stakeholders’ interactions with those organizations. Saxton and Waters (2014) explained that this might be due simply to researchers not having access to measures of stakeholders’ online responses in a both timely and longitudinal manner.

This methodological shortage, in turn affects theoretical testing. Neglecting stakeholder behavior and reaction to organization social media messages, prior researchers left information *receivers* out of the communication loop. This approach may not provide the power necessary to evaluate the outcomes of classic public relations models in online settings nor to reveal the real potential of social media (Ji et al., 2017; Saxton & Waters, 2014). And, not by coincidence, findings from a recent study conducted by Saxton and Waters (2014) based on stakeholder real time engagement data to some extent support this interpretation. They found that two-way dialogic messages were not the only source to catch stakeholder attention and thus stimulate them to like and comment; one-way informational updates were also largely shared by NPOs’ online stakeholders (Saxton & Waters, 2014).
Findings from Hypothesis Testing

Perhaps, the most interesting findings in Study 1 are from the panel model with lagged variables estimated via OLS method. Conceptualizing from the stakeholder perspective, this study was one of the first empirical attempts to demonstrate the effectiveness of nonprofit Facebook adoption. Using panel data with lagged variables estimated with OLS method, the robust association between stakeholder Facebook-based engagement with NPOs and their financial outcome—public donation—was tested. Data used in hypothesis testing were collected from stakeholder social-mediated engagement behavior with the largest NPOs in the in naturalist settings from 2007 to 2015.

Study 1 found that stakeholder engagement activities with NPOs’ Facebook pages were related to their annual fiscal public donation, that stakeholder natural engaging behaviors online such as liking (coefficient = .03, \( p < .05 \)), and commenting (coefficient = .07, \( p < .001 \)) on NPOs’ Facebook posts both significantly and positively predicted the amount of public donation received by NPOs in the following year. These results implied that the more likes and comments NPOs received from their online stakeholders, the greater the positive effect on organizational financial performance; specifically, the more donations they garnered. However, sharing NPOs original posts on Facebook was not found to be significantly related to their public donation in the upcoming year in two separate models run due multicollinearity (coefficient in model 1 for sharing = -.01, \( p = .54 \); coefficient in model 2 for sharing = .006, \( p = .67 \)). This result suggested the number of shares NPOs organizational posts received from their online stakeholder groups did not have any effect on their annual public donation. Finally, although it was not originally hypothesized, both models also found significant negative association between the
numbers of posts NPOs made on their Facebook profiles and public donation. Specifically posts (coefficient in model 1 for posts = -.13, \( p < .001 \); coefficient in model 2 for posts = -.12, \( p < .001 \)) had significantly negative influence on the amount of donation NPOs were awarded by their donors in the next fiscal year. These results draw several significant theoretical and practical contributions to the existing literature.

**Theoretical Implications**

In general, the findings in Study 1 align with previous research that stakeholder active communication behavior with an organization significantly affects their relationships and related positive outcomes with the organization (e.g., Bruning & Ledingham, 1999; Ferguson, 1984; Grunig & Huang, 2000; Grunig & Hung, 2002; Yang & Grunig, 2005). Active publics or stakeholder groups are most likely to be the primary source for organizational information, which can be seen as collective cognitive knowledge to be further shared and acknowledged by even a larger group of stakeholders (e.g., Anderson & Narus, 1990; Kim et al., 2013; Yang, 2007). In this process, the positive intangible values of an organization will be mediated through active stakeholder communicative actions that essentially determine the magnitude and direction of how in general the public evaluate and perceive a target organization and consequently cast positive endorsing behaviors toward the organization. In the context of stakeholder Facebook engagement, users who give likes and comments on charities’ posts can be deemed as active stakeholders. Their clicking “like” and leaving comments on NPO’s posts can be considered as such positive communicative actions. Likes, as characterized by Schandorf (2012), are gestures that convey endorsement at a basic level.
In Study 1, results also showed that more comments left by stakeholders on a charity’s Facebook posts led to better financial performance as well. As Ji and colleagues (2017) argued, making a comment on social media can be classified as a more profound engagement behavior compared to clicking like and share buttons. This may be because actually writing text requires a higher level of effort, leading to a higher level of deep-seated and long-lasting effect (Cho et al., 2014; Berger and Iyengar 2013; Muntinga et al., 2011). However, the influence of leaving textual commentary under an organizational post can be multilayered. First, from the commenter perspective, via commenting, stakeholders have an opportunity to reveal more details about their feelings toward an organization and its products and services. Such behavior can be understood as a proactive communication function that empowers commenters that they are not only encouraged to voice their opinions, but more importantly, feel they are valued in the organizational decision-making process (Li, 2016). Second, commenting behavior and comment messages also exert affect on viewers. From the viewer perspective, witnessing an organization being frequently commented on may yield perceptions that the organization is seen as engaging, transparent, and authentic. Those sophisticated written texts with other-generated information can also be processed by readers as informational source, and thus, set up the agenda for the organization on social media, potentially changing public perceptions, evaluation, and even behavior related outcomes with an organization.

**Practical Implications**

To expound the findings in a more intuitive manner and demonstrate the financial value of stakeholder engagement with NPOs Facebook communication for professionals,
additional computations were conducted. The results can be interpreted as:

1) On average, 1% more engagement generated by stakeholders through liking a NPO’s post will return approximately .03% increase in next year’s donation;

2) On average, 1% more engagement generated by stakeholders through commenting on a NPO’s an organizational post will return about .07% increase in next year’s donation;

3) On average, 1% more posts generated by NPOs on their Facebook pages will lead to approximately .12%–.13% decrease in donation.

These findings, based on the conceptual and mathematical logic that resulted in statistical equations should provide public relations professionals specializing in nonprofit communication to effectively evaluation their annual Facebook performance and predict public donation in the upcoming year.

In addition, although not formally hypothesized, it was found that the total number of posts that a charity put on Facebook during the prior year significantly, but negatively influenced how much donation the charity could expect to receive in the following year. In other words, more actively or often a NPO posted content on its Facebook account did not seem to be a positive predictor of its financial outcome. This finding supports the argument advanced in the previous literature that one-way information dissemination is not a strategic way to make significant favorable changes in stakeholders’ attitudes or behavior (Dozier, Grunig, & Grunig, 1995). Posting too much information on Facebook—without strategic selection—may lead to negative perceptions or behavioral intentions from stakeholders (McCorkindale & DiStaso, 2011).
Emerging new technological features offered by social media signify their critical role in assisting organizations to achieve both favorable attitudinal and behavioral outcomes through managing their relationships with various stakeholder groups. Prior research pointed out the great potential of online communication in facilitating two-way communication and relationship building (e.g., Kent, Taylor, & White, 2003; Lee & Park, 2013; Yang & Lim, 2009). With the increasing development of social media there are more opportunities for organizations to engage stakeholders for bilateral, direct, and intimate communication, although challenges exist. However, as articulated earlier, the majority of existing literature centers on how organizations utilize social media, leaving stakeholders out of the communication loop.

Study 2 took a different approach by focusing on how stakeholders react to an organization’s persuasive message in an online experimental context. Thereby, Study 2 investigated how stakeholders’ communicative reactions to organizational communication manifested by system-generated cues can affect individuals’ information processing and decision-making in social-mediated prosocial context. This experimental examination provided unique contributions to the literature by demonstrating the casual relationship between heuristic cueing and prosocial behavioral change. Based on a 2 (like: large vs. small) X 2 (gap: narrow vs. wide) experiment, it was found that counterintuitively the number of likes displayed under a NPO’s fundraising post had a negative impact on donation amount when the gap between the number of likes and shares was narrow. How this relationship was moderated by salience of system-generated cues and mediated by perceived self-role in a collaborative task was also tested. The
implications make meaningful theoretical and contributions to the literature in several ways.

**Heuristic Cueing Information Processing**

The most important finding of Study 2 was the interaction between number of likes and gap between likes and shares on donation amount and self-perceived contribution. In the domain of strategic communication, it is widely believed that number of likes and shares are two natural metrics or KPIs indicating the frequency of stakeholder engagement. Although it is believed that the level of engagement differs between the two communication behaviors, in general they represent positive relationships and communication outcomes an organizational Facebook post achieves (Cho, 2012; Saxton & Waters, 2014). However, in previous literature, the outcomes were either investigated individually as independent variables, or entered together as predictors to test the their overall effect. No research had studied whether one’s impact on communication outcomes would be contingent upon the levels of the other, and whether, in certain conditions, they would yield negative impacts on outcome variables.

Conceptualizing the numbers of engagement indicators as system-generated cues, findings from Study 2 expanded the framework of the MAIN model (Sundar, 2008) and offered empirical supports for the SIPT prediction (Weaterman, 2012) in a rarely tested context.

Although the MAIN model and machine heuristics have been applied to study how individuals process system-generated information to assess online credibility, little has been done in analyzing status-level cues. Findings from Study 2 suggested that status-level heuristic cues imbedded in Facebook are also valuable information that can be
utilized by individuals. Study 2 showed that, relied upon heuristic information, research participants evaluated their position in a collaborative prosocial task in a virtue setting, which further caused changes in their donation behavior. Second, applying the SIPT, an interpersonal communication theory specialized in computer-mediated communication environment, to an organization-public setting, Study 2 demonstrated that perceptions of other group members in a virtue team would also influence the communication outcome of organizational relational consequences, particularly donation in the current investigation. Last but not the least, the findings extend the impact of online heuristic cues from perception and attitude to actual behavior change. In Study 2, through only altering the number of likes and the gap between like and share in the experimental conditions, significant interactions were obtained between two independent factors.

More interestingly, Study 2 found that the cueing effect did not exist in all conditions. Counterintuitive effects between like and self-perceived contribution and donation were detected. In the narrow gap condition, large amounts of liking resulted in decreased self-perceived contribution and then donation than small amount of likes. The results indicated that only when the cues became extremely salient for participants, would they treat system-generated information as valuable cues and rely on them to make decisions. Specifically, in Study 2, participants considered the cues prominent when they were exposed to the condition where the gap between number of likes and shares was narrow. When participants recognized a relatively high number of people had participated with the cause, they were triggered to think about their personal role in this group task even though in a virtue setting. A possible explanation for this finding is that Facebook users may be used to and attuned to give likes to an organizational post, it is still not yet a
custom for them to share an organizational post, unless they consider it is of great interest or importance for the people in their network who are going to view it. Therefore, when they were exposed to a narrow gap between number of people who had liked the post and who had shared the post, their attention was caught to process the information, which was the only one available to them at the moment. Nevertheless, when participants observed a wide gap between the two KPIs, it was not something unexpected, thus, not cuing any heuristic processing.

**Self-perceived Contribution as a Conditional Mediator of Social Loafing**

Previous studies concluded several theoretical accounts for the social loafing phenomenon. Among them, diffusion of responsibility was probably one the most studied and strongest explanation (e.g. Fishcer et al., 2011; Freeman at al., 1875; Hurley & Allen, 1974; Latane & Darley, 1970; Latane, 1981; Levy et al., 1972; Thalhoder, 1971; Voelpel et al., 2008; Wiesenethal et al, 1983). However, most of the incidents studied by prior researchers were posed as either negative or neutral events; no prosocially-positive cause was involved in this line of research. Therefore, what would be a possible reason for individuals to withdraw contributions from an event, which brings favorable outcomes to the society? Self-perceived personal role was suspected to be the reason because people tend to magnify their own contribution in collaborative tasks and estimate their contribution higher compared to their teammates’ contributions, especially when joint work achieves favorable results that entitle individuals with accomplishment and rewards (Burger & Rodman 1983; Chambers and Windschitl, 2004; Ross and Sicoly 1979).

Study 2 tested this logic through mediation analysis using bootstrapping; the results empirically supported the logic. The findings revealed that when participants
perceived their contribution to the pictured fundraising cause in the experimental material would be highly valued, they tended to donate more. Whereas, when they sensed that their contribution to the joint task would not be treated as valuable as they expected it to be, they would donate less, or in other words became social loafers. More interestingly, such effect was contingent upon the salience of system-generated social cues.

Counterintuitively, greater number of likes led to less perceived contribution and then less donation than small amount of likes, when the gap between like and gap was narrow. These findings extended the existing literature in several ways. First, it provided evidence that social media through virtual communication could form a collaborate community, in which individuals worked together to achieve a common goal. Second, results confirmed the effect of self-perceived personal role in joint tasks tested in prior research and further extended it to the social media context. Most importantly, in addition to the exiting reasons, Study 2 provided an alternative theoretical account to explain social loafing, especially in a social-mediated prosocial circumstance.

**Online Credibility Judgment via System-generated Cues**

While earlier research found the linkage between system-generated cues and credibility was prominent, recent studies found the association was more sophisticated than expected. In Study 2, although there existed significant differences between wide gap and narrow gap on perceived message credibility in the large like condition, the overall interaction was not significant; moreover the mediation effect was not statistically significant. Two reasons may explain these non-significant findings. First, more moderation effects were detected in certain conditions where system cues could become valuable in processing online information. For example, in experiments associated with
Yelp, Van Der Heide and Lim (2015; 2016) discovered that the interaction effect from system cues did not have impact on participants’ perception of reviews’ credibility unless they were frequent users of Yelp. For non-Yelp users, this effect was not found. Another possible moderator was suggested by Gao and colleagues (2016): the main effect ejected from a system cue was moderated by message topics. For some specific topics, for example when number of reposts appeared under a food information-related post, the smaller the number, the more credible people thought the post was. As Van Der Heide and Lim (2016) concluded, there are external factors that can affect the way different heuristics are activated. Rather than merely investigating system-generated cues, future research should employ and discover all possible external factors that can influence cue activation and then how it would impact on individual credibility judgments, attitudes, and behaviors.

The second reason might have come from the manipulation materials design. In the previous two studies that tested the relationship between system-generated cues and attitude, curvilinear patterns were found. Tong and colleagues (2008) designed five experimental groups in which various numbers of friends appeared on five Facebook profiles. Different from their prediction, a reversed-U effect was detected. Results indicated that having an extensive amount of friends on Facebook did not make one perceived as more extraverted; a similar non-linear effect was also found by Westerman and colleague’s Twitter study (Westerman et al., 2012). They designed three experimental conditions (i.e., low, medium, and high) for the number of followers a profile had. However, participants in the medium group perceived the profile owner more credible than the low and high groups, but no difference was detected from low and high.
A non-linear relationship was discovered among the experimental groups and perceived credibility. Future research examining system-generated cues on perceptions should include more than two conditions for the independent groups to further detect whether such reversed-U shape hold in various contexts. In addition, the lack of power (only 189 effective responses were included in the final sample) and problematic scale (the reliability for credibility was at .70) could also be potential reasons led to non-significant results in Study 2.

**Limitations and Future Research**

The vast majority of research has limitations and the current research is no exception. First, the research did not analyze the content strategies of NPOs’ Facebook communication, nor were stakeholder comments analyzed. Obviously, textual data include more sophisticated information than behavior matrices. For instance, in an organizational post, the relevancy of the information to the organization shared in the message may vary. The discrete emotions and emotional arousal appealed in a post can be distinct. In addition, a NPO can also include visual and audio assistances to make a post more appealing. Not only content generated by NPOs, but those posted by stakeholders can also carry those features. The current study did not conduct investigations at the content level, thus, it cannot provide insights in that regard. Future research should explore how message content strategies and features impact on organizational outcomes from both organizational and stakeholder perspectives in online real-time context.

Future research could also address any sample limitations as in Study 1 organizations were exclusively selected from the largest 100 nonprofit organizations in
the U.S. and the results from Study 2 were based a scenario with a fictions organization. Given that sample organizations were presented as either the top NPOs nationally and the experimental NPO was created expressly to mirror a top NPO their social media management and performances could serve as exemplars for other smaller or local charities. In this regard, applying the integrated model to other forms of nonprofits, such as governmental organizations or educational institutions, advocacy groups could help enrich theoretical implications and offer researchers and practitioners with insights from different perspectives.

In addition, in Study 2 no distinction was taken into consideration between NPOs or industry specifications when constructing the model. It was found that within the NPT 100 NPOs, the message strategies they adopt on Facebook and how stakeholders’ interaction with them vary (Saxton & Waters, 2014). Industry classifications may also have impact on a NPO’s financial performances such that some in certain classifications could have possibly received more funding due to policy or financial reasons between 2007 and 2016. Future research can try to take industrial differences into consideration, therefore offering more tailored suggestions to specific nonprofit categories.

It is also noteworthy that though the findings depicted a positive increase in nonprofit organizational Facebook presence and stakeholder engagement with longitudinal and empirical evidence, they were not able to offer theoretical explanations for the major reasons behind such trends. Future research should adopt similar methodology, but add more variables to investigate what causes change for both organizations and their stakeholders. Future research should also continually monitor
NPO and their stakeholder social media engagement to offer continued literature and practical evidences for researchers and professionals.

In Study 1, a confounding result was discovered. Sharing yielded no significant change in NPO financial performance. As discussed earlier, the engagement behavior of sharing an organizational post can be characterized as a gesture to increase the possibility of organization exposure. However, this effect was not observed. A possible reason might be related with users’ original intention of using Facebook- interacting with friends. Vervoreanu (2009) pointed out although organizations such as corporates may accomplish the purpose of keeping in touch with friends and family, Facebook users were apathetic to organizations’ social media-based communication. When seeing a friend sharing a NPO post on his or her newsfeed, the presentation may not differ much from a post directly posted by an organization, thus, it might yield an effect related to information overload. More research is needed to learn the exact motivation behind sharing on Facebook. More studies investigating the reason behind sharing behavior on organizational posts and its possible public relational ramifications are needed to better understand the impact of information overload on communication and financial outcomes.

**Conclusion**

This research is one of the earliest empirical attempts to illustrate a potential association between stakeholder online behavior and cognitive perceptions. The results reinforced the critical role that social media can play in strategic corporate communication management with stakeholders. Saxton and Waters (2014) argued that different online communication tools provide opportunities for real-time observations to
record stakeholder behavioral interactions with organizations. Results generated from the current study added to the evidence that data extracted from social media are valid information that are able to explain offline social phenomena, at least to a certain extent.

With a Big Data approach incorporating a large sample size containing 9-year longitudinal data and an experiment indicating potential casual links, the results of this study may be of use to nonprofit communication professionals to better predict donation campaigns in the future.
References


McCorkindale, T., & DiStaso, M. W. (2011, August). “Like” or “unlike”: How millennials are engaging and building relationships with organizations on Facebook. Paper presented at the Association for Education and Journalism Convention, St. Louis, MO.


Table 1

Demographics for Study 2 Pretest, N = 41

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**Facebook history** ($M = 7.83, SD = 2.35$)

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<tr>
<td>A few times a week</td>
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<td>About 2-3 times a day</td>
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<tr>
<td>More than 3 times a day, but not all the time</td>
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<tr>
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$10,000 - $19,999   24  12.7
$20,000 - $29,999   22  11.6
$30,000 - $39,999   24  12.7
$40,000 - $49,999   18  9.5
$50,000 - $59,999   35  18.5
$60,000 - $69,999   10  5.3
$70,000 - $79,999   9  4.8
$80,000 - $89,999   5  2.6
$90,000 - $99,999   9  4.8
$100,000 - $149,999 7  3.7
More than $150,000  1  0.5

Facebook history  \( M = 8.43, SD = 2.79 \)

Facebook active level

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Table 4

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<th>Total</th>
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<th>SD</th>
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Descriptive Statistic for Share from 2007 - 2015

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<th>Median</th>
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Table 6

*Descriptive Statistic for Comment from 2007 - 2015*

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<th>SD</th>
<th>Minimum</th>
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<td>0</td>
<td>0</td>
<td>0.5</td>
<td>1</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>36</td>
<td>796</td>
<td>22.1</td>
<td>76.7</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>14</td>
<td>462</td>
<td>14</td>
</tr>
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<td>2009</td>
<td>64</td>
<td>74509</td>
<td>1164.2</td>
<td>1646.0</td>
<td>0</td>
<td>100.5</td>
<td>434.5</td>
<td>1721.5</td>
<td>7420</td>
<td>1621</td>
</tr>
<tr>
<td>2010</td>
<td>79</td>
<td>834578</td>
<td>10564.3</td>
<td>63122.5</td>
<td>0</td>
<td>271</td>
<td>1248</td>
<td>6345</td>
<td>562832</td>
<td>6074</td>
</tr>
<tr>
<td>2011</td>
<td>81</td>
<td>978989</td>
<td>12086.3</td>
<td>71464.7</td>
<td>3</td>
<td>400</td>
<td>1780</td>
<td>5535</td>
<td>645306</td>
<td>5135</td>
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<tr>
<td>2012</td>
<td>86</td>
<td>921922</td>
<td>10720.0</td>
<td>49472.3</td>
<td>5</td>
<td>557</td>
<td>1909.5</td>
<td>7576</td>
<td>458187</td>
<td>7019</td>
</tr>
<tr>
<td>2013</td>
<td>95</td>
<td>1613642</td>
<td>16985.7</td>
<td>85288.6</td>
<td>34</td>
<td>1438</td>
<td>3630</td>
<td>8949</td>
<td>828257</td>
<td>7511</td>
</tr>
<tr>
<td>2014</td>
<td>88</td>
<td>2568908</td>
<td>29192.1</td>
<td>161398.6</td>
<td>1</td>
<td>1145.5</td>
<td>4565.5</td>
<td>14267</td>
<td>1506996</td>
<td>13121.5</td>
</tr>
<tr>
<td>2015</td>
<td>86</td>
<td>3320889</td>
<td>38615.0</td>
<td>227097.9</td>
<td>7</td>
<td>1633</td>
<td>6531</td>
<td>17269</td>
<td>2108146</td>
<td>15636</td>
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</table>
**Table 7**

*Results for Negative Binomial Regressions*

<table>
<thead>
<tr>
<th>DV</th>
<th>Intercept</th>
<th>Estimate</th>
<th>SD</th>
<th>DF</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln Posts</td>
<td>-709.25</td>
<td>0.36</td>
<td>0.02</td>
<td>97</td>
<td>19.54</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>ln Likes</td>
<td>-2097.10</td>
<td>1.05</td>
<td>0.03</td>
<td>97</td>
<td>37.61</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>ln Shares</td>
<td>-3049.05</td>
<td>1.52</td>
<td>0.03</td>
<td>97</td>
<td>44.91</td>
<td>&lt; .0001</td>
</tr>
<tr>
<td>ln Comments</td>
<td>-1167.71</td>
<td>0.58</td>
<td>0.03</td>
<td>97</td>
<td>22.92</td>
<td>&lt; .0001</td>
</tr>
</tbody>
</table>
### Table 8

*Variables in the Penal Data Analysis Model*

<table>
<thead>
<tr>
<th>Variables Names</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln DON i,t</td>
<td>Total public donation received by NPO i in year t (in natural log)</td>
</tr>
<tr>
<td>CONST</td>
<td>The constant intercept in the model</td>
</tr>
<tr>
<td>ln LIKE i,t-1</td>
<td>Total number of likes received by NPO i in year t-1 (in natural log)</td>
</tr>
<tr>
<td>ln SHARE i,t-1</td>
<td>Total number of shares received by NPO i in year t-1 (in natural log)</td>
</tr>
<tr>
<td>ln COMM i,t-1</td>
<td>Total number of comments received by NPO i in year t-1 (in natural log)</td>
</tr>
<tr>
<td>ln POST i,t-1</td>
<td>Total number of posts made by NPO i in year t-1 (in natural log)</td>
</tr>
<tr>
<td>ln FUND i,t-1</td>
<td>Total dollar amount spent in fundraising by NPO i in year t-1 (in natural log)</td>
</tr>
<tr>
<td>ln PRICE i,t</td>
<td>Fundraising effectiveness. PRICE is computed by total dollar amount spent in fundraising by NPO i in year t / total dollar amount in expenditure by NPO i in year t (in natural log)</td>
</tr>
<tr>
<td>AGE i,t</td>
<td>NPO i's age by the year of 2016</td>
</tr>
<tr>
<td>AGE * ln FUND i,t-1</td>
<td>Product term of Age and FUND</td>
</tr>
<tr>
<td>ln GRANT i,t-1</td>
<td>Total dollar amount received from government funding by NPO i in year t-1 (in natural log)</td>
</tr>
<tr>
<td>ln PSR i,t-1</td>
<td>Total dollar amount of public service revenue generated by</td>
</tr>
</tbody>
</table>
Table 9

Descriptive Statistics (n= 93* Annual-NPO Panel Observations from 2007-2015)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>DON</td>
<td>Public annual donation</td>
<td>381767455</td>
<td>223568512</td>
<td>493924275</td>
</tr>
<tr>
<td>LIKE</td>
<td>Number of likes</td>
<td>339237</td>
<td>33718</td>
<td>1608061</td>
</tr>
<tr>
<td>SHARE</td>
<td>Number of shares</td>
<td>78463</td>
<td>4042</td>
<td>504829</td>
</tr>
<tr>
<td>COMM</td>
<td>Number of comments</td>
<td>16663</td>
<td>1989</td>
<td>116244</td>
</tr>
<tr>
<td>POST</td>
<td>Number of posts</td>
<td>422.21486</td>
<td>323</td>
<td>623.27</td>
</tr>
<tr>
<td>FUND</td>
<td>Fundraising expenditure</td>
<td>36542868.00</td>
<td>20800041</td>
<td>53993900</td>
</tr>
<tr>
<td>PRICE</td>
<td>Fundraising effectiveness</td>
<td>1.17</td>
<td>1.16</td>
<td>0.10</td>
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<tr>
<td>AGE</td>
<td>NPO age</td>
<td>76.64193</td>
<td>68</td>
<td>42.31</td>
</tr>
<tr>
<td>GRANT</td>
<td>Government funding</td>
<td>112094067</td>
<td>8016870</td>
<td>316388648</td>
</tr>
<tr>
<td>PSR</td>
<td>Program service revenue</td>
<td>195827169</td>
<td>4104372</td>
<td>646201885</td>
</tr>
</tbody>
</table>

*N Six organizations were automatically removed in the panel data analysis process due to missing data.
Table 10

*Effect of Stakeholder Engagement (Estimated with Lagged Measures) Using the Ordinary Least Square (OLS) Regression Analysis*

<table>
<thead>
<tr>
<th></th>
<th>Model 1 without ln</th>
<th></th>
<th>Model 2 without ln LIKE</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>COMM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coefficient</td>
<td>Standard error</td>
<td>Coefficient</td>
<td>Standard error</td>
</tr>
<tr>
<td>CONST</td>
<td>21.55***</td>
<td>0.61</td>
<td>21.72***</td>
<td>0.64</td>
</tr>
<tr>
<td><strong>Independent variables: Stakeholder engagement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln LIKE</td>
<td>0.08*</td>
<td>0.03</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ln SHARE</td>
<td>-0.01</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>ln COMM</td>
<td>-</td>
<td>-</td>
<td>0.07*</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Covariate: NPO Facebook activity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln POST</td>
<td>-0.13*</td>
<td>0.05</td>
<td>-0.12*</td>
<td>0.05</td>
</tr>
<tr>
<td><strong>Covariates: Financial variables</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln FUND</td>
<td>0.19***</td>
<td>0.02</td>
<td>0.19***</td>
<td>0.02</td>
</tr>
<tr>
<td>ln PRICE</td>
<td>-6.48***</td>
<td>0.86</td>
<td>-6.65***</td>
<td>0.89</td>
</tr>
<tr>
<td>AGE</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>ln GRANT</td>
<td>0.004</td>
<td>0.005</td>
<td>0.004</td>
<td>0.005</td>
</tr>
<tr>
<td>ln PSR</td>
<td>-.03***</td>
<td>0.005</td>
<td>-.03***</td>
<td>0.005</td>
</tr>
</tbody>
</table>

*** *p < .001, * p < .05
Table 11:
ANCOVA: Two-way Interaction between Like and Gap on Donation, Credibility, and Self-perceived Contribution, Controlling for Involvement

<table>
<thead>
<tr>
<th>DVs</th>
<th>Gap Wide</th>
<th>Gap Narrow</th>
<th>F</th>
<th>df</th>
<th>η²</th>
<th>Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Like large</td>
<td>Like small</td>
<td>Like large</td>
<td>Like small</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don*</td>
<td>14.07(1.41)</td>
<td>10.07(1.65)</td>
<td>12.42(1.47)</td>
<td>13.95(1.56)</td>
<td>3.24</td>
<td>1</td>
</tr>
<tr>
<td>Cred</td>
<td>7.09(.20)</td>
<td>6.57(.23)</td>
<td>6.51(.21)</td>
<td>6.63(.22)</td>
<td>2.19</td>
<td>1</td>
</tr>
<tr>
<td>Self-con*</td>
<td>4.97(.32)</td>
<td>4.79(.37)</td>
<td>4.43(.33)</td>
<td>5.58(.35)</td>
<td>3.68</td>
<td>1</td>
</tr>
</tbody>
</table>

Don = donation; Cred = credibility Self-con = self-perceived contribution

Interaction effect is significant ****p<.001, ***p<.01, **p<.05. * p< .10
Table 12
Conditional Indirect Effects of Like (X) on Donation (Y) through Credibility (M1) and Self-perceived contribution (M2) at Different Levels of Gap (W) Using Bootstrapping

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Moderator</th>
<th>Mediator</th>
<th>B</th>
<th>SE</th>
<th>Bias-corrected bootstrap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Like</td>
<td>Narrow</td>
<td>Credibility</td>
<td>0.006</td>
<td>0.09</td>
<td>-1.3</td>
</tr>
<tr>
<td>Like</td>
<td>Wide</td>
<td>Credibility</td>
<td>-0.02</td>
<td>0.15</td>
<td>-0.39</td>
</tr>
<tr>
<td>Like</td>
<td>Narrow</td>
<td>Self-perceived</td>
<td>-0.78</td>
<td>0.41</td>
<td>-1.92</td>
</tr>
<tr>
<td>Like</td>
<td>Wide</td>
<td>Self-perceived</td>
<td>-0.11</td>
<td>0.12</td>
<td>-0.54</td>
</tr>
</tbody>
</table>
Table 13

Conditional Direct Effects of Like (X) on Donation (Y) at Different Levels of Gap (W) Using Bootstrapping

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Moderator</th>
<th>Gap</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Like</td>
<td>Narrow</td>
<td></td>
<td>0.01</td>
<td>0.09</td>
<td>0.01</td>
<td>0.99</td>
<td>-2.05</td>
<td>2.07</td>
</tr>
<tr>
<td>Like</td>
<td>Wide</td>
<td></td>
<td>1.89</td>
<td>1.05</td>
<td>1.8</td>
<td>0.07</td>
<td>-0.18</td>
<td>3.96</td>
</tr>
</tbody>
</table>
### Table 14

Moderated Mediation with Bootstrapping

<table>
<thead>
<tr>
<th>Mediator</th>
<th>$B$</th>
<th>$SE$</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credibility</td>
<td>-.03</td>
<td>0.2</td>
<td>-.61</td>
<td>0.26</td>
</tr>
<tr>
<td>Self-perceived contribution</td>
<td>0.91</td>
<td>0.55</td>
<td>0.01</td>
<td>2.14</td>
</tr>
</tbody>
</table>
Figures

Figure 1.

Moderated Mediation Model
Figure 2.

Change of Total Number of Posts Made by *NPT 100* from 2007 to 2015
Figure 3.

Change of Total Amount of Likes Received by *NPT 100* from 2007 to 2015
Figure 4.

Change of Total Amount of Shares Received by *NPT 100* from 2007 to 2015
Figure 5.

Change of Total Amount of Comments Received by NPT 100 from 2007 to 2015
Figure 6.

Interaction Effect between Like and Gap on Donation.
Figure 7.

Interaction Effect between Like and Gap on Credibility.
Figure 8.

Interaction Effect between Like and Gap on Self-perceived Contribution.
Appendices

Appendix A

Experiment Stimuli

Like Large, Gap Narrow
Like Large, Gap Wide
Like Small, Gap Narrow
Like Small, Gap Wide
Appendix B

Experiment Instrument

Study Introduction

Thank you for your interest in participating in this survey. This survey is related with a fundraising event initiated by a non-profit organization, Marine Life Foundation. If you have participated in a similar study before, please withdraw from the current study, otherwise NO compensation will be paid. Thanks for cooperation!

The purpose of this study is to understand the factors that are associated with nonprofit organization online fundraising. The survey will take about 10 minutes to complete. No risks or direct benefits are expected for your participation. Your responses to this survey will be anonymous. No one will be able to identify your specific responses to this survey. Through the survey, there will be attention check questions. Please note that participants who fail to answer attention check questions, their answer will be removed.

Upon completion, you will receive $1.25. You can take it only once.

By participating in this survey, you must agree that you are at least 18 years old. Your participation is voluntary. You can decline to participate, and you can stop your participation at any time, if you wish to do so, without any negative consequences to you. If you have any questions or concerns about the research, please feel free to contact the Principal Investigator, Grace Ji via email (y.ji5@umiami.edu), phone (305-284-3057) or
by mail at Box 248127 School of Communication University of Miami Coral Gables, FL 33124.

Q1. If you are 18 years and older and agree to participate, please click the button next to “I agree/consent”.

I agree/consent

I do not agree/consent

Q2. Are you a Facebook user?

Yes

No

Introduction

Marine Life Foundation (MLF) is a 501(c)(3) non-profit organization led by marine scientists, environmentalists, and educators. We support research that helps provide solutions to the most critical challenges facing marine species. Founded in 1962, MLF has funded studies in 35 countries worldwide. We are listed in the Nonprofit Times' Top 100 U.S. NPOs. MLF receives 56% of its funding from individuals, 19% from government sources, and 7% from corporations.

Our mission is "to stop the degradation of the marine environment and to build a harmonious relationship between oceans and humans." Currently, much of our work concentrates on the conservation of oceans for endangered marine species. In the next
page, you will be shown a screenshot taken from MLF's Facebook page. Please read the screenshot carefully. Later on you will be asked to answer related questions.

[Participants were randomly assigned to see one of the four Facebook posts presented in Appendix B.]

Manipulation Checks

Q3. Based on my experience with online fundraising posts published by top non-profit organizations on Facebook, I think the amount of likes received by the post from Marine Life Foundation is: Small/Large

Q4. Based on the post, how do you think about the number of shares compares to the number of likes? I think, in the post the number of shares equals to ______% of the number of likes.

To calculate the number, you can use this equation: percentage = shares / likes * 100. Feel free to use a calculator. Please write down your answer in the box below.
Q5. Based on my experience with online fundraising posts published by top non-profit organizations on Facebook, I think this percentage is: Small/Large

**Pop-up Text about Lottery Selection**

We would like to thank you again for participating in the current survey. Please note that to show our appreciation of your participation, two percent of the total participants will be randomly selected to receive a bonus payment of $35! Winners will be randomly drawn from the participants pool upon study completion. The bonus payment will be paid to your Mturk account. If you are selected as a winner, you will be contacted via Mturk system.

**Donation measure**

Q6. If you are chosen as a winner, you can donate all or part of the $35 to the current fundraising event initiated by Marine Life Foundation. If you were a winner, how much of the $35 would you like to donate? Please write down your donation amount:_________

**Self-perceived contribution measure**

Q7. If you donate to the fundraising event with the amount you entered, to what extent would you feel that you added value to the cause?

Very much/Not at all
Q8. If you donate to the fundraising event with the amount you entered, to what extent would you feel that you helped the cause?
Very much/Not at all

Q9. If you donate to the fundraising event with the amount you entered, to what extent would you feel that you contributed to the cause?
Very much/Not at all

**Credibility Measure**

Based on the post, what is your general impression about Marine Life Foundation's Facebook post?

Q10. I find Marine Life Foundation's Facebook post is Convincing/Unconvincing
Q11. I find Marine Life Foundation's Facebook post is Believable/Unbelievable
Q12. I find Marine Life Foundation's Facebook post is Biased/Unbiased (Reverse)
Q13. Please select the very left choice (Attention Check)

**Control Measures**

**Involvement**

In general, what do you think about such cause related with saving marine animals?

Q14. I think, to me, saving marine animals is: Important/Unimportant (Reverse)
Q15. I think, to me, saving marine animals is: Boring/Interesting
Q16. I think, to me, saving marine animals is: Relevant/Irrelevant (Reverse)
Q17. I think, to me, saving marine animals is: Means nothing to me/Means a lot to me

Q18. I think, to me, saving marine animals is: Appealing/Unappealing (Reverse)

Q19. I think, to me, saving marine animals is: Fascinating/Mundane (Reverse)

Q20. I think, to me, saving marine animals is: Worthless/Valuable

Q21. I think, to me, saving marine animals is: Involving/Uninvolving (Reverse)

Q22. I think, to me, saving marine animals is: Not needed/Needed

Collectivism

How do you agree or disagree with the following statements?

From extremely disagree (1) to extremely agree (9)

Q23. The well-being of my co-workers is important to me

Q24. If a co-worker gets a prize, I would feel proud

Q25. If a relative were in financial difficulty, I would help within my means

Q26. It is important to maintain harmony within my group

Q27. I like sharing little things with my neighbors (Reverse)

Q28. I feel good when I cooperate with others

Q29. My happiness depends very much on the happiness of those around me

Q30. To me, pleasure is spending time with others

Facebook Activity

Q23. Have you donated to non-profit organizations or fundraising causes in the past year?

No, never
Yes, 1-2 times
Yes, 3-4 times
Yes, 5-6 times
Yes, more than 6 times

**Q24.** Please indicate how long you have had your Facebook account (in years)?

**Donation History**

**Q25.** Please indicate how often do you stay active on Facebook?

Never
A few times a month or less
A few times a week
About once a day
About 2-3 times a day
More than 3 times a day, but not all the time
All the time

**Demographics**

Finally, we would like to ask you some questions about yourself:

**Q27.** What is your age?

**Q26.** What is your gender?
Male
Female

Q28. Which of the following best present your ethnic heritage?

African American/Black
Asian/Pacific Islander
Caucasian/White
Latino/Hispanic
Native American
Other
Prefer not to answer

Q29. What is the highest level of education you have completed?

Less than high school
High school graduate/GED
Some college
Associate's Degree (2 year degree)
Bachelor's Degree (4 year degree)
Master's degree
Professional degree (MD, JD)
Doctorate degree

Q30. What is your annual income?
Less than $10,000
10,000 - $19,999
$20,000 - $29,999
$30,000 - $39,999
$40,000 - $49,999
$50,000 - $59,999
$60,000 - $69,999
$70,000 - $79,999
$80,000 - $89,999
$90,000 - $99,999
$100,000 - $149,999
More than $150,000

Attention Check Questions

Q31. Attention check questions: What is the name of the charity?

Q32. What is the fundraising event about?

Additional Questions

Q33. At your best guess, what is the purpose of the current study?
Q34. Any additional comments?

Debrief

Dear Participant,

During this study, you were asked to read a Facebook post and fill up a questionnaire. You were told that the purpose of the study was to understand factors that are associated with online donation. The actual purpose of the study was to investigate how system-generated information such as “likes” and “shares” will have effects on people’s perception of a nonprofit and their donation behavior.

Please be informed that all the information showed in the study, including nonprofit organization, fundraising event, and donation are fictitious. If you are to be selected to receive additional $35 bonus you will NOT need to donate to the fictitious organization presented in the study. It was only designed to encourage participants to actively engage in information processing.

If you have any concerns about your participation or the data you provided in light of this disclosure, please discuss this with us. We will be happy to provide any information we can to help answer questions you have about this study. If your concerns are such that you would now like to have your data withdrawn, and the data is identifiable, we will do so.

If you have questions about your participation in the study, please contact me through email (y.ji5@umiami.edu), phone (305-284-3057) or by mail at P.O. Box
248127 School of Communication University of Miami Coral Gables, FL 33124, or my faculty advisor, (Dr. Don W. Stacks, don.stacks@miami.edu).

If you have questions about your rights as a research participant, you may contact the University of Miami Human Subjects Research Office at 305-243-3195.

Please again accept our appreciation for your participation in this study.
## Appendix C

### NTP 100 2014 Basic Information on Facebook Presence

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Boy Scouts of America - https://www.facebook.com/Boy-Scouts-of-America-
Planned Parenthood - https://www.facebook.com/PlannedParenthood/?fref=ts
Volunteers of America - https://www.facebook.com/VolOfAmerica
Dana-Farber Cancer Institute - https://www.facebook.com/danafarbercancerinstitute
Food For The Poor - https://www.facebook.com/FoodForThePoor
World Vision - https://www.facebook.com/worldvision
ALSAC/St. Jude Children's Research Hospital - https://www.facebook.com/stjude
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Society

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Rotary

Foundation of

Rotary

57 International  https://www.facebook.com/rotary

58 Special Olympics  https://www.facebook.com/SpecialOlympics

Alzheimer's

59 Association  https://www.facebook.com/actionalz

Operation

Blessing

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Mental Health

61 America  https://www.facebook.com/mentalhealthamerica

Susan G. Komen

62 for the Cure  https://www.facebook.com/SusanGKomen

63 Young Life  https://www.facebook.com/YoungLife

National Multiple

64 Sclerosis Society  https://www.facebook.com/nationalmssociety

Art Institute of

65 Chicago  https://www.facebook.com/artic

66 Brother's Brother  https://www.facebook.com/BrothersBrother
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American Diabetes Association

Medicins San Frontieres/

Doctors Without Borders

American Kidney Fund

Legal Aid Society

Carter Center

National Gallery of Art

Museum Of Modern Art

National Jewish Health

Wildlife
Conservation
Society
Kennedy Center for the Performing
Arts
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UJA-Federation
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JDRF
https://www.facebook.com/myJDRF

Scholarship America
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Jewish Federation of Metropolitan Chicago
https://www.facebook.com/JUFChicago

Communities In Schools
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March of Dimes
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UNCF
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