User misrepresentation in online social networks: how competition and altruism impact online disclosure behaviours

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Abstract:

Their sheer size and scale give social networks significant potential for shaping popular opinions. While the spread of information and influence within social networks has been popular area of research for some time, more recently a research trend has appeared in which the researcher seeks to understand how users can aggressively influence community opinions, often using misrepresented or false information. Such misrepresentations by users are deeply troubling for any social network, where revenue-generation and their reputation depend on accurate and reliable user generated information. This study investigates the individual motivations that both promote and inhibit intentions towards personal information misrepresentation. These motivations are hypothesised to result from the dichotomy of competitive and altruistic attitudes existing with social network communities. Results of a survey analysis involving 502 users of Facebook offer insights useful for understanding social network information sharing practices. Marketing strategies, in particular, should benefit from the careful evaluation of the factors that lead to honesty (or dishonesty) among OSN users.

Article:

1. Introduction

The sheer size of their user bases and content diffusion capabilities give social networks significant potential for distributing information. For example, Facebook users share an incredible 30 billion pieces of digital content each month (Facebook 2015), not to mention the huge number of status and location updates, product recommendations, customer reviews, etc. This has made understanding of user behaviour on these platforms an important area of research

for practitioners and academics alike, particularly in the case of Facebook. As a result, a significant body of research has examined content diffusion and influence in this domain (Liew, Vaithilingam, and Nair 2014; Lin, Li, and Wu 2015). Within this work, the prevailing idea is that content generated or shared within social connections enabled by social network sites tends to be more reliable and trustworthy than is content originating from other sources, since the social network content originated through connections between family, friends, and known peers (Ellison, Steinfield, and Lampe 2007). This can lead to the assertion that content shared on Facebook has a higher level of credibility, accuracy and trustworthiness.

However, recent events have brought into question the validity and trustworthiness of content distributed through social media platforms. Key political events in 2016, such as the Brexit vote in Europe and the U.S. Presidential Election, revealed that individuals often share information that is misrepresentative and inaccurate (Allcott and Gentzkow 2017). With few controls in place to ensure that the personal information shared by individuals is truthful and accurate, it is reasonable to question the data integrity within social networks.

As the influence and scope of these networks grows, the accuracy of personal information shared within them is of paramount importance. Misrepresentation of such information creates negative and serious repercussions for individuals in many other aspects of society. For example, as first responders and government organisations increasingly rely on social media to inform their efforts around things as diverse as emergency response and disease prevention, the need for accurate and timely information becomes paramount (Chunara, Andrews, and Brownstein 2012; Cassa et al. 2013).

If people misrepresent their personal information or involvement in events, it can lead to a lack of coordination among first responder efforts. A notable example of this occurred during the Las Vegas shootings in the United States, where shortly after the event, many individuals claimed to be involved or even be victims of the shooting on social media; claims which were later proven to be misrepresentations.[1] There have even been cases where misrepresentation has created emergencies in and of itself, sometimes leading to tragedy. In India for example, publicity-seeking individuals frequently make false allegations of child kidnapping and endangerment through social media applications. This has created a problem of false accusations and vigilante justice, leading to numerous deaths.[2] The emergence of these types of misrepresentation behaviours has revealed the competitive atmosphere that exists within social media sites, in which people seek to aggressively gain community influence and control the flow of information, regardless of whether the said information is accurate or not.

In addition to the negative impacts on society already mentioned, this type of misrepresentative user behaviour is deeply troubling for any OSN, as the revenue-generating potential of an OSN platform is intimately tied to the distribution of context-based ads, which are themselves dependent on accurate and specific customer information. If customers are purposefully distributing false personal information by means of things like erroneous status updates and inaccurate profile information, this data is corrupted and useless for marketing purposes, which directly impacts the ability of the OSN to generate revenue. However, despite the large problems stemming from misrepresentative behaviour in OSNs, very few studies (Son and Kim 2008; Lee et al. 2015; Alashoor, Han, and Joseph 2017) have examined the antecedents of such behaviour.

In this study, we investigate the individual motivations that both promote and inhibit users to misrepresent their personal information within an OSN, by examining their inherent dichotomy of competition and altruism, in which users are influenced by desires to both help and to compete with other network members simultaneously. We posit that these influences determine an individual's intention to misrepresent personal information that they share with others. Specifically, we ask the question, '*What are the factors that influence user intentions towards personal information misrepresentation in online social networks?*'.

This research provides some insights into the changing and evolving nature of OSN users' information sharing behaviour. As such, it offers important insights to both researchers who are interested in further understanding the information sharing practices that exist between groups of people on OSNs, and practitioners who need to be able to trust the information that they are using to base their corporate decisions and practices on within these platforms. Marketing strategists, in particular, should benefit from careful evaluation and understanding of the factors that that impact OSN users' truthfulness.

The paper is organised as follows. We first review the existing literature and develop hypotheses corresponding to antecedents of misrepresentation behaviour. We then discuss our research design and empirical methodology. Results are presented next, followed by a discussion of our findings and directions for future research.

2. Literature review

In this section, we review extant literature in the areas of information sharing on online social networks, misrepresentation of information on online social networks, and factors influencing misrepresentation on online social networks. Based on our literature review, we identify gaps in current literature that we seek to fill using this study.

2.1. Information sharing on online social networks

IS researchers have studied different aspects of OSN extensively due to the fact that they provide a significant opportunity to observe different aspects of human behaviour. Topics of study include information-sharing continuance (Shang, Wu, and Li 2017), risk-taking behaviour (Miller and Melton 2015), civic engagement (Warren, Sulaiman, and Jaafar 2015), subjective well-being (Chang and Hsu 2016), user anxiety (Tsai, Shen, and Chiang 2015), continued use intentions (Chen 2014; Lin 2016), habitual use (Giannakos et al. 2013), privacy management (Debatin et al. 2009; Heirman et al. 2016; Alashoor, Han, and Joseph 2017; Church, Thambusamy, and Nemati 2017), and network formation (Oh, Agrawal, and Rao 2013; Goode et al. 2014). Another key issue area, which has been well researched, is information sharing on OSN. Facebook, in particular, has received a lot of attention from IS researchers due to the ease with which it allows its users to share information online with peers. Since Facebook is a free service, which allows for the creation and maintenance of a network of friends online, users have flocked to it to share information about themselves voluntarily. This has led to Facebook being a popular tool for IS researchers who have used Facebook to study information sharing (Debatin et

al. 2009; French and Read 2013; Cho, Park, and Kim 2015; Kim 2016; Pentina and Zhang 2017; Shang, Wu, and Li 2017).

While most studies have considered information sharing intention from a positive viewpoint (French and Read 2013; Cho, Park, and Kim 2015; Kim 2016; Pentina and Zhang 2017; Shang, Wu, and Li 2017), very few studies have focused on antecedents of negative information sharing behaviours such as misrepresentation. In considering information sharing as primarily positive, a gap in the literature remains around the motivations of such behaviours, and our study seeks to address this gap.

2.2. Misrepresentation of information on online social networks

Misrepresentation has been studied to some degree by past researchers across a number of different fields. With the rise of online computing and the uncertainty that is inherent in virtual environments, significant attention has been paid to people and organisations portraying themselves and their intentions truthfully (Pavlou and Gefen 2004). To a large extent, this research has been concerned with issues of trust and reputation. This literature is tangentially related to the concept of misrepresentation in that it is concerned with encouraging individuals to present information in such a way as to avoid misrepresentation and become good stewards of the community. For example, work in the area of virtual communities has shown that as people develop perceptions of trust, their participation in the community improves along with the quality of their information sharing (Wu and Tsang 2008). Still, in the majority of this work the good or noble intentions of any parties to online interaction are largely assumed (Hsu, Chang, and Yen 2011).

A much smaller selection of research looks at the role of intentional misrepresentation. In this work, actors seek to distort or mask true facts or identities toward some aim. This research can be divided into several predominant areas based on the entities or actors engaging in the misrepresentation. First, a stream of research has looked at the misrepresentation intentions of government actors operating within social networks. Governments may have powerful motivations for using information technology to distort or misrepresent information (Franklin 1999). Unlike individuals, they also have significant power and reach within digital platforms, giving them significant potential for misrepresentation (Burgess et al. 2011). Examples of research that has studied this type of information include studies which examine the purported Russian meddling in the 2016 election (Savage 2017), and work that studies the actions of the Islamic State (ISIS) to use social media misrepresentation to recruit members and influence military and policy decisions throughout the world (Gates and Podder 2015).

Another important area of study concerns the use of misrepresentation by individual actors or groups to achieve social engineering outcomes. This work is largely conducted in the areas of consumer privacy or information security, both areas in which misrepresentation has long been a problem (Krombholz et al. 2015). For example, individuals often misrepresent themselves as a means of acquiring information on individuals who they wish to steal information from or somehow compromise from an information security standpoint (Abraham and Chengalur-Smith 2010). Many social engineering tactics through online channels contain an element of

misrepresentation. Thus, recognising this type of misrepresentation and taking steps to defend against it constitutes an important area of work (Junger, Montoya, and and Overink 2017).

Finally, the third area of research, and the one most directly related to our study, concerns the misrepresentation inherent in online interpersonal transactions (Ellison, Heino, and Gibbs 2006; Hancock, Toma, and Ellison 2007). Past work has shown that online dating profiles typically contain significant examples of misrepresentation. Individuals proactively edit profiles in an attempt to gain more attention from potential partners in online dating scenarios. Because this type of misrepresentation occurs at the individual level and involves intrinsic factors, we see this as a potentially closely aligned area of research with our own. Our study contributes to this work in that we provide evidence that many of these misrepresentation intentions generalise across the socio-economic spectrum and throughout many far-reaching aspects of social network behaviour. Thus, while extant work helps to explain some of the self-presentation factors that lead to interpersonal misrepresentation, our work seeks to both extend this research and deliver new recommendations applicable to all aspects of social network usage.

On OSN, misrepresentation refers to a situation where a user intentionally shares false personal information with peers (Malhotra, Kim, and Agarwal 2004). Very few IS researchers have studied misrepresentation and its consequences in online context (Son and Kim 2008; Lee et al. 2015). Lee et al. (2015) studied misrepresentation intentions on e-commerce websites and found that the more sensitive the information that users were asked to share, the greater their information misrepresentation intention. This implies that individuals, when pressed for information, rely on online misrepresentation as a coping mechanism when dealing in situations where they would rather not share or disclose. Importantly, the study also showed that monetary rewards offered for sharing sensitive information did not reduce information misrepresentation intention (Lee et al. 2015). Son and Kim (2008) studied misrepresentation as information privacy protected behaviour (IPPR) by surveying Internet users. They defined IPPR as 'a set of Internet users' behavioural responses to their perception of information privacy threats that result from companies' information practices' (Son and Kim 2008, 504). Son and Kim (2008) categorise IPPR into three behavioural responses, namely, information provision (refusal to provide or misrepresent information), private action (removal and negative word-of-mouth), and public action (complaining directly to offending companies and complaining indirectly to third-party organisations). While misrepresentation has been studied in the e-commerce context (Lee et al. 2015) and Internet use in general (Son and Kim 2008), there has been limited attention given to misrepresentation on OSN and its consequences. This is one of the important gaps in current research filled by this paper.

2.3. Factors influencing misrepresentation in online social networks

One stream of IS researchers have categorised the reasons for misrepresentation intention by individual motivations and social motivations (Son and Kim 2008; Hollenbaugh and Ferris 2015). Individual motivations for misrepresentation intention include information privacy concerns, self-efficacy, perceived control, perceived vulnerability, and openness (Son and Kim 2008; Hollenbaugh and Ferris 2015; Alashoor, Han, and Joseph 2017) while social motivations for misrepresentation intention include social cohesion and perceived justice (Son and Kim 2008; Hollenbaugh and Ferris 2015).

Another stream of IS researchers have characterised the motivations for misrepresentation intention as intrinsic motivations and extrinsic motivations (Lee et al. 2015). Intrinsic motivations for misrepresentation intention include information sensitivity (Lee et al. 2015) while extrinsic motivations for misrepresentation include monetary rewards (Lee et al. 2015). Most studies on misrepresentation intention have focused on privacy-related individual motivations. We propose that there are individual motivations for misrepresentation intention on OSN other than privacy-related individual motivations that IS researchers need to explore as well. Our study addresses this gap in IS literature.

Individual motivations drive interpersonal interactions characterised by exchange behaviours such as group gain, reciprocity, reputation and status management, altruism, and competition (Meeker 1971; Cropanzano and Mitchell 2005). Group gain is working towards elevating the performance of a social group as a whole (Meeker 1971; Cropanzano and Mitchell 2005). Reciprocity is expecting others to return the favour after helping others (Meeker 1971; Cropanzano and Mitchell 2005). Reputation management is taking actions to improve one's position within a social hierarchy (Meeker 1971; Cropanzano and Mitchell 2005). Altruism is helping others without directly benefitting oneself (Meeker 1971; Cropanzano and Mitchell 2005). Competition refers to gains made directly by taking from someone else (Meeker 1971; Cropanzano and Mitchell 2005). In the information misrepresentation context, group gain may be better suited to explain actions by government actors and terrorist organisations (Franklin 1999; Burgess et al. 2011; Gates and Podder 2015; Savage 2017) rather than explaining personal actions by individual actors. Likewise, it can be argued that reciprocity may help explain social engineering related actions where unsuspecting users become victims by trying to return favours by responding back to actions of malicious individual and group actors (Abraham and Chengalur-Smith 2010; Krombholz et al. 2015; Junger, Montoya, and and Overink 2017).

Since we are more interested in personal reasons for individual actors to misrepresent information on OSN, we narrow our focus on three of the social exchange behaviours involving the areas of reputation, competition, and altruism. Reputation benefit perceptions (the first construct inside the cognitive personal determinants category as shown in our research model in Figure 3 presented at the end of our Research Model and Hypotheses Development section) includes perceptions of the OSN's ability to mediate actions that create enhanced status for a user within the network and help the user consistently maintain this status over time (Blau 1964; Jones, Hesterly, and Borgatti 1997; Wasko and Faraj 2005). In this paper, we take the position that the influence of reputation benefit perceptions on the intention to misrepresent personal information on OSN is mediated through the social exchange behaviours of competition and altruism. In other words, reputation benefit perceptions represent appraisals that people form in terms of whether a certain behaviour (information misrepresentation) will help achieve some goal with these appraisals then becoming the basis for certain desires (competitive desires and altruistic desires) which in turn manifest as intentions to engage in the behaviour (Bagozzi, Gopinath, and Nyer 1999; Church and Thambusamy 2018). In the context of information misrepresentation on OSN, competition and altruism are intriguing since they are the fundamentally opposite behaviours (Meeker 1971; Cropanzano and Mitchell 2005). As a result, we expect them to have opposite effects on information misrepresentation on OSN. By focusing

on personal motivations for information misrepresentation, we add to extant literature on misrepresentation inherent in online interpersonal interactions (Ellison, Heino, and Gibbs 2006; Hancock, Toma, and Ellison 2007).

Competition, in the OSN context, can take the form of users competing using profile information, number of friends, number of page views, number of likes, etc. (Utz 2010). Schor (1999) found that socioeconomic status is a key factor that people use in order to compete with each other. Studies have shown that interpersonal competition may lead to misrepresentation of personal information on online social networks (Toma and Hancock 2010), where maintaining social status is so much easier compared to real life (Goode et al. 2014). Since OSNs do not provide tools for verification of a user's real-life social status, the potential exists for users to intentionally falsify profile information (Chen and Rea 2004) through careful self-presentation (Goode et al. 2014). Competitive desires are defined as the degree to which a user believes that competing against friends represents a likeable, enjoyable, and satisfying experience (Smither and Houston 1992). Research on the influence of competitive desires in a social context has been divided where one stream of researchers (Abel 1990; Higgins 2006; Turel 2015; Jang, Park, and Song 2016) has suggested a negative influence whereas another stream of researchers (Ryan and Deci 2000; Sweetser and Wyeth 2005; Liu, Li, and Santhanam 2013; Church and Thambusamy 2018) has suggested a positive influence.

In terms of the negative influences, competitive desires create strong social pressures to conform resulting in keeping up with the Joneses (Abel 1990). One possible interpretation is that while users may have found enjoyment in competing using things such as number of friends, number of page views, number of likes, etc. (Utz 2010) when OSNs were novel, it is no longer the case now when most OSNs such as Facebook have matured. Now, those same OSN users may feel that they are competing with their friends using the OSN just to play catch-up with what their friends are doing in order to avoid the fear of missing out or having the feeling that everyone but themselves is having a great time. In other words, OSN users may be competing against their friends to avoid pain rather than to approach pleasure (Higgins 2006). Higgins (2006) adds that 'when a desire to do something becomes a compulsion to do it, that is, experienced too strongly as a motivational force to make it happen, the activity might become less enjoyable' (p. 442). Competitive desires, which represent a person's craving to win in interpersonal situations, was found to have a significant negative influence on OSN users' mental health (Jang, Park, and Song 2016) leading to adverse psychological effects such as technology-related addiction (Turel 2015).

Some other researchers have taken a more positive view of competitive desires in a social context (Ryan and Deci 2000; Sweetser and Wyeth 2005; Liu, Li, and Santhanam 2013; Church and Thambusamy 2018). Competition is an essential part of social life (Johnson and Johnson 1989). Jenkins, Zyzanski, and Rosenman (1979) established that people found pleasure by winning in a group competitive setting. In the online context, the sense of enjoyment can be heightened by the level of competition provided by the medium (Liu, Li, and Santhanam 2013), the challenges offered by the medium (Ryan and Deci 2000), and the human-system interaction offered by the medium (Sweetser and Wyeth 2005). Studies on competition in the online environment have shown that people experienced a heightened enjoyment when put into competitive situations with others online (Sweetser and Wyeth 2005; Liu, Li, and

Santhanam 2013). Church and Thambusamy (2018) found appraisal of hedonic benefits to be a significant predictor of the desire for online competition. In this study, we follow the lead of this stream of researchers and consider the influence of competitive desires on OSN in the positive light.

Altruism occurs when a person voluntarily helps others with no expectations in return (Cropanzano and Mitchell 2005). Altruistic desires refer to the extent to which a user believes that voluntarily helping other users provides her/him enjoyment and satisfaction (Smither and Houston 1992). Altruistic desires, in the OSN context, can take the form of orienting new members in a group, helping peers with problems, and crowdfunding for a social or environmental cause, etc. (Yoon and Wang 2011; Haas, Blohm, and Leimeister 2014). Studies have shown that in the absence of financial incentives, online users engage in voluntary information sharing behaviours to help others (Lerner and Tirole 2002). People may engage in altruistic behaviours since they enjoy helping others (Lin 2007). Altruistic people who voluntarily share knowledge with others 'perceive higher satisfaction, and such satisfaction is stemming from their intrinsic enjoyment in helping others' (Hung, Lai, and Chang 2011, 219). Users are choosing to look up to their online social networks to obtain relevant information posted by others in a voluntary manner rather than rely on traditional media which may sometime sensationalise coverage of events such as social crises (Oh, Agrawal, and Rao 2013). This leads us to believe that in altruistic information sharing situations such as social crises, users do not intentionally misrepresent information on their OSN.

In addition to focusing on the individual motivations for information misrepresentation on OSN, we also add to extant literature (e.g. Lee et al. 2015) that characterises such motivations as intrinsic or extrinsic motivations. Lee et al. (2015) explored information sensitivity as an intrinsic motivation for misrepresentation intention and studied monetary rewards as an extrinsic motivation for misrepresentation. In our study, we focus on hedonic benefit perceptions as an intrinsic motivation for information misrepresentation on OSN and reputation benefit perceptions as an extrinsic motivation for information misrepresentation on OSN.

Hedonic benefit perceptions, which refer to a user's beliefs that using the OSN is fun, enjoyable, and makes her/him happy (Sledgianowski and Kulviwat 2009), is one of the key intrinsic motivations associated with OSN use (Cho, Park, and Kim 2015). While IS researchers (van der Heijden 2004; Lowry et al. 2013) have characterised OSN as hedonic information systems by examining the heightened sense of enjoyment it offers to its users, we are not aware of any study that studies the link between hedonic benefit perceptions and personal information misrepresentation intention on OSN. We seek to address this gap in IS research as well.

Reputation benefit perceptions, which refer to a user's beliefs that active participation in a social network can help her/him earn the respect of other users, thereby helping improve her/his status within the community (Wasko and Faraj 2005), is one of the key extrinsic motivations associated with OSN use (Lerner and Tirole 2002). Extant IS research (Schor 1999; Chen and Rea 2004; Goode et al. 2014) has focused on studying the status benefits offered by OSN. To our knowledge, we are one of the first to study the impact of reputation benefit perceptions on information misrepresentation on OSN.

In this study, we identify personal factors that affect the intention to misrepresent personal information, including reputation benefit perceptions, competition, hedonic benefit perceptions, and altruism, and investigate the way that the OSN influences users through the dyadic interactions between OSN users' personal factors and those users' misrepresentation-related behavioural intentions.

3. Theoretical background

In this study, we use Social Cognitive Theory (SCT) as the theoretical foundation to help inform our understanding of the antecedents of personal information misrepresentation intentions on online social networks. SCT is better suited to study OSN compared to theories such as the Theory of Reasoned Action (TRA) and the Technology Acceptance Model (TAM) since SCT recognises 'the complex nature of behavioural intention and the interaction between social cognitive processes and human behaviour' (Yap and Gaur 2016, 168). SCT has been applied widely by information systems researchers to study areas such as computer-based training (Compeau and Higgins 1995; Bolt, Killough, and Koh 2001), computer learning (Hasan and Ali 2004), computer self-efficacy (Pearson et al. 2003; Hwang, Lee, and Shin 2016), web searching (Kuo et al. 2004; Liaw et al. 2006), virtual communities (Chiu, Hsu, and Wang 2006), mobile banking (Luarn and Lin 2005), information systems security (Lee, Larose, and Rifon 2008; Ifinedo 2014), knowledge sharing (Tsai and Cheng 2012), and online social networking (Wang, Xu, and Chan 2015; Yap and Gaur 2016) to name a few.

Figure 1 presents a schematic model of SCT (Bandura 2001). In the SCT model (Figure 1), 'environmental influences, personal factors and behaviour are interacting determinants that influence each other bidirectionally' (Tsai and Cheng 2012, 1070). SCT offers 'an agentic conceptual framework within which to analyse the determinants and psychosocial mechanisms through which symbolic communication influences human thought, affect and action' (Bandura 2001, 265).
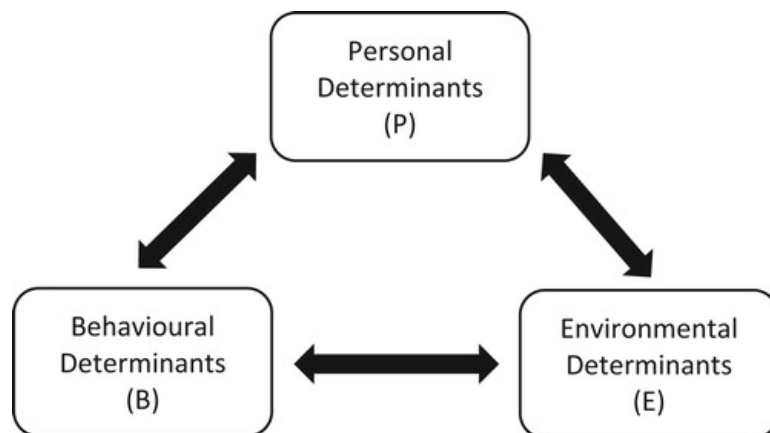
Figure 1. Social cognitive theory conceptual model (Bandura 2001).

As such, SCT allows for the development of valuable theoretical framework to understand, predict, and change human behaviour (Bandura 1977). According to SCT, human behaviour is identified as a series of mutual interactions between a person's personal factors (P), her/his behaviours (B), and the environment (E) in which she/he operates (Bandura 1977, 1986). The

first set of interactions involve understanding of the symbiotic relationship between person's personal factors (P) and behaviours (B). The second set of interactions attempt to explain the relationship between a person's personal factors (P) and the environment (E), leads to a situation where 'human expectations, beliefs, emotional bents and cognitive competencies are developed and modified by social influences that convey information and activate emotional reactions through modelling, instruction and social persuasion' (Bandura 1989, 3). The third set of interactions in the SCT model, which involves behaviours (B) and the environment (E), represent a circumstance where 'behaviour alters environmental conditions and is, in turn, altered by the very conditions it creates' (Bandura 1989, 4).

A conceptual model of information misrepresentation on OSN based on SCT (Bandura 2001) is presented in Figure 2. As highlighted in Figure 2, we use SCT in this study to test the relationship between the personal determinants (P) and the behavioural determinants (B) only. We did not test the impact of environmental determinants (E) on the other two determinants (personal and behavioural) in this study, but plan to do so in our future studies. SCT informs our research model (Figure 3) in the following ways. SCT helps us identify personal motivations (P) such as reputation benefit perceptions, hedonic benefit perceptions, competitive desires, and altruistic desires which serve as antecedents to information misrepresentation behavioural intentions (B) within the OSN. Self-efficacy, which refers to a user's belief in her/his capabilities to organise and execute specific courses of action, is a key component of SCT (Bandura 1986) since it 'plays a central role in the cognitive regulation of motivation, because people regulate the level and distribution of effort they will expend in accordance with the effects they are expecting from their actions' (Tsai and Cheng 2012, 1070). We propose that individuals who are motivated by personal determinants (P) such as reputation benefit perceptions, hedonic benefit perceptions, competitive desires, and altruistic desires will resort to cognitively regulating their efforts by using the capabilities of the OSN to intentionally misrepresent personal information (B).
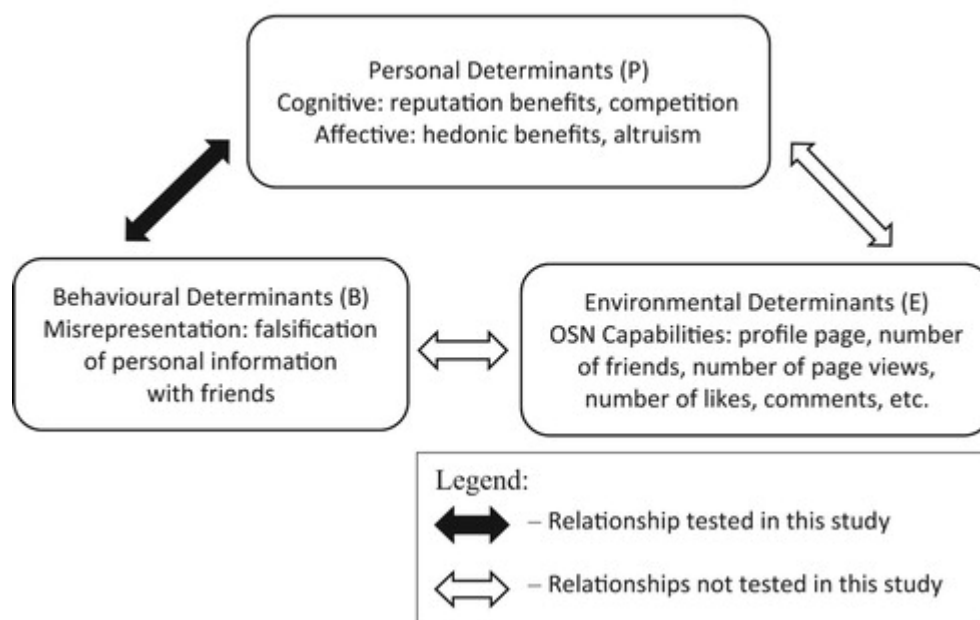
Figure 2. Conceptual model of misrepresentation on OSN based on SCT (adapted from Bandura 2001).
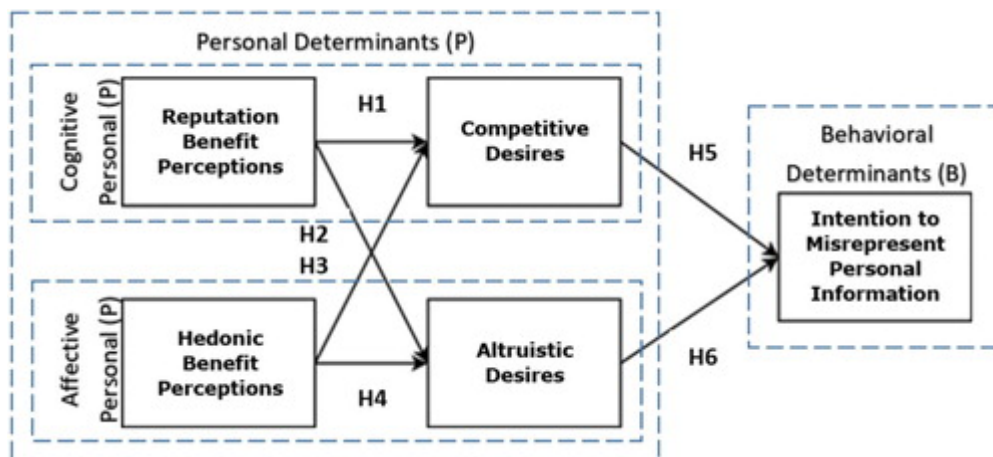
Figure 3. Research model.

In this study, we apply SCT to explain the intention to misrepresent personal information on OSN through a bi-directional, symbiotic interaction between personal motivations (P) and behavioural intentions (B). The behavioural intention (B) we are interested in investigating is the intention to misrepresent personal information. On OSN, misrepresentation behaviour refers to intentionally sharing false personal information with other users (Malhotra, Kim, and Agarwal 2004).

Next, we focus our attention on the personal determinants (P) that lead to misrepresentation intentions on OSN. We identify personal factors that affect the intention to misrepresent personal information, including reputation benefit perceptions, competition, hedonic benefit perceptions, and altruism. Personal determinants can be categorised as cognitive or affective (Oh, Agrawal, and Rao 2013). Cognitive personal determinants represent the intellectual pressure to misrepresent information while affective personal determinants represent the emotional pressure to misrepresent information (Oh, Agrawal, and Rao 2013). From a cognitive standpoint, users feel intellectually pressured extrinsically by the perceived reputational benefit they would receive and extraneous perceptions of competition on OSN (Liu, Li, and Santhanam 2013). Users relieve this intellectual tension by carefully presenting information on OSN to enhance their reputation (Chen and Rea 2004; Goode et al. 2014) and by manipulating their socioeconomic self-presentations to stand out from their peers (Schor 1999; Goode et al. 2014). From an affective point of view, users feel emotional pressure put on them by their intrinsic need to derive pleasure from using OSN (Lowry et al. 2013). Users relieve this emotional tension by embellishing their stories in order to gain acceptance from listeners (Oh, Agrawal, and Rao 2013).

4. Research model and hypothesis development

The goal of this research is to explore the antecedents of personal information misrepresentation intentions on online social networks (OSN). We propose that the desires of competition and altruism influence intentions toward misrepresenting personal information on OSN. Furthermore, we hypothesise that those competitive desires and altruistic desires are driven by perceptions of reputation benefits and hedonic benefits resulting from user participation on OSN. Figure 3 presents our proposed constructs and their hypothesised relationships.

4.1. Hypotheses development

The first relationship we explore is the one between reputation benefit perceptions and competitive desires. Studies (Schor 1999; Huberman, Loch, and Onculer 2004, etc.) have shown that extrinsic rewards such as status or praise can drive competition. An example for reputation benefit perceptions driving competitive desires can be found in the gaming industry where the display of high scores in a game console drives other players to compete harder in an effort to make their names show up in the list of the game's top players, thereby giving them bragging rights within the gaming community. Similarly, in an online social networking context, users compete using status-related material such as profile information posted, number of friends acquired, type of friends acquired, number of page views on some resource (picture, comment, recommendation, etc.) posted, number of likes for resources shared, among other things (Utz 2010). Not only are OSNs designed to make it simpler for users to display symbols related to reputation compared to an offline context where it is far more complex and substantially more expensive to create reputation, but OSNs are also aimed at empowering reputed users to shape popular opinion within the collective through their mass information diffusion capabilities (using tools such as Facebook's Share button or Twitter's Retweet button) and the sheer size of their user bases. Thus, while OSNs intentionally increase the visibility of users with the most connections in their networks and deliberately boost the prominence of content producers who produce the most popular content, they have also created unintended consequences by becoming a source of competition. For these reasons, we propose the following hypothesis:

> *H1: Within online social networks, the perceived potential for reputation gains will increase user desire to engage in competitive behaviour.*

Next, we explore the relationship between reputation benefit perceptions and altruistic desires. Studies have shown that in the absence of financial incentives, extrinsic rewards such as positive reputation and peer recognition in the online context were found to be critical drivers for online users to engage in voluntary information sharing behaviours to help others (Lerner and Tirole 2002). An example for reputation benefit perceptions driving altruistic desires can be found on the online developer community website stackoverflow.com, where users not only get assigned a reputation score, but also get assigned gold, silver, and bronze badges based on the frequency and quality of their answers to technical questions on a variety of topics from other users. While some users on the website may simply be motivated to help others without expecting anything in return (in other words, not seeking to intentionally enhance their reputation by doing so), other users may choose to use their reputation scores to gain more privileges[3] on the website, which will then allow them to do things such as get access to site analytics, moderator tools, chat rooms, etc. Likewise, in an online social networking context, some users may not necessarily seek recognition when they engaging in altruistic behaviours such as 'helping a member seek advice from other members, or provide answers to the advice sought, orienting new members, and helping other members with problems' (Yoon and Wang 2011, 108). However, other users motivated by perceived peer recognition and perceived empowerment from the ability to influence popular opinion within the collective may feel increased desire to engage in selfless acts and to be the most helpful within their networks. Since OSNs are designed to display information such as which users have been the most helpful within

their networks, even those users who are motivated by altruistic desires may be impacted by the unwanted recognition or the power to influence community opinions.

Altruistic desires are based on some justifiable concern for the welfare of other users, both known and unknown users (Eckel and Grossman 1996; Wang and Lai 2006). In the OSN context, we believe that altruistic desires may not necessarily require nothing in return since most OSNs require that this concern be visible to everyone on the network in order to let the reputation benefits show the impact from helping others. Thus, we posit the following hypothesis:

> *H2: On online social networks, reputation benefit perceptions are positively related to the desire to engage in altruistic behaviours.*

The third relationship we examine is the one between hedonic benefit perceptions and competitive desires. Studies have shown that a positive relationship exists between perceived enjoyment and competitive desires (Smither and Houston 1992; Liu, Li, and Santhanam 2013; Church and Thambusamy 2018). In the online social networking context, competitive OSN users motivated by hedonic benefit perceptions may feel an increased desire to compete not only by using information such as total number of friends, type of friends, number of likes for a particular post, etc., but also by playing social games such as Angry Birds, Farmville, Candy Crush Saga, etc. with their friends on their OSNs. As stated in the literature review section, we consider the influence of competitive desires in a social context to be positive based on prior literature (Ryan and Deci 2000; Sweetser and Wyeth 2005; Liu, Li, and Santhanam 2013; Church and Thambusamy 2018). We anticipate that competitive people who are motivated by strong hedonic benefit perceptions are more likely to feel an increased desire to compete with other users on their networks using the competitive features offered by OSNs (including symbols such as number of friends in their network, number of page visits, number of likes on shared content, etc., and features such as social gaming). While it is possible for this competitive desire to become a widespread, negative influence in the future, we do not assume that we have reached that point yet. Thus, we propose the following hypothesis:

> *H3: On online social networks, hedonic benefit perceptions are positively related to the desire to engage in competitive behaviours.*

The next relationship we explore is the link between hedonic benefit perceptions and altruistic desires. Studies (Wasko and Faraj 2005; Lin 2007; Chen et al. 2017, etc.) have shown that people who enjoy helping others feel an increased desire to engage in altruistic behaviours. As stated earlier in the rationale for hypothesis H2, not all OSN users may feel a desire to engage in altruistic behaviours motivated purely by perceived peer recognition and perceived empowerment from the ability to influence popular opinion within the collective. Some OSN users may simply feel the desire to engage in altruistic behaviours to satisfy their intrinsic need for perceived enjoyment. OSNs not only increase such users' desires to engage in altruistic behaviours towards others by providing a platform to help other people on the network, but OSNs also facilitate social interactions between users which in of itself has shown to increase enjoyment (Chen et al. 2017). Based on the above arguments, we hypothesise the following:

H4: On online social networks, hedonic benefit perceptions are positively related to the desire to engage in altruistic behaviours.

The fifth relationship we study is the one between competitive desires and the intention to misrepresent personal information on OSN. Studies have shown that interpersonal competition may lead to misrepresentation of personal information in the online context (Toma and Hancock 2010). This is often found in online dating where users tend to misrepresent their reputation by falsifying personal profile information in an attempt to gain more attention from potential partners (Ellison, Heino, and Gibbs 2006; Hancock, Toma, and Ellison 2007). As stated earlier, while most OSNs are designed to foster information sharing among users, they have also led to some unintended consequences such as competition and misrepresentation. One form of misrepresentation on OSN involves falsifying profile information (such as age, relationship status, etc.), exaggerating social circles of friends, embellishing socioeconomic status by posting pictures next to properties not owned by the user, or celebrities, etc. Competition represents the intellectual pressure to misrepresent information (Oh, Agrawal, and Rao 2013). Users who feel this intellectual pressure resort to information misrepresentation as a means to relieve themselves from this tension (Schor 1999; Chen and Rea 2004; Goode et al. 2014). This feeling of intellectual pressure may lead individuals to falsify profile information in an attempt to 'keep up with the Joneses' or present themselves in the most positive light possible (Schor 1999; Toma and Hancock 2010). Social networks are particularly vulnerable to this type of behaviour since networks are usually populated with many unknown or scarcely known individuals who could attest to the veracity of personal profile information (Chen and Rea 2004), making such misrepresentations effective and less costly (Goode et al. 2014). OSN users who are motivated by a desire to compete with others often find it easier to compete online than in the offline context since OSNs do not provide tools to verify the accuracy of posted profile information of its users.

Competitive desires may also drive intentions towards sharing or distributing intentionally misrepresented content. OSNs create a competitive atmosphere where users aggressively seek to influence popular community opinion by sharing information regardless of whether the information shared is accurate or not. Very often, salacious and other unverified information can result in large attention gains online (Cooke 2017). Competitive individuals seeking status may use the sharing of misrepresentative material as a means of soliciting attention within the network (Del Vicario et al. 2016). Thus, we propose the following:

H5: On online social networks, the desire to engage in competitive behaviours is positively related to the intentions to misrepresent personal information.

The final relationship we explore is the one between altruistic desires and the intention to misrepresent personal information on OSN. Altruism is based on a justifiable concern for others, both known and unknown (Eckel and Grossman 1996; Wang and Lai 2006). It is this concern that likely reduces the tendency towards misrepresentation, and individuals exhibiting such concerns are less likely to misrepresent information for several reasons. While there is some evidence that people may tell lies to people they really care about in order to protect them (white lies) (DePaulo and Kashy 1998), knowledge sharing has been shown to increase when information is shared altruistically among wider and more anonymous communities (Cho, Chen,

and Chung 2010). This is likely because general misrepresentation reduces the overall quality and information integrity of the community, putting it directly at odds with altruistic intentions and making the overall community experience worse for everyone. Altruistic desires thus help promote information integrity to help foster deeper relationships, increased social capital, and an improved experience for all users. Altruistic desires may also empower users by giving them the power to influence community opinion within the collective. In this way, altruism may represent an antecedent for the trustworthy and reliable information sharing often touted as a benefit of OSN usage in the extant literature.

Oh, Agrawal, and Rao (2013) state that OSNs such as Twitter have become a critical tool in altruistic social information sharing behaviours especially during social crises, where the online public community has been elevated to the status of first responders in the absence of reliable information from the other traditional mass media sources. Since traditional media outlets may have the tendency to sensationalise crises coverage to increase circulation or viewership, citizens have flocked to their social networks to obtain relevant information posted by others in a voluntary manner (Oh, Agrawal, and Rao 2013). Thus, OSN users may feel that in altruistic information sharing situations such as social crises, the information shared by other users on the OSN will be more reliable compared to that shared by the mainstream media due to the perception that the users who want to help others during such crises are less likely to intentionally misrepresent information. Conversely, misrepresentation can create both intended and unintended deceptions, resulting in intended or inadvertent harm. Since a greater concern for communities is normally associated with altruistic behaviours, those with altruistic desires would be less likely to intentionally reduce the information integrity of the community by falsifying profile information. At the same time, sharing or distributing misrepresentative information when the impact of that information is unclear is directly at odds with altruistic feelings and altruistic goals (Eckel and Grossman 1996). We would not call a person who intentionally gives bad directions to a stranger altruistic, for example. Similarly, altruistic desires would likely cause users to avoid any type of behaviour that would mislead or misrepresent themselves or others within the community. For these reasons, we propose that altruistic desires reduce intentions to misrepresent personal information on OSNs.

> *H6: On online social networks, the desire to engage in altruistic behaviours is negatively related to the intentions to misrepresent personal information.*

The constructs and proposed relationships in our research model are presented in Figure 3.

5. Methods

5.1. Measurement items

Existing survey scales from literature were adopted for this study whenever possible. All items were measured with 7-point Likert items ranging from strongly disagree to strongly agree. Table 1 shows all survey items together with their respective literary sources.

Table 1. Constructs, survey items and literature sources.

CONSTRUCT	INDICATOR	ITEM TEXT	SOURCE
Reputation Benefit Perceptions	REPUTATION1	I earn respect from others by actively participating in online social networks.	(Wasko and Faraj 2005)
	REPUTATION2	I feel that active participation improves my status on online social networks.	(Wasko and Faraj 2005)
Hedonic Benefit Perceptions	HEDONIC1	I enjoy using online social networks.	(Sledgianowski and Kulviwat 2009)
	HEDONIC2	Using online social networks is fun.	(Sledgianowski and Kulviwat 2009)
	HEDONIC3	Using online social networks keeps me happy.	(Sledgianowski and Kulviwat 2009)
Altruistic Desires	ALTRUISM1	I enjoy sharing my information with others within online social networks if it benefits them.	(Cropanzano and Mitchell 2005)
	ALTRUISM2	I enjoy helping others on online social networks by sharing information.	(Cropanzano and Mitchell 2005)
	ALTRUISM3	It feels good to help someone else by sharing information through online social networks.	(Cropanzano and Mitchell 2005)
Competitive Desires	COMPETE1	(reverse coded) I don't like competing against my friends in online social networks.	(Smither and Houston 1992)
	COMPETE2	I enjoy competing against my friends in online social networks.	(Smither and Houston 1992)
	COMPETE3	I get satisfaction from competing against my friends in online social networks.	(Smither and Houston 1992)
Intention to Misrepresent Personal Information	MISREP1	It is likely that I would falsify some of my personal information on my online social network with my friends.	(Malhotra, Kim, and Agarwal 2004)
	MISREP2	I would probably falsify some of my personal information that my friends see when using an online social network.	(Malhotra, Kim, and Agarwal 2004)
	MISREP3	It is possible I would intentionally falsify some of my personal information that my friends can see in an online social network.	(Malhotra, Kim, and Agarwal 2004)

Reputation benefit perceptions refers to an individuals' perceived reputation advantages from taking actions that benefit the social network. This three-item measurement scale was adapted from Wasko and Faraj (2005). Hedonic benefit perceptions measures the perceived joy, pleasure or fun that is to be gained through network interaction. A three-item measure for this construct was adapted from Sledgianowski and Kulviwat (2009). Altruistic desires measures individual desires towards the act of helping others, regardless of any direct benefit to oneself. Three measures for altruistic desires were adapted from Cropanzano and Mitchell (2005). Competitive desires refers to the desire towards competitive network behaviour, designed to benefit oneself even at the expense of others. A three-item measure was adapted from Smither and Houston (1992). Finally, intentions toward personal information misrepresentation refers to individuals' inclination towards engaging in misrepresentative information sharing within the online social network. Three items for this construct were adapted from Malhotra, Kim, and Agarwal (2004).

5.2. Sampling and data collection

A web-based survey was created to empirically test the hypotheses developed in the theoretical model presented in Figure 3. The survey was implemented through Qualtrics, an online tool for survey design and distribution. The instrument was pre-tested via a small-scale pilot test. During this pilot study, the survey was administered to a total of 20 respondents. Their feedback was then incorporated into the survey for the main data collection. Specific changes resulting from the pilot testing included some layout changes to the survey questionnaire and some amendments and minor revisions to the survey instructions.

Survey participants were recruited from an available pool of undergraduate students at a large Southeastern University in the United States. These participants were chosen because they are typical of online social network users (Scheepers et al. 2014) and frequently make use of social network sites. Additionally, Facebook was chosen as the platform of study since it is consistently ranked as the largest and most popular social media site.

Survey participants were presented with an introduction which explained the purpose of the survey. At the beginning of the survey, participants were asked to select their primary social network. This social network (in this case Facebook) was then referred to as the participants' social network for the remainder of the questions. Though responses were kept anonymous, survey participants had the opportunity to provide a separate email address to receive a small amount of extra credit if they were in a class with a professor who had agreed prior to allow student participation in the survey. Ultimately, the Facebook survey was completed by a total of 502 participants (n = 502). 25% of the respondents were male and 75% female, a gender distribution which follows the results of extant social network research (Ellison, Heino, and Gibbs 2006). 81% of respondents were aged 30 or less. A full 73% of respondents reported social network tenure in excess of 2 years. 82% reported weekly use of online social network sites, with a further 60% of respondents using social network sites every day. Participants took an average of 20 min to complete the survey.

6. Results

6.1. Instrument validation

Data analysis was conducted via the structural equation modelling (SEM) module available within the statistical package STATA. As a first step, we reviewed the performance of our survey instrument through confirmatory factor analysis (CFA). This CFA showed that that most items loaded well on their constructs. Poor performance was observed however for one item which was used to measure reputation benefit perceptions (REPUTATION1). This item was therefore dropped before proceeding to the structural analysis phase.

In addition to the CFA, our instrument validation methodology also involved the examination of four types of validity related to our reflective constructs. Results from validity testing, including composite reliability scores and average variance extracted values (AVEs), are reported in Table 2.

Table 2. Loadings, composite reliability (CR) and average variance extracted (AVE) for all constructs.

CONSTRUCT	INDICATORS	LOADING	CR	AVE
REPUTATION BENEFITS	REPUTATION2	0.86	0.72	0.76
	REPUTATION3	0.88		
HEDONIC BENEFITS	HEDONIC1	0.93	0.89	0.83
	HEDONIC2	0.94		
	HEDONIC3	0.85		
COMPETITIVE DESIRES	COMPETITION1	0.84	0.82	0.85
	COMPETITION2	0.86		
	COMPETITION3	0.82		
ALTRUISTIC DESIRES	ALTRUISM1	0.89	0.86	0.78
	ALTRUISM2	0.90		
	ALTRUISM3	0.86		
INTENTION TO MISREPRESENT PERSONAL INFORMATION	MISREP1	0.83	0.88	0.81
	MISREP2	0.92		
	MISREP3	0.93		

As can be seen in the table, all item loadings are above 0.80, which is indicative of good construct validity and reliability. Composite reliability values range from 0.72–0.89, all of which are above the recommended cut-off of .70, indicating internal construct consistency (Straub 1989). Additionally, AVE values range from 0.76–0.85, which is indicative of convergent validity. Discriminant validity was assessed by comparing the square root of the AVE for a construct with its correlation with any other construct. These values are presented on the diagonal in Table 3. All square roots of AVEs exceeded the construct loading for any other construct and discriminant validity is therefore established.

Table 3. Correlations between latent variables showing discriminant validity.

	REP	HEDO	COMP	ALT	MIS
REP	0.87				
HEDO	0.50	0.91			
COMP	0.35	0.23	0.92		
ALT	0.40	0.48	0.24	0.88	
MIS	0.14	–0.06	0.16	–0.15	0.90

Note: Diagonal values show square roots of AVE.
REP = Reputation Benefit Perceptions, HEDO = Hedonic Benefit Perceptions, COMP = Competitive Desires, ALT = Altruistic Desires, MIS = Intention to Misrepresent Personal Information.

Table 4 shows the loadings of all items on their respective constructs, as well as item cross-loadings for all other constructs. These loadings provide some evidence of both discriminant and convergent validity. All loadings are higher than .50 and no item has a cross-loading higher than its proposed construct loading.

Table 4. Cross loadings.

	HEDO	REP	COMP	ALT	MIS
HEDO					
hedo1	0.938	0.435	0.159	0.524	–0.067

	HEDO	REP	COMP	ALT	MIS
hedo2	0.935	0.407	0.160	0.480	−0.103
hedo3	0.851	0.527	0.299	0.382	0.008
REP					
rep1	0.433	0.861	0.264	0.364	0.118
rep2	0.445	0.883	0.338	0.341	0.118
COMP					
comp1	0.203	0.320	0.916	0.191	0.137
comp2	0.217	0.318	0.925	0.253	0.160
ALT					
alt1	0.473	0.355	0.212	0.896	−0.138
alt2	0.443	0.360	0.215	0.900	−0.154
alt3	0.433	0.356	0.216	0.855	−0.100
MIS					
mis1	0.004	0.171	0.162	−0.053	0.834
mis2	−0.021	0.137	0.149	−0.132	0.923
mis3	−0.111	0.083	0.136	−0.182	0.931

Note; REP = Reputation Benefit Perceptions, HEDO = Hedonic Benefit Perceptions, COMP = Competitive Desires, ALT = Altruistic Desires, MIS = Intention to Misrepresent Personal Information.

6.2. Common method bias

This study makes use of self-reported survey data and there is therefore some concern with common method bias (Turel and Gefen 2013). To investigate common method bias problems, we performed the Harmon single factor test. This test returns problems with common method bias if a single factor explains the majority of model variance. Alternatively, if un-rotated factor solutions result in a single factor common method bias may also exist (Podsakoff and Organ 1986; Podsakoff et al. 2003). The Harmon single factor test showed that the best single factor accounted for only 19% of the observed variance. Since this is a small minority of the variance in the model, common method bias does not represent a significant concern.

6.3. Results of hypothesis testing

Having examined the measurement model, we evaluated the hypothesised construct relationships by means of SEM. Figure 4 shows the results of SEM analysis and presents the coefficients and corresponding significance levels for each relationship. The model showed very good evidence of fit across multiple indices (χ^2/d.o.f = 2.25; RMSEA = 0.05; CFI = 0.98; TFI = 0.97; SRMR = 0.046). Statistical support was found for most hypothesised relationships. Starting at the left side of Figure 4, we see that the relationships between reputation benefit perceptions and competitive desires (0.57; $p < 0.01$) as well as altruistic desires (0.26; $p < 0.01$) are both positive and significant. Additionally, the path between hedonic benefit perceptions and altruistic desires is significant (0.43; $p < 0.01$). Interestingly, the path between hedonic benefit perceptions and competitive desires was not significant. Moving to the next level of the model, altruistic desires had a negative and significant relationship on misrepresentation intentions (−0.24; $p < 0.01$). In other words, individuals expressing greater altruistic desires were less likely to engage in misrepresentative actions. Conversely, competitive desires had a positive and significant impact on misrepresentation intentions. This implies that competitive desires were associated with

increased tendencies toward misrepresentative behaviours (0.26; $p < 0.01$), as hypothesised. The implications of these finding are discussed in the next section.
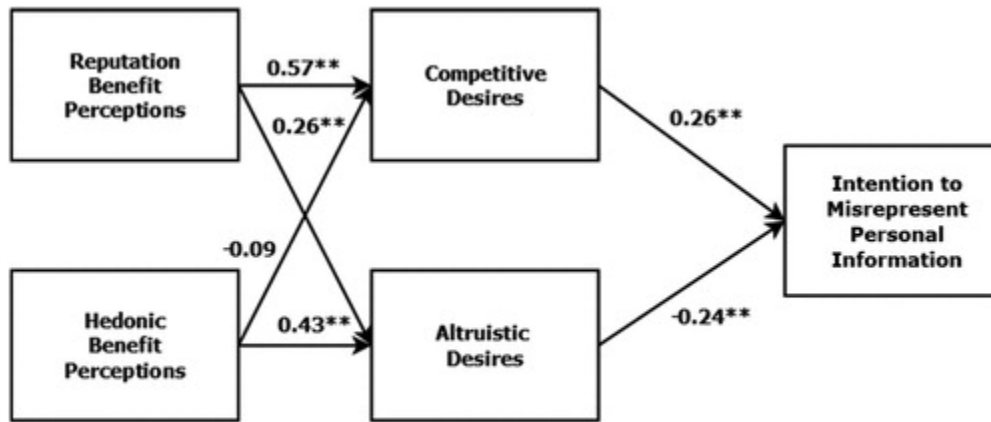
Goodness of Fit: Chi^2: 106; RMSEA 0.05; CFI 0.978; TFI 0.969; SRMR 0.046

Figure 4. Results of structural equation modelling.

7. Discussion

This paper developed and tested a model of misrepresentation intentions within Facebook. Using Social Cognitive Theory as a foundation for our work, our findings show that individuals' intentions towards personal information misrepresentation are influenced by personal determinants. We did not examine the impact of environmental determinants on personal determinants and behavioural determinants in this study. We plan to do so in our future work. The focus of this study was on investigating the interplay between competitive desires and altruistic desires inherent in OSN usage and their impact on personal information misrepresentation intentions. Results of the study indicate that the OSN user feels both motivations towards a desire to compete with other users as well as a feeling or desire to help these same individuals with their goals and aspirations. These diametrically opposed feelings ultimately increase or decrease the propensity towards the distribution of dishonest information, with competitive desires increasing this tendency while altruistic desires decrease it.

Competitive desires were associated with increased intention toward personal information misrepresentation. In other words, when the user feels a desire to compete with others, they may be inspired to engage in misrepresentative behaviour. This finding makes intuitive sense when we consider that these behaviours could have multiple benefits for the user. First, misrepresentation may allow them to gain access to communities online which they would otherwise not be admitted, for example by falsifying some aspect of their affiliations or socio-economic status. At the same time, misrepresentation could be used to sway the opinions of other members, thereby affording the individual influence or sway over the direction of OSN discourse. This finding is consistent with research by Constant, Kiesler, and Sproull (1994) who shows that individuals actively seek to persuade, and that this is a common cause of information sharing. The finding also helps to explain why misrepresentative actions are anecdotally more commonplace in discussions involving controversial or political topics. These types of

discussions are known to often produce strong competitive feelings in participants (Drouin et al. 2016).

Our other main finding highlights the role that feelings of altruism play in lowering intentions toward misrepresentation. Put another way, individuals who are interested in helping other members of the community out of altruistic desires were less likely to misrepresent. This finding is in spirit with how Facebook is conceptualised in much of the extant research. Altruistic desires may lead to the sharing of information to help each other leading to deeper relationships, increased social capital, and an improved experience for all users. In this way, altruism may represent an antecedent for the trustworthy and reliable information sharing often touted as a benefit of OSN usage in the extant literature.

Other key findings from the study include the support for both perceived hedonic and reputation benefits increasing altruistic desires. This finding confirms past research that shows that helping others is a source of enjoyment for many (Ryan and Deci 2000; Sweetser and Wyeth 2005; Liu, Li, and Santhanam 2013). At the same time, while many individuals may not necessarily seek recognition for their helpful acts, recognition is often appreciated. Therefore, the potential for increased status makes a natural antecedent to altruistic desires. Past research has shown that status benefits play an important part in the reason that individuals engage in Facebook. Many of the metrics used by Facebook are often times designed to impart some level of status upon the users. Popular posts receive a large number of likes, popular individuals advertise very large friend networks etc. Our finding for the role of reputation benefits in increasing both competitive and altruistic desires is thus consistent with past research. Put differently, this finding shows that opportunities for increased reputation encourage interpersonal interaction, whatever the personal motivations. Reputation then has a complex effect in the social network, leading to both helpful behaviour in the form of altruism but also engendering a competitive spirit into the user population.

One surprising finding was the lack of support for the role of hedonic benefits in producing competitive desires, contrary to expectations. Some extant research into the motivations of economic behaviour known as 'keeping up with the Joneses' (Abel 1990) offers a possible explanation. According to this research, many people who engage in competitive economic activity gain little enjoyment from such behaviour. Rather, this behaviour is mostly undertaken out of some misplaced sense of obligation or a desire for reputation. This is in line with our findings around reputation benefits. It may simply be that reputation benefits have such an overwhelming influence competitive desires that the role of hedonic benefits is thereby masked. Another possible explanation for the lack of support for this relationship is that people may be choosing to avoid pain rather than approach pleasure (Higgins 2006). OSN users may feel that the constant need to catch up with other users on their networks, for the fear of missing out or having the feeling that everyone else but themselves are having a great time, is wearing them out to a point where it is more of a pain than a pleasure to do so.

7.1. Theoretical implications

This study contributes to information systems (IS) literature by adapting SCT (Bandura 1977,1986,1989,2001) to the context of OSN, such as Facebook. Using SCT as our

theoretical background, we are one of the first studies to develop and empirically test a model of personal information misrepresentation intentions on OSN such as Facebook.

We used SCT to explore the motivations behind personal information misrepresentation intentions on OSN by shedding light on the dyadic relationship between an OSN user's personal factors (P) and the user's misrepresentation-related behavioural intentions (B). Using SCT, we categorised an OSN user's personal factors into cognitive determinants (reputation benefit perceptions and competitive desires) and affective determinants (hedonic benefit perceptions and altruistic desires). These cognitive and affective factors represent a dichotomy of forces that influence an OSN user's intentions to misrepresent personal information on OSN. Our identification of cognitive personal determinants and affective personal determinants for misrepresentation intentions within the OSN environment provides an alternate theoretical lens to study information sharing behaviours on OSN such as Facebook.

Our study is one of the few that have used SCT to study behaviours related to OSN usage. By doing so, we add to extant IS literature (Wang, Xu, and Chan 2015; Yap and Gaur 2016) in this area. Wang, Xu, and Chan (2015) used SCT to understand OSN continuance use from a computer self-efficacy perspective. Yap and Gaur (2016) used SCT to understand OSN usage from a functional, social, and psychological perspective. While these two studies (Wang, Xu, and Chan 2015; Yap and Gaur 2016) have used OSN use as their dependent variable, we have used personal information misrepresentation intentions on OSN as our dependent variable. We believe that our use of misrepresentation intentions on OSN as our dependent variable represents a much-needed directional change in studying information sharing behaviours on OSN.

Facebook has been a popular tool for IS researchers to study human behaviours related to information sharing (Cho, Park, and Kim 2015; Miller and Melton 2015; Warren, Sulaiman, and Jaafar 2015; Heirman et al. 2016, etc.) and non-information sharing behaviours (Giannakos et al. 2013; Chen 2014; Tsai, Shen, and Chiang 2015; Chang and Hsu 2016; Lin 2016, etc.). Our study adds to the IS literature on human behaviours related to information sharing on Facebook by investigating why Facebook users use the OSN to misrepresent personal information. More specifically, we add to limited IS literature (e.g. Alashoor, Han, and Joseph 2017) that focuses on the negative aspects of information sharing, such as misrepresentation of information on OSN.

Our research adds to the work done by IS researchers (Son and Kim 2008; Lee et al. 2015) in the area of misrepresentation in the online context. While Lee et al. (2015) studied misrepresentation intentions on e-commerce websites and Son and Kim (2008) studied misrepresentation as information privacy protected behaviours (IPPR) by surveying Internet users in general, neither study focused attention on misrepresentation intentions on OSN. We seek to fill this research gap in IS literature by investigating the misrepresentation intentions of OSN users on Facebook. IS researchers in the past have focused their attention on either the financial antecedents of misrepresentation behaviour (Lee et al. 2015) or the privacy-related antecedents of misrepresentation behaviour (Son and Kim 2008). To the best of our knowledge, our study is one of the first to focus on the competition-related antecedents and altruism-related antecedents of information misrepresentation behaviours on OSN.

While privacy-related antecedents of information sharing behaviours on OSN have been studied extensively by IS researchers (Hann et al. 2007; Son and Kim 2008; Debatin et al. 2009; Lowry, Cao, and Everard 2011; Alashoor, Han, and Joseph 2017), we chose to focus on OSN's social influences on a user's cognitive determinants (reputation benefit perceptions and competitive desires) and affective determinants (hedonic benefit perceptions and altruistic desires) which have shown to be significant predictors of personal information misrepresentation intentions of an OSN user.

7.2. Practical implications

This study has practical implications for both social network developers and society as a whole. On the societal side, looking at the macro level it is clear that both political and societal interest in social network information practices has increased in recent years, both in the United States and Europe (Walsh, Parisi, and Passerini 2017). This increased interest has created demand for a better understanding of the information sharing practices of individuals, while at the same time bringing the truthfulness of much social network information into question. Our study provides an increased understanding of the factors that both foster and hinder intentions towards truthfulness in information sharing, and should inform efforts around developing more legitimate practices and policies of information distribution in online social networks.

While governments and regulators should appreciate this work, the study also benefits every social network user. Our study comes at a time in which the influence of social networks and other technologies for information sharing continues to rise in our society. They affect our moods (Gürbüz and Gözde 2017), our perceptions of society and of the world in which we live (Lai, Hsieh, and Zhang 2019). Given their ubiquitous nature, it is extremely important that our perceptions of social networks be based on accurate information so that individuals have good information on which to base their sense-making around events and their place in the world. At both the country and individual levels, a good understanding of the factors that lead individuals to towards intentions to misrepresent information should aid both education and regulation efforts around consumption of social network information and ultimately help individuals to become good consumers of social network information.

The study also offers practical implications for social network designers, both those at Facebook as well as other OSNs. Facebook, like any OSN, needs access to a large amount of correct and accurate marketing information. Without such, effective context-based advertising and much of the commercial revenue generating potential of the platform is not possible. Without accurate information, individual marketers cannot effectively segment the Facebook population into target groups.

This study shows that competitive desires may increase the network population's intention towards engaging in personal information misrepresentation. In general, fostering a competitive environment is considered a good thing. Competitive discourse, for example, is associated in some studies with better decision-making and improved innovation (Simon and Jerit 2007; Tjosvold 2008). Competitive discussion has even been proposed as a solution to the much-maligned 'echo chamber' effect present in social media (Harris and Harrigan 2015).

Our finding that competitiveness in social media creates a desire to falsify information or create information that is misleading is therefore interesting. We explain this finding as an aspect of the context-specific nature of competition in social media. Past work has shown that social media discourse can be applied well in the context of long extended discussions. Problems occur however when using social media as a platform for short term discussions of surface level topics (Harris and Harrigan 2015). This stems from the fact that, in the short term, there are few consequences for social media misrepresentation. The lack of ability to verify statements or sources quickly allows people to misrepresent with impunity. This combined with the incredible transmission speed of social media data allows misrepresentation to flourish (De Wit, Greer, and Jehn 2012)

For these reasons, strategies undertaken by organisations on social media to foster competition as a means of encouraging information sharing may be creating unintended consequences. OSN managers therefore should work to find ways to limit the amount of interpersonal competition that exists between groups of users, especially when the relationship between users is relatively weak.

One strategy that may help in this regard is development of a system to actively track emerging competitive environments within the network. Facebook values competition based on their actions in recent years. This has included the implementation of user-sponsored messages. These messages can be applied to the pages of other users, and targeted users have little say in whether or not they are shown these messages. Since the system effectively allows one individual to directly advertise to others, this system has the potential to bring tangentially connected individuals into contact with each other around content that users may find objectionable. As discussed, these types of conversations involving loosely connected individuals have great potential for creating misrepresentation behaviour. Facebook has also recently implemented additional buttons so that people can no longer only like content. While a 'dislike' button is not planned, users can now add tags (love, haha, wow, sad, angry) to posted content. Such additions seem designed to create varied, often controversial discussion around posted content.

We propose that Facebook should go a step further and develop a competitiveness measure for individual pieces of content as well as an overall competitiveness score for individual users. Other social network sites like Reddit have had a thumbs up/thumbs down system for rating content in place for years, which has the benefit of identifying competitive and controversial content based on the number of conflicting up and down votes the content receives. With such a system in place, Facebook's algorithms could identify 'hot spots' of competition within the network and more quickly identify areas prone to competitive-based misrepresentation.

Identifying competitive hot spots might also be a step towards Facebook's goal of better policing content that violates its terms of service. In the wake of the 2016 election, Facebook decided to eliminate or reduce the amount of content from certain sites allowed within the platform (Isaac 2016). Purging false and inaccurate information is a step towards improved information integrity, however great care should be taken to ensure that the process used in labelling or distinguishing fake news from real news needs to be seen as equitable by all of the social network community. These types of centrally focused attempts to label particular sources as legitimate or illegitimate have great potential to be perceived as unfair or as a show of favour for

one group over another. A system that publicly scores content and users based on the competition and controversy they elicit could provide data useful for making such decisions. At the same time, these scores would provide the community with some clarity about the process used in these types of decisions.

7.3. Limitations and future research opportunities

As in any research project of its kind, the current study is subject to a few limitations. First, since Facebook has become a worldwide platform with a mix of cultures, nationalities and backgrounds, care should always be taken when attempting to generalise findings to larger populations. While we do feel our results are likely indicative of many Western cultures, we urge caution when adapting these findings to groups and cultures that deviate substantially from that represented by our sample. This is especially true given the study's topic of information sharing, where information disclosure can be sensitive to cultural norms and values. While a limitation of this work, this also presents an interesting area for future research. A future study could examine the way that competitive and altruistic desires promote or hinder misrepresentation across a number of cultures and nationalities. Another limitation of the study is that we narrowed our focus to studying misrepresentation of information on Facebook. It is possible that users on other OSN (e.g. Instagram, Twitter, LinkedIn, YouTube, etc.) exhibit misrepresentation behaviours that vary significantly from those of Facebook users. Thus, a future research opportunity could be to examine the differences in misrepresentation behaviours across a variety of OSN.

In this study, we established a relationship between personal determinants (P) and behavioural determinants (B). Another avenue for future research is to examine the impact of the environmental determinants (E) (or OSN capabilities such as profile page, number of friends, number of page views, number of likes, comments, etc.) on this relationship between personal determinants (P) and behavioural determinants (B). One possible extension of this work could be to re-test the relationship between personal determinants (P) and behavioural determinants (B) by adding the environmental determinants as control variables that moderate this relationship. By doing so, the resulting work would benefit from a more complete application of SCT. Finally, it is important to mention that the study is fundamentally concerned with the intentions towards personal information misrepresentation, rather than actual misrepresentation itself. Given our data collection and participants, it is likely not possible to observe actual misrepresentation as it happens in real time on Facebook. Our study is an attempt to get as close as possible within these constraints. This does however create a limitation in the sense that outside of a controlled environment it is ultimately not possible to know exactly what participants were referring to when answering some questions. Interpretations and future studies based on these results should consider these aspects when generalising the work.

Disclosure statement
No potential conflict of interest was reported by the authors.

Data availability statement
The data that support the findings of this study are available from the corresponding author, [MC], upon reasonable request.

Notes

1. https://www.nytimes.com/2017/10/02/us/politics/viral-claims-and-rumors-in-the-las-vegas-shooting.html Accessed November 14, 2018.
2. https://www.wsj.com/articles/india-admonishes-whatsapp-after-deaths-1530730096 Accessed November 14, 2018.
3. https://stackoverflow.com/help/privileges Accessed June 18, 2019

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INSTRUMENT

Demographic questions

Items:
- Gender:
  □ Male □ Female
- To what age group do you belong?
  □ 17–20 □ 21–25 □ 26–30 □ 31–35 □ 36–40 □ 41–45 □ 46–50 □ Over 50
- Which statement best describes your level of experience of using the World Wide Web?

o I have used the Web a few times before this survey	o I use the Web almost every day
o I use the Web a few times a month	o I have never used the Web before this survey
o I use the Web every week	

- Which online social network do you primarily use?

MySpace	YouTube
Snapchat	Instagram
Facebook	Other
LinkedIn	None

- How long have you been using your primary online social network?

o Less than 6 months	o 2 years to 3 years
o 6 months to 1 year	o More than 3 years
o 1 year to 2 years	o Never before this survey

- How frequently do you use your primary online social network?

o I have used online social networks a few times before this survey	o I use online social networks every day
o I use online social networks a few times a month	o I have never used an online social network before this survey
o I use online social networks every week	

- How much time do you spend on an average using your primary online social network every time you visit it?

o Less than 30 min	o 2h to 3 h
o 30 min to 1 h	o More than 3 h
o 1 h to 2 h	o None

Construct: reputation benefit perceptions
(Source: Why should I share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice – Wasko and Faraj, MIS Quarterly Vol. 29 No. 1. pp. 35-57/March 2005)
Items: (based on seven-point Likert scales)
1. I earn respect from others by actively participating in online social networks.
2. I feel that active participation improves my status on online social networks.
3. I actively participate in online social networks to improve my reputation among my friends.

Construct: hedonic benefit perceptions
(Source: Using social network sites: The effects of playfulness, critical mass and trust in a hedonic context – Deb Sledgianowski and Songpol Kulviwat, Journal of Computer Information Systems Summer 2009)
Items: (based on seven-point Likert scales)
1. I enjoy using online social networks.
2. Using online social networks is fun.
3. Using online social networks keeps me happy.

Construct: altruistic desires
(Source: Contributing Knowledge to Electronic Knowledge Repositories: An Empirical Investigation – Atreyi Kankanhalli, Bernard C. Y. Tan, and Kwok-Kee Wei, MIS Quarterly Vol. 29 No. 1. pp. 113-143/March 2005)
Items: (based on seven-point Likert scales)
1. I enjoy sharing information with others on online social networks if it benefits them.
2. I enjoy helping others on online social networks by sharing information.

3. It feels good to help someone else by sharing information through online social networks.

Construct: competitive desires
(Source: The Nature of Competitiveness: The Development and Validation of the Competitiveness Index – Robert D. Smither and John M. Houston, *Educational and Psychological Measurement* 1992; 52; 407)
Items: (based on seven-point Likert scales)
1. I don't like competing against my friends in online social networks.
2. I enjoy competing against my friends in online social networks.
3. I get satisfaction from competing against my friends in online social networks.

Construct: intention to misrepresent information
(Source: Malhotra, N., Kim, S., and Agarwal, J. 2004. "Internet Users' Information Privacy Concerns (IUIPC): The Construct, the Scale, and a Causal Model," *Information Systems Research* (15:4), pp. 336-355.)
Items: (based on seven-point semantic scales)
1. Please specify the extent to which you would falsify some of your personal information on your online social network with your friends.
   □ Very unlikely/very likely
2. I would probably falsify some of my personal information that my friends see when using an online social network.
   □ Not probable/probable
3. Is it possible you would intentionally falsify some of your personal information that your friends can see in an online social network?
   □ Impossible/possible