SPONSOR VISIBILITY, CUSTOMIZATION, AND USER CONTROL IN THE ERA OF INTERACTIVE TECHNOLOGY: EFFECTS ON CAUSAL ATTRIBUTION OF SPONSOR'S MOTIVES, SPONSOR ATTITUDES, AND CREDIBILITY IN THE CONTEXT OF SPONSORED MOBILE HEALTH-RELATED APPS

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ABSTRACT

SPONSOR VISIBILITY, CUSTOMIZATION, AND USER CONTROL IN THE ERA OF INTERACTIVE TECHNOLOGY: EFFECTS ON CAUSAL ATTRIBUTION OF SPONSOR'S MOTIVES, SPONSOR ATTITUDES, AND CREDIBILITY IN THE CONTEXT OF SPONSORED MOBILE HEALTH-RELATED APPS

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With the astonishing speed of smartphone and application [app] development, mobile app sponsorship is gaining popularity as a tactic of strategic brand communication and cause-related marketing, especially in the area of health. Smartphone apps provide a high degree of interactivity, which gives users a great deal of control over technology in addition to receiving personalized feedback based on their input. Despite a significant increase of mobile marketing and sponsorship spending, concerns about information privacy are growing in mobile apps. Mobile app sponsorship fosters communities of customers centered on their brand and helps them manage different health issues. It also curates personal customer data and tailors advertising messages and marketing initiatives to reach targeted audiences. However, there is a lack of research explaining how corporate app sponsors are evaluated and what attributions users generate in interactive mobile environments when evaluating the sponsor and the app. Therefore, drawing on the assumptions of attribution theory, this research project examined the effects of three factors in the context of mobile health (mHealth) apps mediated by sponsor motive attributions: visibility (or obtrusiveness) of a sponsor, app personalization pertaining to users' data sharing within a mHealth app interface, and users' control over the information sharing option.

The present study employed a mixed factorial online experiment, which manipulated the type of sponsor obtrusiveness (high vs. less vs. no visibility), the scope of customization based

on personal information sharing (more vs. less), user control over the information sharing (high vs. low), and message repetition (three times). A total of 252 college students participated in the online experiment via a student research pool and 467 responses were collected from the general population panel sample via the Qualtrics online survey platform to replicate the findings of the online experiment study with the student sample. The results indicated that sponsor visibility in the app interface significantly influenced attitudes towards the sponsor, mHealth app credibility, and intentions to download and use for the mHealth app in both student and general population samples. These effects were mediated by participants' attributions about sponsors' altruistic and self-serving motives. The degrees of personal information sharing and user control were not found to produce negative responses from users. However, higher user control was associated with more positive sponsor attitudes, higher app credibility, and higher download and usage intentions when sponsorship messages were highly visible in the general population panel sample. Also, indirect effects of personal information sharing moderated by user control on sponsor attitudes and app evaluations mediated by altruistic motive attributions were significant in the condition of high app sponsorship visibility.

The findings from this study broaden the scope of attribution theory from the perspective of sponsorship in new media, such as mobile health apps. In particular, it emphasizes the importance of cognitive responses using mobile health app sponsorship, especially the important roles of consumer attributions of sponsor motive on attitudes towards the sponsor, mHealth app credibility, and download and usage intentions for the mHealth app.

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CHAPTER 1

INTRODUCTION

Corporate sponsorship as a promotional tool has developed remarkably over the past few decades (Cornwell & Maignan, 1998; Rodgers, 2007; Spais & Johnston, 2014) and has been acknowledged as a significant element of marketing communications, adopted by marketing-driven companies to reach a broad variety of target customers. Reflecting these trends, global sponsorship spending in 2017 has seen steady growth and is predicted to ultimately reach 62.7 billion U.S. dollars, an increase from the previous year's figure of 60.1 billion (Statista, 2018b). Specifically, the majority of the global sponsorship spending came from North America with 22.3 billion U.S. dollars in 2016, followed by Europe with 16 billion U.S. dollars and Asia Pacific with 14.8 billion U.S. dollars. Notably, marketing and sponsorship are experiencing a well-documented and revolutionary upheaval in both format and function in light of a rapidly changing communications technology landscape, particularly as it relates to the emergence of digital and mobile media (Rader et al., 2014; Rose, Jiang, & Mangematin, 2017; Spais & Johnston, 2014). Funding directed toward smaller properties (i.e., mobile applications, free public wireless services, prosocial content and technologies) – especially those situated outside the big sport, leisure and entertainment segments – are expected to significantly increase, while continuing a trend of robust spending on larger and more prestigious properties (IEG, 2017).

A growing number of corporate sponsors looking to establish effective partnerships with smaller properties have aimed for incremental values for all stakeholders through joint investment and effort. Such collaborative marketing communication has embraced social media and mobile media; most notably this is true with organizations that might be involved in effective "cause marketing" (Furlow, 2011; Shankar, Venkatesh, Hofacker, & Naik, 2010; Scott,

2015). Cause marketing, also known as cause-related marketing (CSR), is categorized as sponsorship of or a promotional partnership with a nonprofit organization and a (for-profit) corporation that benefits both organizations. As reciprocal partners, the corporation gains social value and awareness for its brand; meanwhile, the nonprofit organization promotes greater awareness of its cause or issue to consumers and sometimes generates greater consumer engagement with the organization. A popular example is the development and sponsorship of prosocial mobile technologies like health-related applications (mHealth apps). These apps are developed to reach targeted consumer segments to increase brand awareness with a positive image and brand preference (Rader et al., 2014; Rose et al., 2017; Svendsen, Andersen, & Andersen, 2017). App sponsorship may be perceived as more than just a gift given to the public; it may also stimulate general consumer interest in the sponsoring brand and its product in real time. This has the potential to improve the attitude toward the brand through the positive app experience the consumer may have (Alnawas & Aburub, 2016; Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011; Kim, Lin, & Sung, 2013; Rose et al., 2017).

In mobile app stores, numerous types of mHealth apps are now available, from general apps for maintaining health and fitness to advanced apps for self-care of chronic or specific health diseases (Aguilar-Martínez et al., 2014; Boulos, Brewer, Karimkhani, Buller, & Dellavalle, 2014; Martínez-Pérez, Torre-Díez, & López-Coronado, 2013). Currently, corporate companies support such mHealth apps as sponsors and also develop their own apps for issues involved in health benefits and management for the general public. While mHealth app sponsorship can be an effective tool that helps marketers use consumer data for efficient advertising and brand strategies, it raises a concern about privacy of consumer personal information that can lead to skepticism related to sponsors' motives in the minds of consumers.

Skepticism might, in turn, endanger brand reputation and consumer trust (Boulos et al., 2014; "Data privacy is the next competitive battleground | WARC," 2017). Even if data sharing is necessary to utilize a customized app service, consumers may consider such sponsorship circumstances as an external cue to infer how their data is being used and why the brand is developing or supporting a mHealth app (Gu, Xu, Xu, Zhang, & Ling, 2017; Martínez-Pérez, Torre-Díez, & López-Coronado, 2014; Roland, 2013). Personal control over the app customization could be another cue that offsets the negative perception of data sharing with the sponsored app (Kim et al., 2013; O'Brien & Toms 2008).

Relatively little empirical research exists regarding the effects of sponsored technologies via new media on consumers' motive evaluations and other corresponding outcomes. Earlier studies on consumer-focused sponsorship communication have been inclined to justify the business value of sponsoring big sporting events (Cornwell & Maignan, 1998; Cornwell, Weeks, & Roy, 2005; Deitz, Myers, & Stafford, 2012; Rifon, Choi, Trimble, & Li, 2004; Rodgers, 2007; Spais & Johnston, 2014; Speed & Thompson, 2000). However, since there is an increasing business market for mobile apps and healthcare software technologies for individual users and practitioners (Rose et al., 2017; Sanou, 2016; Svendsen et al., 2017), further insights are necessary to determine the impacts of commercial sponsors and their sponsorship activities on the app properties, especially regarding the sponsorship of sensitive topics, such as health.

Recent research has made a wide range of attempts to determine the mechanisms underlying consumer responses to sponsorship message stimuli in relation to the content of cognitive elaborations, such as consumer attributions about the messages and sponsor motive assessment across various electronic media platforms (Deitz et al., 2012; Rifon et al., 2004; Rodgers, 2007; Santomier, 2008). None of these studies have focused on today's mobile app

sponsorships. Nonetheless, studying mobile apps is essential because this technology is characterized by a great degree of interactivity where users can customize the app based on personal preferences, allowing them to exercise control over various features. Therefore, further research is needed to explain the effects of sponsored new media technologies, such as mobile apps, on the lives of users.

Research Objectives

This dissertation is conducted in the context of mobile health-related apps focusing on fitness and exercise. In comparison with the other commercial or entertainment event platforms, mHealth apps offer a unique context for investigation because they often ask users to share a wealth of demographic information and sensitive health data to optimize personalized intervention or knowledge. Users do not always realize that completing this action means that personal information is recorded somewhere else and is at risk of being shared with app developers and third parties. It is also known that consumers are more reluctant to download mHealth apps if they notice some risk cues associated with use of personal information for commercial benefits or data leaking to unknown parties (Boulos et al., 2014; Dehling, Gao, Schneider, & Sunyaev, 2015; Sunyaev, Dehling, Taylor, & Mandl, 2015).

Therefore, this dissertation project aims to answer the following questions. First, this study examines whether more or less visible sponsor identification, the scope of personalization, and users' control over the extent of personalization influence users' intentions to act upon the app (download and use it). It also considers evaluations of the app (credibility) and the sponsor (attitude toward the sponsor). Second, this research explores how the attribution of the sponsor's motive mediates the effects of sponsor visibility, the scope of personalization, and users' control over the personalization. It uses attribution theory to fill the gaps in research needed to

understand consumer evaluations (attitudes) of corporate sponsorship information within the interactive mHealth app contexts through the creation of causal attribution of motives. Third, this study investigates whether scope of personalization and users' control interact with each other and moderate the effects of sponsor visibility on consumer evaluations through sponsor motive assessments. Finally, the present project uses replication as a way to validate the results and offer insights for future studies. The proposed hypotheses were tested using two participant samples: younger adults (college students) and the general population.

Dissertation Roadmap

This dissertation is divided into ten chapters. Chapter 1 introduces the background information on mHealth app sponsorship as well as the significance of the study. It further elaborates on the research objectives stated above. It also provides an overview of the dissertation and its intended contribution to the marketing communication field. Chapter 2 considers a comprehensive literature review of mobile apps with regard to the mHealth app market and its uses of users' personal data. Chapter 3 delineates research on corporate sponsorship and its visibility from a traditional form to a new media medium, including mobile apps. Chapter 4 provides more detail about app customization based on personal information sharing and user control over the information sharing in a sponsored app context. It discusses what data sharing and user control means in mHealth apps, and how these features influence users' responses. Chapter 5 provides an attribution theory framework and applications in different marketing and communication contexts. Chapter 6 develops the research hypotheses derived from the conceptual framework. Chapter 7 describes the methodology used to test the research hypotheses, along with the scales used in the empirical data collection. This chapter also discusses research design, data collection, and instrument development. Chapter 8 presents the

findings of the study with the student sample. Chapter 9 provides the results from the same study that was replicated with the general population sample. Chapter 10 discusses the study's implications for theory and for the design of more effective sponsorship strategies in marketing communication mixes. This chapter also lists limitations of the study and provides conclusions.

CHAPTER 2

MOBILE APPLICATIONS, HEALTH, AND PRIVACY

Mobile Application Market Development

Communication through mobile media has become central to people's lives around the world. Regardless of age, gender, religion, or ethnicity, people's lives have been driven by widespread adoption of mobile devices. The market for information and communications technology (ICT) is evolving at a dazzling speed, and consumers are overwhelmed with an ever-increasing amount of innovations, especially for the mobile device. With the extensive global market penetration of smartphones and tablets, use of the mobile device is one of the most ubiquitous and dynamic trends in the current media communication (Jung, Kim, & Chan-Olmsted, 2014). According to a report by the International Telecommunications Union (ITU), there were more than 7 billion mobile cellular network subscriptions worldwide in 2016, which represents 95% of the global population (Sanou, 2016). The usage of smartphones has significantly influenced the everyday lifestyles of individuals (Ozdalga, Ozdalga, & Ahuja, 2012; Shaikh & Karjaluoto, 2015). Smartphones can be used to fulfill a variety of personal needs and purposes, such as communicating via e-mail and SMS text messages, performing online searches, and using specific software applications for lifestyle management, and so on.

In particular, the emergence of the smartphone has broken ground in the development and use of mobile software applications ("apps" for brevity). Since Apple made a key turning point in the business by launching its iPhone and App Store in 2007, there has been remarkable growth in the mobile app market from a competition between devices to platforms (Cecere, Corrocher, & Battaglia, 2015). Over 6.5 million mobile apps are available in the leading app stores including Google Play, Apple App Store, Windows, Amazon Appstore, Blackberry words, and

so on; it is hard to figure out exactly how many apps are across all the app stores, but as of March 2018 there were over 3.6 million apps in Google Play alone, and more than 2.2 million apps were available in the Apple Store in January 2017 (Statista, 2018a).

A mobile app is a type of computer-based software program that allows the user to perform a specific task that can be installed and run on a range of portable digital devices such as smartphones and tablets (Liu, Au, & Choi, 2014). As mobile devices and app technologies have become more advanced and more powerful, the use of recent mobile apps has increased among users more than ever before. Mobile apps have fundamentally transformed nearly every aspect of human life because of their unique functions, including usability, mobility, omnipresence, portability, availability, and interactivity (Liu, Zhu, Holroyd, & Seng, 2011; Okazaki & Mendez, 2013; Shankar & Balasubramanian, 2009; Stoyanov et al., 2015; West et al., 2012). Apps with easy-to-use electronic visual display allow users direct access to the personal account and database to meet a variety of everyday needs, such as when ordering food, learning languages, checking bank account balances, and communicating with others. This breakthrough in technology, along with advanced computing and connectivity capabilities, motivated the explosive worldwide growth of the use of mobile phone and wearable devices for healthcare and healthy lifestyles management. On the other hand, integrated and easy data use for various purposes have also brought inevitable risks or concerns about safe data use, management, and security among different stakeholders ("Data privacy is the next competitive battleground | WARC," 2017; Roland, 2013).

Mobile Applications in Healthcare and Personal Data Collection

This revolution in mobile network technology has provided unprecedented opportunities for life management apps development, particularly within the healthcare industry (Bender, Yue,

To, Deacken, & Jadad, 2013; Liu et al., 2011; West et al., 2012). According to a new mHealth report, in 2016, companies generated 12.5 billion U.S. dollars with mobile app related health services (Research 2 Guidance, 2016). Also, more than 259,000 medical and health-related apps classified under the general terms of mHealth apps are now available in the market for various purposes. mHealth apps are commonly defined as all kinds of mobile apps with the potential to improve physical and mental well-being. These vary from patient education and support to sophisticated medical information for healthcare professionals through the major iOS platforms (e.g., the Google Play store and iTunes App Store). For example, mHealth apps function as a basic app with text message reminders or push notifications that remind users to drink water, and further work as an advanced app that assist patients to manage chronic diseases like diabetes based on their health conditions (Boulos et al., 2014; Vollmer Dahlke & Ory, 2016). Recent mHealth apps contain advanced features that not only improve the processing speed and expand the health data storage capability of the apps in smartphones, but also improve the quality of graphic and sound features for user-friendly design and interface.

Most common mHealth apps concentrate on fitness and wellness issues of patients and the general public, such as physical exercise and weight loss, lifestyle and stress management, diet, and nutrition (Boulos et al., 2014; Chen, Cade, & Allman-Farinelli, 2015; Flores Mateo, Granado-Font, Ferré-Grau, & Montaña-Carreras, 2015; West et al., 2012). With various types of behavioral interventions, these types of apps are promising in supporting healthy behavior changes and weight management to a broader audience (Aguilar-Martínez et al., 2014; Cowan et al., 2013; Dennison, Morrison, Conway, & Yardley, 2013; Flores Mateo et al., 2015; McKay et al., 2016). There are other patient-centered apps available that focus more on aiding patients with specific health conditions, chronic diseases, and self-diagnosis (Boulos et al., 2014; Ramirez et

al., 2016; Schnall et al., 2016; Tirado, 2011). For example, apps for diabetes patients offer a variety of diabetes-specialized functions, including self-monitoring blood glucose recording, medication or insulin logs, and even real-time communication between patients and health-care providers. Although many sophisticated mHealth apps with medical terminology and functions for healthcare professionals and providers are also available, the present study focuses on only the most popular patient-centered app topics, such as fitness and wellness-related apps, to answer the proposed hypotheses. I decided to use these types of apps because health and fitness-related apps (for non-disease specific issues) are more likely to appeal to the broad general public in everyday life. That is, sponsoring a non-disease-specific health app is potentially considered more proper and efficient to reach a broader audience for corporate organizations when compared to disease-specific apps.

Given the popularity of the mHealth app market, mHealth apps (mostly healthy life management and fitness related apps) are emerging as a popular communication tool for effective digital sponsorship, advertising, and targeting specific audiences, while raising concerns about users' data collection. For example, Johnson & Johnson, an American medical device, pharmaceutical, and consumer packaged goods manufacturing company, has been supporting BabyCenter, the leading parenting site, and BabyCenter's mobile app, for many years ("JOHNSON'S® Baby - BabyCenter," 2017). BabyCenter's free app, used by over 400 million expecting parents, has spiked in download popularity in both the Apple and Google stores ("Pregnancy Tracker & Baby App on the App Store," 2017). Through online and mobile sponsorship activities, Johnson & Johnson has obtained millions of target consumers' real-time data, which has improved its ability to target advertising and develop brand strategies based on users' data (Heine, 2014). On the other hand, according to a US Senate Commerce Committee's

investigation into data brokers and improper use of health data collection, BabyCenter was selected as one of the companies that sold its users' data to third parties, such as advertisers (Dembosky, 2013).

Another example of mHealth app sponsorship is MyFitnessPal by Under Armour, an American footwear, sports and casual apparel company. While Nike and Adidas developed their own running apps and attempted to achieve success to attract their loyal consumers to use their apps, Under Armour has aggressively outbid such retailers for mobile app sponsorship deals with athletes (Lorenz, 2015). As a result of their mobile marketing efforts, MyFitnessPal (the largest connected free smartphone app that tracks users' diet and exercise) has now become part of Under Armour Connected Fitness that has been forming the world's largest digital health and fitness community with over 120 million users (Perez, 2015). By tracking data of sponsored app users, Under Armour is developing efficient strategies to deliver their advertising messages via multiple media channels to target consumers. Due to this fact, these types of health and fitness-tracking apps are also raising serious privacy issues related to sharing users' health data with other commercial companies (Dredge, 2013; Huckvale, Prieto, Tilney, Benghozi, & Car, 2015).

Given the rising privacy concern in the industry of mobile sponsorship, the purpose of this dissertation is to explore the duality of effects of sponsored mHealth apps on smartphone users' attributions of sponsors' motives and, further, sponsor attitudes and app evaluations, such as app credibility and download and usage intentions. On one hand, users may generate more altruistic ideas of mHealth app sponsorship, because a company sponsors an app to help with a public health issue and build a healthier community of users. On the other hand, users may attribute mHealth app sponsorship to self-promotion motives, because a company may still put its logo and/or advertising messages within the app and, on top of that, collect users' personal

demographic and health-related information to develop future tailored advertising strategies. The present dissertation project, therefore, investigates what motive attributions would be triggered by the visibility of a sponsor, a requirement to provide personal information, and user control over the information sharing when users are exposed to mHealth app interfaces. Furthermore, it examines whether a consumer's motive attribution about the sponsor influences the app and sponsors' evaluations.

CHAPTER 3

CORPORATE SPONSORSHIP AND NEW TECHNOLOGY

Corporate Sponsorship

Corporate sponsorship has been defined as "provision of assistance either financial or in kind to an activity by a commercial organization for the purpose of achieving commercial objectives" (Meenaghan, 1983, p. 9). It relates to all kinds of activities involving "a cash and/or in-kind fee paid to a property (typically a sports, entertainment, non-profit event or organization) in return for access to the exploitable commercial potentials associated with that property" (Ukman, 1995, p. 1). In other words, these marketing activities may differ by the following aspects: (1) the nature of the sponsored property (e.g., arts, causes, or sports); (2) the size and scope of its appeal (e.g., local, national, or international); (3) its duration (e.g., a day, a week, or a season); (4) related media coverage (e.g., live or tape delayed on broadcast or cable TV); (5) the number of sponsors involved and the level of financial commitment for each sponsor (e.g., title sponsor or official supplier); and (6) opportunities for event signage, as well as product/packing tie-ins (Gardner & Schuman, 1988; Gwinner, 1997; McDaniel, 1999; Meenaghan, 1991; Ukman, 1995).

Subsequently, consumer-focused sponsorship-linked marketing refers to "the orchestration and implementation of marketing activities for the purpose of building and communicating an association to a sponsorship" (Cornwell, 1995, p. 15). Thus, corporate sponsorship of a sport, art, or cause encompasses effective marketing communication strategies with a fee paid in advance for future market values. Some firms seek sponsorships as a means to create awareness or to enhance public perception of their brands, while others seek to utilize sponsorships as a way of differentiating their products and services from competitors (e.g.,

putting their own products and services into issues, events, causes, and nonprofit organizations that customers care deeply about). The concept of sponsorship is similar to traditional advertising, but sponsorship and advertising differ from each other in a few ways. Most definitions of sponsorship distinguish it from traditional advertising because sponsorship works differently. In advertising, messages can be manipulated, while the messages generated by sponsorship are less identifiable and controllable forms of promoting or selling products or services (Hastings,1984; Carrillat & d'Astous, 2012).

As part of sponsorship, research on cause-related marketing (CRM) often explains how consumers evaluate activities for sponsorship, especially in terms of sponsors' real motives. CRM refers to "a versatile marketing tool that can be used to realize a broad range of corporate and marketing objectives" (Varadarajan & Menon, 1988, p. 60). Some of the previous studies on CRM used the framework of attribution theory to explain how consumers judge corporate sponsors and the motives behind their sponsorship (Barone, Miyazaki, & Taylor, 2000; Becker-Olsen, Cudmore, & Hill, 2006; Bendapudi, Singh, & Bendapudi, 1996; Dean, 2002, 2003; Ellen, Mohr, & Webb, 2000; Forehand & Grier, 2003; Keaveney & Nelson, 1993; Rifon et al., 2004; Webb & Mohr, 1998). According to these studies, depending on the circumstances, consumers are likely to attribute causality to sponsor motives—either intrinsic motives (e.g., altruism and social responsibility) or extrinsic motives (e.g., profit exploitation and public image enhancement). However, although companies want consumers to perceive goodwill without skepticism and any negative thoughts, sponsorship often causes public suspicion of the hidden motives behind the company's prosocial sponsorship activity (Varadarajan & Menon, 1988). Thus, sponsors' motives tend to be perceived not as pure corporate philanthropic giving, but more as self-serving business strategizing (Bae & Cameron, 2006; Barone et al., 2000; Becker-

Olsen et al., 2006; Dean, 2003; Ellen et al., 2000; Pracejus & Olsen, 2004; Varadarajan & Menon, 1988).

Sponsor Visibility (Obtrusiveness)

Numerous corporate names and logos appearing on sporting and arts events as sponsor visibility tactics (strategically-placed billboards, on-camera showcases, etc.) have been prevalent and widespread for the last decade, since visibility was considered to have a positive influence on perceptions of sponsoring corporations and subsequent consumer decisions (Breuer & Rumpf, 2011; Erickson & Kushner, 1999; Mullin, Hardy, & Sutton, 1993). Sponsor visibility or obtrusive sponsorship is a brand-level cue that may influence consumer attributions and evaluations about sponsorship activities. In online advertising literature, high visibility advertising, or obtrusive advertising, refers to situations in which the ad appears highly visible and/or requests two-way interaction with its users by using rich media features, such as pop-ups, displays, and videos (Goldfarb & Tucker, 2011).

In traditional mass media channels, most sponsorships tend to be simple and are limited to brand name identification (e.g., "Sponsored by Kraft Foods") or, in some cases, the brand name and a brief slogan (e.g., "Kraft Foods: Feeding the hungry one person at a time") (Rodgers & Thorson, 2000). Online sponsorships also appear in such traditional forms as part of the content of a webpage or an app interface, or as part of a list of sponsors. However, recent sponsorship formats can employ different interactive features available online, such as the click of the mouse sending a visitor to the homepage of the sponsor, an inserted link on sponsor logos offering more relevant information about the sponsor (Rodgers & Thorson, 2000; Li & Leckenby, 2004), or even highly visible display exposure with rich media features including a product's image and description (Goldfarb & Tucker, 2011; Rosenkrans, 2009).

Since there are too many brand messages within one medium competing for the attention of the consumers, especially online, combining Internet behavior targeting with highly visible advertising content becomes popular for marketers to increase advertising effectiveness in virtual environments (Alnahdi, Ali, & Alkayid, 2014; Rejón-Guardia & Martínez-López, 2014). For instance, targeting with an obtrusive online ad format allows companies to efficiently deliver their product messages to the specific target group and helps companies receive better information about consumer preference and perceptions. Not only does obtrusive advertising as an attention-getting tactic lead consumers to infer that the advertiser is attempting to manipulate them, but it also lowers advertising persuasion such as ad attitudes, brand attitudes, and purchase intentions (Campbell, 1995, Friestad & Wright, 1994).

Corporate Sponsorship in the New Media Era

Recent radical changes in media technologies suggest important implications with regards to corporate sponsorship for researchers and marketers (Drennan & Cornwell, 2004; Farrelly & Quester, 2003; Meenaghan, McLoughlin, & McCormack, 2013; Meenaghan & Shipley, 1999; Santomier, 2008; Spais & Johnston, 2014). The growth and development of new media technologies have altered the manner in which sponsorship is produced, delivered, and consumed. Additionally, new media technologies have contributed significantly to the ongoing sponsorship strategies and tactics and have prompted dynamic and synergistic relationships among sponsors, media channels, and consumers (Drennan & Cornwell, 2004; Santomier, 2008; Shankar & Balasubramanian, 2009; Spais & Johnston, 2014). The relationship-marketing paradigm evolved from the alliance between sponsors and sponsored properties in the form of business-to-business relationships (Farrelly & Quester, 2003). However, recently relational marketing reflects a business-to-consumer relationship from which companies foster consumers'

favorable beliefs about and trust in them through virtual communities to create value for their firms (Porter & Donthu, 2008). The discussion of new media technologies is relevant to relational marketing as such technologies make it easier to reach and consolidate consumers immediately and at any location, which represents the following three prominent features of new media: immediacy, interactivity, and mobility (Barnes & Scornavacca, 2004; Friedrich, Gröne, Hölbling, & Peterson, 2009; Heinonen & Strandvik, 2007; Lee, 2005).

While traditional sponsorships emphasize traditional media coverage (e.g. a televised sports event) or face-to-face opportunities presented in corporate entertainment booths for product trials, new media sponsorships are acknowledged as presenting interactive opportunities to create and implement new ways of doing business, such as building relations with users on digital platforms (Drennan & Cornwell, 2004; Spais & Johnston, 2014; Meenaghan et al., 2013; Porter & Donthu, 2008; Santomier, 2008). Although companies sometimes use visually attractive and more engaging content that often incentivizes attendees to visit sponsor booths during physical events (e.g., a photo taking booth with the sponsor logo, pouring beer from a tap linked to an outdoor billboard), developing relationships with consumers through interactive sponsorship activities is a relatively new form of marketing communication. Social media, online forums, and mobile apps constitute excellent vehicles for marketers to foster strong relationships with customers who become parts of sponsor-facilitated virtual communities (Alnawas & Aburub, 2016; Bellman et al., 2011; de Vries, Gensler, & Leeflang, 2012; Friedrich et al., 2009; Porter & Donthu, 2008; Rifon et al., 2004). For example, MyFitnessPal, sponsored and then owned by Under Armour, mobilizes people who have common fitness-related goals. Baby Center portal, which is part of Johnson & Johnson's family of companies, operates a website, multiple online forums, and an app to support parents and expecting parents.

Thus, instead of push-based irritating or direct notifications about sponsored ads, corporate companies develop and/or sponsor virtual communities for public interest. Sponsoring virtual communities provides opportunities to efficiently have two- or multi-way communication with tailored promotion of an offer between a firm and its customers (Santomier, 2008; Shankar & Balasubramanian, 2009; Spais & Johnston, 2014). In such communities, a sponsor can be less visible and less identifiable as direct advertising is often not present. The lack of visibility may lead consumers to attribute the use of new media in sponsorship to altruistic causes given that the consumers are aware of the sponsorship. At the same time, however, it might be the case that new media is used not only to create, but also to track users' activities and collect their personal information for commercial, self-promotional reasons. This idea drove the overarching research question to be answered in this dissertation.

Sponsorship in a digital and online context can be defined as an indirect form of persuasion that allows companies to carry out marketing and communication objectives by associating with key content (Rodgers & Thorson, 2000). It is becoming common to interact with consumers and their information in real time to provide personalized and customized offers (immediacy and personalization as characteristics of new media) (Alnawas & Aburub, 2016; Lee, Kim, & Sundar, 2015; Weeks, Cornwell, & Drennan, 2008; Xu, Teo, Tan, & Agarwal, 2009). These new forms for sponsorship can be characterized by a greater level of interactivity that makes them quite different from traditional, non-interactive sponsorships. In terms of psychological processing for forming consumer responses, sponsorship has been also known to outperform most other advertising formats, such as traditional advertising (Hastings, 1984; Hoek, Gendall, Jeffcoat, & Orsman, 1997; Meenaghan, 2001), advocacy advertising (Haley, 1996), and in-kind sponsorship including more advertising features (Carrillat & d'Astous, 2012). To the best

of my knowledge, however, no recent online study has considered this proposition in an interactive environment.

Many companies and organizations are looking for Internet sponsorship deals to increase their brand awareness or preference through electronic word-of-mouth among specific target audiences (Drennan & Cornwell, 2004; Hsieh, Lo, & Chiu, 2016; Kim, 2011; Meenaghan et al., 2013; Rodgers, 2003; Weeks et al., 2008). For example, in-app sponsorship is used as a more personalized and convenient communication channel for participants when receiving and sharing event-related information in real time. Sponsoring apps are also considered to be a beneficial and valuable promotional tool for event sponsors, as there are no printing costs, editing costs, or booth setup fees, and the likelihood of capturing a wide range of participants' attention and engagement is higher. To reflect these trends, Guidebook, the most popular mobile application builder for different events and properties (i.e., schools, places, companies, etc.) provides dynamic in-app sponsorship offers through their app (Guidebook, 2017b). In this event app, sponsors can simply expose their brand logo on the app interface and place a banner ad with an interactive link to provide more information about the sponsor (Guidebook, 2017a).

In mobile health contexts, while traditional app store revenue and in-app purchase or advertising revenue have had minor roles in the mHealth app business, app sponsorship is now a major revenue source for mHealth app providers and developers (Research 2 Guidance, 2016). According to a recent IMS report, more than 50% of mHealth apps for critical trials are sponsored by more than one organization, including medical and research institutions as well as commercial organizations (i.e., athletic and fitness brands, pharmaceutical companies) (IMS health, 2015). In particular, different types of corporate companies, including Under Armour and Johnson & Johnson, have supported and/or developed their own apps for health and fitness

issues (Heine, 2014; Lorenz, 2015; Perez, 2015). Since health apps allow users to accomplish personal health goals in their everyday lives, the high level of interaction between the app and the user for information exchange has also increased. Such personalized app-user interaction could be effective in delivering customized messages, which explains why various sponsors are paying attention to the health apps.

CHAPTER 4

USER CONTROL AND INFORMATION SHARING IN A SPONSORED APP CONTEXT

Interactivity in Digital Advertising and Sponsorship Research

In advertising and sponsorship contexts, interactivity is commonly used as a promotional tactic of media-based marketing strategies that include an element of feedback from those to whom the advertisements are directed. Traditional advertising and research implicitly assume that advertising is something the firm does to the consumer, while interactive advertising makes it clear that this is a limited view of advertising and highlights the need to understand how consumers impact advertising (Pavlou & Stewart, 2000). In the interactive advertising context, therefore, users are enabled to have greater control over the simple and linear order in which they are exposed to online advertisements. Different types of highly visible or obtrusive advertising, including keyword search, pop-ups, banner ads, and sponsorships, can be considered interactive advertising if the ad requests two-way communication with its user (Goldfarb & Tucker, 2011) or provides the possibility of interaction with the ad messages conveyed in that medium (Li & Leckenby, 2004). Given this information, even with the same level of product information, interactive advertising exposure allows consumers to actively engage and interact with the information in the system (e.g., a banner ad or pop-up with a direct link to buy advertised products) (Li & Leckenby, 2004). During exposure to advertising, interactive systems were found to help consumers process product information, as they were able to easily reduce unwanted or superfluous information and to organize that information in such a way that facilitated the process (Widing & Talarzyk, 1993).

Unlike interactive advertising, no common definition for sponsorship itself has been clearly discussed up to this point. However, the Interactive Advertising Bureau (IAB) considers new online sponsorships as a part of revenues generated from Internet advertising (Interactive Advertising Bureau, 2017). According to a report by the IAB, interactive sponsorship falls into all kinds of activities related to paying for custom content and/or experiences, which may or may not include ad elements such as display advertising, brand logos, advertorial, or pre-roll video (Interactive Advertising Bureau, 2017). In addition, recent corporate sponsors have used dynamic interactive methods beyond traditional advertising elements, such as offering no download or waiting time for an online file, free app content, or free internet access in public places. In this case, interactivity refers not only to tailored interactions with an advertising message coming from a sponsor itself but also to tailored interactions with sponsored technologies, such as mobile health-related apps.

Previous research suggested that interactivity is especially critical in encouraging users' responses to persuasive messages (Bezjian-Avery, Calder, & Iacobucci, 1998; Coyle & Thorson, 2001; Ghose & Dou, 1998; Liu & Shrum, 2009; Oh & Sundar, 2015; Porter & Donthu, 2008). For online advertising, as interactivity may provide the potential to increase the positive interaction effects of advertising messages with the user, interactive advertising has mostly highlighted the role of the consumer in determining the effects and effectiveness of advertising, while challenging traditional assumptions about how advertising works (Ghose & Dou, 1998; Ko, Cho, & Roberts, 2005; McMillan & Hwang, 2002; Pavlou & Stewart, 2000; Rodgers & Thorson, 2000; Sicilia, Ruiz, & Munuera, 2005). Research has also confirmed that there are positive relationships between the level of interactivity and attitudes toward it, showing users' more favorable attitudes toward more interactive websites (Johnson, Bruner, & Kumar, 2006;

Kalyanaraman & Sundar, 2006; McMillan & Hwang, 2002), and even website sponsors (Kim, 2011).

Although there are obvious advantages to interactivity in promotion, interactivity may also pose some disadvantages for marketing and advertising in certain conditions (Bezjian-Avery et al., 1998; Liu & Shrum, 2002; Yaakop, Anuar, & Omar, 2013; Yadav & Varadarajan, 2005). For example, some researchers have argued that interactive information might interrupt the process of persuasion under certain conditions as well as it would help better recall the information (Bezjian-Avery et al., 1998; Liu & Shrum, 2002). In addition, Sundar et al. (2003) found that when interactivity is considered as a function of participant apathy, a different pattern could emerge (i.e., apathetic participants were positively affected by level of two-way communication, while non-apathetic participants were either not or somewhat negatively affected). Interactivity could serve as a peripheral cue and, as such, has an effect only on those who are relatively less involved. According to dual processing theories, such as the Elaboration Likelihood Model of persuasion (ELM; Petty & Cacioppo, 1986) and the Heuristic Systematic Model of Information (HSM; Chaiken, 1980), people receive persuasive messages in two distinct ways for information processing: a central (systematic) route and a peripheral (heuristic) route. The central route to persuasion involves a higher level of message elaboration and is based on thoughtful consideration about and scrutiny of message arguments (e.g., ideas, content). The peripheral route to persuasion is related to a low level of elaboration that occurs when individuals reply to simple cues (e.g., elements of a message) other than the strength of message arguments. The likelihood of elaboration is determined by individual's motivation and ability to process the message (Petty & Cacioppo, 1986). In complicated contexts, like mobile app stores, people often have a lack of interest in processing all information in the app interfaces thoroughly,

so they are more likely to rely on general impressions or heuristic cues for information processing, such as reviews, price, and other (e.g., Kanthawala, Joo, Kononova, Peng, & Cotten, 2018). App interface elements, such as sponsor logos, personal information form, and "opt-out" option, are manipulated in the present study as cues that could lead participants to make quick judgment about the nature of the app.

Finally, the unique nature of interactivity may face a "double-edged sword" in a quest to use online marketplace information to build positive relationships with consumers (Eastlick, Lotz, & Warrington, 2006). More specifically, issues related to online advertising interactivity are also considered to be barriers in delivering effective messages to audiences and in building advertising credibility and privacy trust (Sheehan & Hoy, 2000; Yaakop et al., 2013). Yadav and Varadarajan (2005) suggest that higher interactivity could lead to better consumer decision-making and greater privacy compromises and efforts by consumers to control access to information related to their personal transactions and consumption behavior.

Interest in the concept of interactivity and its related outcomes has increased as we have entered in the new era of mobile technologies where people can interact anytime and anywhere (Varnali & Toker, 2010). Lee (2005) found that perceived components of mobile interactivity, namely user control, responsiveness, connectedness, ubiquitous connectivity and perceived contextual offers have strong and significant effects on consumer trust and behavioral intentions. Calder et al. (2009) suggested that the high level of engagement associated with users' experiences interacting with smartphone apps tends to make advertising messages through the app more persuasive. Further, Bellman et al. (2011) argued that using branded apps has a positive persuasive impact, increasing interest in the brand and also the brand's product category. Although there has been a lot of research on the positive effects of interactive features for

different mobile apps, there remains little understanding of how interactivity pertaining to users' data sharing and users' control over the information sharing option produces positive or negative effects. More specifically, it is necessary to investigate how features of health apps that are sponsored by commercial companies determine consumer attributions and evaluations of the app and the sponsor. Thus, this study aims to fill the gap in existing research by looking at app customization based on information sharing, and user controllability for the customization of sponsored apps in the context of mobile health.

Information Sharing and mHealth App Sponsorship

Although many studies attempt to examine a variety of persuasive message tactics to empirically assess how brand image or awareness improves or changes as a consequence of sponsorship (Cornwell et al., 2005; Grohs, 2016), little is known about the forms and functions of interactive features like personal information sharing with sponsored properties or user control over the technology in the contexts of new media sponsorship. Interactivity is a broad construct involving several key aspects of the persuasion process—two-way, reciprocal communication, or synchronicity (Liu & Shrum, 2009), personalization of content (Kalyanaraman & Sundar, 2006), user control (Steuer, 1992), and technological affordances that alter the medium, source, and message of communication (Sundar, 2007).

Personalization of content might produce some positive responses. One such response is the increase of users' satisfaction with an app and, further, a sponsor. However, it is not clear if these positive responses can be overpowered by the inconvenience of sharing personal information with an app and the privacy concerns this can raise. There are growing concerns related to interactive app technologies that collect and potentially use users' personal and/or health information for irrelevant purposes (Boulos et al., 2014; Dehling et al., 2015; Gu et al.,

2017; Powell, Landman, & Bates, 2014; Sunyaev et al., 2015; Williams et al., 2015). Obtrusive interactions, such as asking users to share detailed personal information could be perceived more negatively when related to topics requiring more privacy and security, such as in health management (Boulos et al., 2014; Sunyaev et al., 2015; Dehling et al., 2015).

For sponsored mobile apps, a requirement to share users' personal data could be considered part of the customization of app technology. In the case of mHealth apps, apps often ask users to share their personal demographic and/or sensitive medical information to be stored for easy and seamless real-time access. App customization is also used to provide users with tailored health management services by activity trackers such as Fitbit or Apple Watch (Boulos et al., 2014; Kumar & Lee, 2011; Rosser & Eccleston, 2011). As part of this process, sponsored apps may also generate personalized advertisements of sponsor products. Such customized mobile in-app advertising can gain significant attention from users because it offers new opportunities for sponsors to create effective and efficient promotions based on users' data (Lee et al., 2015).

Given these factors, there are many valued features and characteristics that app developers and sponsors should consider when creating health-related apps as an interactive communication platform. In particular, sharing health information for a certain mHealth app may be considered a critical contextual cue that can influence consumers' negative perceptions about why the sponsored app collects their information. Indeed, security and privacy issues related to users' data collection are burgeoning in the health apps market; many of the popular health apps have been known to share their users' data with third parties, such as advertising and analytics companies (Dredge, 2013; Dembosky, 2013; Huckvale et al., 2015). According to the existing literature on mHealth, requests for sharing personal information itself works as a powerful

trigger in one's concerns or skepticism about data confidentiality, privacy invasion, and security issues, even if it is an essential step for effective and full functionality of the mHealth app (Boulos et al., 2014; Sunyaev et al., 2015; Williams et al., 2015). Thus, in this dissertation I determine the effects of app technology based on data sharing activities in which app sponsorship is applied to develop relationships between the sponsor and the customer.

User Control and Customization of the Web and Mobile Apps

Web-based communication, which includes mobile app technology, often allows users to have more content and navigational tools than traditional media do. These characteristics of the medium have a distinct impact on consumers' processing of information and attitude changes (Ghose & Dou, 1998; Kim, 2011; Rodgers & Thorson, 2000). The ease of manipulating content and the ability to transfer information grants additional control to the user and enables two-way communication, capabilities that are not available through traditional media (Liu & Shrum, 2002). The ability of the user to control the information stream is related to interactivity (Bezjian-Avery et al., 1998). It helps users receive tailored feedback based on determined settings by themselves (Kalyanaraman & Sundar, 2006; Sundar, Jia, Waddell, & Huang, 2015). Williams et al. (1988) proposed that interactivity is the degree to which participants in a communication process have control over this process and can interchange roles in their mutual discourse.

Personal control and information exchange between a machine and a user (two-way communication) as the two key features of machine interactivity (McMillan & Hwang, 2002) lead to users' satisfaction (Ballantine, 2005; Rafaeli, 1989) and increase performance quality and engagement (Blasco-Arcas, Buil, Hernández-Ortega, & Sese, 2013; Schaffer & Hannafin, 1986). With more personal control over the information exchange process, for example, individuals

could perceive high levels of interaction with the web that help them gain control over the information, as compared with traditional media that have less control over the process (Ballantine, 2005; Peterman, Rohem, & Haugtvedt, 1999). In addition, high levels of interaction imply system customization where a machine generates feedback based on personalized input (Kalyanaraman & Sundar, 2006; Sundar et al., 2015).

Corporate websites tend to provide greater user control over the information about the corporation. By creating potential for interaction opportunities with consumers, companies want to effectively enhance consumers' attention and understanding of the information, while positively influencing attitudes toward the website and the issue featured in the website (McMahan, Hovland, & McMillan, 2009; Sewak, Wilkin, Bentley, & Smith, 2005; Kim & Stout, 2010). When considering the product shown on a website, for instance, giving opportunities to interact with the website helps improve consumers' information searches (Bettman, Luce, & Payne, 1998), thus increasing the probability of exposure to and understanding of product information (Kim & Stout, 2010). Based on these advantages, greater interaction has been considered a desirable feature that is associated with the feeling of users' satisfaction and pleasure as well as sponsors' popularity and credibility (compared to other ad formats, such as interstitials) among Internet users (Kim, 2011; Liu & Shrum, 2002; Sicilia et al., 2005).

Mobile apps, defined as software downloadable to a mobile device, are based on the features offering interactive, controlled, and personalized communication (Ahmed, Beard, & Yoon, 2016; Bellman et al., 2011). For example, while consumers of persuasive messages through traditional media are generally passive and actively resist or avoid any exposures (Karson & Fisher, 2005), consumers of mobile apps are more active in receiving messages because they can choose to continue or discontinue using the app and can set their personalized

app interfaces (Ahmed et al., 2016; Bellman et al, 2011; Kim et al., 2013). Customizing a social media account based on personal data or determining settings of notifications for apps that generate personalized newsfeeds or messages could be regarded as another example of users' controllability in the mobile app environment (Liu, 2014).

Although self-controllability of different app customization that helps users generate a high level of interaction with the app and feel a sense of control over the interaction has been studied (Kim et al., 2013; O'Brien & Toms, 2008), there is not much research on the effects of self-controllability of personal and/or health data sharing on app users' evaluation when it comes to the sponsoring health app. In particular, it is important to investigate how users perceive opt-out options to have more control over their personally identifiable information (Tucker, 2014). Thus, this study explores how user control over app customization based on personal data sharing influences users' responses about the app and the sponsor.

CHAPTER 5

THEORETICAL FRAMEWORK: ATTRIBUTION THEORY

Attribution Theory in Social Psychology

In social psychology, "attribution" is an umbrella term used to explain the cognitive processes by which individuals make causal explanations about human behavior and/or events and how these relate to their thinking and behavior in the future (Heider, 1958; Jones & Davis, 1965; Kelley, 1973). Attribution theory is a family of theories based on the main assumption that people generate causal inferences about different situations they observe or experience. Heider (1958), the first to propose the psychological theory of attribution, believed that people are "amateur scientists" or "I psychologists" trying to understand other people's behavior by piecing information together until they arrive at a reasonable explanation or cause. In other words, people tend to determine the cause of events.

In his book *The Psychology of Interpersonal Relations* (1958), Heider characterized "commonsense psychology" as a sophisticated conceptual scheme for its real value of knowledge that has an influence on human perception and action in the social world. Although people have various kinds of explanations for the events of human behaviors, he pointed out two key factors that can stimulate one's attribution motive: 1) internal personal factors (intrinsic motives), such as individual character or personality, and 2) external situational factors (extrinsic motives), such as something about the situation or environment a person is in—including social pressure, social norm, task or luck. Within sponsorship, companies may be viewed as sponsoring a cause because they view the cause as worthy, which would be an intrinsic or altruistic (goodwill) motive, or because they seek to profit financially or enhance their reputation, which would be an extrinsic or sales motive (Bendapudi et al., 1996; Madrigal, 2001; Piliavin & Charng, 1990).

Subsequently, Kelley (1967, 1972, 1973) proposed the most well-known principles of attribution theory, a covariation model entailing several principles. First, his *principle of covariance* states that people use social perception in a rational, logical fashion to attribute an individual's behavior to a combination of environmental factors and some internal characteristics of the person. The 'covariation' means that one's ability to observe two or more causes over time attributes to a certain effect. People gather information through multiple experiences or perceptions (at different places and times) and use them to determine what variables have changed and which have stayed the same to form the current attitude or behavior.

Second, according to the *discounting principle*, complex configurations of factors that are plausible for co-varying over time, across situations, and across individuals are considered for judging an observed effect: "The role of a given cause in producing a given effect is discounted if other plausible causes are also present" (Kelley 1972, p. 8). Human beings tend to reduce multiple possible attribution situations into one single plausible explanation for the events or behaviors they observe. According to Kelley, this occurs because people prefer to rapidly associate causes with events and generalize across similar attribution situations to reach a final explanation (Kelley, 1972). Thus, between two or more explanations, an intrinsic motivation is more likely to be discounted when an extrinsic motivation is newly present to explain an event or behavior (Mizerski, Golden, & Kernan, 1979).

This cognitive process can be commonly observed when consumers infer corporations' real motives behind the sponsorship. Consumers will basically perceive intrinsic or altruistic motives if they consider that a company is supporting a cause because of its fondness for or beliefs in that specific cause. However, once consumers start to think that the intents of the company are only to profit or enhance their image during the sponsorship, consumers will

minimize the intrinsic motives while perceiving extrinsic or self-marketing motives to reduce attributional errors (Barone et al., 2000; Becker-Olsen et al., 2006; Drumwright, 1996; Moore, Mowen, & Reardon, 1994; Mowen & Brown, 1981; Salmones, Dominguez, & Herrero, 2013; Sparkman, 1982).

Kelley's principles of discounting will mainly be used in this study. In particular, the discounting principle will be used to explain the nature of sponsorship motives (i.e., goodwill or self-promotion) as consumer cognitive reactions to the characteristics of mHealth app and the app sponsor activities, such as sponsor visibility and interactivity, in mHealth app contexts.

Applications of Attribution in Marketing, Advertising, and Sponsorship Research

Broad-based applications of corporate sponsorship activities are an important part of marketing, brand communication strategizing, and sponsorship. Attribution theory has been used to explain consumers' affective, cognitive, and behavioral responses to and judgments about products, services, events, companies, endorsers, etc., for several decades (Sparkman & Locander, 1980). Understanding the attributional process helps consumer researchers and practitioners investigate what determines the expectancy of success or the subjective likelihood of personal satisfaction for one of many alternative choices informing one's subsequent behavior.

Past attribution research in marketing and advertising has examined various causal inferences that influence consumer behavior, including inferences about a consumer's own behavior, product selection success or failure, and a product endorser's recommendations and motives. Early consumer attribution research focused more on how consumers infer why they have purchased or selected a product (Folkes, 1988). These studies investigated consumers' perceptions and beliefs regarding product purchase or selection, providing two main reasons for

why a customer may purchase an item. According to the results of these studies, a customer buys an item if, first, they like the product or, second, because situational factors like incentives or coupons are available at point of purchase (Folkes, 1988; Mazursky, LaBarbera, & Aiello, 1987; Mizerski et al., 1979; Tybout & Scott, 1983).

Another research domain studied consumer inferences about product performance and satisfaction (Chebat, Filiatrault, Gélinas-Chebat, & Vaninsky, 1995; Curren & Folkes, 1987; Folkes, 1984, 1988; Mazursky et al., 1987; Orvis, Cunningham, & Kelley, 1975; Richins, 1983, 1985; Wirtz & Mattila, 2004). These studies looked beyond the consumer as a causal representative, focusing more on numerous causal inferences, especially when consumers determine product failure or success. According to this viewpoint, consumers' causal attributions and evaluations about a product's failure (or success) are likely to be influenced by various environmental attributes such as product defects and service delivery flaws (Folkes, 1984) and waiting line (Chebat et al., 1995).

Consumer attribution also factored into consumer reactions to the exposure of recommendations or comments from product endorsers—typically salespersons and celebrity endorsers in advertisements (Campbell & Kirmani, 2000; Choi & Rifon, 2012; Moore, et al., 1994; Ohanian, 1990; Silvera & Austad, 2004; Sparkman, 1982; Wiener & Mowen, 1986). Studies in product endorsements mainly concentrated on consumer perceptions of intrinsic motives (e.g., an endorser's liking for or beliefs in a particular product) versus extrinsic motives (e.g., monetary incentives for product endorsement). Most often, when consumers consider the real intents of endorsers' recommendations, they tend to infer extrinsic motives of monetary gains rather than intrinsic motives like personal liking or satisfaction (Moore et al., 1994; Ohanian, 1990; Silvera & Austad, 2004; Sparkman, 1982; Wiener & Mowen, 1986). Similar

studies also investigated consumer responses to positive and negative word-of-mouth (WOM) about a product, mainly investigating how consumers infer the reasons behind communicators' distribution of negative information (DeCarlo, Laczniak, Motley, & Ramaswami, 2007; Herr, Kardes, & Kim, 1991; Hunt, Domzal, & Kernan, 1982; Kamins & Assael, 1987; Laczniak, DeCarlo, & Ramaswami, 2001; Richins, 1983; Sen & Lerman, 2007).

In addition to efforts in understanding the actions of celebrity endorsements and reviewers' recommendations, scholars used the framework of causal attribution to analyze consumer judgment and skepticism of corporate sponsors and their motives behind their sponsorship (Becker-Olsen et al., 2006; Bendapudi et al., 1996; Carrillat, d'Astous, & Colbert, 2008; Dean, 2002, 2003; Deitz et al., 2012; Ellen, Webb, & Mohr, 2006; Ellen et al., 2000; Forehand & Grier, 2003; Keaveney & Nelson, 1993; Lee, Kim, & Kim, 2011; Rifon et al., 2004; Webb & Mohr, 1998). Sponsor motive assessment will be discussed in more detail in the next section.

Use of Discounting Principle for Motive Assessment in the Digital Contexts

Consumers attribute motives to communicators based on their previous experiences or observations. Prior research on attribution theory demonstrates that consumers discredit recommendations from endorsers if they notice a suspicious cue, indicating the latter incentives to recommend a product (for reviews, refer to Folkes, 1988; Mizerski et al., 1979). Such cues may work as a powerful trigger in memory and retrieval of information stored and process more affordable cognitive processing to assess the communicator's motives. On the basis of *the discounting principle* of attribution, consumers discount an intrinsic explanation if an alternative environmental or extrinsic explanation appears (Kelley, 1972). This principle has been used in various studies designed to uncover the determinants of new media marketing practices, such as

online source credibility (Dou, Walden, Lee, & Lee, 2012; Rifon et al., 2004), electronic word-of-mouth (eWOM) (Laczniak et al., 2001; Lee & Youn, 2015; Qiu, Pang, & Lim; 2012; Sen & Lerman, 2007; Senecal & Nantel, 2004) and other areas dealing with consumer perception and information formation on persuasion (Lee et al., 2011; Porter & Donthu, 2008). For example, one research domain using the discounting principle is to examine the effects of readers' attributions of the peer reviewers' motivation and credibility in the contexts of eWOM – interpersonal communication about products and services among online consumers (Lee & Youn, 2015; Qiu et al., 2012; Sen & Lerman, 2007; Senecal & Nantel, 2004).

eWOM has been considered an influential recourse for consumers' decision-making processes because they generally trust peer consumers more than they trust advertisers or marketers (Sen & Lerman, 2007). Thus, online consumers tend to attribute more non-product related motivations (e.g., commissions on sales) to recommend online sources that are promoted by commercially linked third parties and sellers than independent third-party websites (refer to Kelley, 1973; Lee & Youn, 2015). Readers who are considering a product review will base their decision on the causal inferences they make regarding where the reviewer's motivation in posting the review comes from. In other words, if the reader's attribution about the reason behind the reviewer's posting is derived from an external factor (e.g., monetary gains), rather than an internal factor (e.g., reviewers' own interests), the reader may discount the credibility of the reviewer and the reviewed product.

This assumption has also been used in sponsorship studies to examine sponsor credibility (Dou et al., 2012; Ellen et al., 2006; Rifon et al., 2004). According to these studies, when being exposed to sponsorship information, consumers first attribute causality to sponsor motives—either intrinsic motives (e.g., altruism and social responsibility) or extrinsic motives (e.g., profit

exploitation and public image enhancement) to develop sponsor credibility or trust and attitude formation. Unless there is a suspicious sponsorship cue (e.g., brand logo, name) presented in the stimulus environment, consumers first tend to perceive altruistic or goodwill motives when being exposed to sponsorship information. However, they may engage in a complex attribution process while in a state of suspicion to attribute the sponsor to extrinsic motives like sales and profit purposes, while minimizing its intrinsic motives of altruism (Carrillat et al., 2008; Dean 2002; Kelley, 1972; Lee et al., 2011; Mizerski et al., 1979). This may negatively influence trust in the sponsor and attitudes toward the sponsor (Becker-Olsen et al., 2006; Bendapudi et al., 1996; Carrillat et al., 2008; Ellen et al., 2000; Forehand & Grier, 2003; McDonald, 1991).

There is a lack of studies regarding attributions of a sponsor's motive in the context of mHeath apps. Corporate companies use mobile app sponsorship in dynamic ways, such as placing a simple brand logo or advertising message on the corner of the sponsoring app or highly exposing their brand identity and product information in use of the customized app. The first question of this study is whether visible identification of a sponsor (sponsor obtrusiveness) in an mHealth app interface would lead to stronger self-promotion motives compared with less visible (obtrusive) sponsor identification or absence of such identification. I also ask if attribution of a sponsor's motive would mediate the effect of sponsor obtrusiveness (as well as effects of two dimensions of interactivity) on a number of dependent variables, such as attitudes toward sponsor, mHealth app credibility, and intention to download and use an mHealth app.

Taking this line of thinking further and referring to the literature about interactive features on mHealth apps discussed earlier, I examine the effects of app customization based on personal data sharing and user control over the technology on sponsor's motive attribution. First, the level of app customization is operationalized as the degree of personal information sharing

where an individual provides only basic (low level of customization: e.g., nickname and email) or diverse (high level of customization: e.g., real name, email, weight, height, diet and activity specifications, etc.) information to receive more or less personalized feedback from the app. I hypothesize that the requirement to share more personal information would serve as a cue to activate a sponsor's real motive assessment and, as a result, lead to higher self-promotion attribution of a sponsor's motive and affect overall outcome variables (sponsor attitude, app credibility, app download and use intention).

Second, user control over the app customization is operationalized as whether the app provides an opt-out option for personal information sharing or not. I hypothesize that offering opt-out options for users to choose what personal information they are willing to share would serve as another cue for users to generate less self-serving motives of the sponsor, which results in positive evaluations about the sponsor and the app. Research hypotheses based on the main and interaction effects of sponsor visibility (obtrusiveness), customization (personal information sharing), and user control, and mediating effects of sponsor motive assessment are explained further in the following section.

CHAPTER 6

HYPOTHESES DEVELOPMENT

Study Hypotheses

mHealth apps are interactive technologies that are increasingly used by corporate sponsors for multiple reasons. This technology can be used as part of CSR to create a better, healthier society by facilitating health management in different areas, which can be directly linked to the altruistic intentions of a company. At the same time, sponsors still tend to identify apps that are associated with them by placing logos or ads within the apps. Such elements may cause users to discontinue altruistic attribution of motives and judge the sponsor based on self-promotion motives, because consumer motive attributions about the sponsors' motives are determined not only by past experiences and individual characteristics, but also the characteristics of the sponsorship strategy and messages relayed in the environments of the consumer (Cornwell et al., 2005; Drennan & Cornwell, 2004; Rifon et al., 2004).

In the sponsored app interface, there are different types of factors available that can generate sponsors' motive assessments, which also influences evaluations of the app sponsor as well as the mHealth app itself, including app credibility and behavioral intentions towards the app. For example, cues not only directly related to app functions and design but also app developers and source providers have been recognized as the essential criteria for users when evaluating mHealth apps (Kanthawala et al., 2018). Also, it is possible that a type of sponsorship organization could be a matter for judging the real motives of the app sponsor that eventually influence credibility and download intentions of the app (Peng, Kanthawala, Yuan, & Hussain, 2016; Szykman, Bloom, & Blazing, 2004). Besides, visibility of the sponsor could negatively

determine sponsor evaluations and sponsored properties (Goldfarb & Tucker, 2011; Rejón-Guardia & Martínez-López, 2014; Rifon et al., 2004).

Thus, I hypothesize that a sponsor's visibility (obtrusiveness) within an mHealth app interface could trigger stronger self-promotion motive attributions and less altruistic motive attributions, and lead to negative sponsor and app evaluations.

H1: More obtrusive sponsorship messages will generate stronger attributions about mHealth app sponsors' self-serving motives (and less attributions about app sponsors' altruistic motives) than less obtrusive sponsorship messages.

H2a: Participants will indicate less favorable attitudes toward mHealth app sponsors when the apps show them more obtrusive sponsorship messages than less obtrusive sponsorship messages.

H2b: Participants will rate credibility of mHealth apps lower when the apps show them more obtrusive sponsorship messages than less obtrusive sponsorship messages.

H2c: Participants will indicate lower intentions to download and use mHealth apps when the apps show them more obtrusive sponsorship messages than less obtrusive sponsorship messages.

H3a-c: Attribution of sponsors' motives will mediate the effects of sponsor obtrusiveness on attitudes towards the sponsors (H3a), mHealth app credibility (H3b), as well as intentions to download and use mHealth apps (H3c).

mHealth apps are designed as an advanced mobile technology with a high level of user control for a customized system. A user can individualize an mHealth app using their personal information, which determines the nature of communication between the app and the user (e.g., setting a weight loss goal and getting notifications about weight loss progress) as well as the user

and the sponsor (e.g., tailored advertising messages). Meanwhile, personal information sharing within an mHealth app for receiving customization services raises several privacy concerns, as a sponsoring company may use users' information for its own commercial purposes or even sell it to unknown third parties. Previous studies discovered that app personalization based on personal information could generate users' concerns and increase skepticism about privacy invasion and personal data security (Boulos et al., 2014; Sunyaev et al., 2015; Williams et al., 2015). Thus, requiring a high level of personal information for customization in a mHealth app interface can be treated as a salient cue that may trigger a self-promotion motive attribution about the sponsor at the cost of a public-serving motive attribution and lead to negative attitudes toward the sponsor.

In addition, consumer concerns about sharing personal information act as potential barriers to produce positive app evaluations including app credibility and usage intentions (Peng et al., 2016). In other words, requesting detailed personal information itself would trigger thoughts of the sponsorship motive and skepticism. Although users desire to use personalized health app services by inputting their personal data, users' intentions to download and use the app may be determined by what consumer attributions of sponsors' real motives are in reality. In this study, it is necessary to determine how different degrees of customization based on personal information sharing (sharing basic vs. more detailed personal information with an mHealth app) affect consumer attribution of sponsors' motives. It is also important to find out whether the degree of personal information sharing and users' attribution of sponsors' motives influence sponsor attitudes and app evaluations, such as app credibility and intentions to download and use the app. Thus, I hypothesize below:

H4: Requiring a higher level of personal information sharing will generate stronger attributions about app sponsors' self-serving motives (and less attributions about app sponsors' altruistic motives) than requiring a lower level of personal information sharing.

H5a: Participants will show less favorable attitudes toward mHealth app sponsors when the apps require them to share a higher level of personal information compared with sharing a lower level of personal information.

H5b: Participants will rate credibility of mHealth apps lower when the apps require them to share a higher level of personal information compared with sharing a lower level of personal information.

H5c: Participants will indicate lower intentions to download and use mHealth apps when the apps require them to share a higher level of personal information compared with sharing a lower level of personal information.

H6a-c: Attribution of sponsors' motives will mediate the effects of personal information sharing on attitudes towards the sponsors (H6a), mHealth app credibility (H6b), as well as intentions to download and use mHealth apps (H6c).

Since requiring a high level of personal information sharing for app customization would be more likely to trigger self-promotional motive attributions and lead to negative evaluations about the app as well as the sponsor, options that allow user control over sharing personal information (ex. opt-out features) may offset such effects. The information about users' controllability for sharing personal data indicated in an app interface could be an alternative cue that generates altruistic motive attribution, while minimizing self-promotional motive attribution. This may lead to positive consumer outcomes about the app and the sponsor. To examine the effects of options for users' controllability over the information sharing, it is predicted that

higher levels of user control in the app (vs. lower levels of user control) positively affect consumer attribution of a sponsor's motives and result in further evaluations about the app and the sponsor. Thus, I hypothesize below:

H7: Providing a higher level of user control over personal information sharing will generate stronger attributions about app sponsors' altruistic motives (and less attributions about app sponsors' self-serving motives) than providing a lower level of user control over the information sharing.

H8a: Participants will show less favorable attitudes toward mHealth app sponsors when the apps provide them with a lower level of user control over the information sharing compared with a higher level of user control over the information sharing.

H8b: Participants will rate credibility of mHealth apps lower when the apps provide them with a lower level of user control over the information sharing compared to a higher level of user control over the information sharing.

H8c: Participants will indicate lower intentions to download and use mHealth apps when the apps provide them with a lower level of user control over the information sharing compared to a higher level of user control over the information sharing.

H9a-c: Attribution of sponsors' motives will mediate the effects of user control over sharing personal information on attitudes towards the sponsors (H9a), mHealth app credibility (H9b), as well as intentions to download and use mHealth apps (H9c).

Research is needed to determine whether there are interaction effects between sponsor obtrusiveness and personal information sharing on mHealth apps. While interactive sponsorship is known to be an effective tool to increase consumer attention toward a brand, some researchers have argued that such a format could be perceived as too obtrusive and may even motivate

consumers to identify the advertisers' persuasive intent in the particular situations (Campbell, 1995; Goldfarb & Tucker, 2011). It is possible that consumers may perceive highly visible advertising as too obtrusive. This effect may be strengthened in the context of users' privacy invasion, especially when personal data is being shared (Alreck & Settle, 2007; Goldfarb & Tucker, 2011; Morimoto & Chang, 2006). Therefore, the following hypotheses for the interaction effects of the level of sponsor visibility and personal information sharing on the health apps are proposed:

H10: More obtrusive sponsorship messages will generate stronger attributions about app sponsors' self-serving motives (and less attributions about app sponsors' altruistic motives) than less obtrusive sponsorship messages when participants are required to share a high level of personal information compared to when the level of personal information sharing is low.

H11a-c: The moderating effect of personal information sharing on the relationships between sponsor obtrusiveness and attitudes towards the sponsors (H11a), mHealth app credibility (H11b), as well as intentions to download and use mHealth apps (H11c) will be mediated by attribution of sponsors' motives.

It is also necessary to examine whether there are interaction effects between user control and sponsor obtrusiveness on mHealth apps. Since some researchers have suggested that sponsorship messages could sometimes be perceived as too visible and obtrusive to deliver the advertisers' persuasive intents (Campbell, 1995; Goldfarb & Tucker, 2011; Rifon et al., 2004), it is interesting to question whether user controllability for personal information sharing with an mHealth app could offset the negative effects of sponsor visibility. Therefore, the following

hypotheses for the interaction effects of level of user control and sponsor visibility on the health apps are proposed:

H12: More obtrusive sponsorship messages will generate stronger attributions about app sponsors' self-serving motives (and less attributions about app sponsors' altruistic motives) than less obtrusive sponsorship messages when participants are provided with a low level of user control over sharing personal information compared to when the level of user control over sharing personal information is high.

H13a-c: The moderating effect of user control on the relationships between sponsor obtrusiveness and attitudes towards the sponsors (H13a), mHealth app credibility (H13b), as well as intentions to download and use mHealth apps (H13c) will be mediated by attribution of sponsors' motives.

Similarly, it is necessary to reveal whether user control over the technology will also negatively interact with the effects of app customization based on personal information sharing on evaluations of the sponsor and the mHealth app. Even if personal information sharing plays a role in increasing consumer attribution about the app sponsor's self-promotional motives, a high level of user control over personal information could minimize such attribution for sponsor motives as another relevant cue and might lead to improved outcomes for the sponsor as well as the app. Therefore, the following hypotheses for the interaction effects of user control and requirement to share personal information for app customization on the health apps are proposed:

H14: Providing a higher level of user control over the information sharing will generate stronger attributions about app sponsors' altruistic motives (and less attributions about app sponsors' self-promotional motives) than providing a lower level of user control over

the information sharing when participants are required to share a lower level of personal information compared to when the level of personal information sharing is high.

H15a-c: The moderating effect of user control on the relationships between personal information sharing and attitudes towards the sponsors (H15a), mHealth app credibility (H15b), as well as intentions to download and use mHealth apps (H15c) will be mediated by attribution of sponsors' motives.

Finally, as there are multiple hypothesized interaction effects between the main variables of the study (i.e., sponsor obtrusiveness, personal information sharing, and user control over the technology), it is important to identify whether the factors all work together as well when evaluating the mHealth app and its sponsor. Moreover, it is also interesting to note how the mediating role of sponsor motive assessment appears in the interactions of the three main variables. Therefore, the following hypotheses for the three-way interaction effects of sponsor visibility, personal information sharing, and level of user control along with mediation effects of sponsor motive assessment on the mHealth apps are proposed below:

H16: At low obtrusive sponsorship messages, providing a higher level of user control over the information sharing will generate stronger attributions about app sponsors' altruistic motives (and less attributions about app sponsors' self-promotional motives) than providing a lower level of user control over sharing personal information when participants are required to share a low level of personal information compared to when the level of personal information sharing is high.

H17a-c: The moderating effects of user control and personal information sharing on the relationships between sponsor visibility and attitudes towards the sponsors (H17a),

mHealth app credibility (H17b), as well as intentions to download and use mHealth apps (H17c) will be mediated by consumer attribution of sponsors' motives.

CHAPTER 7

METHODS

The purpose of this project was to examine whether requirements to share personal information, user control over app technology, and sponsor visibility (obtrusiveness) influence consumers' causal attributions of sponsors' motives and, as a result, sponsor attitudes, app credibility, and app download and use intentions. Thus, this study investigated the main and interaction effects of three variables on the dependent variables: sponsor visibility, personal information sharing, and user control. The mediating role of sponsors' motive attribution was also tested. To test study hypotheses, two pretests were first conducted to develop stimuli for the main experiment study. Following the pretests, the scenario-based online experiment was conducted twice using two different types of samples: a student sample and general population panel sample.

Study Design

To test the study's hypotheses, a 3 (sponsor obtrusiveness: highly obtrusive sponsor message vs. less obtrusive sponsor message vs. no sponsor identification) x 2 (requirement to share personal information for app customization: sharing detailed information vs. sharing basic information) x 2 (user control over information sharing: opt-out option for personal information sharing vs. no opt-out option for personal information sharing) x 3 (message repetition) mixed factorial experiment was administered online. Thirty-six versions of sponsored health apps were created for the experiment. First, **sponsor obtrusiveness** is a within-subjects factor with three levels: highly obstructive sponsor, less obstructive sponsor, and no sponsor identification. Each participant saw nine different health app interfaces for all three obtrusive sponsor conditions (3 apps per each condition). **Personal information sharing for app customization** is a between-

subjects factor with two levels: being require to share detailed personal information and basic personal information. Each participant saw nine different health app interfaces involving one of the two sharing conditions. **User control over personal information sharing** is also a between-subjects factor with two levels. Each participant saw nine different health app interfaces involving one of the two user control conditions. In the higher user control condition, participants were given an opportunity to opt-out from providing any personal information to the app by seeing an opt-out sign. In the lower user control condition, participants did not have that option, so no opt-out sign was shown in the app interfaces.

Participants

Sample 1: Students

Participants were recruited online through a student research pool, SONA system, administered in the Department of Advertising + Public Relations in the College of Communication Arts & Sciences at Michigan State University. A total of 252 responses were collected for the main online experiment study (see power analysis description in the next paragraph). Every participant who completed the study received extra credit for a class via the SONA system. A student sample is considered as being appropriate for this experiment because more than 70% of Millennials and Post-Millennials (also known as Generation Z) between the ages of 18 and 34 are heavy users of mobile apps (comScore, 2017). Additionally, younger adult users, between the ages of 18 and 24 use mobile apps via smartphones more than 3 hours a day on average, and 65% of them spend two-thirds of their digital media time on smartphone apps alone (comScore, 2017). Anyone who was born between 1981 and 1996 (ages 22 to 37 in 2018) is considered a Millennial, and anyone who was born from 1997 onward is part of a new generation called Post-Millennials (Dimock, 2018).

To confirm whether the sample size for the main study provides enough statistical power for F tests (ANOVA: repeated measures, within-between interaction), I conducted a power analysis, using G*Power software (Erdfelder, Faul, & Buchner, 1996; Faul, Erdfelder, Lang, & Buchner, 2007) with power (1 - β) set at 0.95, $\alpha = 0.05$, and partial Eta-Squared (η^2_p) = 0.02. It is one of the lowest effect size statistics that could be found in similar studies (Bellman et al., 2011; Wilson & Sherrell, 1993), two-tailed. This statistical power analysis demonstrated that the acceptable sample size for this experiment should be 176 participants or more; four between-subjects groups with three within-measurements. Thus, 252 participants for the main experiment study is a reasonable proposition with the statistical power; the final data had filtered out drop-out responses, missing values, or responses that couldn't pass several attention check questions. All participants for pretests and the main study read an online informed consent form prior to their participation in the experiment. Clicking on "Next" (">>") signified that they were 18 years of age or older and had voluntarily agreed to participate in the study (See Appendix A).

Sample 2: General Population Panel Sample

To ensure the effects of the study findings are reliable and generalizable to a wider population, I also replicated the same online study with a general population panel sample collected via the Qualtrics online survey platform, one of the leading research and panel management company in the United States. A total of 467 completed responses from the panel sample were used to replicate the finding of the experiment study with the student sample. The number of participants for the panel sample also provides a good proposition with the statistical power, as described above. As the results with the student sample produced the minimum significant value for partial Eta-Squared (η^2_p) = .02, no additional power analysis was conducted

(otherwise it would produce the same minimum sample size of 176). Qualtrics received $5 per participant.

Pretests and Stimuli Development

I ran two pretests to develop the project stimuli for the main study. Participants for pretests were recruited via the SONA system. SONA system is an online recruitment system available in the Department of Advertising + Public Relations at Michigan State University. It offers student participants to take part in research to earn extra credit that can later be applied toward courses students take. Each participant received extra credit for their participation. Pretest participants were excluded from the pool to recruit participants for the main study. The first pretest was conducted to determine a relevant health topic to produce the app interfaces. Then, I pretested three factors of the app interfaces based on the topic that was selected from the first pretest. The three factors were sponsor obtrusiveness, a requirement to share personal information, and user control over sharing information. Based on the pretest results, screenshots of fictitious mHealth apps with manipulated messages were created specifically for the main online experiment as the study stimuli. The reason this project used mock-up health apps with fictional sponsors is to avoid any confounding effects that may occur due to prior knowledge (e.g., experiences and familiarity) about existing companies and their real apps that have been used by participants.

Pretest 1

mHealth App Topic Selection. To find a relevant app topic for health and fitness, 10 top popular health app categories (e.g., running, water drinking, calorie counter, sleep, fitness, pregnancy tracker, weight loss, mediation, first aid, stress relief) found in official app stores were first selected. During the first pretest study, participants (n = 32) rated each of the health app

categories in terms of how much each health and fitness topic was relevant to them. This was measured by asking participants to indicate their level of agreement or disagreement with each of the following four statements on a seven-point scale that was slightly modified from the previous research (Maheswaran & Meyers-Levy, 1990): (1) "I am interested in the topic of the health app," (2) "I am familiar with the topic of the health app," (3) "The topic of the health app is relevant to me," and (4) "I would like to learn more about the topic of the health app." Among the ten topics, the water drinking app (M = 4.52, SD = 1.24) had the most moderate score for both men and women and was selected to conduct the second pretest. The reasoning behind selecting the most moderate app is to avoid any confounding effects of app topic selection itself. Cronbach's alpha scores for all app topics ranged from .739 and .943, which indicates good measure consistency. Water drinking was used as the topic to develop twelve different versions of the apps (3 different types of sponsor visibility x 4 between-subjects experimental conditions). (See Appendix C)

Pretest 2

Sponsor Obtrusiveness. Three versions of the app interfaces with/without sponsorship information were created. These three versions were identical except for the manner in which the sponsorship information was exposed to participants (See Appendix C). Highly obtrusive sponsor information in the form of the sponsor's logo was shown in the center of the health app interface (M = 5.16, SD = 1.12). Less obtrusive sponsor's information was shown in the right corner of the app interface in a smaller form of the same logo (M = 4.04, SD = 1.67). No visible sponsor condition had no sponsor logo shown (M = 3.37, SD = 2.06). Participants (n = 40) were asked to evaluate the degree to which the sponsor was visible on a semantic differential 7-point scale from "No visible" to "Very visible" (F (2, 78) = 18.89, p < .001, η^2_p =.33).

Requirement to Share Personal Information. To define a high versus low level of required personal information sharing, various health-related apps that ask users to share personal data were carefully reviewed. Different types of personal demographic and health information, such as full name, user name, email address, date of birth, gender, height, weight, physical address including city, state, zip code, were selected prior to the pretest (See Appendix C). In the pretest, participants viewed two different lists of personal details. In the first list, only basic information sharing was required (e.g., user name, email address, height, weight) to customize the water drinking app (M = 3.49, SD = 1.06). The second list included basic information as well as additional detailed information (e.g., full name, email address, date of birth, gender, weight, height, physical address) (M = 5.34, SD = .91). Participants (n = 40) identified on a semantic differential 7-point scale from "Little" to "A lot" how much information they thought they were required to provide (F (1, 39) = 1581.32, $p < .001$, η^2_p =.98).

Level of User Control. To define a high versus low level of user control, two versions of the app interfaces were created. These two versions were identical except for having an additional function, providing an "Unselect" icon to skip inquiring about users' personal information (See Appendix C). The highly controllable condition provided an unselect icon to skip sharing users' personal information (M = 5.13, SD = .93), while a less controllable condition did not provide an unselect icon to skip the process (M = 2.76, SD = 1.68). Participants (n = 40) were asked how much control they thought they had over sharing information to use the app by using a semantic differential 7-point scale from "Little" to "A lot" (F (1, 39) = 762.39, $p < .001$, η^2_p =.95).

Message Repetition Three different versions of the water drinking apps were created for message repetition. These three versions were identical in manipulations of three independent

variables except for name and design features of the apps. Since this study used water drinking as the topic to develop main stimuli, the color of blue tone was used for all experimental stimuli (See Appendix C). Message repetition did not produce significant main and interaction effects on most mediators and dependent variables (See Appendix D).

Procedures

Responses were collected in an online experiment hosted by a leading survey web service, Qualtrics.com. First, each participant for the experiment was given the external URL to the experiment website through a student research pool (SONA system) at Michigan State University. Upon entering the study website, participants were asked to read the consent form of the study and press the NEXT button (">>") if they wished to participate in the study (see Appendix A). Participants first read instructions that are asked them to imagine that they were looking for mobile apps on the smartphone app stores. The instructions included scenarios related to health app interfaces (e.g., "In this online study, you will be asked to evaluate several water drinking app interfaces. Please carefully examine the app interfaces in the next pages and rate them in terms of each app and its sponsor. There are some questions to check how accurately you will answer all the questions, so please focus on answering all the questions as much as you can for better results. In addition, pay close attention to each page as there is no return button") (see Appendix B). Immediately after reading the scenarios of the experiment, participants took a look at 9 different sponsored health app interfaces (3 within-subject conditions (sponsor visibility) x 3 message repetition: 3 apps for highly visible sponsors; 3 apps for less visible sponsors; 3 apps for no visible sponsors) in a form of screenshots in one of four between-subjects conditions (See Appendix C). These 9 apps were held constant except for the manipulated factors and app designs. After each app interface, participants were asked to evaluate the motives

of each app sponsor and attitudes toward the sponsors. Also, they were asked to evaluate each app's credibility and their behavioral intention towards the apps (download and use). After viewing all 9 apps and answering questions about each of them, participants were asked to complete the remaining part of the questionnaire, including demographic information, mobile app usage behaviors, and potential control/moderating factors like levels of privacy concern.

Measures

The questionnaire consisted of three main sections. The first section had two dependent measures that were tested as mediators (altruistic motive attributions versus self-promotional motive attributions). The second section included three dependent variables, including the sponsorship responses (sponsor attitudes) and app evaluations (app credibility, and intentions to download and use the apps), and potential control/moderating factors. The last section was for the characteristics of the participants (demographics and mobile app usage behaviors) (See Appendix E). The first and second sections for each app and sponsor were provided after each app interface was shown. Then, the last section was provided at the end of the questionnaire. In the questionnaire, I used several attention-checking questions that are beneficial to control for data quality.

Causal Attributions of Sponsors' Motives

Two types of causal attributions were measured in this study: Altruistic (public-serving) sponsor motives and self-promotional (self-serving) sponsor motives. The measures for the two types of causal attributions developed by prior researchers (Deitz et al., 2012; Rifon et al., 2004; Speed & Thompson, 2000) were used and modified for this study. Causal attribution toward altruistic sponsor motives were measured by asking participants to indicate their level of agreement or disagreement with each of the following three statements on a seven-point scale:

(1) “This sponsor is likely to have the best interests of the app at heart,” (2) “The main reason this sponsor would be involved with the app is because the sponsor believes it deserves support,” and (3) “This sponsor sponsored the app because they care about their customers.” Similarly, causal attribution toward self-promotional motives was also measured with the following three statements on a seven-point scale: (1) “This sponsor sponsored the app to persuade me to buy their products,” (2) “The main reason this sponsor supported the app because sponsorship creates a positive corporate image,” and (3) “This sponsor benefits by sponsoring consumer health and fitness app.”

Sponsorship Evaluation

This study assessed attitudes toward the sponsor relating to the effectiveness of app sponsorship. Attitudes toward the sponsors were measured with four items, which were also derived from prior research (Speed & Thompson, 2000). Each sponsor attitude was estimated on seven-point semantic differential scales anchored by “dislike/like,” “unpleasant/pleasant,” “unfavorable/favorable,” and “bad/good.”

App Evaluations

App evaluations included two factors, such as perceived credibility of the apps and behavioral intentions toward the apps. First, app credibility was measured with 10 seven-point semantic differential scales, which were adopted from prior sponsorship research (Rodgers, 2007): “not qualified/qualified,” “not believable/believable,” “not experienced/experienced,” “not knowledgeable/knowledgeable,” “untrustworthy/trustworthy,” “biased/unbiased,” not reputable/reputable,” “unethical/ethical,” “not objective/objective,” and “not credible/credible.” Behavioral intentions (downloading and usage intentions) for the apps were measured using 3 Likert-type scales that were adopted from the previous research (Lee, 2005). Each statement

asked participants to indicate their response on a seven-point scale, ranging from (1) "strongly disagree" to (7) "strongly agree": (1) "Given the chance, I intend to download and use the health app," (2) "I expect my use of this health app to continue in the future," and (3) I have intention to download and use the health app."

Demographics

Participants' demographic information was measured through their responses to various questions, including gender, age, ethnicity, class standing, and income.

Mobile App Usage Experience

Mobile app experiences were measured using various questions, including not only participants' previous app usage, but also their health app experiences (e.g., "Have you ever downloaded an app for health and fitness related issues?" "Have you ever used an app for health and fitness related issues?" "If you are using an app for health and fitness related issues, how long have you been using the app?").

Control and/or Potential Moderating Variables

Privacy concern and sponsor intrusiveness were also measured as potential control variables. These were considered to be included in statistical analyses with the dependent measures as covariates. Individual differences were also measured as possible moderating variables, which may interfere with the results of the study.

Data Analysis

Reliability of Measures

All the measures of constructs are based upon measures considered valid and reliable from the prior literature in another context. Responses to each app (message repetition) were summed and averaged to form a single item of each construct index. The reliability check was

measured through Cronbach's reliability test, which helps to indicate that all scales are highly reliable. The items measuring the importance of the primary goal yielded Cronbach's alpha values of .85 and .87. Reliability of the measures was confirmed using several criteria (e.g., Fornell & Larcker, 1981; Nunnally & Bernstein, 1994).

Analytic Strategy for Hypotheses testing

First, a series of three way repeated-measures ANOVAs using SPSS Statistics were performed to test the previously stated hypotheses. I ran multiple 3 (sponsor visibility) x 2 (app interactivity) x 2 (user control) x 3 (message repetition) repeated-measures ANOVAs with five dependent variables, including two sponsor motive assessments (altruistic/self-serving motives), attitudes toward the sponsors, app credibility, and behavioral intentions toward the app. Second, to examine the mediating roles of the perceived sponsor motives with continuous moderators, this study ran moderated mediation analysis using the PROCESS statistical software for SPSS by Andrew F. Hayes. Model 4 and Model 8 in PROCESS were used to estimate direct and indirect effects in moderation and mediation (conditional effects) models for personal information sharing and user control, two between-subjects variables.

Third, MEMORE (MEdiation and MOderation in REpeated-measures designs) macro for SPSS was used to test a within-subject mediation analysis (Montoya & Hayes, 2017). Since MEMORE was introduced to estimate direct and indirect effects specifically in a within-subjects medication analysis, I also ran multiple models using MEMORE to find the mediation roles of sponsors' altruistic and self-serving motives between three conditions of sponsor visibility (a within-subjects factor) on dependent variables. PROCESS and MEMORE are a path analysis modeling tool that is widely used through various social psychology research for estimating direct and indirect effects in single and multiple mediator models (Hayes, 2009; Montoya &

Hayes, 2017). Both PROCESS and MEMORE use the bootstrapping method of statistical analysis that involves repeatedly sampling from the data set in a computationally intensive way (Preacher & Hayes, 2008). This method allows estimation of the indirect effect in each resampled data set using random sampling methods.

Lastly, to examine whether or not any difference could be observed when the data was split into four groups representing four between-subjects conditions, I ran different conditional within-subjects mediation analyses in MEMORE for SPSS for each between-subjects group.

CHAPTER 8

RESULTS: STUDENT SAMPLE

Descriptive Statistics

Participants for this experimental research were recruited from a student research pool called SONA at Michigan State University. The sample consisted of 166 women (65.9%) and 83 men (32.9%) with the majority of respondents belonging to the 18 – 24 age group (93.9%). Their ages ranged from 18 to 28 with a mean age of 21.63 (*SD* = 1.47). There were no significant differences in age and gender observed among participants across the four between conditions (Age: F (8, 241) = .54, p = .826; Gender: Sex: χ^2 (6) = 3.95, p = .683). In terms of class rank, the majority of the sample consisted of upperclassmen with 35.7% seniors (n = 90), 30.6% juniors (n = 30.6), 20.6% sophomore (n = 52), 10.3% freshman (n = 26), and 2% graduate students (n = 5). Less than 1% (.8%) did not specify class status (n = 2). In terms of ethnicity, the majority of the sample was Caucasian (n = 172, 68.3%), followed by Asian American (n = 41, 16. 3%), Black or African American (n = 21, 8.3%), and Hispanic or Latino (n = 11, 4.4%). Lastly, family household income levels of the sample fell between $100,000 - $146,999 (n = 59, 23.4%), followed by more than $175,000 (n = 51, 20.2%), $50,000 - $99,999k (n = 46, 18.2%), less than $25,000 (n = 43, 17.1%), $25,000 - $49,999 (n = 32, 12.7%), and $150,000 -174,999 (n = 18, 7.1%).

Testing H1, H2, and H3

Hypothesis 1 predicted that more obtrusive sponsorship messages would generate stronger attributions about mHealth app sponsors' self-serving motives than less obtrusive sponsorship messages, while more obtrusive sponsorship messages would bring fewer attributions about app sponsors' altruistic motives than less obtrusive sponsorship messages.

Two different three-way repeated-measures ANOVAs (each for one of the two motive factors) were conducted to test the effect of sponsor visibility on consumer attributions about sponsors' self-serving motives and altruistic motives.

As hypothesized in H1, the test results demonstrated that there were significant main effects of sponsor visibility on both altruistic (F (2, 496) = 31.06, $p < .001$, η^2_p =.16) and self-serving motive attribution (F (2, 496) = 10.38, $p < .001$, η^2_p = .04) among student participants. Bonferroni post-hoc tests indicated that participants were likely to generate stronger attributions about sponsors' self-serving motives when sponsorship messages were more obtrusive (M = 5.28, SD = .06) compared to less obtrusive (M = 5.22, SD = .07) or no sponsorship messages (M = 5.04, SD = .07). More obtrusive sponsorship messages (M = 4.80, SD = .06) generated less attributions about sponsors' altruistic motives than less obtrusive (M = 5.13, SD = .07) or no sponsorship messages (M = 5.21, SD = .07) (see Table 1.1 & Figure 1.1). Therefore, H1 was supported.

Table 1.1. Pairwise Comparisons of Sponsor Visibility on Sponsor Motives

	Sponsor Motive Assessments					
	Altruistic Motives			Self-Serving Motives		
	Mean/Meandiff	*SD*	*p*	*Mean/Meandiff*	*SD*	*p*
High Visibility	4.80	.08		5.28	.06	
Less Visibility	5.13	.07		5.22	.07	
No Visibility	5.21	.07		5.04	.07	
High vs. Less visibility	–.33	.06	.000***	.06	.05	.615
Less vs. No visibility	–.09	.05	.231	.18	.06	.004**
High vs. No Visibility	–.41	.06	.000***	.24	.06	.000***

Notes: *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$.

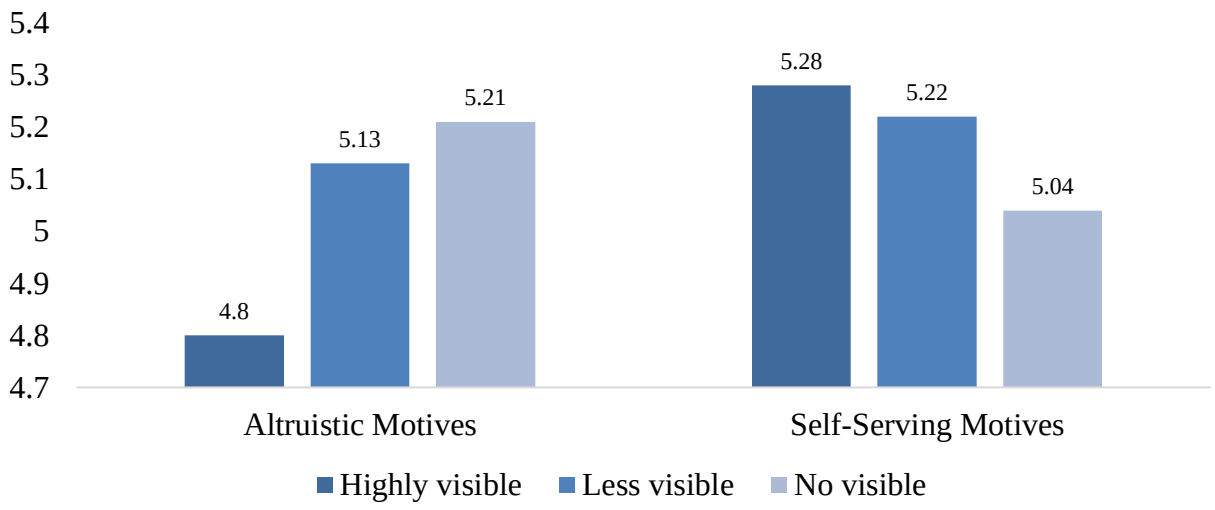

Figure 1.1. The Effects of Three Different Sponsorship Messages on Sponsor Motives

Hypothesis 2 proposed that more (vs. less) obtrusive sponsorship messages would generate less favorable attitudes toward mHealth app sponsors (H2a), lower credibility of mHealth apps (H2b), and lower intentions to download and use mHealth apps (H2c). Three repeated-measures ANOVAs (each for one of the three dependent variables) were conducted to test the main effect of sponsor visibility on attitudes towards the sponsor, mHealth app credibility, and download and usage intentions for mHealth apps. The results showed that there were significant main effects of sponsor visibility on attitudes toward the app sponsor (F (2, 496) = 50.45, $p < .001$, η^2_p =.17), mHealth app credibility (F (2, 496) = 38.26, $p < .001$, η^2_p = .13), and intentions to download and use the mHealth app (F (2, 496) = 29.49, $p < .001$, η^2_p = .11).

As shown in Table 1.2 and Figure 1.2, Bonferroni post-hoc tests indicated that participants had less favorable attitudes toward the sponsors when the app showed more obtrusive sponsorship messages (M = 5.06, SD = .08) than less obtrusive sponsorship messages (M = 5.48, SD = .07) and no sponsorship messages (M = 5.60, SD = .07). For mHealth app credibility, participants were more likely to rate lower credibility of sponsored mHealth apps when the app showed more obtrusive sponsorship messages (M = 5.10, SD = .07) than less

obtrusive sponsorship messages (*M* = 5.38, *SD* = .07) and no sponsorship messages (*M* = 5.46, *SD* = .06). Also, participants had lower intentions to download and use mHealth apps when the app showed more obtrusive sponsorship messages (*M* = 3.42, *SD* = .10) than less obtrusive sponsorship messages (*M* = 3.73, *SD* = .10) and no sponsorship messages (*M* = 3.80, *SD* = .10). Thus, H2a-c were supported.

Table 1.2. Pairwise Comparisons of Sponsor Visibility on Users' Evaluations

	Sponsor and App Evaluations								
	Sponsor Attitude			App Credibility			Download Intentions		
	Mean /Meandiff	*SD*	*p*	*Mean /Meandiff*	*SD*	*p*	*Mean /Meandiff*	*SD*	*p*
High Visibility	5.06	.08		5.10	.07		3.42	.10	
Less Visibility	5.48	.07		5.38	.07		3.73	.10	
No Visibility	5.60	.07		5.46	.06		3.80	.10	
High vs. Less Visibility	–.42	.06	.000***	–.28	.04	.000***	–.31	.05	.000***
Less vs. No Visibility	–.12	.05	.055	–.08	.04	.181	–.08	.05	.309
High vs. No Visibility	–.53	.06	.000***	–.36	.05	.000***	–.39	.05	.000***

Notes: $^{*}p \leq .05$, $^{**}p \leq .01$, $^{***}p \leq .001$.

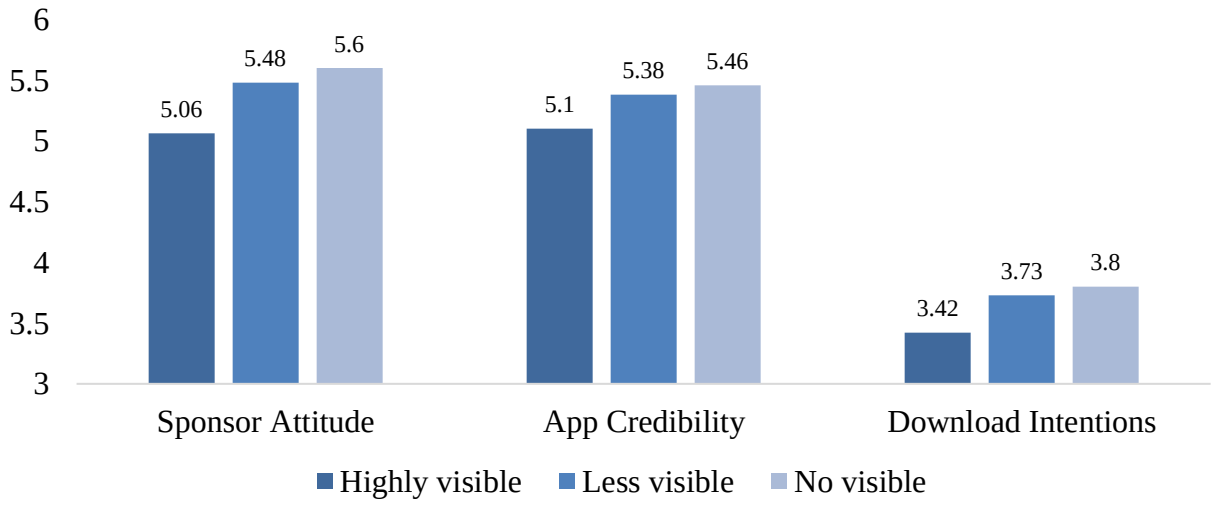

Figure 1.2. The Effects of Three Different Sponsorship Messages on Users' Evaluations

Hypothesis 3 stated that consumer attributions of sponsors' motives would mediate the effect of sponsor obtrusiveness on attitudes towards the sponsors (H3a), mHealth app credibility (H3b), as well as intentions to download and use mHealth apps (H3c). Three different within-subjects mediation models (each model for one dependent variable) using MEMORE macro for SPSS (Montoya & Hayes, 2017) were analyzed to examine the mediating roles of sponsors' altruistic motives (a_1-path and b_1-path) and self-serving motives (a_2-path and b_2-path) on dependent variables (see Figure 1.3). Before running MEMORE for a within-subjects mediation analysis, all internal reliability scores through message repetition using Cronbach's alpha tests were checked. All of the scores ranged from .75 to .90 in each within-subjects condition.

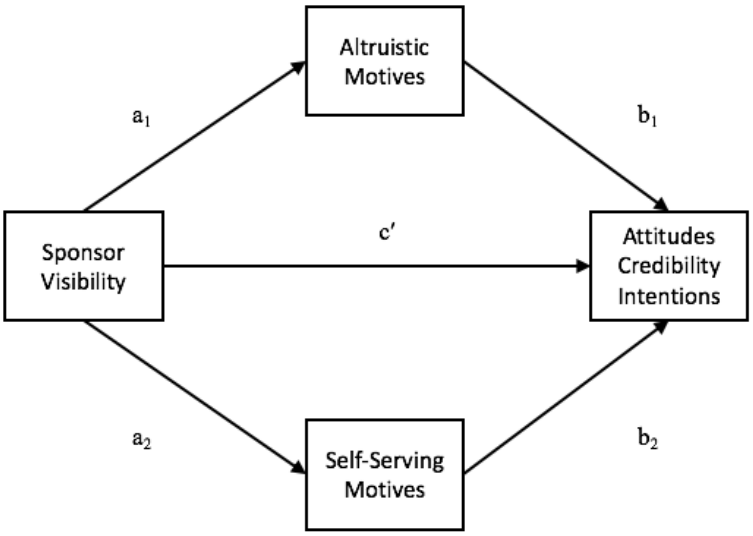

Figure 1.3. The Proposed Path-Analytic Model for a Within-Subject Factor, Sponsor Visibility, with Two Mediators: Altruistic and Self-Serving Motives

As shown in Table 1.3, there were significant indirect effects of altruistic motives (a_1b_1-path) as well as self-serving motives (a_2b_2-path) on the relationship between sponsor visibility and attitudes toward the app sponsor, mHealth app credibility, and download and usage intention for the app. The indirect effects of self-serving motives on the relationships between sponsor

visibility and attitudes, credibility, and intentions were also significant. Therefore, H3 was supported.

Table 1.3. Path Coefficients and Indirect Effects for Within-Subjects Mediation Models with Two Mediators: Altruistic and Self-Serving Motives

		Path[a] Coefficient	Indirect Effects					
			Altruistic Motives			Self-Serving Motives		
		B[b]	B	SE	95%CI[c]	B	SE	95%CI
Model1	SV → SAM (a_1)	$-.42^{***}$						
	SV → SSM (a_2)	$.22^{***}$						
	SAM → AT (b_1)	$.67^{***}$						
	SSM → AT (b_2)	$.14^{**}$						
	SV → AT (c′)	$-.29^{***}$						
Model2	SV → SAM (a_1)	$-.42^{***}$						
	SV → SSM (a_2)	$.22^{***}$						
	SAM → CRE (b_1)	$.45^{***}$						
	SSM → CRE (b_2)	$.18^{***}$						
	SV → CRE (c′)	$-.23^{***}$						
Model3	SV → SAM (a_1)	$-.42^{***}$						
	SV → SSM (a_2)	$.22^{***}$						
	SAM → INT (b_1)	$.42^{***}$						
	SSM → INT (b_2)	$.17^{**}$						
	SV → INT (c′)	$-.26^{***}$						
Model1	SV → SAM, SSM → AT		–.28	.06	(–.39, –.19)	.03	.02	(.00, .06)
Model2	SV → SAM, SSM → CRE		–.19	.04	(–.27, –.11)	.04	.02	(.01, .08)
Model3	SV → SAM, SSM → INT		–.17	.04	(–.25, –.11)	.04	.02	(.00, .08)

Note: a. SV = Sponsor Visibility, SAM = Sponsors' Altruistic Motive, SSM = Sponsors' Self-Serving Motives, AT = Sponsor Attitudes, CRE = App Credibility, INT = Download Intentions. b. $^{*}p \leq .05$, $^{**}p \leq .01$, $^{***}p \leq .001$. c. 95% Confidence Interval from 10,000 bootstrap samples.

Testing H4, H5, and 6

Hypothesis 4 proposed that when requiring a high level of personal information sharing to use the app (vs. requiring a lower level of personal information sharing), participants would generate stronger attributions about app sponsors' self-serving motives and fewer attributions about app sponsors' altruistic motives. Two different two-way ANOVAs were conducted to test the main effects of personal information sharing on consumer attributions about sponsors' self-serving motives as well as altruistic motives. The results showed that there were no significant main effects of personal information sharing on both altruistic (F (1, 248) = .37, p = .54) and self-serving motive attribution (F (1, 248) = .06, p = .80). Therefore, H4 was not supported. Nonetheless, the direction of the Bonferroni post-hoc test results coincided with the proposed hypothesis. As shown in Table 1.4, requiring more detailed personal information (M = 5.01, SD = .09) generated less altruistic motive attribution than basic personal information (M = 5.10, SD = .09). In addition, participants showed stronger attributions about sponsors' self-serving motives when the app required them to share more personal information (M = 5.19, SD = .08) compared to less personal information (M = 5.16, SD = .08).

Table 1.4. Means and Standard Deviations of Sponsor Motives for More vs. Less Information Sharing

	Personal Information Sharing			
	Higher Info Sharing (n = 127)		Less Info Sharing (n = 125)	
	Mean	*SD*	*Mean*	*SD*
Altruistic Motives	5.01	.09	5.10	.09
Self-Serving Motives	5.19	.08	5.16	.08

Hypothesis 5 stated that when requiring higher level of personal information sharing to use the app compared to requiring lower levels of personal information sharing, participants would show less favorable attitudes toward mHealth app sponsors (H5a), lower credibility of

mHealth apps (H5b), and lower intentions to download and use mHealth apps (H5c). Three different two-way ANOVAs were conducted to test the main effects of personal information sharing on consumer attitudes toward the sponsor, mHealth app credibility, and intention to download and use the app. The findings showed that there was no significant main effect of personal information sharing on attitude toward the app sponsor (F (1, 248) = .43, p = .51), mHealth app credibility (F (1, 248) = .62, p = .43), and intentions to download and use mHealth apps (F (1, 248) = .10, p = .76). Thus, H5a-c were not supported.

However, as shown in Table 1.5, the directions of the Bonferroni post-hoc test results matched what the hypotheses predicted. Requiring higher personal information sharing (M = 5.34, SD = .09) generated less favorable attitudes than requiring less personal information sharing (M = 5.42, SD = .09). Also, participants rated credibility lower when the app asked them to share more personal information (M = 5.27, SD = .09) compared to less personal information (M = 5.36, SD = .09). Lower intentions to download and use mHealth apps were observed in the condition of more personal information sharing (M = 3.62, SD = .14) compared to the condition of less personal information sharing (M = 3.68, SD = .14)

Table 1.5. Means and Standard Deviations of Users' Evaluations for More vs. Less Information Sharing

	Personal Information Sharing			
	Higher Info Sharing (n = 127)		Less Info Sharing (n = 125)	
	Mean	*SD*	*Mean*	*SD*
Sponsor Attitude	5.34	.09	5.42	.09
App Credibility	5.27	.09	5.36	.09
Download Intentions	3.62	.14	3.68	.14

Hypothesis 6 proposed that sponsors' motives (altruistic and self-serving motives) would mediate the effects of personal information sharing on the three dependent variables: attitudes towards the sponsors (H6a), mHealth app credibility (H6b), as well as intentions to download

and use mHealth apps (H6c). To test this hypothesis, different mediation analyses using Model 4 in PROCESS for SPSS were conducted to test sponsors' altruistic motives and self-serving motives as mediators on three dependent variables. Since neither PROCESS nor MEMORE allow a within-subjects mediation analysis with covariates or moderators at the same time (Montoya & Hayes, 2017), I ran nine conditional process models for three within-subjects conditions (sponsor visibility).

As shown in table 1.6, there was no significant mediation effect of altruistic motives as well as self-promotional motives on the relationship between personal information sharing and attitudes toward the app sponsor, mHealth app credibility, or download and usage intentions for mHealth apps. Therefore, H6a-c were not supported.

Table 1.6. Mediation Model Results for the Indirect Effects of Personal Information Sharing on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High Visibility	.02	.10	(–.19 .23)	–.00	.01	(–.03 .03)
	Less Visibility	.09	.09	(–.07 .28)	.00	.02	(–.04 .04)
	No Visibility	.04	.09	(–.12 .23)	–.02	.02	(–.07 .03)
App Credibility	High Visibility	.01	.09	(–.15 .19)	–.00	.03	(–.05 .06)
	Less Visibility	.08	.08	(–.07 .26)	.00	.02	(–.03 .04)
	No Visibility	.04	.07	(–.10 .19)	–.01	.02	(–.06 .02)
Download Intentions	High Visibility	.02	.13	(–.22 .26)	.00	.02	(–.03 04)
	Less Visibility	.11	.11	(–.09 .32)	–.00	.02	(–.04 .03)
	No Visibility	.05	.10	(–.14 .24)	–.00	.02	(–.05 .03)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Testing H7, H8, and H9

Hypothesis 7 stated that providing a higher level of user control over personal information sharing would generate stronger attributions about app sponsors' altruistic motive (and fewer attributions about app sponsors' self-serving motives) than providing a lower level of user control over sharing personal information. Two different two-way ANOVAs were conducted to test the main effects of user control on consumer attributions about sponsors' altruistic motives and self-serving motives. The test results indicated that there was no significant main effect of user control on both altruistic (F (1, 248) = .11, p = .75) and self-serving motive attribution (F (1, 248) = .09, p = .76). Therefore, H7 was not supported.

However, the directions of the Bonferroni post-hoc test results for user control were consistent with the proposed hypothesis. As shown in Table 1.7, when providing higher levels of user control on the app (M = 5.07, SD = .09) compared to lower levels of user control (M = 5.03, SD = .09), participants were likely to generate more altruistic motive attributions. On the other hand, self-serving motive attribution was lower in the higher levels of user control condition (M = 5.20, SD = .08) than in the lower levels of user control condition (M = 5.16, SD = .08).

Table 1.7. Means and Standard Deviations of Sponsor Motives for Higher vs. Lower User Control

	User Control over Information Sharing			
	Higher User Control (n = 125)		Lower User Control (n = 127)	
	Mean	*SD*	*Mean*	*SD*
Altruistic Motives	5.07	.09	5.03	.09
Self-Serving Motives	5.20	.08	5.16	.08

Hypothesis 8 posited that individuals would show less favorable attitudes toward mHealth app sponsors (H8a), rank lower credibility of mHealth apps (H8b), and have lower intentions to download and use mHealth apps (H8c) when the mHealth apps provided them with

lower levels of user control over sharing personal information compared with higher levels of user control over sharing personal information. Three different two-way ANOVAs were used to test the main effects of user control in the app interface on the three dependent variables: sponsor attitudes, mHealth app credibility, and download and usage intentions for mHealth apps. Results indicated that there were no significant main effect of user control on attitudes toward the app sponsor (F (1, 248) = .00, p = .98), mHealth app credibility (F (1, 248) = .02, p = .88), and intentions to download and use mHealth apps (F (1, 248) = .38, p = .54). Thus, H8a-c were not supported.

Bonferroni post-hoc tests showed that participants rated the same attitudes toward the sponsors when the app provided an opting-out option for sharing personal information on the app interface (M = 5.38, SD = .09) and no opt-out option (M = 5.38, SD = .09). Also, participants had almost the same credibility of sponsored mHealth apps in the condition of having an opt-out option for information sharing (M = 5.32, SD = .09) and in the condition of having no option-out option (M = 5.31, SD = .09). For intentions to download and use mHealth apps, participants rated slightly higher intentions when having an opt-out option (M = 3.71, SD = .14) compared to having no opt-out option (M = 3.59, SD = .14) (see Table 1.8).

Table 1.8. Means and Standard Deviations of Users' Evaluations for Higher vs. Lower User Control

	User Control over Information Sharing			
	Higher User Control (n = 125)		Lower User Control (n = 127)	
	Mean	*SD*	*Mean*	*SD*
Sponsor Attitude	5.38	.09	5.38	.09
App Credibility	5.32	.09	5.31	.09
Download Intentions	3.71	.14	3.59	.14

Hypothesis 9 predicted that sponsor motives (i.e., altruistic and self-serving) would mediate the effect of user control over the technology on attitudes towards the sponsors (H9a),

mHealth app credibility (H9b), as well as intentions to download and use mHealth apps (H9c). Different mediation analyses using Model 4 in PROCESS for SPSS were tested to examine the research hypothesis. Since neither PROCESS nor MEMORE provide a within-subjects mediation analysis with covariates or moderators at the same time (Montoya & Hayes, 2017), I ran nine conditional process models for three within-subjects conditions (sponsor visibility). As shown in Table 1.9, indirect effects of both altruistic motives and self-serving motives on the models were not significantly different from zero in all three within-subjects conditions. In other words, altruistic motives as well as self-serving motives did not mediate the relationship between user control over the technology and attitudes toward the app sponsor, app credibility, or intentions to download and use mHealth apps. Therefore, H9a-c were not supported.

Table 1.9. Mediation Model Results for the Indirect Effects of User Control on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High Visibility	.00	.11	(–.21 .21)	.01	.02	(–.02 .04)
	Less Visibility	.02	.09	(–.16 .18)	–.00	.02	(–.04 .04)
	No Visibility	–.11	.09	(–.29 .07)	–.02	.03	(–.07 .02)
App Credibility	High Visibility	.00	.09	(–.18 .17)	.02	.03	(–.04 .07)
	Less Visibility	.02	.08	(–.14 .17)	–.00	.02	(–.03 .03)
	No Visibility	–.09	.07	(–.24 .05)	–.02	.02	(–.06 .02)
Download Intentions	High Visibility	.00	.12	(–.24 .25)	–.01	.02	(–.05 .02)
	Less Visibility	.02	.10	(–.19 .23)	.00	.02	(–.03 .04)
	No Visibility	–.11	.10	(–.31 .07)	–.00	.02	(–.06 .04)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Testing H10, H11, H12, H13, H14, and H15

Hypothesis 10 suggested that compared to less obtrusive sponsorship messages, more obtrusive sponsorship messages would generate stronger attributions about app sponsors' self-serving motives but less attributions about app sponsors' altruistic motives when participants are required to share higher levels of personal information. Two different three-way repeated-measures ANOVAs were conducted to test the interaction effects of sponsor visibility and personal information sharing on consumer attributions about sponsors' altruistic and self-serving motives. Results showed that there was no significant moderating effect of personal information sharing on the relationships between sponsor visibility and both altruistic motive attribution (F (2, 496) = .68, p = .51) and self-serving motive attribution (F (2, 496) = .72, p = .49). Therefore, H10 was not supported.

As shown in Figure 1.4 and Figure 1.5, however, the direction of Bonferroni post-hoc test results coincided with the proposed hypothesis. Results indicated that more obtrusive messages generated less altruistic motives and more self-serving motives of the sponsor when participants were required to share higher level of personal information compared to lower levels of personal information sharing.

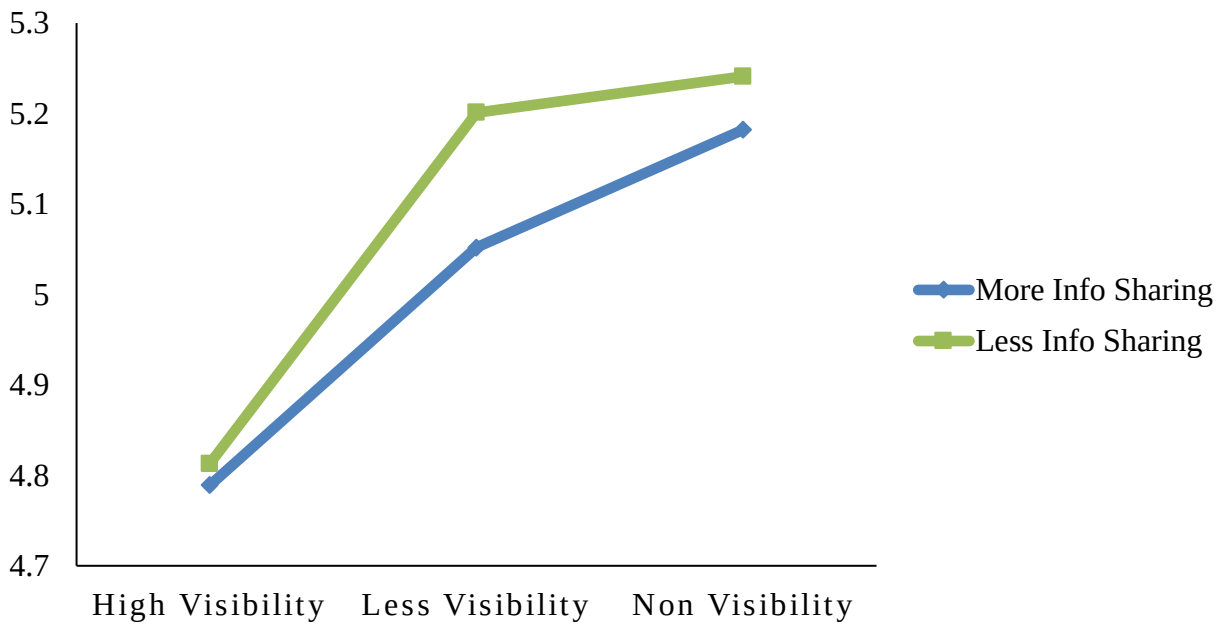

Figure 1.4. Moderating effects of Personal Information Sharing on the Relationship between Sponsor Visibility and Altruistic Sponsor Motives

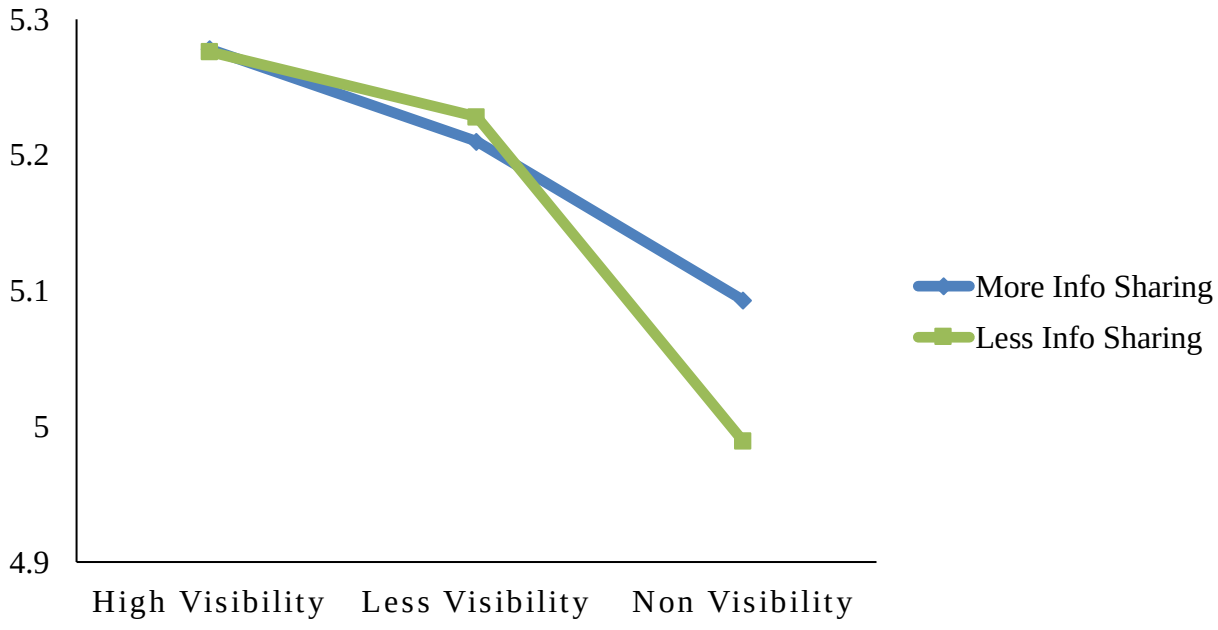

Figure 1.5. Moderating effects of Personal Information Sharing on the Relationship between Sponsor Visibility and Self-Serving Sponsor Motives

Regarding the relationship between sponsor obtrusiveness and attitudes towards the sponsors (H11a), mHealth app credibility (H11b), and intentions to download and use mHealth apps (H11c), Hypothesis 11 suggested confirming whether or not the moderation effect of personal information sharing would be mediated by consumer attribution of altruistic and self-serving motives. Different mediation models in PROCESS (Model 4) for SPSS were conducted to test mediation effects of such sponsor motives on the interaction effects of sponsor visibility and personal information sharing. Since neither PROCESS nor MEMORE offer a within-subjects mediation analysis with covariates or moderators at the same time (Montoya & Hayes, 2017), I ran nine moderated mediation models for three dependent variables and two mediators using the calculation differences in three within-subjects groups. As shown in Table 1.10, there was no significant mediation effect of sponsors' altruistic motives and self-serving motives on the models when personal information sharing moderated the effect of sponsor visibility on users' evaluations. Therefore, H11a-c were not supported.

Table 1.10. Moderated Mediation Model Results for the Indirect Effects of Sponsor Visibility by Personal Information Sharing on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Difference in Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High – No Visibility	–.03	.08	(–.19 .13)	.01	.02	(–.02 .04)
	High – Less Visibility	–.07	.06	(–.20 .05)	–.01	.01	(–.02 .01)
	Less – No Visibility	.04	.05	(–.04 .14)	.02	.03	(–.02 .08)
App Credibility	High – No Visibility	–.02	.05	(–.11 .08)	.01	.02	(–.02 .04)
	High – Less Visibility	–.04	.04	(–.12 .03)	–.00	.01	(–.02 .01)
	Less – No Visibility	.03	.03	(–.03 .10)	.02	.02	(–.01 .06)
Download Intentions	High – No Visibility	–.02	.05	(–.10 .09)	.01	.02	(–.02 .06)
	High – Less Visibility	–.04	.04	(–.12 .03)	–.00	–.01	(–.03 .12)
	Less – No Visibility	.02	.03	(–.03 .07)	.02	.02	(–.02 .06)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Hypothesis 12 stated that more obtrusive sponsorship messages (vs. less obtrusive sponsorship messages) would generate stronger attributions about app sponsors' self-serving motives but less attributions about app sponsors' altruistic motives when lower levels of user control were provided when using mHealth apps. Two different three-way repeated-measures ANOVAs were conducted to test the interaction effects of user control and sponsor visibility on sponsors' altruistic and self-serving motive attributions among participants. Results showed that there was no significant interaction effect of sponsor visibility and user control over information sharing on both altruistic (F (2, 496) = 1.83, p = .16) and self-serving motive attribution (F (2, 496) = 2.52 p = .08). Therefore, H12 was not supported.

Nonetheless, the direction of Bonferroni post-hoc tests results coincided with the hypothesis prediction. Bonferroni post-hoc tests results reported that there was no significant distinction in the conditions of more visible sponsorship messages but in the condition of no visible sponsorship message, higher levels of user control generated more altruistic motives. On the other hand, in the more obtrusive sponsorship condition, participants rated more self-serving motives when they were provided with lower levels of user control (see Figure 1.6 & Figure 1.7).

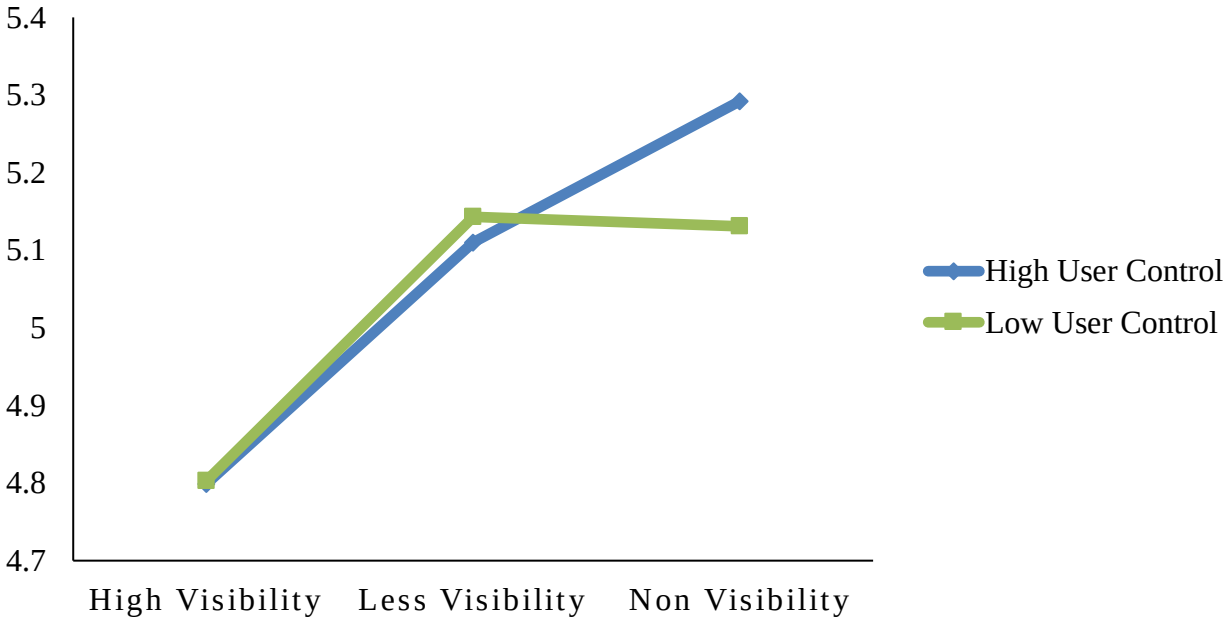

Figure 1.6. Moderating effect of User Control on the Relationship between Sponsor Visibility and Altruistic Sponsor Motives

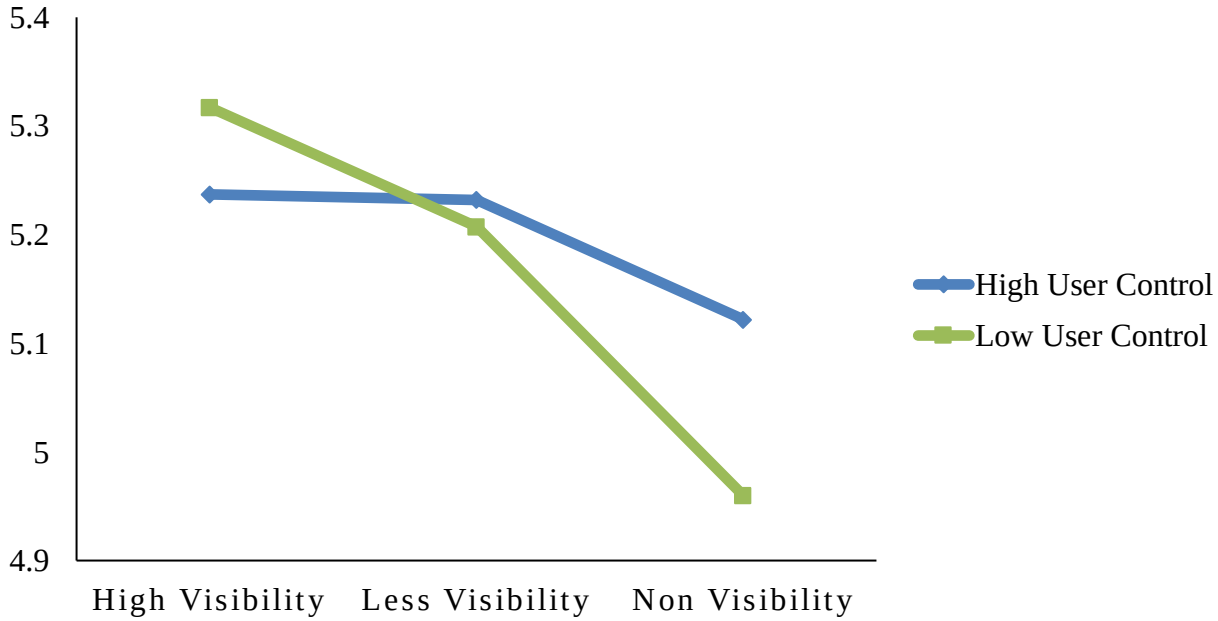

Figure 1.7. Moderating effect of User Control on the Relationship between Sponsor Visibility and Self-Serving Sponsor Motives

Regarding the relationship between sponsor obtrusiveness and attitudes towards the sponsors (H13a), mHealth app credibility (H13b), and intentions to download and use mHealth apps (H13c), Hypothesis 13 was proposed to confirm whether or not the moderation effect of user control over the technology would be mediated by attribution of altruistic and self-serving motives. Different moderated mediation models in PROCESS (Model 4) for SPSS were conducted to test the mediating roles of sponsor motives with user control as a moderator. As neither PROCESS nor MEMORE allow a within-subjects mediation analysis with covariates or moderators at the same time (Montoya & Hayes, 2017), I ran nine models for three dependent variables using the differences in three within-subjects groups.

As shown in Table 1.11, no significant mediation effect of sponsors' altruistic motives and self-serving motives was found when user control over information sharing moderated the effect of sponsor visibility on users' evaluations. However, the indirect effects of altruistic motives are different from zero, then mediation is established in little and no sponsorship messages within conditions. This means that positive mediation effects of altruistic motives were observed in conditions where there were little to no sponsorship messages presented. Thus, H13a-c were partially supported.

Table 1.11. Moderated Mediation Model Results for the Indirect Effects of Sponsor Visibility by User Control on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Difference in Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High – No Visibility	.11	.08	(–.04 .27)	.02	.02	(–.01 .07)
	High – Less Visibility	–.01	.06	(–.14 .11)	.00	.01	(–.02 .03)
	Less – No Visibility	.08	.04	(.00 .17)	.03	.03	(–.02 .08)
App Credibility	High – No Visibility	.06	.05	(–.03 .16)	.02	.02	(–.00 .07)
	High – Less Visibility	–.01	.04	(–.09 .07)	–.00	.01	(–.01 .03)
	Less – No Visibility	.07	.03	(.00 .13)	.02	.02	(–.01 .06)
Download Intentions	High – No Visibility	.06	.05	(–.02 .17)	.03	.03	(–.00 .10)
	High – Less Visibility	–.01	.04	(–.09 .07)	.01	.01	(–.01 .04)
	Less – No Visibility	.05	.03	(.00 .11)	.02	.02	(–.01 .08)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Hypothesis 14 predicted that providing higher (vs. lower) levels of user control over personal information sharing would generate stronger attributions about app sponsors' altruistic motives but less self-serving motives in the condition of being asked to share less personal information compared to the condition of being asked to share more personal information. Two different two-way ANOVAs were used to confirm interaction effects of personal information sharing and user control in the app interface on consumer motive attributions of the sponsor. Results indicated that there was no significant interaction effect of user control and personal information sharing on both altruistic motives (F (1, 248) = .11, p = .74) and self-serving motives (F (1, 248) = .20, p = .65).

In terms of the relationship between personal information sharing and attitudes towards the sponsors (H15a), mHealth app credibility (H15b), and intentions to download and use mHealth apps (H15c), Hypothesis 15 suggested confirming whether or not the moderation effect of user control over the technology would be mediated by consumer motive attributions of the sponsor: altruistic and self-serving motives. Different moderated mediation models in PROCESS

(Model 8) for SPSS were conducted to find the mediating roles of sponsor motives in the interactions between user control and personal information sharing. Since neither PROCESS nor MEMORE offer a within-subjects mediation analysis with covariates or moderators at the same time (Montoya & Hayes, 2017), I ran nine conditional process models for interaction effects of two between-subjects factors (user control, personal information sharing) mediation analysis for three dependent variables in three within-subjects groups (sponsor visibility).

As shown in Table 1.12, there was no significant mediation effect of sponsors' altruistic motives and self-serving motives when user control moderated the effect of personal information sharing on attitude, app credibility, and intentions to download and use mHealth apps. Therefore, H15a-c were not supported.

Table 1.12. Moderated Mediation Model Results for the Indirect Effects of Personal Information Sharing by User Control on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High Visibility	–.09	.21	(–.49 .33)	–.00	.03	(–.06 .05)
	Less Visibility	–.03	.17	(–.36 .32)	–.02	.04	(–.12 .05)
	No Visibility	–.05	.18	(–.38 .31)	–.02	.05	(–.12 .07)
App Credibility	High Visibility	–.07	.17	(–.41 .27)	–.00	.05	(–.10 .11)
	Less Visibility	–.02	.16	(–.34 .28)	–.02	.03	(–.10 .04)
	No Visibility	–.04	.15	(–.32 .26)	–.02	.04	(–.10 .06)
Download Intentions	High Visibility	–.11	.25	(–.59 .39)	.00	.03	(–.08 .06)
	Less Visibility	–.03	.21	(–.44 .38)	.02	.04	(–.05 .10)
	No Visibility	–.06	.19	(–.42 .33)	–.00	.03	(–.08 .06)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Testing H16 and H17

Hypothesis 16 proposed that at low obtrusive sponsorship messages, providing higher levels of user control would generate stronger sponsors' altruistic motive attribution (and less self-serving motive attribution) rather than providing lower levels of user control over sharing personal information when participants are required to share less (vs. more detailed) personal information. Two different three-way ANOVAs were used to test interaction effects of sponsor visibility, personal information sharing, and user control on the two motive attributions of the sponsor among participants. Results showed that there was no significant three-way interaction effect on both altruistic motives (F (1, 248) = .08, p = .92) and self-serving motives (F (1, 248) = .35, p = .71). Therefore, Hypothesis 16 was not supported.

Hypothesis 17 stated that the moderating effects of user control and personal information sharing in regard to the relationship between obtrusive sponsorship on attitudes towards the sponsors (H17a), mHealth app credibility (H17b), as well as intentions to download and use mHealth apps (H17c) would be mediated by attribution of sponsors' motives. Different moderated mediation models in PROCESS (Model 8) for SPSS were conducted to find the mediating roles of sponsors' motives in the interactions among three variables: sponsor visibility, user control, and personal information sharing. Since neither PROCESS nor MEMORE provide a within-subjects mediation analysis with covariates or moderators at the same time (Montoya & Hayes, 2017), I ran nine conditional process models for the interaction effects of one within-subjects factor (sponsor visibility) and two between-subjects factors (user control, personal information sharing) mediation analysis using differences in three within-subjects conditions. As shown in Table 1.13, there was no significant mediation effect of sponsors' altruistic and self-serving motives when user control and personal information sharing moderated the effect of

sponsor visibility on attitudes, app credibility, and intentions to download and use mHealth apps. Therefore, H17a-c were not supported.

Table 1.13. Moderated Mediation Model Results for the Indirect Effects of Sponsor Visibility by Personal Information Sharing and User Control on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High – No Visibility	–.03	.15	(–.33 .28)	.01	.03	(–.04 .06)
	High – Less Visibility	–.05	.13	(–.31 .19)	.01	.02	(–.04 .06)
	Less – No Visibility	–.06	.19	(–.42 .33)	–.00	.03	(–.08 .06)
App Credibility	High – No Visibility	–.02	.10	(–.21 .17)	.01	.03	(–.04 .07)
	High – Less Visibility	–.03	.08	(–.20 .11)	.01	.02	(–.03 .04)
	Less – No Visibility	.01	.07	(–.10 .16)	–.01	.03	(–.07 .06)
Download Intentions	High – No Visibility	–.02	.10	(–.22 .16)	.02	.04	(–.07 .09)
	High – Less Visibility	–.03	.08	(–.20 .11)	.02	.03	(–.02 .08)
	Less – No Visibility	.01	.05	(–.09 .10)	–.01	.04	(–.10 .06)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Within-Subjects Mediation Analyses split into four Between-Subjects groups in MEMORE

To find out whether or not any difference could be observed across the four between-subjects conditions, different conditional within-subjects mediation analyses in MEMORE for SPSS were used to test for each between-subjects condition. Since MEMORE does not allow more than 2 within factors for each of mediators and dependent variables, I used the differences in high sponsor visibility condition and no sponsor visibility condition for data analysis.

As shown in Table 1.14, the indirect effect of sponsor visibility on users' evaluations through altruistic motive attributions with 95% bootstrap confidence interval were statistically different from zero. This means that altruistic motives significantly mediated the relationships between sponsor visibility and user's evaluations in each between condition. Although there was a mediation effect of self-serving motives on the relationship between sponsor visibility and app credibility in the condition of being asked to share more personal information with lower control, there were no other mediation effects of self-serving motives on the relationships between sponsor visibility and dependent variables in other conditions.

Table 1.14. Within-Subjects Mediation Analyses split into Four Between-Subjects Groups: Personal Information sharing x User Control

			Altruistic Motives			Self-serving Motives		
			B	SE	95%CI[a]	B	SE	95%CI
More Info Sharing	Higher User Control (n = 61)	Sponsor Attitude	–.26	.08	(–.43 –.12)	–.01	.03	(–.09 .02)
		App Credibility	–.11	.05	(–.22 –.03)	–.01	.03	(–.09 .02)
		Download Intentions	–.25	.10	(–.44 –.07)	.00	.02	(–.06 .03)
	Lower User Control (n = 66)	Sponsor Attitude	–.18	.08	(–.36 –.04)	.03	.04	(–.02 .12)
		App Credibility	–.15	.07	(–.29 –.04)	.05	.04	(.00 .14)
		Download Intentions	–.16	.07	(–.31 –.04)	.05	.05	(–.01 .17)
Less Info Sharing	Higher User Control (n = 64)	Sponsor Attitude	–.39	.13	(–.65 –.16)	.04	.04	(–.02. 13)
		App Credibility	–.20	.07	(–.34 –.08)	.02	.02	(–.02 .06)
		Download Intentions	–.16	.06	(–.30 –.07)	.03	.04	(–.02 .13)
	Lower User Control (n = 61)	Sponsor Attitude	–.17	.08	(–.36 –.04)	–.01	.06	(–.12 .12)
		App Credibility	–.12	.07	(–.28 –.02)	.05	.06	(–.07 .18)
		Download Intentions	–.08	.07	(–.25 .01)	.05	.08	(–.10 .23)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

CHAPTER 9

RESULTS: GENERAL POPULATION PANEL SAMPLE

The same study was replicated with the general population sample.

Descriptive Statistics

Participants for this experimental research study were recruited from Qualtrics.com, a leading research and panel management software in the United States. Among 467 responses, the sample consisted of 253 women (54.2%) and 213 men (45.6%). Their ages ranged from 18 to 81 with a mean age of 48 (*SD* = 1.47). 119 participants (25.5%) represented Millennials or Generation Y, aged between 18 and 34 years old; 125 participants (26.8%) belonged to Generation X, aged between 35 and 50 years old; 186 participants (39.8%) were Baby Boomers aged, 51 to 70 years old. The rest of the participants (7.9%, n = 37) were older than 70 years (Silent Generation). There were no significant age and gender differences observed among participants across the four between-subjects conditions (Age: F (63, 403) = .85, p = .787; Gender: Sex: χ^2 (6) = 4.00, p = .677). In terms of education level, the majority of the sample had some college degree (41.8%, n = 199), followed by high school graduates (23.1%, n = 108), individuals attending college (12.8%, n = 60), individuals who had graduate school (12.6%, n = 59), and individuals attending other types of educational institutions, such as vocational-technical schools (9.7%, n = 45).

The majority of the sample was Caucasian (80.9%, n = 378), followed by African American (9.2%, n = 43), Hispanic or Latino (6%, n = 28), Asian (5.8%, n = 27), American Indian or Alaska Native (1.1%, n = 5), and others (.8%, n = 4). For the family household income, the majority of the sample had an annual income of $50,000 - $99,999 (33.2%, n = 155),

followed by $25,000 - $49,999 (23.8%, n = 111), $100,000 - $146,999 (14.3%, n = 67), less than $25,000 (20.8%, n = 97), and more than $200,000 (2.1%, n = 10).

Testing H1, H2, and H3

Hypothesis 1 proposed that more obtrusive sponsorship messages would generate stronger attributions about mHealth app sponsors' self-serving motives as well as fewer attributions about mHealth app sponsors' altruistic motives when compared to less obtrusive sponsorship messages. Two different three-way repeated-measures ANOVAs (each for one motive attribution) were conducted to test the effect of sponsor visibility (obtrusiveness) on consumer motive attributions. Test results indicated that there were significant main effects of sponsor visibility on both altruistic (F (2, 926) = 9. 97, $p < .001$, η^2_p =.02) and self-serving motive attribution (F (2, 496) = 3.05, $p < .05$, η^2_p = .04) in the panel sample.

Participants tended to generate stronger attributions about sponsors' self-serving motives when sponsorship messages were more obtrusive (M = 5.13, SD = .06) and less obtrusive (M = 5.15, SD = .05) sponsorship messages than no sponsorship messages (M = 5.07, SD = .06). On the other hand, participants had less attributions of sponsors' altruistic motives when more obtrusive sponsorship messages (M = 4.86, SD = .06) were provided compared to less obtrusive sponsorship messages (M = 5.00, SD = .06) and no sponsorship messages (M = 4.98, SD = .06) (see Table 2.1 & Figure 2.1). Therefore, H1 was supported.

Table 2.1. Pairwise Comparisons of Sponsor Visibility on Sponsor Motives

	Sponsor Motive Assessments					
	Altruistic Motives			Self-Serving Motives		
	Mean/Meandiff	*SD*	*p*	*Mean/Meandiff*	*SD*	*p*
High Visibility	4.86	.06		5.13	.06	
Less Visibility	5.00	.06		5.15	.05	
No Visibility	4.98	.06		5.07	.06	
High vs. Less visibility	–.14	.04	.000***	–.02	.03	1.000
Less vs. No visibility	.02	.03	1.000	.08	.03	.031*
High vs. No Visibility	–.12	.04	.004**	.06	.04	.373

Notes: $^{*}p \leq .05$, $^{**}p \leq .01$, $^{***}p \leq .001$.

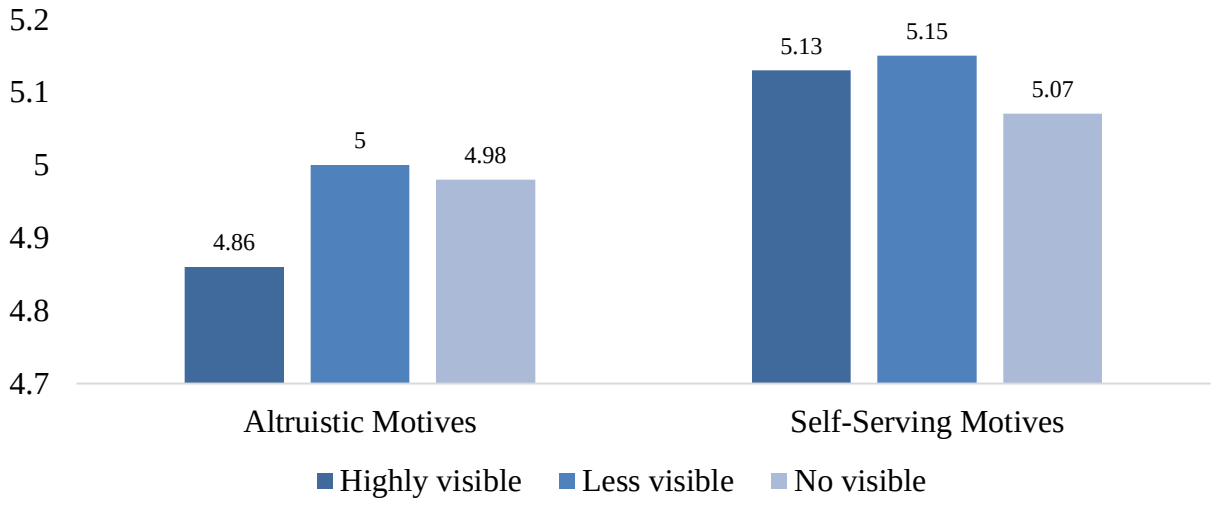

Figure 2.1. The Effects of Three Different Sponsorship Messages on Sponsor Motives

Hypothesis 2 predicted that more obtrusive sponsorship messages would bring less favorable attitudes toward mHealth app sponsors (H2a), lower credibility of mHealth apps (H2b), and lower intentions to download and use mHealth apps (H2c) when compared to less obtrusive sponsorship messages. Three different repeated-measures ANOVAs (each for one dependent variable) were used to confirm whether there is a main effect of sponsor visibility on three dependent variables including sponsor attitudes, mHealth app credibility, and download and usage intentions for mHealth apps. The results showed that there were significant main

effects of sponsor visibility on attitudes toward the app sponsor (F (2, 926) = 7.45, $p <$ .001, η^2_p =.17), mHealth app credibility (F (2, 926) = 9.42, $p <$ .001, η^2_p = .02), and intentions to download and use the mHealth app (F (2, 926) = 6.24, $p <$ .01, η^2_p = .01).

As shown in Table 2.2 and Figure 2.2, Bonferroni post-hoc tests demonstrated that participants rated less favorable attitudes toward the sponsors when more obtrusive sponsorship messages (M = 5.12, SD = .07) were shown compared to less obtrusive sponsorship messages (M = 5.25, SD = .06) and no sponsorship messages (M = 5.24, SD = .07). In addition, participants ranked lower mHealth app credibility in the condition of more obtrusive sponsorship messages (M = 5.00, SD = .06) than in the condition of less obtrusive sponsorship messages (M = 5.13, SD = .06) and no sponsorship messages (M = 5.13, SD = .06). Participants rated lower download and usage intentions for mHealth apps in the more obtrusive sponsorship message condition (M = 3.70, SD = .09) than in the less obtrusive sponsorship message condition (M = 3.80, SD = .09) and no sponsorship message condition (M = 3.83, SD = .09). Therefore, H2a-c were supported.

Table 2.2. Pairwise Comparisons of Sponsor Visibility on Users' Evaluations

	Sponsor and App Evaluations								
	Sponsor Attitude			App Credibility			Download Intentions		
	Mean /Meandiff	*SD*	*p*	*Mean /Meandiff*	*SD*	*p*	*Mean /Meandiff*	*SD*	*p*
High Visibility	5.12	.07		5.00	.06		3.70	.09	
Less Visibility	5.25	.06		5.13	.06		3.80	.09	
No Visibility	5.24	.07		5.13	.06		3.83	.09	
High vs. Less Visibility	–.14	.04	.002**	–.13	.04	.001***	–.10	.04	.031*
Less vs. No Visibility	.01	.03	1.000	–.01	.03	1.000	–.03	.04	1.000
High vs. No Visibility	–.13	.04	.010**	–.14	.04	.001***	–.13	.04	.004**

Notes: $^{*}p \leq .05$, $^{**}p \leq .01$, $^{***}p \leq .001$.

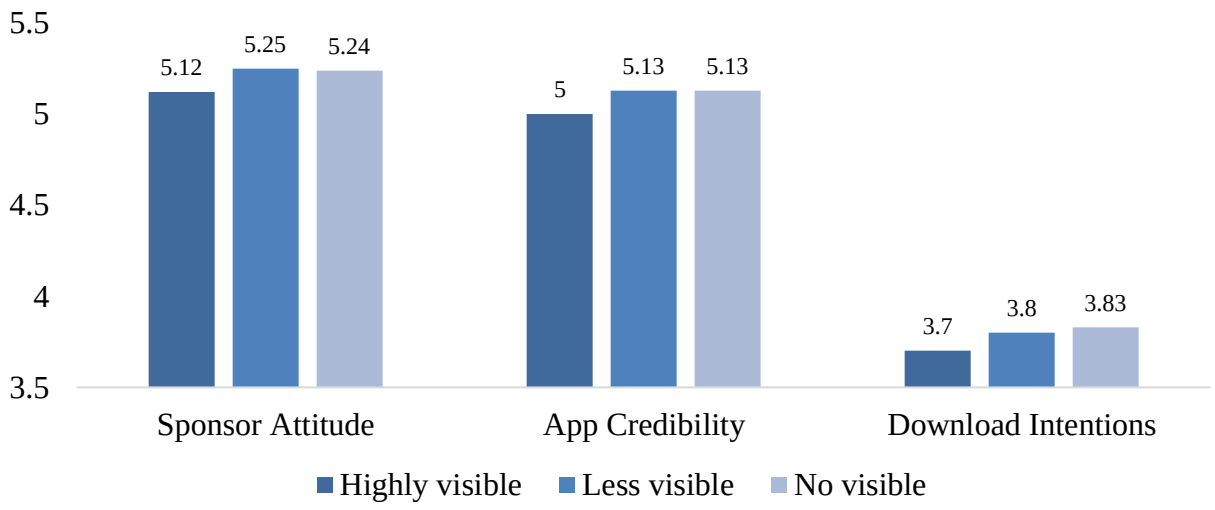

Figure 2.2. The Effects of Three Different Sponsorship Messages on Users' Evaluations

Hypothesis 3 proposed that sponsor motive attributions would mediate the effect of sponsor visibility on attitudes towards the sponsors (H3a), mHealth app credibility (H3b), and intentions to download and use mHealth apps (H3c). Three different within-subjects mediation analyses (each analysis for one dependent variable) using MEMORE macro for SPSS were used to test the mediating roles of sponsors' altruistic motives (a_1-path and b_1-path) and self-serving motives (a_2-path and b_2-path) on dependent variables (see Figure 2.3). Before running MEMORE for a within-subjects mediation analysis, I confirmed the internal reliability using Cronbach's alpha (which ranged from .81 to .92) across three messages used as manipulation in each within-subjects condition. As shown in Table 2.3, test results of mediation analysis showed that there were significant mediation effects (a_1b_1-path) of altruistic motives on the relationships between sponsor visibility (highly visible vs. no visible sponsorship) and attitudes toward the app sponsor, mHealth app credibility, and download and usage intention for the app. The indirect effect (a_2b_2-path) of self-serving motives was not definitively different from zero, but difference in significance does not always mean significantly different (Montoya & Hayes 2017).

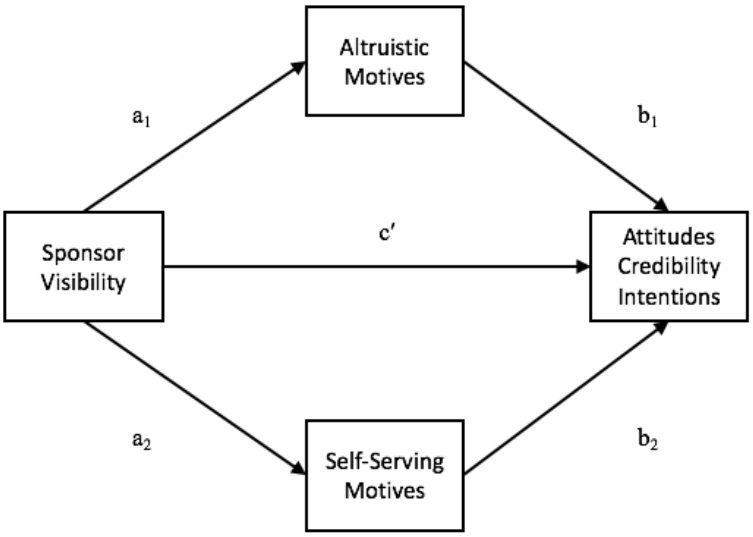

Figure 2.3. The Proposed Path-Analytic Model for a Within-Subject Factor, Sponsor Visibility, with Two Mediators: Altruistic and Self-Serving motives

According to a recent study conducted by Montoya and Hayes (2017), one indirect effect could be different from zero while another is not, and these two indirect effects may not be different from each other in multiple-mediator models using MEMORE. In this case, pairwise comparison between specific indirect effects in a multiple-mediator model could explain how one indirect effect is better supported by the data than another by comparing the indirect effects to each other using an estimate of their difference. Point estimates and 95% bootstrap confidence intervals for the difference between pairs of specific indirect effects indicated that indirect of altruistic and self-serving motives are statistically different. In detail, the indirect effect through altruistic motive attribution is significantly different than the indirect effect through self-serving motive attribution on sponsor attitudes, $B = -.10$, $SE = .04$ with 95% bootstrap CI [–.18, –.04], app credibility, $B = -.01$, $SE = .03$ with 95% bootstrap CI [–.15, –.04], intentions, $B = -.08$, $SE = .03$ with 95% bootstrap CI [–.14, –.04]. Also, total indirect effect through both motive attributions is significantly different from zero, $B = -.11$, $SE = .04$ with 95% bootstrap CI [–.18,

–.04], app credibility, B = –.09, SE = .03 with 95% bootstrap CI [–.15, –.03], intentions, B = –.11, SE = .04 with 95% bootstrap CI [–.18, –.04]. Therefore, H3a-c were supported.

Table 2.3. Path Coefficients and Indirect Effects for Within-Subjects Mediation Models with Two Mediators: Altruistic and Self-Serving Motives

		Path[a] Coefficient	Indirect Effects					
			Altruistic Motives			Self-Serving Motives		
		B[b]	B	SE	95%CI[c]	B	SE	95%CI
Model1	SV → SAM (a_1)	–.12**						
	SV → SSM (a_2)	.06						
	SAM → AT (b_1)	.91***						
	SSM → AT (b_2)	–.01						
	SV → AT (c′)	–.02						
Model2	SV → SAM (a_1)	–.12**						
	SV → SSM (a_2)	.06						
	SAM → CRE (b_1)	.78***						
	SSM → CRE (b_2)	.08*						
	SV → CRE (c′)	–.05[d]						
Model3	SV → SAM (a_1)	–.12**						
	SV → SSM (a_2)	.06						
	SAM → INT (b_1)	.91***						
	SSM → INT (b_2)	–.01						
	SV → INT (c′)	–.02						
Model1	SV → SAM, SSM → AT		–.11	.03	(–.18, –.04)	–.00	.01	(–.02, .01)
Model2	SV → SAM, SSM → CRE		–.09	.03	(–.15, –.03)	.01	.01	(–.01, .01)
Model3	SV → SAM, SSM → INT		–.12	.04	(–.18, –.04)	–.00	.01	(–.02, .01)

Note: a. SV = Sponsor Visibility, SAM = Sponsors' Altruistic Motive, SSM = Sponsors' Self-Serving Motives, AT = Sponsor Attitudes, CRE = App Credibility, INT = Download Intentions. b. $^{*}p \leq .05$, $^{**}p \leq .01$, $^{***}p \leq .001$. c. 95% Confidence Interval from 10,000 bootstrap samples. d. p = .055.

Testing H4, H5, and 6

Hypothesis 4 stated that requiring higher levels of personal information sharing to use mHealth apps would generate stronger self-serving motives but less sponsors' altruistic motives compared to requiring lower levels of personal information sharing. Two different two-way ANOVAs were used to test the main effects of personal information sharing on consumer attributions about two sponsor motives. Test results indicated that there was no significant main effect of information sharing on both altruistic motive attribution (F (1, 463) = 1.17, p = .28) and self-serving motive attribution (F (1, 463) = .76, p = .39). Therefore, H4 was not statistically supported. As shown in Table 2.4, the test result for altruistic motive attribution was the same as my prediction. Requiring more detailed personal information (M = 4.89, SD = .08) generated less altruistic motive attribution when compared to basic levels of personal information (M = 5.00, SD = .08). However, participants held stronger self-serving motives of the app sponsor in the condition of less personal information sharing (M = 5.16, SD = .07) than in the condition of more personal information sharing (M = 5.07, SD = .07).

Table 2.4. Means and Standard Deviations of Sponsor Motives for More vs. Less Information Sharing

	Personal Information Sharing			
	More Info Sharing (n = 229)		Less Infor Sharing (n = 238)	
	Mean	*SD*	*Mean*	*SD*
Altruistic Motives	4.89	.08	5.00	.08
Self-Serving Motives	5.07	.07	5.16	.07

Hypothesis 5 predicted that requiring detailed personal information sharing would bring less favorable attitudes toward mHealth app sponsors (H5a), lower credibility of mHealth apps (H5b), and lower download and usage intentions for mHealth apps (H5c) when compared to requiring basic levels of personal information sharing. Three different two-way ANOVAs were

employed to test the main effects of personal information sharing on sponsor attitudes, mHealth app credibility, and download and usage intentions. The findings demonstrated that there was no significant main effect of personal information sharing on app sponsor attitudes (F (1, 463) = 1.58, p = .21), mHealth app credibility (F (1, 463) = 1.65, p = .20), and download and usage intentions for mHealth apps (F (1, 463) = .00, p = .96). Therefore, H5a-c were not supported.

As shown in Table 2.5, however, the directions of the Bonferroni post-hoc test results agreed with the prediction. Participants rated less favorable attitudes when the app asked them to share more detailed personal information (M = 5.13, SD = .09) than less detailed personal information (M = 5.28, SD = .09). In addition, they rated lower credibility in the condition of more personal information sharing (M = 5.01, SD = .08) than less personal information sharing (M = 5.16, SD = .08). There was no difference in behavioral intentions between the condition of more personal information sharing (M = 3.78, SD = .12) and the condition of less personal information sharing (M = 3.78, SD = .12).

Table 2.5. Means and Standard Deviations of Users' Evaluations for More vs. Less Information Sharing

	Personal Information Sharing			
	More Info Sharing (n = 229)		Less Infor Sharing (n = 238)	
	Mean	*SD*	*Mean*	*SD*
Sponsor Attitude	5.13	.09	5.28	.09
App Credibility	5.01	.08	5.16	.08
Download Intentions	3.78	.12	3.78	.12

Hypothesis 6 posited that sponsors' motives attributions would mediate the effects of personal information sharing on attitudes towards the sponsors (H6a), mHealth app credibility (H6b), and intentions to download and use mHealth apps (H6c). Different mediation analyses using Model 4 in PROCESS for SPSS were employed to determine the mediation roles of sponsors' altruistic as well as self-serving motives in the relationships between information

sharing and the three dependent variables. As discussed in the previous section, PROCESS and MEMORE don't allow a within-subjects mediation analysis with covariates or moderators simultaneously (Montoya & Hayes, 2017). Thus, I ran nine different conditional process models for three within-subjects conditions (sponsor visibility) with the three dependent variables. As shown in table 2.6, the findings demonstrated that there was no significant mediation effect of both sponsor motives on the association between personal information sharing and sponsor attitudes, mHealth app credibility, or download and usage intentions. Therefore, H6a-c were not supported.

Table 2.6. Mediation Model Results for the Indirect Effects of Personal Information Sharing on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High Visibility	.13	.10	(–.06 .33)	.03	.02	(–.01 .08)
	Less Visibility	.07	.09	(–.11 .23)	.01	.02	(–.03 .04)
	No Visibility	.03	.10	(–.16 .22)	–.00	.01	(–.04 .02)
App Credibility	High Visibility	.13	.09	(–.05 .30)	.02	.02	(–.01 .07)
	Less Visibility	.07	.09	(–.10 .24)	.00	.01	(–.01 .02)
	No Visibility	.03	.10	(–.16 .22)	–.00	.01	(–.02 .01)
Download Intentions	High Visibility	.15	.11	(–.06 .36)	.00	.02	(–.05 .04)
	Less Visibility	.08	.10	(–.12 .27)	.00	.01	(–.03 .02)
	No Visibility	.04	.11	(–.18 .24)	–.00	.01	(–.03 .02)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Testing H7, H8, and H9

Hypothesis 7 suggested that participants would generate stronger consumer attributions of altruistic motive of the app sponsor and less self-serving motives of the app sponsor when higher (vs. lower) levels of user control over the technology was provided on the app interface. Two different two-way ANOVAs were used to test the main effects of user control on consumer attributions including sponsors' altruistic motives and self-serving motives. The findings showed that there was no significant main effect of user control on altruistic motives (F (1, 463) = 1.57, p = .21). As shown in Table 2.7, although altruistic motives did not show significantly different results between two user control conditions, the Bonferroni post-hoc test indicated that participants were likely to generate more altruistic motive attributions in the condition of higher levels of user control provided (M = 5.01, SD = .07) compared to the condition of lower levels of user control (M = 4.88, SD = .08) in the app. However, the main effect of user control on self-serving motive attribution (F (1, 463) = 5.97, p < .05) was significant. Participants had stronger self-serving motives in the higher levels of user control condition (M = 5.24, SD = .07) than in the lower level of user control condition (M = 4.99, SD = .08), which is the opposite of what was predicted (see Table 2.7). Thus, the test produced statistically significant results, but H7 was not supported, as the results were the opposite of what was predicted. These results are interpreted in the discussion section.

Table 2.7. Means and Standard Deviations of Sponsor Motives for Higher vs. Lower User Control

	User Control over Information sharing			
	Higher User Control (n = 251)		Lower User Control (n = 216)	
	Mean	*SD*	*Mean*	*SD*
Altruistic Motives	5.01	.07	4.88	.08
Self-Serving Motives	5.24	.07	4.99	.08

Hypothesis 8 proposed that participants would have less favorable attitudes toward mHealth app sponsors (H8a), lower mHealth apps credibility (H8b), lower download and usage intentions for mHealth apps (H8c), when the mHealth apps provide with lower levels of user control over personal information sharing when compared with higher levels of user control over personal information sharing. Three different two-way ANOVAs were conducted to test the main effects of user control in the app interface on the three dependent variables: sponsor attitudes, mHealth app creditability, and download and usage intentions for mHealth apps. Results showed that there was no significant main effect of user control on attitudes toward the app sponsor (F (1, 463) = 3.15, p = .08), mHealth app credibility (F (1, 463) = 3.06, p = .08), and download and usage intentions for mHealth apps (F (1, 463) = 2.79, p = .10). Thus, H8a-c were not supported.

Nonetheless, the direction of the Bonferroni post-hoc test results coincided with the proposed hypothesis, as shown in Table 2.8. Participants rated more favorable attitudes toward the sponsors when the app had an opt-out option over the personal information sharing (M = 5.31, SD = .08) compared to no opt-out option (M = 5.09, SD = .09). Participants also rated higher credibility of sponsored mHealth apps in the condition of having an opt-out option for information sharing (M = 5.12, SD = .08) and in the condition of having no opt-out option (M = 4.99, SD = .09). In terms of download and usage intentions for mHealth apps, Participants rated higher intentions when the app had an opt-out option (M = 3.92, SD = .11) rather than no opt-out option (M = 3.64, SD = .12).

Table 2.8. Means and Standard Deviations of Users' Evaluations for Higher vs. Lower User Control

	User Control over Information sharing			
	Higher User Control (n = 251)		Lower User Control (n = 216)	
	Mean	*SD*	*Mean*	*SD*
Sponsor Attitude	5.31	.08	5.09	.09
App Credibility	5.12	.08	4.99	.09
Download Intentions	3.92	.11	3.64	.12

Hypothesis 9 proposed that sponsor motive attributions would mediate the effect of user control over the technology on sponsor attitudes (H9a), mHealth app credibility (H9b), and download and usage intentions for mHealth apps (H9c). Different mediation analyses using Model 4 in PROCESS for SPSS were tested to examine this hypothesis. As discussed earlier, I ran nine conditional process models for three within-subjects conditions (sponsor visibility) and the three dependent variables, since neither PROCESS nor MEMORE allow covariates or moderators at once in a within-subjects mediation analysis (Montoya & Hayes, 2017), As shown in Table 2.9, test results showed that there was no significant mediation effect of self-serving as well as altruistic motives on dependent variables in all three conditions of sponsorship visibility, except for the mediation effect self-serving motives on app credibility. In other words, both altruistic motives and self-serving motives did not indirectly influence the relationship between user control over the technology and attitudes toward the app sponsor, app credibility, or download and usage intentions for mHealth apps. Thus, H9a-c were not supported.

Table 2.9. Mediation Model Results for the Indirect Effects of User Control on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High Visibility	–.15	.10	(–.34 .04)	–.04	.03	(–.10 .00)
	Less Visibility	–.06	.09	(–.23 .11)	–.02	.02	(–.07 .01)
	No Visibility	–.10	.10	(–.29 .09)	–.02	.03	(–.08 .03)
App Credibility	High Visibility	–.14	.09	(–.32 .03)	–.04	.02	(–.08 –.00)
	Less Visibility	–.06	.09	(–.24 .11)	–.01	.01	(–.04 .01)
	No Visibility	–.10	.10	(–.29 .09)	–.01	.02	(–.05 .02)
Download Intentions	High Visibility	–.16	.11	(–.38 .05)	–.00	.03	(–.06 .07)
	Less Visibility	–.07	.10	(–.27 .13)	–.01	.02	(–.05 .04)
	No Visibility	–.11	.11	(–.32 .11)	–.00	.03	(–.05 .06)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

In terms of altruistic sponsor motives, consumer attributions of sponsors' altruistic motives and consumer evaluations did not statistically differ between those in the two conditions of user control. Additional tests were conducted to confirm whether varying degrees of user control for sharing personally identifiable data with the sponsored app really influenced sponsor attitudes and app evaluations in specific conditions. Since there were significant effects of personal information sharing moderated by user control on users' evaluations through altruistic motive mediation in the condition of having highly visible sponsorship messages in the general population panel sample (see testing results of H15), different one-way ANOVAs were conducted to find the effects of opt-out options for users' self-control over the technology by splitting into three sponsor visibility conditions (high vs. less vs. no visibility).

Results indicated that having opt-out options had a significant impact on positive sponsor attitudes (F (1, 465) = 3. 76, p = .05, η^2_p =.01), higher app credibility (F (1, 465) = 7.37, p < .05, η^2_p =.01), and higher download and usage intentions (F (1, 465) = 5. 52, p < .05, η^2_p =.01) when sponsorship messages were highly visible; no significant impact was observed in the less and no visible conditions. As shown in Table 2.10, participants had more favorable attitudes toward the

sponsor when the app provided an opt-out option (*M* = 5.25, *SD* = .09) than when the app provided no opt-out option (*M* = 4.99, *SD* = .10) and rated higher credibility in the opt-out condition (*M* = 5.13, *SD* = .09) than those in the no opt-out condition (*M* = 4.88, *SD* = .09) when sponsorship messages were clearly displayed. Download intentions were also higher in the app with opt-out options (*M* = 3.90, *SD* = .12) than those in the app without opt-out options (*M* = 3.50, *SD* = .13). Therefore, H8 was partially supported.

Table 2.10. Different One-Way ANOVA Results for the main effect of User Control split into Three Sponsor Visibility Conditions

	Users' Evaluations			
	Sponsor Attitude			
Sponsor Visibility	*F (df1:465)*	*p-Value*	Partial squared	Observed Power
High Visibility	3.76	.053[a]	.008	.49
Less Visibility	2.33	.128	.005	.33
No Visibility	1.73	.189	.004	.26
	App Credibility			
	F (df1:465)	*p-Value*	Partial squared	Observed Power
High Visibility	4.03	.045[*]	.009	.52
Less Visibility	1.95	.163	.004	.29
No Visibility	1.78	.182	.004	.27
	Download Intentions			
	F (df1:465)	*p-Value*	Partial squared	Observed Power
High Visibility	5.52	.019[*]	.012	.65
Less Visibility	1.17	.279	.003	.19
No Visibility	1.87	.172	.004	.28

Note: High User Control: n = 251, Low User Control: n = 216. a. p-value for the effect of user control on sponsor attitudes in highly visible condition approaches significance.
b. $^{*}p \leq .05$; $^{**}p \leq .01$; $^{***}p \leq .001$.

Testing H10, H11, H12, H13, H14, and H15

Hypothesis 10 suggested that more (vs. less) obtrusive sponsorship messages would generate stronger self-serving motive attributions and less altruistic motive attributions when participants were required to share more detailed (vs. basic) levels of personal information. Two different three-way repeated-measures ANOVAs were conducted to test the interaction effects of sponsor visibility and personal information sharing on consumer attributions of sponsors' altruistic and self-serving motives.

The findings demonstrated that there was no significant interaction effect of sponsorship message visibility and personal information sharing on altruistic motives (F (2, 926) = 1.89, p = .15). Furthermore, Bonferroni post-hoc tests indicated that participants rated sponsors' altruistic motives higher when they were required to share less detailed personal information (M = 4.77, SD = .08) than when they were required to share more detailed personal information (M = 4.95 , SD = .08) in the higher visible sponsor condition (see Figure 2.4). It was revealed that personal information sharing significantly moderated the effect of sponsor visibility on self-serving motive attribution (F (2, 926) = 3.62, p < .05). When participants were required to share more detailed personal information, they rated self-serving motives to be lower (M = 4.77, SD = .08) compared to when they were required to share less detailed personal information (M = 4.95, SD = .08) in the higher visible sponsor condition (see Figure 2.5). This finding is the opposite to what was predicted. Although H10 was not supported, the results for self-serving motives are statistically significant and are explained further in the discussion section.

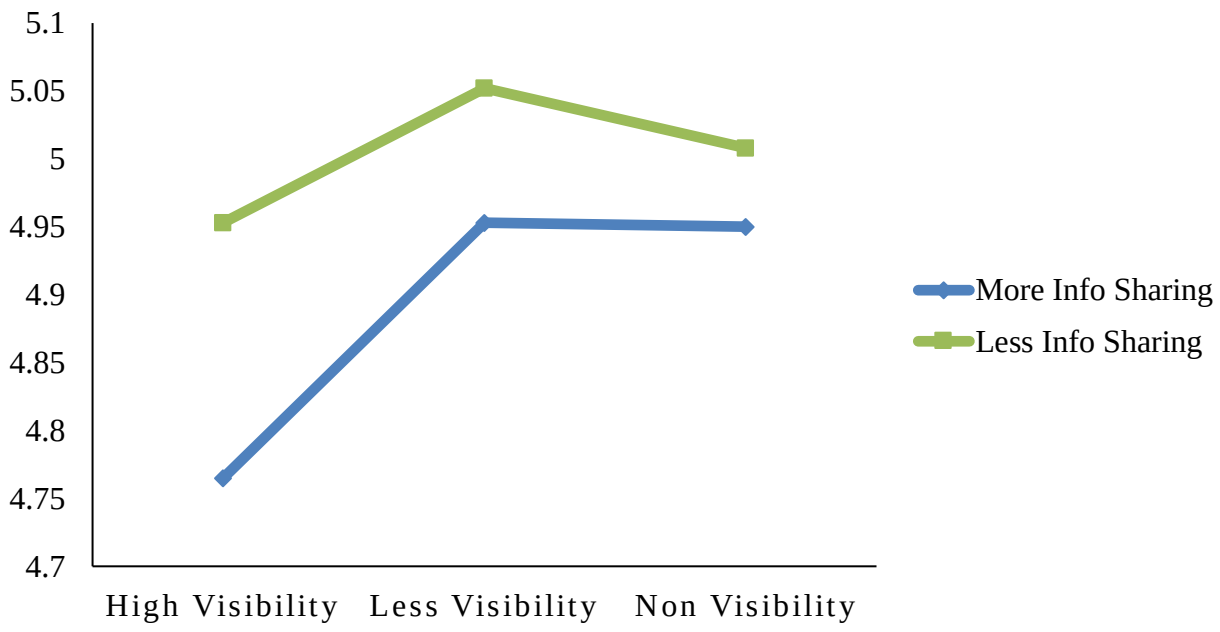

Figure 2.4. Moderating effect of Personal Information Sharing on the Relationship between Sponsor Visibility and Altruistic Sponsor Motives

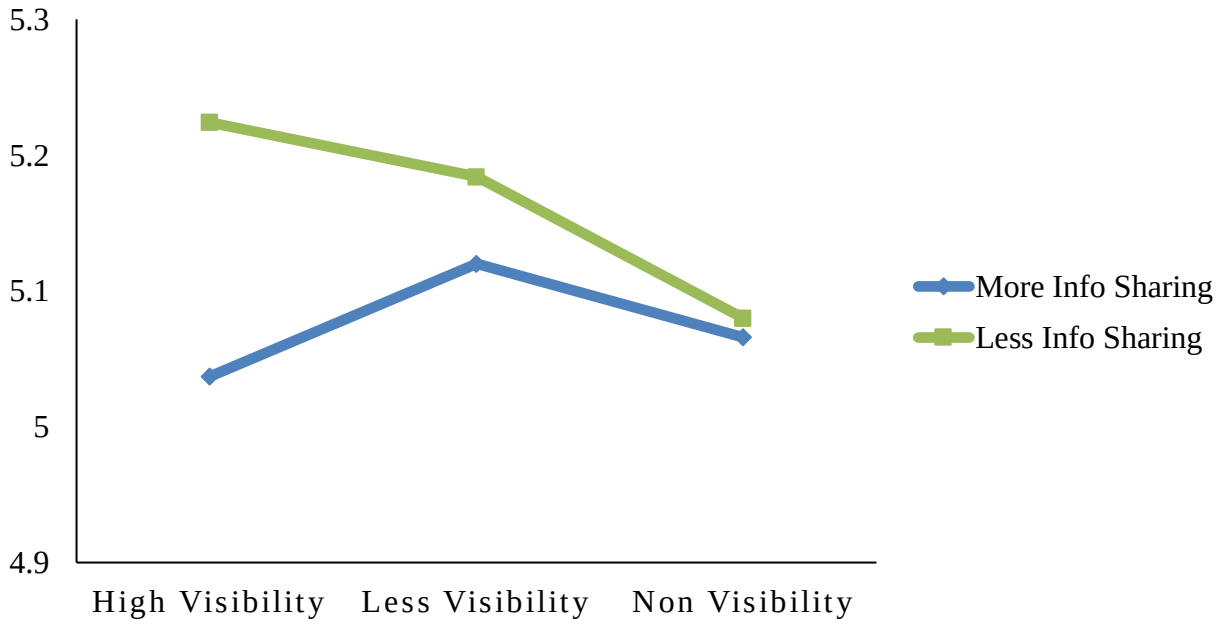

Figure 2.5. Moderating effect of Personal Information Sharing on the Relationship between Sponsor Visibility and Self-Serving Sponsor Motives

Hypothesis 11 stated that the moderating roles of personal information sharing with regard to the relationships between sponsor visibility and attitudes towards the sponsor (H11a), mHealth app credibility (H11b), and intentions to download and use mHealth apps (H11c) would be mediated by sponsor motive attributions. Different mediation models in PROCESS (Model 4) for SPSS were used to examine the indirect effects of such sponsors' altruistic and self-serving motives in the links between sponsor visibility and dependent variables with personal information sharing as a moderator. Given that neither PROCESS nor MEMORE allow a within-subjects mediation analysis with covariates or moderators simultaneously (Montoya & Hayes, 2017), I ran nine moderated mediation models for three dependent variables and two mediators using the calculation differences in three within-subjects groups. As shown in Table 2.11, test results showed that there was no significant mediation effect of sponsors' altruistic motives and self-serving motives on the models when personal information sharing moderated the effect of sponsor visibility on users' evaluations. Thus, H11a-c were not supported.

Table 2.11. Moderated Mediation Model Results for the Indirect Effects of Sponsor Visibility by Personal Information Sharing on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Difference in Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High – No Visibility	.11	.07	(–.19 .25)	–.00	.02	(–.04 .03)
	High – Less Visibility	.05	.05	(–.04 .16)	.03	.02	(–.00 .07)
	Less – No Visibility	.03	.04	(–.04 .10)	.01	.01	(–.02 .03)
App Credibility	High – No Visibility	.10	.06	(–.02 .22)	.01	.01	(–.01 .04)
	High – Less Visibility	.05	.04	(–.04 .14)	.03	.02	(–.00 .08)
	Less – No Visibility	.03	.03	(–.04 .09)	.01	.01	(–.01 .04)
Download Intentions	High – No Visibility	.08	.05	(–.01 .19)	.02	.01	(–.00 .05)
	High – Less Visibility	.04	.04	(–.03 .13)	.03	.02	(–.00 .07)
	Less – No Visibility	.03	.04	(–.04 .10)	.01	.01	(–.01 .03)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Hypothesis 12 proposed that more (vs. less) obtrusive sponsorship messages would bring stronger self-serving motives as well as less altruistic motives, when lower levels of user control were provided. Two different three-way repeated-measures ANOVAs were used to test the interaction effects of user control and sponsor visibility on consumer attribution about sponsors' motives. Results showed that there was no significant interaction effect of sponsor visibility and user control over information sharing on both altruistic motive attribution (F (2, 926) = 1.30, p = .27) and self-serving motive attribution (F (2, 926) = 1.67, p = .19). Therefore, H12 was not supported.

As shown in Figure 2.6 and Figure 2.7, however, the direction of Bonferroni post-hoc tests results coincided with what was predicted. The results reported that higher user control generated more altruistic sponsor motives in all three sponsor visibility conditions. On the other hand, participants rated more self-serving motive attributions when they were provided with higher user control than lower user control over the technology.

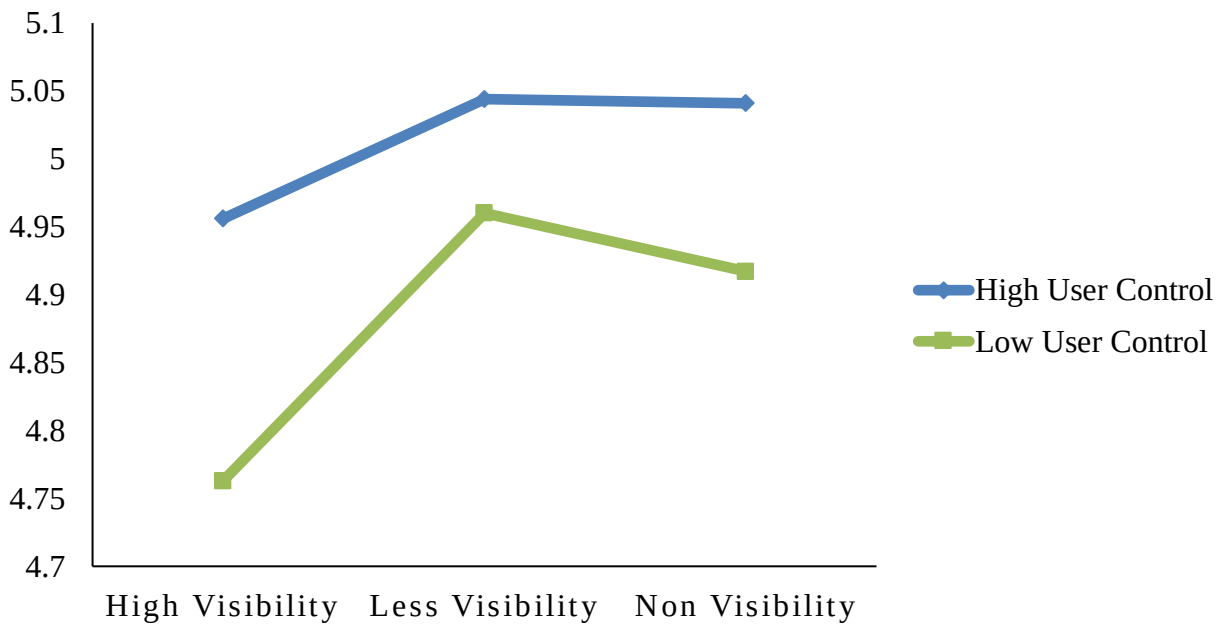

Figure 2.6. Moderating effect of User Control on the Relationship between Sponsor Visibility and Altruistic Sponsor Motives

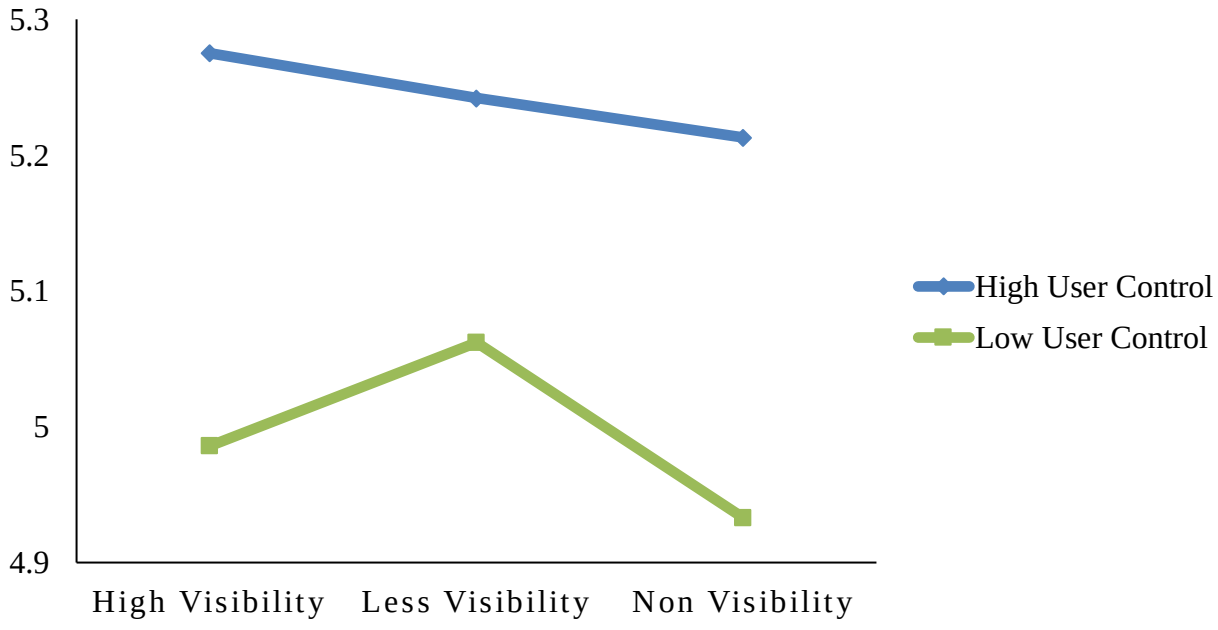

Figure 2.7. Moderating effect of User Control on the Relationship between Sponsor Visibility and Self-Serving Sponsor Motives

Hypothesis 13 predicted that the moderation effect of user control over the technology in regards to the relationship between sponsor obtrusiveness and attitudes towards the sponsors (H13a), mHealth app credibility (H13b), and intentions to download and use mHealth apps (H13c) would be mediated by consumer attribution of altruistic and self-serving motives. Different moderated mediation models in PROCESS using Model 4 for SPSS were used to test the mediating roles of the two sponsor motives when user control interacted with sponsor obtrusiveness. I ran nine separate models for the three dependent variables using the calculation differences in three within-subjects groups, because neither PROCESS nor MEMORE macro allow a within-subjects mediation analysis with covariates or moderators at once (Montoya & Hayes, 2017). As shown in Table 2.12, no significant mediation effect of sponsors' altruistic motives and self-serving motives was found when user control over information sharing moderated the effect of sponsor visibility on attitude, app credibility, and intentions to download and use mHealth apps. Thus, H13a-c were not supported.

Table 2.12. Moderated Mediation Model Results for the Indirect Effects of Sponsor Visibility by User Control on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Difference in Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High – No Visibility	–.06	.07	(–.19 .07)	.00	.01	(–.02 .01)
	High – Less Visibility	–.07	.05	(–.17 .03)	–.03	.02	(–.07 .00)
	Less – No Visibility	.02	.04	(–.05 .09)	.01	.01	(–.01 .05)
App Credibility	High – No Visibility	–.05	.06	(–.17 .06)	–.00	.01	(–.02 .01)
	High – Less Visibility	–.06	.04	(–.15 .02)	–.03	.02	(–.07 .00)
	Less – No Visibility	.02	.03	(–.05 .09)	.02	.01	(–.00 .05)
Download Intentions	High – No Visibility	–.04	.05	(–.15 .05)	–.00	.01	(–.02 .02)
	High – Less Visibility	–.06	.04	(–.14 .02)	–.02	.02	(–.06 .00)
	Less – No Visibility	.02	.04	(–.05 .10)	.01	.01	(–.00 .05)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Hypothesis 14 suggested that providing higher (vs. lower) levels of user control over the technology would generate stronger altruistic motives but less self-serving motives when participants were asked to share less detailed personal information compared to more detailed personal information. Two different two-way ANOVAs were conducted to test whether there was any interaction effect of personal information sharing and user control on consumers' two motive attributions about the sponsor. Results indicated that there was no significant interaction effect of user control and personal information sharing on both altruistic motives (F (1, 463) = 3.07, p = .08), and self-serving motives (F (1, 463) = 3.30, p = .07).

Hypothesis 15 stated that moderating effects of user control on the link between personal information sharing and attitudes towards the sponsors (H15a), mHealth app credibility (H15b), as well as download and usages intentions for mHealth apps (H15c), would be mediated by consumer motives attribution about the sponsor. Different moderated mediation models in PROCESS using Model 8 for SPSS were employed to test the mediating roles of sponsor motives when user control interacted with personal information sharing. Neither PROCESS nor MEMORE provide a within-subjects mediation analysis with moderators at once (Montoya & Hayes, 2017). Thus, I ran nine conditional mediation analysis models for interaction effects of two between-subjects factors, such as user control and personal information, for the three dependent variables in three within-subjects groups (sponsor visibility). As shown in Table 2.13, there were significant mediation effects of sponsors' altruistic motives on sponsor attitudes, app credibility, and download and usage intentions in the highly visible sponsorship message conditions, whereas indices in other conditions showed that there was no significant indirect effect of both sponsors' motives on dependent variables when user control moderated personal information sharing. That is, with the highly visible sponsorship messages, requesting more

information sharing with higher (vs. lower) user control generated stronger altruistic motives of the sponsor, resulting in positive sponsor attitudes, higher app credibility, and higher download and usages intentions. Therefore, H15a-c were partially supported.

Table 2.13. Moderated Mediation Model Results for the Indirect Effects of Personal Information Sharing by User Control on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High Visibility	.40	.20	(.03 .81)	.06	.05	(–.01 .19)
	Less Visibility	.20	.18	(–.13 .56)	.04	.04	(–.01 .15)
	No Visibility	.32	.20	(–.06 .73)	.04	.05	(–.04 .16)
App Credibility	High Visibility	.38	.19	(.03 .75)	.05	.04	(–.01 .15)
	Less Visibility	.20	.17	(–.13 .54)	.02	.02	(–.01 .07)
	No Visibility	.32	.20	(–.07 .71)	.02	.03	(–.03 .08)
Download Intentions	High Visibility	.44	.22	(.03 .89)	.00	.05	(–.11 .09)
	Less Visibility	.23	.20	(–.16 .63)	.01	.04	(–.07 .09)
	No Visibility	.06	.23	(–.07 .81)	.00	.05	(–.10 .10)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Testing H16 and H17

Hypothesis 16 stated that with less obtrusive sponsorship messages, higher user control over the technology would generate stronger altruistic motive attributions as well as less self-serving motive attributions than lower levels of user control over the technology when participants were required to share less (vs. more) personal information. Two different three-way ANOVAs were employed to test three way interaction effects of sponsor visibility, personal information sharing, and user control on the two sponsor motive attributions. Results showed that there was no significant three-way interaction effect on both altruistic motives (F (2, 926) = 1.45, p = .24), and self-serving motives (F (2, 926) = .58, p = .56). Therefore, Hypothesis 16 was not supported.

Hypothesis 17 predicted that the moderating effects of user control and personal information sharing in terms of the relationships between obtrusive sponsorship on attitudes towards the sponsors (H17a), mHealth app credibility (H17b), and download and usage intentions for mHealth apps (H17c), would be mediated by consumer motive attributions about the sponsor. Different moderated mediation models in PROCESS using Model 8 for SPSS were used to confirm the mediating roles of sponsor motives when user control and personal information sharing moderated the associations between sponsor visibility and the three dependent variables. As stated earlier, neither PROCESS nor MEMORE offer a within-subjects mediation analysis with covariates or moderators simultaneously (Montoya & Hayes, 2017). Therefore, using differences in three within-subjects conditions, I ran nine different conditional moderated mediation process models for the three-way interaction effects involving one within-subjects factor (sponsor visibility) and two between-subjects factors (user control, personal information sharing) on the three dependent variables. As shown in Table 2.14, there was no

significant mediation effect of altruistic and self-serving motives about the app sponsor when user control and personal information sharing moderated the effect of sponsor visibility on attitudes, app credibility, or download and usage intentions for mHealth apps. Therefore, H17a-c were not supported.

Table 2.14. Moderated Mediation Model Results for the Indirect Effects of Sponsor Visibility by Personal Information Sharing and User Control on Users' Evaluations through Sponsor Motives

		Sponsor Motive Assessments					
		Altruistic Motives			Self-Serving Motives		
	Sponsor Visibility	B	SE	95%CI[a]	B	SE	95%CI
Sponsor Attitude	High – No Visibility	.11	.14	(–.16 .38)	.03	.01	(–.03 .02)
	High – Less Visibility	.16	.11	(–.03 .39)	.02	.03	(–.04 .10)
	Less – No Visibility	–.07	.07	(–.22 .07)	–.02	.03	(–.09 .01)
App Credibility	High – No Visibility	.09	.12	(–.13 .33)	–.00	.02	(–.04 .02)
	High – Less Visibility	.14	.09	(–.02 .34)	.02	.04	(–.04 .11)
	Less – No Visibility	–.07	.07	(–.20 .06)	–.03	.03	(–.09 .02)
Download Intentions	High – No Visibility	.08	.10	(–.12 .29)	–.01	.02	(–.05 .03)
	High – Less Visibility	.12	.08	(–.30 .30)	.02	.03	(–.03 .09)
	Less – No Visibility	–.07	.07	(–.22 .07)	–.02	.02	(–.08 .01)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Within-Subjects Mediation Analyses split into four Between-Subjects groups in MEMORE

To confirm whether or not any difference could be observed across the four between-subjects conditions, I conducted different conditional within-subjects mediation analyses in MEMORE for SPSS for each condition. As shown in Table 2.15, the indirect effects of sponsor visibility on users' evaluations through altruistic motive attributions with a 95% bootstrap confidence interval were statistically different from zero. However, the only mediation effect of altruistic motives on the relationships between sponsor visibility and dependent variables was observed in the condition of sharing detailed information with lower user control. In other words, when participants were asked to share more detailed personal information with lower user control over the information, less altruistic motive attributions mediated less favorable attitudes toward the sponsor, lower mHealth app credibility, and lower intentions to download and use mHealth apps. Self-serving motives also significantly mediated sponsor visibility on sponsor attitudes in the condition of being asked to share less information with higher user control. No significant indirect effects of altruistic and self-serving motives were observed in other between-subjects conditions.

Table 2.15. Within-Subjects Mediation Analyses split into Four Between-Subjects Groups: Personal Information sharing x User Control

			Altruistic Motives			Self-serving Motives		
			B	SE	95%CI[a]	B	SE	95%CI
More Info Sharing	Higher User Control (n = 127)	Sponsor Attitude	–.09	.05	(–.19 .01)	–.01	.02	(–.06 .03)
		App Credibility	–.06	.04	(–.15 .01)	–.02	.03	(–.08 .04)
		Download Intentions	–.06	.04	(–.16 .01)	–.01	.03	(–.09 .04)
	Lower User Control (n = 102)	Sponsor Attitude	–.20	.08	(–.37 –.05)	–.00	.02	(–.07 .03)
		App Credibility	–.19	.08	(–.36 –.04)	–.00	.02	(–.06 .02)
		Download Intentions	–.19	.08	(–.36 –.07)	–.00	.01	(–.04 .01)
Less Info Sharing	Higher User Control (n = 124)	Sponsor Attitude	–.05	.06	(–.19 .05)	–.04	.16	(–.07 –.01)
		App Credibility	–.04	.05	(–.15 .05)	–.02	.01	(–.06 .01)
		Download Intentions	–.02	.03	(–.08 .03)	–.02	.02	(–.06 .01)
	Lower User Control (n = 114)	Sponsor Attitude	–.06	.07	(–.20 .07)	–.03	.04	(–.12 .02)
		App Credibility	–.05	.06	(–.17 .06)	–.01	.02	(–.06 .02)
		Download Intentions	–.04	.05	(–.16 .05)	.00	.01	(–.03 .02)

Note: a. 95% Confidence Interval from 10,000 bootstrap samples.

Summary of Hypotheses Testing for Both Samples

The results indicate that more obtrusive sponsorship messages incorporated into an app interface negatively influenced attitudes toward sponsors, mHealth app credibility, and download and usage intentions for the mHealth apps. These effects were mediated by consumer attributions about sponsors' altruistic and self-serving motives, such that sponsor visibility increased perceived self-promotional motives and decreased perceived altruistic motives and, this, in turn, reduced evaluations related to attitudes toward sponsors, mHealth app credibility, and download and usage intentions for the mHealth apps. The degree of app customization based on personal information sharing and user control over the information sharing was not found to negatively affect responses from users, as was predicted. Although there was a significant main effect of user control on self-serving motive attribution from the general population sample, the result was the opposite of what was predicted, such that higher levels of user control increased perceived self-serving motive attribution compared to lower levels of user control. An explanation of these findings will be provided in the discussion section. There were significant effects of user control on users' responses about the sponsor and the app when sponsorship messages were highly visible in the panel sample. In other words, higher user control generated positive sponsor attitudes, higher app credibility, and higher download and usage intentions for mHealth apps in the conditions of highly visible sponsorship.

Regarding interaction effects, there were significant mediation effects of altruistic motives when user control moderated the effect of sponsor visibility on users' responses in the conditions of little vs. no sponsorship messages from the student sample. The results of interaction effects of sponsor visibility and personal information sharing on self-serving motives in the general population sample were statistically significant, but they were the opposite of what

was predicted. When participants were asked to share more detailed personal information, they rated self-serving motives to be lower compared to when they were asked to share less detailed personal information. A possible explanation of these findings will be also provided in the discussion section. There were no significant interaction effects of user control and personal information sharing on both altruistic motive and self-serving motive attributions in both samples. However, the effects of personal information sharing moderated by user control did produce significant results on attitudes toward sponsor and app evaluations through altruistic motive attributions when app sponsorship messages were highly visible in the general population panel sample. There were no other significant mediated and/or interaction effects observed in either of the two samples.

Regarding within-subjects mediation analyses performed through splitting the dataset into four between-subject groups (personal information sharing (more vs. less) x user control (high vs. low)) and running statistical tests with each of the four samples separately, the effects of sponsor visibility on users' evaluations through the mediation of altruistic motive attributions with a 95% bootstrap confidence interval were statistically different from zero in the student sample across all four conditions. More visible sponsorship messages generated less altruistic motive attributions, and, as a result, led to negative sponsor attitudes, lower mHealth app credibility, and lower download and usage intentions for mHealth apps. The mediation effect of self-serving motive attributions on app credibility was significantly different from zero in the condition of more information sharing with lower user control. In other words, more visible sponsorship messages generated stronger self-serving motive attributions, as a result, led lower mHealth app credibility when users were asked to share more information with lower user control in the app. There were no mediation effects of motive attributions in other conditions.

In terms of the general population panel sample, the effects of sponsor visibility on users' evaluations through the mediation of altruistic motive attributions were statistically different from zero in the conditions of being asked to share detailed information with lower user control. This means that more visible sponsorship generated fewer altruistic motive attributions and this, in turn, resulted in more negative attitudes, lower mHealth app credibility, and lower download and usage intentions for mHealth apps when participants were asked to share detailed information with lower user control. Self-serving motives also significantly mediated the effects of sponsor visibility on sponsor attitudes when users were asked to share less information with higher user control. More visible sponsorship generated stronger self-serving motive attributions that led to more negative sponsor attitudes when participants were asked to share basic information with higher user control. No significant indirect effects of altruistic and self-serving motives were observed in other between-subjects conditions in the panel sample. The results of all hypotheses testing for both students and panel samples are summarized in Table 2.16.

Table 2.16. Summary of Hypotheses Testing Results for Student and Panel Samples

	Casual Path	Test Results	
		Student Sample	Panel Sample
H1	SV → SMA	Supported	Supported
H2a-c	SV → AT, CRE, INT	Supported	Supported
H3a-c	SV → SMA→ AT, CRE, INT	Supported	Supported
H4	PI → SMA	Not Supported	Not Supported
H5a-c	PI → AT, CRE, INT	Not Supported	Not Supported
H6a-c	PI → SMA → AT, CRE, INT	Not Supported	Not Supported
H7	UC → SMA	Not Supported	Not Supported
H8a-c	UC → AT, CRE, INT	Not Supported	Partially
H9a-c	UC → SMA → AT, CRE, INT	Not Supported	Not Supported
H10	SV X PI → SMA	Not Supported	Not Supported
H11a-c	SV X PI → SMA → AT, CRE, INT	Not Supported	Not Supported
H12	SV X UC → SMA	Not Supported	Not Supported
H13a-c	SV X UC → SMA → AT, CRE, INT	Partially	Not Supported
H14	PI X UC → SMA	Not Supported	Not Supported
H15a-c	PI X UC → SMA → AT, CRE, INT	Not Supported	Partially
H16	SV X PI X UC → SMA	Not Supported	Not Supported
H17a-c	SV X PI X UC → SMA → AT, CRE, INT	Not Supported	Not Supported

Note : SV = Sponsor Visibility, PI = Personal Information Sharing, UC = User Control, SMA = Sponsor Motive Attributions, AT = Sponsor Attitudes, CRE = App Credibility, INT = App Download Intentions.

CHAPTER 10

DISCUSSION

The present study investigated whether sponsor visibility (or obtrusiveness) in a mobile health app interface, the scope of app personalization, operationalized by the amount of personal information sharing, and users' control over information sharing, manipulated by the presence or absence of the "opt-out" option, influence what types of motives, altruistic or self-serving, mobile app users attribute to sponsors. Furthermore, this study examined how the attribution of sponsor motives affects mobile app users' evaluations of the sponsor and the app itself in the context of mHealth apps. More specifically, this study tested:

1) whether more obtrusive sponsorship identification in an app interface leads to more negative effects on attitudes toward sponsors, evaluations of app credibility, and download and usage intentions than less obtrusive sponsorship;

2) whether requiring users to share a greater amount of detailed personal data with the app as well as providing no user control over data sharing elicit more negative effects on attitudes toward sponsors, evaluations of app credibility, and download and usage intentions than the requirement to share less personal information and providing users with an option to skip information sharing;

3) whether information sharing and user control interact with each other and also moderate the effects of sponsor obtrusiveness on attitudes toward sponsors, evaluations of app credibility, and download and usage intentions; and,

4) finally, whether altruistic and self-serving sponsor motive attributions mediate the main and interaction effects of the three manipulated variables: sponsor obtrusiveness, personal information sharing, and user control.

H1, H2, and H3

The set of hypotheses 1, 2, and 3 predicted that the level of sponsor visibility would influence users' inferences about sponsors' real motives for app support, and as a result, lead to the increase or decrease in attitudes toward the sponsor as well as mHealth app credibility and download and usage intentions for mHealth apps. Specifically, it was predicted that altruistic motives would result in more positive outcomes and self-serving motives would produce negative outcomes. First, the findings of this study demonstrate that when participants are exposed to app interfaces with more obtrusive sponsorship, they become more skeptical about a sponsor's real motive for app support compared to when participants are exposed to app interfaces with less obtrusive or no sponsorship identification. More specifically, participants generated stronger self-serving motive attributions of the sponsor supporting the app while expressing weaker altruistic motive attributions when the sponsor was more visible compared to when the sponsor was less visible or not present in the mobile Health app interface. These findings are consistent with previous research that suggests a negative influence of obtrusive sponsorship and advertising messages in contexts other than mHealth apps (Goldfarb & Tucker, 2011). This effect was present in both student and general population samples. Thus, this study contributes to the existing literature by studying the effects of sponsor obtrusiveness in the context of mobile app technology. Future research should continue to explore other cues linked to sponsorship statements in mobile app interfaces that could influence sponsor motive attributions. Sponsor-app fit, types of sponsoring companies, and brand preference could generate consumer attributions about the sponsor's real motives (Deitz et al., 2012; Peng et al., 2016).

Second, the present study revealed that more visible sponsorship in the app interfaces had a negative impact on sponsor attitudes and app evaluations, compared to less visible or no sponsorship identification. Participants were more likely to have negative attitudes toward the sponsor, lower app credibility judgments, and lower download and usage intentions when the app sponsor was more visible (vs. less or no sponsor identification). Again, this effect was consistent for both student and general population samples. These results add to the available body of evidence related to the factors influencing consumer evaluations of mHealth apps as well as corporate sponsorship for prosocial apps. Therefore, the results of the current study suggest that managers of sponsored properties must work diligently to develop non-obtrusive brand-level information using logos, slogans, or taglines that look like traditional advertising.

Third, the results of the present study with both samples demonstrate that there are significant mediation effects of both altruistic and self-serving types of sponsorship motive attribution. The effects of sponsor obtrusiveness on negative evaluations of the app and the sponsor become stronger through the decrease in perceived altruistic motive attributions and the increase in perceived self-serving motive attributions. These findings continue the line of research related to consumer motive assessment and its impact on consumer responses (Dean, 2002; Deitz et al., 2012; Rifon et al., 2004). Since previous studies mostly focused on the mediation effects of sponsor motive assessments on the relationships between cognitive associations (e.g., sponsor-cause/issue congruence, social identification with the sponsor) and sponsorship responses, this study provides an unique contribution to the growing body of knowledge in new media sponsorship by demonstrating the significant role of sponsor motive assessments in mediating the effects of sponsor visibility. Future work should continue to examine other cognitive factors that mediate the link between sponsor visibility and consumer

responses. For instance, individual differences in previous experiences or persuasion knowledge of general sponsorship activities or sponsored apps may serve to influence consumer responses (Campbell & Kirmani, 2000).

Overall, it can be concluded that the negative effects of sponsor visibility on consumer evaluations of the sponsor and the app can be strengthened by triggering consumer skepticism about the app sponsorship (Goldfarb & Tucker, 2011). Although previous studies on corporate sponsorship have supported that sponsor visibility or message type significantly influence sponsor motive assessments and/or consumer evaluations in traditional contexts, such as big sport sponsor logo exposure on TV networks (Breuer & Rumpf, 2011; Menon & Kahn, 2003; Stipp, 1998; Szykman et al., 2004), it is necessary to intensively explore how sponsorships work when interactive, mobile, Internet-based media are used. One such new mobile interactive technology is offered by smartphones and tablet computers that allow users to download and use mobile apps to manage aspects of their daily lives, including their health, and engage in everyday app use for various personal reasons. The abundance of health mobile apps, including the ones that are sponsored leads smartphone users to use visual cues, such as sponsor's logo, to evaluate apps in an automatic or semi-automatic manner. This practice characteristic of new media is different from traditional media where sponsors' identification and involvement in an event (e.g., Olympics or TV/radio programming) matter but lacks interactions with audiences; by default, more noticeable and vivid messages, thus, are less of an issue in traditional media (Coyle & Thorson, 2001; Drennan & Cornwell, 2004; Santomier, 2008; Sirgy, Lee, Johar, & Tidwell, 2008). Therefore, research on sponsor visibility in the world of new mobile interactive media is crucial, especially when it covers sensitive issues related to health.

Results from the present study provide initial evidence to understand how app sponsorship, as a new and efficient digital marketing communication strategy, influences sponsor motive assessments and consumer evaluations of the sponsor and the sponsored properties in today's new media environment. This study suggests that, even when the media context is new, visibility of sponsor identification leads to negative effects. Thus, marketers should find creative ways to disclose support of an app without making it too obtrusive. The present study, for example, indicated that low obtrusive sponsorship identification generates significantly more positive assessments of altruistic motives among young adults (college students) and the general adult population (Qualtrics panel). Thus, when the logo is present on an app interface, but is not too visible, the assessment of altruistic motive for sponsorship increases. At the same time, marketers should be aware that any type of sponsor identification, either more or less obtrusive, can lead to greater self-promotional motive attribution. I suggest that while mHealth app users do not discard the altruistic motives of a sponsor, especially then the logo is less visible, they always assign a higher self-promotional motive to the sponsor when the logo is present (regardless of the logo's visibility level). This is true, as the present study found, for younger as well as general adult populations.

The findings of this study also emphasize the importance of replicating research based on college student participants with non-student participants before making any generalizations. In terms of the difference in sponsor visibility between the two samples, both the student and the general population sample showed the negative effects of more visible sponsor identification (vs. less or no visible sponsor identification) on sponsor motive assessments and evaluations of the app and the sponsor. Sponsor motive assessments in both samples had the same mediation effect.

H4, H5, and H6

The second set of hypotheses predicted that different degrees of personal information sharing as part of app customization would affect attribution of a sponsor's motives, sponsor attitudes, and app evaluations. The results of this study, however, did not support these predictions in both samples. Although the directions of the effects proposed aligned with what was predicted, statistical tests were not significant. The lack of findings could be explained as follows. First, since different types of water drinking apps were used as experimental stimuli, this study used types of personal information (i.e., real name, email address, date of birth, height and weight, physical address, etc.) that could be treated as not extremely sensitive medical information or financial information that could directly trigger users' concerns. This general rather than specific personal information sharing on water drinking apps might be a possible reason for not finding a significant effect of this personal information sharing on the mediating and dependent variables. Previous studies have argued that information security and privacy of sensitive medical information on mHealth apps significantly influence user acceptance of and trust in mHealth apps (Dehling et al., 2015; Sunyaev et al., 2015). Thus, further research should expand the scope of app personalization manipulations based on information sharing and include more sensitive personal information like medical history, bank information, credit card numbers, or social security numbers as part of stimuli to test if the effects will be different. Furthermore, future studies should explore additional moderators and mediating variables to understand in which contexts and through triggering which processes the effects of personal information sharing become significant.

Second, individual differences in perceived benefit values could be another possible explanation for non-significant app personalization effects. Previous studies suggest that when

users are more likely to receive personalized online offerings, they perceive the beneficial values of personalization more and have less concerns about information privacy and transparency (Awad & Krishnan, 2006; Chellappa & Sin, 2005). At the same time, there are individual differences in benefit values determined by previous privacy invasion experience that could lead to differences in how consumers respond to app personalization. For example, if consumers perceive the value of the app service to be much greater than receiving advertising messages, they would be more willing to partake in online personalization. In this case, perceived benefits of app personalization minimize the negative effects of previous invasion experience or concerns in the online app service. Future studies will need to examine how to deal with different consumer segments based on individual differences in app personalization value and information transparency.

Lastly, there is a possibility that people's habituation to personal disclosures online could influence the non-significant findings of the app personalization effects. Since this study recruited smartphone users as experimental subjects, app personalization offerings based on one's data sharing might already become part of their lives when using personalized health app services. This means that asking users to share information in order to use personalized app services may not be enough of a cue to generate negative thoughts about why identifiable information should be shared in the app. Even if Internet and smartphone users do not underestimate privacy threats of online disclosures, they often tend to misjudge how accessible their information is when it is shared online and to what extent it is being used by the third parties (Strater & Richter, 2007). This claim is relevant to the concept of "imagined audiences" —a person's mental conceptualization of the people with whom we are communicating (Litt, 2012, p. 331) – and should be explored in the future in the context of app information sharing.

Users often imagine and construct mediated conversations or communication at an individual level in order to present themselves appropriately due to technological affordances and immediate responses from social networks. For example, users have targeted imagined audiences in mind when posing and sharing content even though their posts' privacy settings often do not change on social networking sites like Facebook (Litt & Hargittai, 2016). Future research should explore how "imagined audiences" affect app and sponsor evaluations when users are required to share identifiable personal information. Furthermore, clear visualization tools or consent for privacy settings might increase users' recognition of the extent of information sharing and the utilization of privacy options. Therefore, future studies should also focus on the role of different app features for information sharing in users' perceived privacy threats of information disclosure and how users' habituations to personal disclosures influence their responses to using personalized mHealth app services and app sponsorship.

H7, H8, and H9

In testing H7, H8, and H9, there were no significant effects in the predicted directions of user control on sponsor attitudes, mHealth app credibility, and download intentions to the app in both samples; there were partially significant effects of user control on sponsor and app evaluations in the general population panel sample. Results from the general population panel sample indicated that user control had a positive impact on the evaluations only when sponsor message visibility is high. The lack of results to support the hypotheses prompts the assumption that the level of user control over the technology within the app interface does not produce more positive outcomes related to sponsor motive assessments and app and sponsor evaluations. It should be noted that there were no significant results when testing hypotheses in the student sample. The results with the general population sample were statistically significant, but not in

the direction I initially proposed. Also, additional tests showed that user control were partially significant in certain conditions. First, I will offer an explanation of the lack of significant results in the student sample. Second, I will discuss the results found in the general population sample.

A possible explanation for no significant effects of user control in the younger adults (student) sample is that predetermined answers like opt-out options for users' self-control on the mobile interface might be an insufficient tool to guarantee data security and information privacy to users (Janger & Schwartz, 2002; Liu, 2014; Solove, 2012). Although users often believe that providing user control of data collection is an important criterion to determine data security and privacy protection, only a small number of them, in practice, use opt-out options (Janger & Schwartz, 2002) and many people do not even pay attention to change the default privacy settings on websites (Acquisti, Gritzalis, Lambrinoudakis, & Vimercati, 2007). Instead, users tend to use or disclose their personal data when voluntarily requested to share in reality. This means that even if participants could perceive that users' controllability over sharing identifiable data is provided, it could be difficult to have opt-out rights when expecting to receive customized app services. Thus, it is necessary to further examine what new solutions could work as a meaningful alternative for more effective user self-control options without having such obligatory feelings among them, especially in younger adult populations, digital natives for whom personal information privacy protection might not be an issue of primary importance (Lewis, Kaufman, & Christakis, 2008; Liu, 2014; Strater & Richter, 2007).

It is notable that the degrees of user control significantly influenced consumer attributions about self-serving motives in the general population panel sample. The results from the general population panel sample indicated that participants were likely to attribute sponsorship to a self-serving motive in the higher level of user control conditions compared to those in the lower level

of user control conditions. This finding is the opposite of what I initially predicted. This can be explained as follows. In this study, all participants acknowledged that all app interfaces that they viewed were sponsored by corporate companies, no matter how the sponsorship messages were shown on the app interface. Thus, the design or functional aspects of opt-out options for a user's self-control could be perceived as a fancy and advanced app feature in generating corporations' self-serving motives to only sponsored apps. Indeed, users believe that branded apps or health apps by corporate sponsors are able to provide better designed app functions compared to other sponsors, such as non-profits and government organizations (Kanthawala et al., 2018). Because better-designed apps would be more expensive to create, logically corporate companies can more likely afford to create such apps and provide users with better app design and functionality for profiting reasons. This may be a potential reason that stronger self-serving motives were also observed in the higher (vs. lower) degree of user control. These findings suggest theoretical implications that both motives could be increased if the cues stimulate cognitive elaboration about the sponsor's motives.

While the effect of user control on consumers' self-serving motive attribution showed significance in the general population sample, there was no effect in the student sample. It is possible that student participants were more likely to be familiar with and enjoy advanced media features and functions including those in mobile apps, compared with their older counterparts from the general population. Thus, in the future, it is necessary to examine in more detail how individual differences in familiarity with mobile technologies that are possibly facilitated by age influence users' responses. Furthermore, although non-significant findings for motive attributions were observed, the directions of the findings in the student sample were found to be the opposite of the directions of the effect in the general population panel sample. That is, fewer

self-serving motive attributions were observed (though not significant) in the higher levels of user control conditions, while they had more altruistic motive attributions in the same conditions. As previous evidence suggests, certain factors may affect individuals in different demographic groups differently, especially when the focus is on attitudinal dependent variables (Hanel & Vione, 2016). Therefore, more replication studies across different contexts will be needed in future research.

Interestingly, having opt-out options had a significant impact on positive consumer sponsor attitudes, higher app credibility, and higher download and usage intentions when sponsorship messages were highly visible in the general population panel sample. These findings support the hypothesis about the effects of user control on consumer evaluations, but these effects were statistically significant only in the condition of highly visible sponsorship messages. This means that sponsor visibility is an important factor that may influence consumer perceptions of opt-out options for data sharing. In other words, with less visible or no visible sponsorship messages on the app, users may not consider opt-out options in the app interface as a salient cue to judge the sponsor and the app. However, if sponsorship messages were more obviously displayed in the app interface, greater elaboration would occur to evaluate sponsorship activities (Petty and Cacioppo, 1986). According to Petty and Cacioppo's Elaboration Likelihood Model of Persuasion (ELM), a high level of elaboration can occur if receivers are distracted by salient cues or have trouble understanding the message. Thus, users may carefully scrutinize the app interface and use opt-out options as a relevant cue to positively evaluate the sponsor and the app compared to when no opt-out options were provided. This is an important finding to understand how and when opt-out options over data sharing actually work properly and determine users' attitudes toward the sponsor and download decisions in app stores without

skepticism of sponsorship. Future studies should consider providing user controllability with opt-out options over personal data sharing as even more essential in some circumstances.

Although this study found the effects of user control over personal data sharing on consumer evaluations in the conditions of highly visible sponsorship messages in the public panel sample, no significant effects of user control were observed in the student sample. As discussed earlier, student participants might be more familiar with new media features including the sponsored apps and less concerned about sharing general information to use personalized mHealth app services. Indeed, college students routinely and habitually provide personal information on profiles for personalized online and mobile services (Lewis et al., 2008; Strater & Richter, 2007). Thus, it is possible that providing an opt-out option for data sharing in the app interfaces was not a sufficient cue for them to have negative thoughts about the app and the sponsor.

H10, H11, H12, H13, H14, and H15

This set of hypotheses predicted the two-way interaction effects of the scope of information sharing, user control over the information sharing, and/or sponsor visibility on dependent variables such as sponsor attitudes, mHealth app credibility, download and usage intentions to mHealth apps mediated by sponsor motive attribution. First, in testing H10, H11, H12, and H13, no significant moderating effects of personal information sharing or user control over the information sharing were found on the relationship between sponsor visibility and sponsor motives and dependent variables. However, in the student sample, there were significantly positive mediation effects of altruistic motives when user control moderated the effects of sponsor visibility on sponsor attitudes and app evaluations, but these effects were only observed in the conditions of little vs. no sponsorship messages. Also, in the public panel

sample, the results for interaction effects of sponsor visibility and personal information sharing on self-serving motives were statistically significant, but this was the opposite of what was predicted.

Although no two-way moderation and moderated mediation effects in the predicted direction were found, it is necessary to discuss some other interesting and significant findings produced in both samples. One such finding is that the scope of customization based on personal information sharing significantly moderated the effect of sponsor visibility on self-serving motive attribution in the general public panel sample data. Furthermore, the direction of this effect was the opposite of what was predicted in H10. The results demonstrated that participants tended to report less self-serving sponsor motive attributions when they were asked to share more detailed personal information with the app rather than less personal information in the all sponsor visibility conditions. This means that asking users to share more personal data for app customization decreases consumer attributions about a sponsor's self-serving motives. Although obtrusive sponsorship messages increase consumer attributions about the sponsor's profit motives, app personalization based on personal data sharing may not generate stronger self-serving motive attributions when the sponsor is visible (vs. less or no visible) in a sponsored app. Consumers may not perceive the app sponsor's motives negatively unless there are clear cues directly linked to privacy invasion and personal data security issues.

In testing H13, it is also interesting to note the significant mediation effects of altruistic motives when the user control moderated the effects of sponsor visibility on users' evaluation in little to no sponsor visibility within conditions of the student sample. This means that providing opt-out options in the app interface increased stronger altruistic motive attributions, and, in turn, led to positive evaluations about the sponsor and the app in the conditions of no (vs. less)

sponsorship messages. In other words, when supporting mHealth apps, it works best (ethical and legal concerns aside) when companies do not present their identification in the app interface to increase altruistic motive attributions from consumers. In addition, positive effects of higher user control are also generated when no (vs. less) sponsorship message is presented in the app. However, since there were no significant findings of indirect effects for altruistic motives in the within conditions of highly vs. no visible sponsorship messages, future studies are necessary in order to examine why these effects are observed within conditions of less and no visible sponsorship messages. Also, as there were no positive mediation effects of altruistic motive observed in the public panel sample, it is important to further examine what factors or contexts generate the positive mediation effects of altruistic motive attribution among student participants.

In testing H14 and H15, there were also no significant interaction effects of personal information sharing and user control over the information sharing on sponsor motive assessments and dependent variables in the student sample as well as the general population panel sample. The results from the general population panel sample showed that the mediation effects of altruistic motive attributions when user control moderated the effects of personal information sharing on sponsor attitudes and app evaluations were significant in the highly visible sponsorship message conditions. When participants were exposed to highly visible sponsorship messages, more information sharing with higher (vs. lower) user control generated stronger altruistic motives of the sponsor, resulting in positive sponsor attitudes, higher app credibility, and higher download and usages intentions for mHealth apps. Even if participants were asked to share detailed personal information with the app, high levels of user control over the information sharing made them rate the sponsor's altruistic motive higher. At the same time, there was a significant main effect of user control on self-serving motives with the highly visible sponsorship

messages in testing H7; participants rated stronger self-serving motives in the conditions of high levels of user control compared to low levels of user control.

Overall, these findings have important theoretical implications for researchers in the field of marketing and advertising. According to Kelley's (1972) discounting principle, consumers minimize an explanation of one's motives if an alternative explanation exists. In sponsorship literature, consumers attribute and lean to one of two plausible causes for sponsorship activities, such as altruistic motives and profit motives (Sparkman, 1982). This causal inference is determined by what information or feature is salient (Heider, 1958). Accordingly, when consumers recognize cues related to the sponsor's profit objectives, they are likely to stimulate previous knowledge of self-serving corporate sponsorship motives, while discounting beliefs in altruistic sponsor motives. In the present study, there is a great presence of altruistic sponsor motives when users are required to share more detailed personal information with opt-out options for information sharing. However, the activation of self-serving motives is not reduced in the sample condition. These findings add to the body of the literature that adopted Kelley's discounting principle to different traditional sponsorship contexts. When multiple explanations coexist in the more complicated contexts like the mobile sponsored app, the activation of the sponsor's self-serving motives may not be reduced.

In addition, it was interesting to find significant results for the mediation effects of altruistic motives on users' evaluations when user control moderated personal information sharing in the panel sample. That is, highly visible sponsorship messages could be considered an obtrusive cue that activates consumer perception of personal data sharing and self-controllability. In other words, with highly visible sponsorship messages, users generate some levels of sponsor motive assessments, which affect sponsor attitudes, app credibility, and download and usages

intentions for mHealth apps. As briefly discussed above, stronger sponsorship messages could bring greater elaboration in consumers' minds to evaluate sponsorship activities (Petty & Cacioppo, 1986). It is necessary to further examine how and to what extent obtrusive sponsorship messages would cause positive or negative thoughts of new media sponsorship activities when other app features for customized services are provided at the same time.

H16 and H17

The last set of hypotheses predicted the three-way interaction effects of the scope of customization for information sharing, user control over the information sharing, and sponsor visibility on sponsor motive assessments and consumer evaluations about the sponsor and the app mediated by sponsor motive attributions. In testing H16 and 17, there were no significant interaction effects among sponsor visibility, app customization based on sharing personal information, and user control over the information sharing. These results suggest that with low or no obtrusive sponsorship in the app interfaces, providing a higher level of user control over personal information sharing did not necessarily create stronger altruistic motives of the sponsor and positive consumer responses. This means that companies might not receive users' negative responses when users are asked to share more detailed personal information through the app. The results also suggest that it may be not even necessary to include opt-out option rights into the app for users when displaying less or no visible sponsorship messages. This finding should be approached with caution, given ethical concerns related to collecting personal information through newest technologies without conscious user awareness. Future studies are necessary to confirm that this phenomenon will apply in other instances, such as branded apps or apps related diseases.

Summary of Theoretical Implications

The present study examined the effects of sponsor visibility, app personalization by being required to share personal information, and user control over the information sharing on consumer attribution of sponsor motives. This study also explored whether these motive attributions for the support of a health app result in consumer evaluations of the sponsor as well as the app. First, this dissertation broadens the scope of attribution theory from the focus on sponsorship activities for smaller properties using new media such as mobile health apps to the examination of more interactive new media environments that directly influence cognitive responses and consumer evaluations of sponsor as well as sponsored properties. The findings highlight the importance of adding cognitive responses to theoretical explanations of sponsorship effects in the mobile media context, especially the important roles of consumer attributions of sponsor motive on sponsor attitudes, mHealth app credibility, and download and usage intentions for mHealth apps. In addition, although attribution theory has been applied to a wide range of marketing and sponsorship studies, scholars have rarely approached new media features for providing personalized and interactive services beyond cues related to brand-level statements or sponsor identification of the sponsorship activities.

Second, the present study provides another approach to adopt Kelley's discounting principle (1972) into new media sponsorship research. In the findings of the study, participants rated stronger altruistic motive attributions as well as stronger self-serving motive attributions when they were asked to share detailed personal information with higher (vs. lower) level of user control over the information sharing. These are somewhat different from Kelley's discounting principle that proposes that users tend to decrease an explanation of altruistic motives while increasing self-serving motives or vice versa, if there is an alternative explanation presented. In

sum, this study suggests that the activation of both altruistic and self-serving motive attributions could be generated in more complex new media environments such as mHealth apps.

Third, findings of this study demonstrate how sponsor motive assessments not only influence sponsor attitudes but also the evaluations of sponsored properties in the context of a health app. The mHealth app credibility and download intentions for the mHealth app should be more thoroughly studied within the outlined theoretical approach to understand new media sponsorship. Given the increasing popularity of the new sponsorship strategy using mobile devices and mobile apps, it has become more important to understand what cognitive factors activate certain users' judgment about the sponsor and the sponsored properties. In conclusion, the findings of this study demonstrate the utility of applying attribution theory to understanding sponsor motive assessments and consumer responses in mobile app contexts.

Lastly, the findings of this study emphasize the importance of replicating research done with college student samples using non-student (general population) samples before making any generalizations with regard to the studied factors. Replication, which involves the process of repeating a study using the same methods with different subjects, is important, as it assures that the results are valid and reliable, determines the generalizability or the role of extraneous variables, applies the study results to another situation, and inspires new research combining previous findings from related studies (Lamal, 1990; Peterson, 2001; Vaux, Fidler, & Cumming, 2012). There are six different types of replication: checking of analysis, reanalysis of data, exact replication, conceptual replication, empirical generalization, generalization and extension (Tsang & Kwan, 1999). Tsang and Kwan's terminology suggests that these types of replication are determined by study elements, involving what population or data set is used (same dataset, same population, or different population) and what measurement and/or analysis are used (same

measurement and analysis or different measurement and/or analysis). To reinforce the finding reported in the original study, in this study, I used an exact replication method that involves the same research procedures, measurement and analysis using the same context, but with a different sample of participants from a sample of the original population.

Although exact replication is considered to be a significant part of knowledge production in social sciences (Nosek & Lakens, 2014; Walker, James, & Brewer, 2017), not many studies on marketing communications as well as in the human-computer interaction (HCI) field have discussed or practiced experimental research with the replication method (Benoit & Holbert, 2008; Hornbæk, Sander, Bargas-Avila, & Grue Simonsen, 2014; Easley, Madden, & Dunn, 2000; Reid, Soley, & Winner, 1981). In this regard, this study assesses the empirical implications of and builds confidence in attribution theory under different conditions by replicating the same study with two different samples. This study expects to advance the frontiers of sponsorship knowledge in new media environments.

Summary of Practical Implications

Beyond its theoretical significance, this dissertation has important practical implications. The findings of this study suggest that obtrusive sponsorship messages generate negative attributions about sponsors' real motives and result in negative evaluations regarding the sponsor and sponsored app. Thus, it is suggested that marketing managers should carefully deal with brand-level information in the sponsored properties to minimize consumer thoughts of corporate profit motives. In addition, although this study did not find enough evidence to support the claim about negative effects of asking users to share personally identifiable information, for developing long-term relationships with the users, mHealth app practitioners should consider users' needs

not only in receiving more tailored feedback but also in trusting the app usage without any concerns or skepticism.

Recent advances in mobile technologies based on tracking and profiling functions have provided corporate companies with the ability and power to use personal information to create sophisticated consumer profiles for target marketing. Even if users prefer to have personalized app services and have fewer concerns about data privacy, from an ethical standpoint, sponsoring companies must develop privacy policies to protect users' information and ensure it is securely stored and used only with conscious user agreement. Companies must provide protection guidelines to users to offset potential risks in using personalized app services.

Also, it is still possible that some users, especially younger generations, lack proper knowledge about digital privacy issues. They do not often acknowledge how and to what extent their personal information shared through an app might be used for profit reasons. This is particularly concerning when health information is at risk. Previous studies on digital privacy literacy suggest that young users have shared almost every aspect of their lives with mobile devices with limited privacy knowledge and skills, and lower income users have high reliance on mobile technologies as an alternative to the broadband home connection (Lewis et al., 2008; Park & Jang, 2014; Strater & Richter, 2007). Therefore, companies should develop privacy protection policies to enhance users' digital literacy, and government agencies should provide effective industry guidelines that help mobile app marketers deal with issues related to users' privacy.

Due to the recent Facebook–Cambridge Analytica data scandal, users' concerns about privacy invasion and data security issues are continuously increasing (Granville, 2018). Users become more reluctant and skeptical to share personal data with for-profit companies that could be leaked to unknown third parties, but users' needs for customized app services do nonetheless

exist. Additionally, sponsorship activities using new media are very complicated and different from those in the traditional sponsorship contexts. Therefore, for long-term relationships with users, various stakeholders in the field need to strategize how to deal with having a simple visualization or function like opt-out options on the interface that may directly determine consumer reactions to the sponsor firm and the app.

Limitations

It is vital to note several limitations of this study. The first limitation involves the characteristics of the participants recruited for the online experiment. Despite the effort to recruit a gender-balanced pool for both student and general public panel data, female participants accounted for a larger proportion of participants than did males. Since previous studies have argued that there are gender differences in evaluating cognitive perceptions (Darley & Smith, 1995; Meyers-Levy & Sternthal, 1991), it would be worthwhile in future studies to explore whether such characteristics shared by the same gender group influence cognitive responses and evaluations about the sponsor and the app in the mobile context. It must be noted that participants were randomly assigned to the four between-subjects conditions, reducing possible confounding effects of gender and other non-manipulated factors on the dependent variables. It was also statistically tested if gender distribution was significantly different across the four conditions, and gender distribution was equal in the user control and information sharing conditions.

Secondly, the present study focused on consumer attributions of the app sponsors' motives within the framework of attribution theory, but it is also likely that other cognitive characteristics (i.e., organization types, persuasion knowledge, previous experience of using mHealth apps, privacy concerns) can lead to skepticism of corporate advertising and sponsorship

activities (Friestad & Wright, 1994; Szykman et al., 2004). For instance, consumers who are highly skeptical of commercial advertising and routinely question the motives of sponsors do not easily infer positive and society-serving motives of the sponsor. Instead, they may easily become suspicious of the profit sponsor's intent (Boush, Friestad, & Rose, 1994; Friestad & Wright, 1994). Future studies should consider replicating the present study in other cognitive situations to more explicitly understand the cognitive process of determining consumer responses to the sponsor and the sponsored apps in the field of mobile health.

Thirdly, although this study concentrated on the impact of the amount of personal information users were asked to share with the sponsored app, it lacked sensitivity in the manipulated personal information. Previous studies have shown that consumers' willingness to disclose personal information depends on the sensitivity of each information type (Phelps, Nowak, & Ferrell, 2000; Sheehan & Hoy, 2000). Information sensitivity is defined as the perceived control of access to information or knowledge that can adversely affect individual privacy or welfare (Bansal, Zahedi, & Gefen, 2010). Since the present study examined the impact of sharing general information rather than specific information with the mHealth app on consumer attributions of sponsors' motives and corresponding responses, it is necessary to examine what type of personal information regarding information sensitivity influences consumers' responses. In addition, future research should consider the sensitivity of each information type as an additional variable in the context of mHealth apps with data sharing.

Fourth, this study only used results from pretests to find three manipulated variables of the app interfaces in the college student sample; this study was conducted with the college student sample and replicated with the general population panel sample to validate the findings of the study done with the student sample. Thus, the study did not include manipulation checks

in the general population panel sample. In future studies, it is necessary to incorporate manipulation checks into the study design to clearly identify whether the manipulated variables truly affect the findings from a different sample data, especially, when the manipulation is tested with a sample from a different population. In addition, some interactions, specifically, between message repetition and sponsor visibility were observed from additional test results. This means that there could be differences in app repetition across each within-subjects condition driving the findings of the study. It is necessary to consider how to strictly control the effects of message repetition in the design of future research.

Lastly, providing opt-out options is a common way to manipulate users' controllability over their personal information in interactive media (Tucker, 2014), but it is also possible that other features such as traditional privacy protection cues (i.e., notice and consent) and advanced design for privacy warnings and nudges in the mobile apps can play an important role in affecting users' perception of data security and app evaluations (Liu, 2014). For instance, before asking users to share personal information with the app, the sponsor can inform users of their willingness to protect users' information without using it for any commercial purposes or sharing it with third parties. This can generate attributions of a sponsor's altruistic motives, resulting in positive perceptions of sponsor attitudes, app credibility, and download and usage intentions.

Conclusion

Recent advances in smartphone technologies afford users valuable opportunities to receive tailored app services. mHealth app use is considered to be ingrained into users' daily lives. Corporate companies have been paying more attention to adopting new and interactive media for small properties like supporting mobile apps for health as an effective tactic of strategic brand communication and cause-related marketing. Despite the popularity of mHealth

apps among different users and corporate sponsors, there are growing concerns related to mHealth app personalization and information privacy. The present study was conducted in order to explore how corporate sponsors of mHealth apps are evaluated and what sponsor motive attributions users generate in today's interactive mobile environments. It also examined how the identification of sponsorship influences attitudes towards sponsors, mHealth app credibility, app and download and usage intentions. Moderating effects of user control and information personalization were studied along with mediating effects of sponsor motive attribution. Two samples were involved in testing the proposed hypotheses: a younger adult sample (student sample) and a general population sample.

The results of this study indicate that obtrusive sponsorship in the mHealth app interface leads to more negative evaluations of the sponsor and the app. The effects of sponsor visibility are mediated by consumer attributions about sponsors' altruistic and self-serving motives. The degree of app personalization based on information sharing and user control do not influence negative responses from users. Nonetheless, user control had a significant impact on positive sponsor attitudes, higher app credibility, and higher download and usage intentions when sponsorship messages were highly visible. The effects of personal information sharing moderated by user control demonstrated significant results on sponsor attitudes and app evaluations through altruistic motive attributions when app sponsorship was highly visible. These effects were only significant when the hypotheses were tested using data from the general population sample. It is possible that age differences between the two samples (mean ages for the college student sample = 21.63, mean ages for the general population panel sample = 48) might have produced some of the differences in the results.

APPENDICES

APPENDIX A. CONSENT FORMS FOR BOTH SAMPLES

CONSENT FORM (STUDENTS)

Please read the following information carefully before you begin the survey. Once you have read the form and still want to participate, click on the ">>" button below and then start the questionnaire.

You are invited to participate in a study about how people download mobile health apps. You will see multiple health apps and answer a number of questions about them. The study shouldn't take longer than 30 minutes. You can take it at any place and at any time.

You will receive 0.5 SONA credit for participation in this online study. Your participation is voluntary. You may choose not to participate at all or discontinue your participation at any time without any penalty.

Risks. Your participation is not expected to cause you any risk greater than those encountered in everyday life. The study is administered online, so you may take it at any time before the deadline and at any location. Your answers will not harm you in any way. If you feel any discomfort in completing any task or in answering any question, you can withdraw from the study without penalty.

Confidentiality. Your identity, participation, and any information you provide will remain anonymous and confidential. This information will not be shared with anyone, and will only be used for the purpose of the research. The data will be stored in a computer folder with password access. Only the investigators and MSU IRB will have access to the data. The data will be kept for at least 3 years after the project closes.

Benefits. The purpose of this research is to gain scientific knowledge about online article reading. The study is highly important as it adds to the body of knowledge related to the topic, and we would like to thank you for considering participation.

Incentives for Participation. You may receive 0.5 extra credit for your participation in this online study. Since you have been recruited through SONA system, you will be asked to provide your SONA PIN code at the end of this study. We will use this PIN code to grant you extra credit on SONA. Please note that you should pay full attention to the questions asked as some of the answers may affect your receiving extra credit. You will answer some attention-checking questions that will require you to confirm that you want to receive 0.5 credit for your participation. If you do not answer these questions correctly, you will not receive extra credit. These questions can randomly appear on different pages, in different sections, so we are asking you to pay full attention to the content of the study.

Participants who consent to take part in this study will be awarded SONA credits through http://msucas.sona-systems.com. In the SONA system, 1 hour of research participation is worth 1

SONA credit and this credit is pro-rated in 15-minute increments. It is up to individual course instructors to determine how many points this converts to in their classes (this should be specified in the syllabus for each course). The duration of this study is approximately 30 minutes. Participation in this study is voluntary. You may withdraw at any time without penalty. This means that no SONA credits will be deducted from your account, nor will withdrawal have any effect on your relationship with any of your instructors. Participants who withdraw partway through the study will be awarded credit based on the portion of the study they complete. Students who view the materials but do not participate in any part of the research will receive 0 SONA credit.

Questions, Concerns and Complaints. If you have any questions about the research, please contact Eunsin Joo by email: jooeunsi@msu.edu, or phone: (706) 540-6213.

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study or report a research related injury, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 5173552180, Fax 5174324503, or email irb@msu.edu or regular mail at 408 W Circle Drive 207 Olds Hall, MSU, East Lansing, MI 48824.

I have read this consent form and my questions have been answered. BY CLICKING ON THE ">>" BUTTON BELOW, I give my consent to participate in this study.

CONSENT FORM (GENERAL POPULATION PANEL SAMPLE)

Please read the following information carefully before you begin the survey. Once you have read the form and still want to participate, click on the ">>" button below and then start the questionnaire.

You are invited to participate in a study about how people download mobile health apps. You will see multiple health apps and answer a number of questions about them. The study shouldn't take longer than 30 minutes. You can take it at any place and at any time.

Your participation is voluntary. You may choose not to participate at all or discontinue your participation at any time without any penalty.

Risks. Your participation is not expected to cause you any risk greater than those encountered in everyday life. The study is administered online, so you may take it at any time before the deadline and at any location. Your answers will not harm you in any way. If you feel any discomfort in completing any task or in answering any question, you can withdraw from the study without penalty.

Confidentiality. Your identity, participation, and any information you provide will remain anonymous and confidential. This information will not be shared with anyone, and will only be used for the purpose of the research. The data will be stored in a computer folder with password access. Only the investigators and MSU IRB will have access to the data. The data will be kept for at least 3 years after the project closes.

Benefits. The purpose of this research is to gain scientific knowledge about online article reading. The study is highly important as it adds to the body of knowledge related to the topic, and we would like to thank you for considering participation.

Incentives for Participation. You may receive monetary incentive for your participation in this online study. **Please note that you should pay full attention to the questions asked as some of the answers may affect you receiving the reward. You will answer some attention-checking questions that will require you to confirm that you want to receive the reward for your participation. If you do not answer these questions correctly, you will not receive the reward. These questions can randomly appear on different pages, in different sections, so we are asking you to pay full attention to the content of the study.**

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I have read this consent form and my questions have been answered. BY CLICKING ON THE ">>" BUTTON BELOW, I give my consent to participate in this study.

APPENDIX B. EXPERIMENT SCENARIOS

Dear participant,

Thank you very much for your agreement to participate in the study.
We appreciate your help and time very much.

In this online study, **you will be asked to evaluate several water drinking app interfaces. Please carefully examine the app interfaces in the next pages and rate them in terms of each app and its sponsor.**

There are **some questions to check how accurately you will answer all the questions, so please focus on answering all the questions as much as you can for better results.** In addition, pay close attention to each page as there is no return button.

Ready? Let's go!

APPENDIX C. EXPERIMENTAL STIMULI

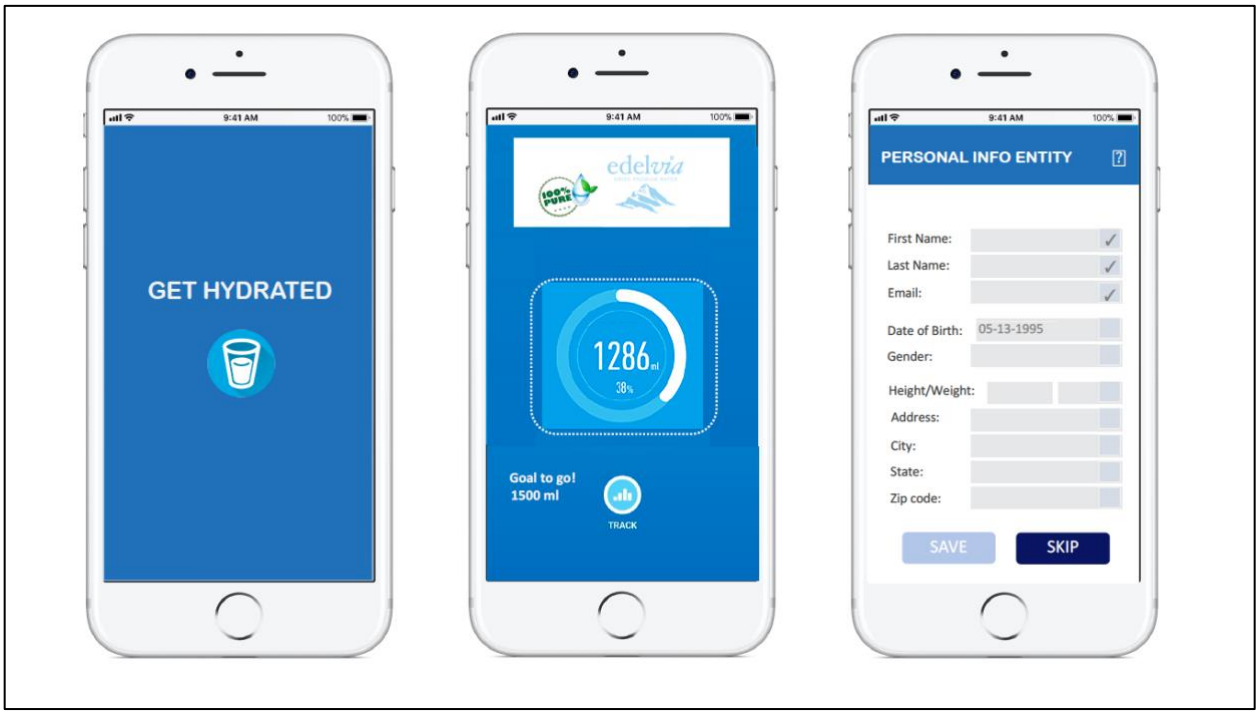

Figure 3.1. An Example of the App with High Sponsor Visibility, More Information Sharing, and High User Control

Figure 3.2. An Example of the App with Less Sponsor Visibility, Less Information Sharing, and Less User Control

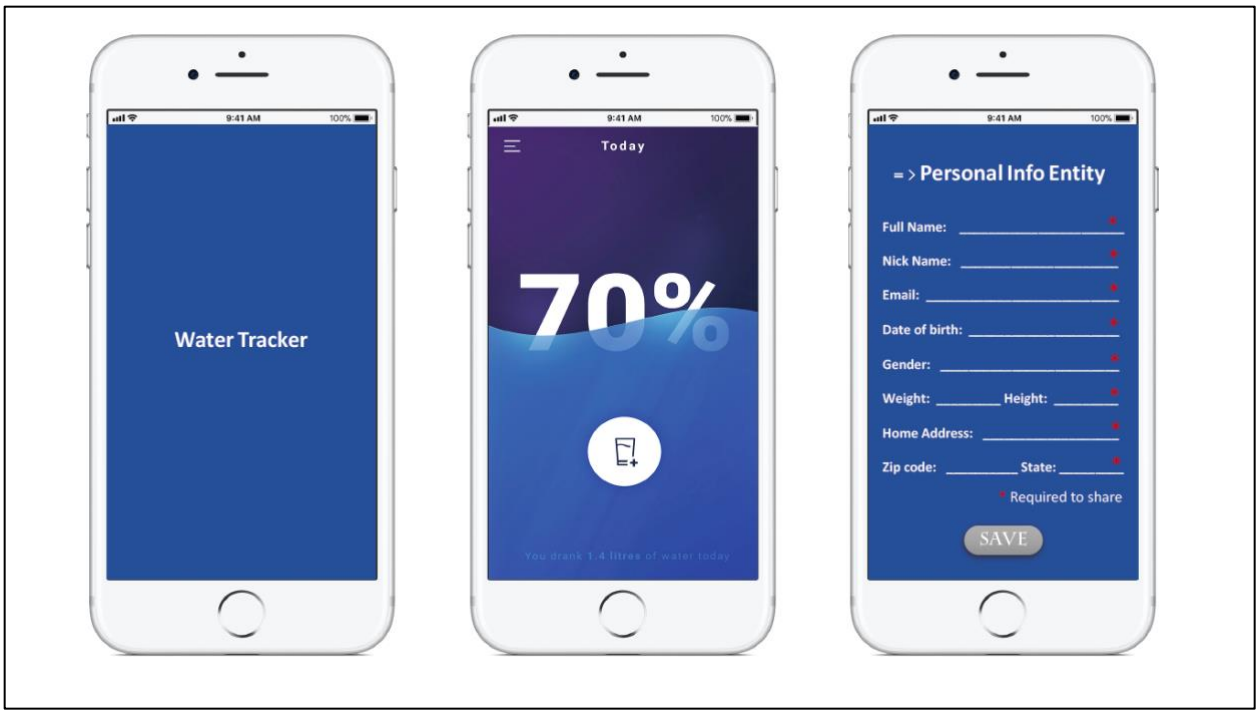

Figure 3.3. An Example of the App with No Sponsor Visibility, More Information Sharing, and Less User Control

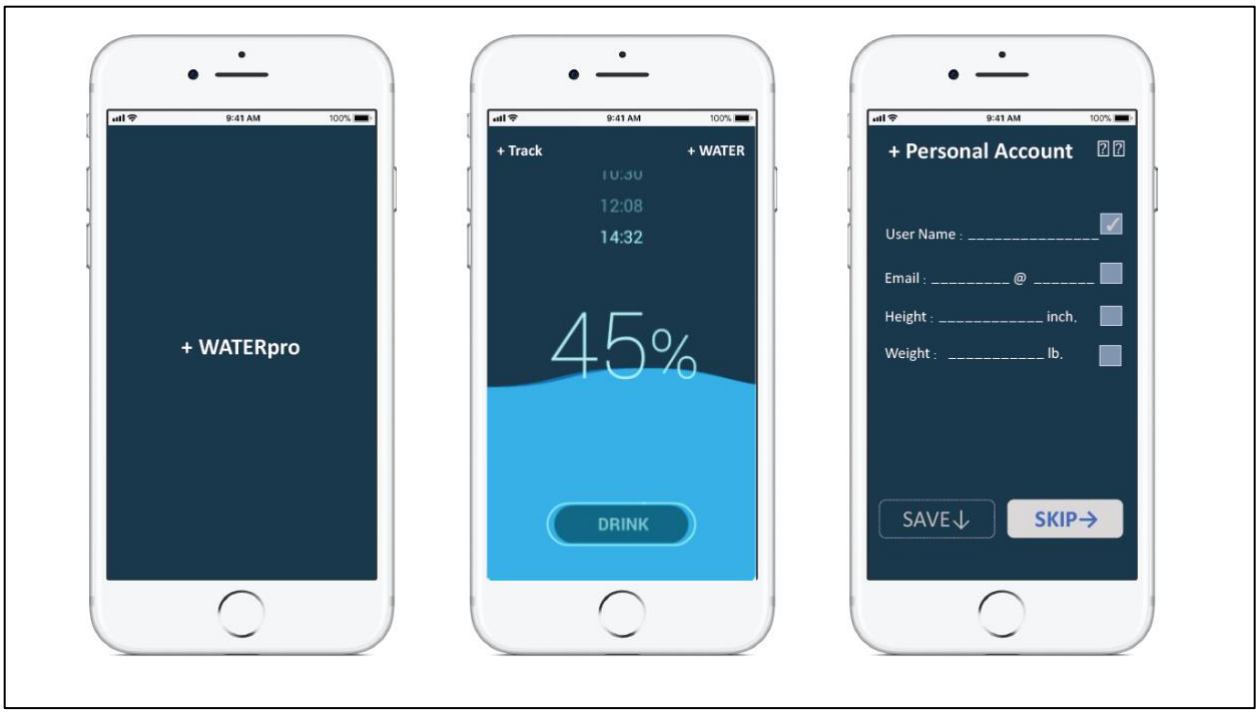

Figure 3.4. An Example of the App with No Sponsor Visibility, Less Information Sharing, and More User Control

APPENDIX D. MESSAGE REPETITION EFFECTS

Table 3.1. Main and Interaction Effects of Message Repetition

	General Population Panel Sample				
	SAM	SSM	AT	CRE	INT
MR[a]	.683	.726	.557	.528	.412
MR x PI	.096	.458	.565	.433	.644
MR x UC	.844	.429	.036*	.161	.443
MR x SV	.000***	.071	.000***	.001***	.002**
MR x PI x UC	.799	.689	.752	.568	.943
MR x SV x PI	.098	.002**	.066	.014*	.047*
MR x SV x UC	.015*	.157	.225	.035*	.081
MR x SV x PI x UC	.131	.033*	.214	.458	.831
	Student Sample				
	SAM	SSM	AT	CRE	INT
MR	.059	.002**	.000***	.000***	.000***
MR x PI	.104	.398	.036*	.153	.362
MR x UC	.194	.038*	.167	.625	.157
MR x SV	.020*	.000***	.000***	.000***	.003**
MR x PI x UC	.052	.863	.023*	.211	.419
MR x SV x PI	.341	.708	.027*	.004**	.118
MR x SV x UC	.956	.841	.545	.898	.230
MR x SV x PI x UC	.105	.282	.555	.347	.657

Note: a. MR = Message Repetition, SV = Sponsor Visibility, PI = Personal Information Sharing, UC = User Control over the information sharing, SAM = Sponsors' Altruistic Motive, SSM = Sponsors' Self-Serving Motives, AT = Sponsor Attitudes, CRE = App Credibility, INT = Download Intentions. b. $^{*}p \leq .05$, $^{**}p \leq .01$, $^{***}p \leq .001$.

APPENDIX E. MEASUREMENT INSTRUMENTS

Q. Please rate the following statements about the sponsoring brand of this app on scales from 1 (Strongly Disagree) to 7 (Strongly Agree).

	Strongly Disagree						Strongly Agree
This sponsor is likely to have the best interests of the app at heart.	○	○	○	○	○	○	○
The main reason this sponsor would be involved with the app is because the sponsor believes it deserves support.	○	○	○	○	○	○	○
This sponsor sponsored the app because they care about their customers.	○	○	○	○	○	○	○

Q. Please rate the following statements about the sponsoring brand of this app on scales from 1 (Strongly Disagree) to 7 (Strongly Agree).

	Strongly Disagree						Strongly Agree
This sponsor sponsored the app to persuade me to buy their products.	○	○	○	○	○	○	○
The main reason this sponsor supported the app because sponsorship creates a positive corporate image.	○	○	○	○	○	○	○
This sponsor benefits by sponsoring consumer health and fitness app.	○	○	○	○	○	○	○

Q. Please rate on the scales below how you feel about the sponsoring brand of this app.

Dislike	○	○	○	○	○	○	○	Like
Unpleasant	○	○	○	○	○	○	○	Pleasant
Unfavorable	○	○	○	○	○	○	○	Favorable
Bad	○	○	○	○	○	○	○	Good

Q. Please rate on the scales below how you think about this water drinking app.

Not Qualified	○	○	○	○	○	○	○	Qualified
Not Believable	○	○	○	○	○	○	○	Believable
Not Experienced	○	○	○	○	○	○	○	Experienced
Not Knowledgeable	○	○	○	○	○	○	○	Knowledgeable
Untrustworthy	○	○	○	○	○	○	○	Trustworthy
Biased	○	○	○	○	○	○	○	Unbiased
Not Reputable	○	○	○	○	○	○	○	Reputable
Unethical	○	○	○	○	○	○	○	Ethical
Not Objective	○	○	○	○	○	○	○	Objective
Not Credible	○	○	○	○	○	○	○	Credible

Q. Please rate the following statements about this water drinking app on scales from 1 (Strongly Disagree) to 7 (Strongly Agree).

	Strongly Disagree						Strongly Agree
Given the chance, I intend to download and use this app.	○	○	○	○	○	○	○
I expect my use of this app to continue in the future.	○	○	○	○	○	○	○
I have intention to download and use this app.	○	○	○	○	○	○	○

Q. Do you currently own a smartphone?

- Yes
- No

Q. What operating system does your phone use?

- iOS
- Android
- Windows
- Blackberry
- Other _____

Q. Have you ever downloaded a mobile app?

- Yes
- No

Q. Have you ever downloaded an app to track anything related to your health or fitness? (e.g., running, diet, nutrition, flu, sleep control, etc.)

- Yes
- No

Q. If yes, how often do you use a health-related app on your phone?

- Several times a day
- Everyday
- Several times a week
- At least once a week
- At least once a month
- Less than once a month
- Non-use

Q. How many health-related apps have you used

- 1-5 apps
- 6-10 apps
- 11-20 apps
- More than 20 apps

Q. Have you ever downloaded a health-related app sponsored by a brand? For example, Nike+ Running is sponsored by Nike.

- Yes
- No

Q. Do you currently own brand sponsored health apps? For example, Nike+ Running is sponsored by Nike.

- Yes
- No

Q. If yes, how often do you use a sponsored health-related app on your phone?

- Several times a day
- Everyday
- Several times a week
- At least once a week
- At least once a month
- Less than once a month
- Non-use

Q. What gender do you identify with?

- Male
- Female
- Other _____

Q. In what year were you born? _____

Q. Are you a college student?

- Yes
- No

Q. If you are a college student, what is your current class standing?

- Freshman
- Sophomore
- Junior
- Senior
- Master's student
- Doctoral student
- Other
- Refuse to answer

Q. If not a college student, what is the level of your education?

- High School
- College
- Grad school
- VoTech
- Other. Specify: _____

Q. What is your occupation?

- Professional/Technical
- Administrative/Managerial
- Sales/Service
- Clerical/White Collar
- Craftsman/Blue Collar
- Homemaker
- Retired
- Self Employed
- Educator
- Other. Specify: _____

Q. Which of the following best describes your ethnicity and race? Check all that apply.

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latino
- Native Hawaiian or Other Pacific Islander
- White/Caucasian
- Other. Please specify: _____
- Refuse to answer

Q. Is English your first language?

- Yes
- No

Q. What is your annual household income?

- Under $25,000
- $25k - $29,999
- $30k - $49,999
- $50k - $74,999
- $75k - $99,999
- $100k - $149,999
- $150k - $174,999
- $175k or more

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