ABSTRACT

SUPPORTING USER INTERACTION AND SOCIAL RELATIONSHIP FORMATION IN A COLLABORATIVE ONLINE SHOPPING CONTEXT

by
Yu Xu

The combination of online shopping and social media allow people with similar shopping interests and experiences to share, comment, and discuss about shopping from anywhere and at any time, which also leads to the emergence of online shopping communities. Today, more people turn to online platforms to share their opinions about products, solicit various opinions from their friends, family members, and other customers, and have fun through interactions with others with similar interests. This dissertation explores how collaborative online shopping presents itself as a context and platform for users' interpersonal interactions and social relationship formation through a series of studies.

First, a qualitative interview study shows that online shoppers believe that shopping-related interactions have a positive impact on their social bonds. However, there is uncertainty around the appropriateness of discussing shopping in online marketplaces, forums, and social networking sites between strangers and friends. These uncertainties act as strong deterrents that limit further interactions between users with shared shopping interests. Next, a mix of lab experiments and focus groups demonstrate how informational support and social support affect user participation and relationships, the impact of social structure on interpersonal relationship formation between community members, and the development of desire to be socially connected with others through real-time text conversations on shopping topics. Moreover, a combination of interviews, focus groups, and online survey identify four types of personas to help illustrate the complex nature of user participation and

behaviors in online shopping communities: Opportunists, Contributors, Explorers, and Followers.

Finally, an online experiment study with 50 participants implements problem-solving tasks to examine users' relationship building in computer-mediated online shopping groups and the effects of interpersonal relationships on user behaviors in collaborative online shopping contexts. The results suggest that users may develop desire to be socially connected after working on implemented collaborative problem-solving tasks within the group, and the perceived social connectedness may encourage user engagement and contribution behaviors in online shopping groups and communities. The results also show that such help-giving, collaborative tasks lead to developing social capital and facilitating social support that have more significant impacts on user behaviors over the long term.

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For my family,
who always support my endeavors with your full love.
Thank you and I love you!

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CHAPTER 1

INTRODUCTION

1.1 User Interaction and Socialization in a Collaborative Online Shopping Context

Humans, by nature, are social creatures [128]. Because interpersonal relationships are the foundation of human life, most human behavior takes place in the context of one's social relationships with others [19]. It is a voluntary, cooperative personal relationship involving varying degrees of companionship, intimacy, affection, and mutual assistance [53]. Because social experiences often change an individual's mental, physical, and spiritual characteristics, social connections and relationship experiences can significantly influence one's development and well-being [141]. However, the evidence from social psychologists clearly shows that "humans do not respond to the same stimuli in the same way across relationship contexts" and the meaning of stimuli to the individual may change dramatically with changes in relationship context [171]. Therefore, to predict and understand behavior, it is necessary to appreciate and understand the social and relationship context in which an individual is embedded.

Humans engage in a wide range of social activities. People seek partners and interpersonal social connections for a variety of relationship needs in everyday activities, such as shopping [90]. In some cultures, mothers transfer their shopping knowledge and expertise to their daughters in what often becomes a lifelong shopping partnership [121]. In modern western societies, many people, especially young adults, shop with friends rather than family members in physical shopping malls for utilitarian and hedonic objectives [80]. While there are many competing needs that define the ideal shopping experience, one of the main motivators for shoppers

may be the opportunity for social experiences while shopping [149], including "the enjoyment of [...] bonding with others while shopping" [10]. Shopping is often considered a *recreational* and *social experience* that people enjoy as a communication and socialization activity, where the actual purchasing of products is a secondary consideration [137]. Much of the past work in shopping has focused on commercial environments and applications from the perspectives of marketing and consumer behavior. Therefore, much of the research centers around predicting and controlling buyers' actions, but overlooks the *social* nature of the marketplace and how it affects community life [7, 76, 89, 111]. As we move into an era of increased connectedness and information, exploring this gap in knowledge from a social, human-centric perspective will provide valuable insights into people's behavior, needs, and how to better support their goals. This can lead to new opportunities for people to communicate, discuss and share information, establish and maintain relationships, purchase products, and for researchers to examine these behaviors.

In the past few decades, technology has had a profound and direct impact on both how people shop and socialize with others. The increasing popularity of social networking services (SNS) and applications (e.g., blogs, Facebook, Twitter, YouTube, and Instagram) has created opportunities for new business models [167], and ways to measure and influence the behavior of consumers [106]. Shopping in a social interactive environment enabled by SNS and applications brings a different user experience to consumers, compared with that of brick-and-mortar stores and traditional online commerce websites [132]. Social shopping is regarded as having the potential to revolutionize online shopping activities, with recent trends moving from product-centered commercial environments to more user-centered online communities [100]. Social shopping allows users to communicate, write reviews and comments, rate products, and share their experience while shopping on the Internet [71], rather than having unidirectional interactions where users search for and

purchase products provided by businesses [180]. Therefore, experiences in the context of social shopping involve more social and collaborative interactions between users, stimulating user engagement and strengthening business and user relationships [101]. The social attributes (e.g., triggering discussions and initiating conversations) of products and shopping experience have been seen as a major factor and contributor in online shopping activities [77, 183].

The concept of collaborative online shopping emerges amid the growing use of online shopping and SNS [39]. This newer form of online shopping brings a unique user experience in the context of e-commerce, as shopping is regarded as something that people enjoy doing collaboratively [66, 196] and part of the socialization process [191]. There are two major types of social shopping platforms identified in prior research studies: social media sites that incorporate commercial features, including advertisement and online transactions; and e-commerce websites that incorporate social features to support and encourage social interaction [32, 63].

Evolving from traditional e-commerce, social shopping involves user-centered online communities that encourage user-generated content and supports user interactions [91]. As an activity that "naturally lends itself to social interaction" [193], the social foundation of shopping has led to increasing collaborative online shopping activities and the formation of online shopping communities [140].

The formation of online shopping communities is based on the recent developments in e-commerce and social media, where users find and interact with others who share similar shopping interests and/or shopping experience [45]. In this dissertation, *online shopping community* is defined as an expansion of "social shopping community," which is typically referred to as "online shopping traffic through social media engagement and interaction" [130]. A broad range of online platforms are considered as part of online shopping communities, where users exchange information, solicit opinions, and share experience with regard to online shopping or shopping

in general. Major types of online shopping communities are exemplified as retailer site communities (e.g., Amazon Customer Review, Best Buy Community Forum), deal-sharing communities (e.g., Slickdeals), online review forums (e.g., Laptop Mag), and social shopping groups on social media (e.g., Facebook Groups).

While there are numerous studies on customer participation in online social shopping communities [87, 88, 110], most existing literature examines social shopping from marketing strategy perspectives, including the impact of customer participation on consumers' decision-making of purchase [3], brand awareness [50], and customer loyalty [65]. Only a few studies have investigated the new types of online communities from the ***social*** and ***relational*** perspectives [193]. For example, from the view of social responsibility theory, Li & Li [105] advocated social media sites as independent social actors, where consumers can establish social relationship in the context of social shopping. Social support theory views emotional support and information support as important determinants of user participation in social shopping communities [106]. However, the relationship formation among users in online shopping communities still remains understudied.

This dissertation shifts the focus from the marketing perspectives of consumer participation (e.g., making purchases) in collaborative online shopping to the ***social and relational perspectives of user participation and social relationship formation in the context of collaborative online shopping***. For example, users can share their opinions about products, solicit various opinions from their friends, family members, and other customers, and experience feelings of enjoyment through interactions with others with similar interests [134, 158]. In particular, Evans et al. [52] showed shopping behavior as a part of the social process of being together with family or friends and discussed the need to approach shopping experiences and consumer behavior from social and relational perspectives. Given this context, the need for an approach based on social and relational perspectives

is gradually gaining headway in the context of online shopping. Studies have shown that 90% of consumers using online shopping websites prefer contact with a human rather than an automated entity [89]. In addition, online consumers value social relationships and enjoy communicating with others. Therefore, collaborative online shopping presents a new type of social context and online communities, where users may desire, develop, and enjoy social relationships with others. Since collaborative online shopping emerges as a form of "social need" that encourages people to be connected with others [193], a comprehensive understanding of user interaction and relationship formation in online shopping communities may lead to enormous potential for social matching and recommendation opportunities, which can inform and directly impact multiple related fields. This research aims to *understand whether, how, and why social shopping activities and online shopping communities facilitate social connection/relationship through user interaction on social shopping platforms*. To be more specific, this dissertation aims to: (1) Understand user behaviors, preferences, and challenges in their participation on current social shopping platforms (e.g., social media sites, online forums, product review sites); (2) Explore the means of encouraging user interaction and socialization on shopping topics, as well as social relationship formation and improvements among users; and (3) Design a social-oriented collaborative online shopping prototype, and test on various types of social shopping users, to engage users in interpersonal interaction and support relationship formation among others through communications of collaborative online shopping activities.

1.2 Dissertation Objectives

The objective of this dissertation is two-fold. One is to understand how existing online platforms and social media systems support user interaction and social relationship formation in a shopping context, the user preferences, goals, and challenges in users'

perceptions and relationship formation of social connections with others, and how shopping interactions may facilitate social connections and relationships through various types of user interactions. The other is to leverage the knowledge gained from pursuing the first objective to find ways to support user interaction in a shopping context so users can develop new social connections and enhance existing social relationships through collaborative online shopping activities. Results of this research will improve our understanding of user interaction in a shopping context and identify a new form of social context and platform for user socialization and relationship formation. Contributions of this dissertation include an understanding of user socialization and relationship formation in an under-studied online setting, exploring a new online context to enrich people's social life and expand social matching opportunities, and a proof-of-concept interface prototype to better facilitate the discovery and development of social connections/relationship in computer-mediated online environments. This dissertation contributes to the fields of human-computer interaction and computer-supported cooperative work, informing users, researchers, and designers of social shopping systems, as well as social network and social matching platforms.

1.3   Dissertation Organization

This dissertation is organized as follows: Chapter 2 begins by defining social relationship and reviewing prior works about the various characteristics that influence the formation of people's social relationships, as well as presenting and discussing a series of social theories and models (e.g., social exchange theory, social support theory, uncertainty reduction theory, homophily, and impression management) of the social relationship formation process, which depicts how users engage in and develop social connections. Next, Chapter 3 introduces collaborative online shopping and user-generated online shopping communities as an emerging social context and

platform for discovering and enhancing social connections. Chapter 4 follows by discussing the development of relationship research from face-to-face communication to computer-mediated environments, and identifying a new context for exploring and examining user interaction and the social relationship formation process. Then, Chapter 5 proposes a research agenda for understanding the social and relational goals and challenges in users participation and socialization with others on existing online shopping platforms and social media systems, how existing online shopping communities facilitate relationship formation in a shopping context, as well as how a human-centered design of software can better support user socialization and relationship formation in a collaborative online shopping context. This chapter also presents the research questions to be answered by this dissertation. Chapters 6–10 expand upon each step of the research agenda by reviewing the studies that have been conducted to answer this dissertation's research questions. Finally, Chapter 11 summarizes the dissertation, discusses the contributions and limitations of the research studies presented, and presents new research ideas and directions stemming from this dissertation.

CHAPTER 2

SOCIAL RELATIONSHIP

2.1 Introduction

This dissertation focuses on how people engage in online activities and socialize with others for new and existing relationships. This chapter provides an in-depth survey of the state-of-the-art research in social connections and relationships in order to gain a deeper understanding of their underlying dynamics. We review related sociological and psychological research that focuses on people's socialization and relationship formation with others.

2.2 Definition of Social Relationship

Prior sociology and psychology researchers have worked extensively to investigate and define social relationships among individuals [20, 84]. One pervasive definition is that partners are dependent on one another to obtain good outcomes and facilitate the pursuit of their needs and goals [57]. Sociology and psychology theories have also explored the nature of humans' social relationships and generalized three core principles: the uniqueness principle, the integration principle, and the trajectory principle, which address how and why a relationship becomes more than the sum of its parts, the merging of two partners into a single psychological entity, and the way relationships change over time [58].

2.2.1 Uniqueness

Relationship outcomes depend more on the unique patterns that emerge when the relational partners interact, rather than the specific characteristics and qualities of each partner in the relationship. A relationship functions as its own entity that is distinct from and irreducible to the two constituent partners [19].

The uniqueness principle has been addressed by various relationship theories from different perspectives, with the focus on certain characteristics of relationship partners or specific interpersonal outcomes. For example, interdependence theory argues that the qualities of each partner greatly impact on how the two partners interact in particular situations and the outcomes of those interactions as a result [148]. Relational regulation theory views that the extent to which social interaction successfully regulates affect, behavior, and cognition depends on the idiosyncratic traits, preferences, and personal tastes of each partner [95].

There are also many empirical examples of uniqueness that have been observed in people's lives. For example, the proverb "beauty is in the eye of the beholder," is rooted in the observation that relationship variance explains most of the total variance in perceptions of mate value and long-term attraction [48]. On the other hand, likelihood of developing depression during the transition to new parenthood are dramatically high when stressed individuals have disagreeable spouses [115]. Finally, in a romantic relationship or marriage, when both partners report comparable levels of commitment to the relationship, the mutuality of commitment positively facilitate relationship wellbeing beyond the two partners' individual levels of commitment [47].

2.2.2 Integration

The principle of integration refers to the phenomenon that interactive opportunities and motivations for interdependence tend to facilitate cognitive, affective, motivational, or behavioral merging between partners [58]. As a relationship develops and the increase of the mutual desire to maintain the relationship, one relational partner's individual self-concept usually becomes more intertwined with that of the other one [6].

The integration principle has been continuously examined by empirical psychological research studies. For example, Agnew et al. [1] discovered higher relationship

commitment predicts greater spontaneous use of plural pronouns such as we, us, and our in unstructured relationship thought-listing tasks. However, the merging of identities takes time for partners that possesses some opposite attributes (e.g., extroversion and introversion) [157]. As a result, individuals are more likely to exhibit self-enhancing biases generalized to their relationship partners in certain circumstances [153].

Another prevailing perspective to examine the integration principle is self-regulation. According to transactive goal dynamics theory, relationship partners form a single self-regulating unit that involves a complex web of goals, pursuits, and outcomes [59]. In this case, partners in a relationship are typically studied as a group rather than individuals. Effective and efficient coordination of their goals and pursuits, the relational partners can achieve a level of goal success that would have been impossible if they were solo or had a less compatible partner. For example, Dan and John are in the same task team and their goal is to complete a working project within a week, and Dan is apparently the more productive one. So instead of dividing the work equally, John may alternatively help by doing some daily errands for Dan, such as picking up kids from school or fetching clothes from the cleaners, so that Dan can be more focused on the project and the chance of achieving the group goal of completing the project on time increases.

2.2.3 Trajectory

The trajectory principle refers to the tendency that relationship dynamics are affected by each partner's continually updated perceptions of the interpersonal interactions and experiences [58]. This principle has also been studied from various theoretical perspectives in prior sociology and psychology research. For example, Levinger and Snoek [103] proposed the paired relatedness model and found that relationship partners move through stages of increasing interdependence during the process of

becoming aware of each other, interacting, and eventually forming a relationship. A social penetration theory perspective [5] believed relationship partners develop intimacy as they gradually increase the depth and breadth of their self-disclosures. According to relational regulation theory [95], people's perceptions of social support originate mainly from everyday conversations and shared activities rather than in response to major life-changing events. As a result, it is intrinsically challenging to predict the outcomes of a relationship before it begins, no matter how much knowledge one has with regard to the characteristics of his/her relational other(s) [56].

2.3   Interpersonal Relationship Formation thorough Social Interaction

People engage in social activities and form social relationships based on a variety of considerations. This section reviews a number of well-established social theories and effects pertaining to the formation process of interpersonal relationships, with a focus on how and why social interactions may lead to further social relationships.

2.3.1   Social Exchange Theory

Social exchange theory proposes that the nature of social relationship is featured by self-interested actors who transact with other self-interested actors to accomplish individual goals that they cannot achieve alone [97]. According to social exchange theory, decisions to pursue, continue, and terminate a particular social relationship are the results of a continual cost-benefit analysis [164]. In general, one pursues or engages in specific social relationships if the perceived or expected benefits outweigh the perceived or expected costs. Otherwise, the interpersonal relationship will not be established or the existing ones will be terminated.

Traditionally, social exchange theorists view self-interested actors as unemotional humans or non-human beings who have information, cognitively process it, and make decisions regarding the pattern and nature of exchange with others [85].

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However, further examination of many common exchange relations argues that emotions both enter and pervade social exchange processes and interpersonal relationships, such as friendship relations, which are often propelled by strong affection or feelings of joy and sorrow [97]. The processes of social exchange may cause individuals to feel good, satisfied, relieved, and/or excited with regard to their relational partners [98], and therefore generate pride or shame on one's self [152], or anger or gratitude toward the relational others, as the outcomes of social exchange [179]. It has been widely accepted that emotional dynamics have a more central role in social exchange theory than typically assumed in the process of any interpersonal relationships.

2.3.2 Social Support Theory

Social support refers to "everyday behaviors that, whether directly or indirectly, communicate to an individual that she or he is valued and cared for by others" [13]. Social support is traditionally considered to be the exchange of both verbal and nonverbal communication that conveys emotion and information to help reduce people's uncertainty or stress [174]. Conventional social support is found most often within established, multi-dimensional, and primarily bilateral personal connections and relationships [41], as well as through informal social networks [4].

Technology development allows social support to be exchanged via computer-mediated communications, among millions of users who do not know each other and do not communicate face-to-face. The variance in communication method brings changes to the social support process, as traditionally one may turn to a target person to seek support, while users in virtual spaces or communities barely know each other in person particularly. Instead, unlike face-to-face support relationships, most computer-mediated support exchange begins by the messages left by other people with certain expertise when common experiences are found [174].

Most online and virtual support spaces work via asynchronous communication [139], such as blogs (a truncation of "weblog") or bulletin board systems (BBS). Users post messages that are stored online for some period of time for others to read and respond to, usually at a different and considerably later time. In addition, many SNS provide "live chat" functionality for users to simultaneously engage in real-time interactions. Despite primarily being text exchanges, the benefits and potential of support exchange in real-time interaction through these "synchronous chats" are considerable, as found by early social support researchers in computer-mediated environments [124].

One should not infer that social support takes place only within certain virtual groups or online communities where support is an obvious theme (e.g., cancer supporting group and alcohol support group). Conversations about any kind of problem may raise need for information and comfort [174]. There are two primarily exchanged support types in online environments, informational support and emotional support [22]. According to Cutrona and Suhr [41], informational support comes in the form of advice, factual input, and feedback, while emotional support is given through expressions of caring, concern, empathy, and sympathy, including statements of affection and emotional understanding. Social support in computer-mediated environments entails some changes in the traditional support exchange among individuals. Even in online environments, the dynamics of social support are also evolving in various user communities and social contexts [61, 92, 181].

2.3.3 Uncertainty Reduction Theory

Uncertainty reduction theory proposes that when interacting with a stranger, one's primary objective is to reduce uncertainty or to increase predictability of the stranger's future behavior [15]. The theory presents a reciprocal relationship between amount of communication and uncertainty [96], which is consistent with research on

the desire to obtain information under conditions of uncertainty [17, 18]. According to uncertainty reduction theory, not only does the amount of communication reduce uncertainty, but information seeking and similarity between communicators reduce it, too.

Sunnafrank expanded on the theory, submitting that people are motivated to reduce uncertainty about a person specifically for the purpose of better predicting the value of future interactions with them [161]. A positive predicted outcome increases the motivation and leads to continued or escalated interactions in the future, while a negative predicted outcome leads to the tendency of lessening the frequency of future interactions or discontinuing the relationship completely [16].

2.3.4 Homophily

Homophily is the tendency of individuals to associate and bond with similar others, as in the proverb "birds of a feather flock together" [54]. Homophily explains group composition in terms of the similarity of members' characteristics and social background or the extent to which pairs of individuals are similar in terms of certain attributes, such as age, gender, education, lifestyle, and other social background [144]. Homophily largely defines people's social networks and relationships in a way that has powerful implications for the information they receive, the attitudes they form, and the interactions they experience [120]. According to Ruef and his colleagues [147], the similarity of individuals tends to facilitate relational partners toward a higher level of interpersonal attraction, trust, and understanding than would be expected among dissimilar ones. In general, homophily refers to the observation that individuals are more likely to affiliate with others who share similar interests or who are in a similar situation [151], and people also tend to be more similar in strong social relationships [69, 120].

2.3.5 Impression Management and Self-representation

Impression management, or the act of self-presentation, is based on the concept that virtually everyone is attentive about trying to influence the perception that other people have towards him/herself [99]. Though traditional impression management is based on face-to-face interactions, scholars have examined the topic in users' online participation as well. For example, qualitative interviews are conducted to investigate self-presentation strategies in online dating sites, suggesting that online daters intensively involve themselves in both creating and evaluating impressions being given [51]. Researchers also studied impression management behaviors in online social media systems, and posited self-reported efficacy with impression management predicted number of online connections and the level of participation [94]. The concept has also been introduced to the research of online communities. Prior works indicated impression management as an important factor in explaining online community participation [21], and a significant predictor of knowledge contribution in several online settings [156].

Goffman [62] theorized impression management as a way people tend to intentionally shape how other people see them, through a serious of actions and performances in day-to-day social interactions. In online interactions, there also exists a need for users to control how they self-present and evaluate the impressions given by other users, through actions on social media, such as sharing and receiving information, leaving comments, "liking" other people's posts, and making recommendations [136]. Additionally, several impression management literature introduced Predicted Outcome Value Theory [161], which examines impression formation in online communities [200]. The theory maintains that people expect to extract value from initiating new relationships, and that they are more likely to interact with a new person if they perceive a positive value from the friendship in the near future.

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2.4 Summary

This chapter delved into how people pursue and engage in interpersonal relationships with others, with a particular focus on social interaction. It reviewed related sociological and psychological research that examines people's socialization and relationship formation with others in traditional and computer-mediated settings. The next chapter will introduce and discuss a new online context for researching and developing social connections and relationships.

CHAPTER 3

COLLABORATIVE ONLINE SHOPPING

3.1 Introduction

This research focuses on understanding users' interpersonal social relationships in a collaborative online shopping context, using human-centered design of software to facilitate user participation and socialization through interactions on shopping topics.

This chapter reviews prior works examining people's shopping activities in social media environments, people's participation in various forms of online shopping platforms, and people's interaction with others on the topic of shopping.

3.2 Defining Collaborative Online Shopping

Currently, there is no widely accepted consensus on a definition for "collaborative online shopping." Collaborative online shopping is mostly considered similar to the terms of "social shopping" or "social commerce" [89]. However, neither of these terms have consistently accepted definitions in the literature [12]. Some use the term *social shopping* interchangeably with *social commerce* [175], or consider social shopping as a subset of social commerce [40], while others argue that the two terms refer to distinctive user behaviors and platforms [159]. For example, Stephen and Toubia [159] regard social shopping as a type of online shopping activity that connects customers who generate content (e.g., by sharing items on Facebook, Twitter, and Instagram; or writing product reviews on websites such as Amazon.com and eBay.com), and social commerce as the industry that includes (typically online) businesses utilizing the interaction data from their buyers and sellers to drive more informed and targeted sales [138].

This dissertation defines "collaborative online shopping" as a non-marketing equivalent of "social shopping," which is an approach to online shopping based

on interpersonal interactions between users on social networks (e.g., Facebook, Instagram, and Twitter) and online third-party platforms (e.g., forums, blogs, and review sites), where the consumers' perceptions, attitudes, and shopping intentions are influenced by their friends and other users through posts, sharing, comments, and recommendations. In the context of collaborative online shopping, people are doing more than simply shopping online on their own [75, 197]. Instead, participants are making collaborative effort to explore stores, share information, discover products, and discuss about the shopping experience [130]. Compared with traditional online shopping activities, collaborative online shopping makes it easier and more convenient for users to explore interesting products, obtain shopping advice, and discover bargains, thereby improving and personalizing their overall shopping experience [87, 106]. In addition, collaborative online shopping is more than just buying products, it is also about creating an online community, where people can gain increased social presence [192] and receive social support [155].

One limitation of the previous work in collaborative online shopping (or social shopping) is the lack of examination of how shopping, as a social practice, impacts people's social relationships. Previous research has extensively explored how people's social network activities can be used to predict and shape their shopping behavior [159], but limited works have examined the other direction—how social shopping contributes to people's social relationships. Adding commercial features to social media sites and adding social networking features to online shopping websites are the two major trends in current social shopping research [106]. Prior social shopping research has focused mainly on the drivers of user-generated content (UGC) from different perspectives, to investigate the determinants of consumer consumption and creation of UGC from the motivational perspective [43], as well as the social effect of content contributions from the social influence perspective [194]. Very few studies have studied the requesting and sharing of commercial content in social shopping

environments, except Zhang and colleagues [192]. They explored the motives of users participating in social shopping, and demonstrated the effects of technological features (perceived interactivity, perceived personalization and perceived sociability) of social shopping systems on customers' virtual experiences (social support and social presence) and subsequently their participation intention to receive and share shopping information on social media. However, this quantitative study did not explain why some social shopping systems fail to socialize users' online shopping experience and what challenges users face when participating in social shopping through current social media systems and e-commerce sites.

3.3   Product Categorical Effects in Collaborative Online Shopping

To explore the under-studied area of social shopping on social relationships, it first requires identifying the product and service categories that people prefer to share on social networks in collaborative online shopping activities. One limitation in most of the prior research is the over-conceptualization of shopping in online contexts. Only few studies have examined product categorical effects and differences in consumers' preference and behavior in a social shopping context.

Levin et al. [102] addressed the question of how to combine online and offline services in the most complementary way for different product categories, based on the results from two experiments and a series of surveys. As summarized in their research paper, for products like clothing, consumers place great value on the ability to touch and inspect the product and therefore they prefer offline, bricks-and-mortar services, while for products like electronics, consumers place great value on the rapid dissemination of large amounts of information through Internet search. Despite the rich literature in social networking and online shopping, such product category differences have been underdeveloped in the context of social shopping. Little has

been discovered about the product category-dependent consumers' preferences for traditional online shopping and social commerce.

3.4 Similarity Attraction Effect in a Collaborative Online Shopping Context

When users share similarities in demographics, interests, and attitudes, they become more attracted to each other [122]. Byrne [26] first posited similarity attraction effect as increased similarity in attitudes, personality traits, or a number of other attributes is associated with increased attraction between two people, and the effect has been repeatedly studied and observed on multiple attributes and measures [27, 160, 162], as well as across different cultures [25, 126] for decades. A great number of previous studies indicate the positive effects on attraction generated from similarities in personal traits, attitudes, hobbies, and values [44, 79]. In the context of collaborative online shopping, these attributes were mostly identified in the personal information of users' profiles, as well as browsing and shopping history [40]. Therefore, collaborative online shopping addresses the missed opportunities for initiating new friendships and enhancing existing social relationships, as in many cases of collaborative online shopping activities, users may discover the similarities in interests and/or attitudes with other shoppers, or their existing friends on social networks during the interactive and collaborative shopping processes [183]. However, these opportunities have not been fully explored and supported by existing social matching and social shopping systems.

The advancement of technology and emergence of social media allows for new opportunities to discover similarities in peoples' life and activities, to explain and predict people's behavior [83]. Many types of similarities are generated for discovery and exploration in the social media age, which include: "who-similarity" referring to the similarity in demographic features such as age, ethnicity, educational

background; "what-similarity" referring to similarity in people's activities, hobbies, and views on certain events or phenomenon; "where-similarity" referring to similarity in geographic location, where users can easily check-in on social network sites and apps that track GPS locations; and "when-similarity" referring to similarity in timing of activities and experience, which is a relatively recent similarity attraction effect examined by Kaptein and colleagues [83]. The similarity attraction effect has impact on virtual communities as well. For example, previous research found the emergence of social relationships in online gaming communities without any physical contacts [118], where players establish friendships with other players through playing games online and/or discussions on gaming forums, experiencing co-occurrence of activities (what-similarity and when-similarities), and/or devoting themselves to a group of people with similar interests (what-similarity). Similarly, social shopping communities provide an online environment for the users to discover, share, comment, recommend, and discuss about products and shopping experience, which presents what-similarity and when-similarity to new encounters for social matching opportunities, and generates what-similarity for reinforcing and enhancing existing relationships.

3.5 Online Shopping Community

Online communities, as a type of social formation on the Internet, utilize the power of technology to connect individuals with shared interests and present unprecedented social interaction and relationship development opportunities irrespective of geography and time [133]. As more purchases of products and services shift from offline to online platforms, online shopping is evolving these activities from "transactional exchanges to more relational exchanges" [93]. Technological advancement has transformed online shopping, once regarded as a solitary activity, into collaborate social activities that embrace the innate human need to socialize [178]. As a result,

many efforts have been made to replicate an engaging community experience that is typically associated with offline shopping, which customers "partially substitute shopping for recreation and use these activities to develop social activities and bonds with others" [8]. E-commerce retailers and social media sites have also recognized the important benefits of a well-established online social shopping communities, including customer feedback, market research, creativity incubation, and the self-perpetuating engine of brand loyalty [35]. The emerging online shopping communities facilitate interactions among users [68], provide more interpersonal interactions and shopping experiences [46], and are described as a great place to give support, share information, and connect with fellow members with similar interests [49].

Similar to most social computing technologies, the members' participation and contribution are key to the value and success of online shopping communities [177]. Though the focus of many academic studies has been on how customer participation in online shopping communities affects their purchase decisions [37, 38], the inherent social nature of social shopping and online shopping communities entices researchers to derive insights from social-related theories as well. For example, social support theory characterizes social support for users in online communities from multiple dimensions, such as informational support and emotional support [70]. In the context of online shopping communities, Liang et al. [106] identify social support as an important determinant of user participation and contribution, where informational exchange and emotional exchange have positive impacts on social and relational intimacy among users, and between individual users and the community.

3.6 Online Relationship Formation in Shopping Communities

Online community is regarded as a place where individual with common interests, background, and goals participate and share information by posting questions, providing answers, and engaging in discussions about specific topics [29, 187]. The

emergence of social shopping and online shopping communities connects users based on shared shopping interests and experience, which leads to social connections beyond shopping discussions [113]. For example, Zhu et al. [198] describe eBay's online community as a place where users' interactions on shopping topics are interspersed with personal conversations, social support, and helping behaviors. Prior research has identified the roots of online relationships are very similar to those in offline interpersonal relationships [93]. The psychological process that drives the relationship formation of all communities, no matter online or offline, is noted as "identification, appreciation of members' contribution, camaraderie, and perceptions of social support" [198]. Early studies in online communities discovered that users perceive their online relationships of equal importance and closeness as offline equivalents [119]. The online relationships that users develop and experience in online environments can be as strong and as deep as their offline relationships [30].

Nevertheless, online social shopping platforms are not merely online equivalents of physical shopping malls, though they are similar at a basic level [159]. As a result, despite some similar underlying psychological roots, relationship formations are subject to the essential differences in online and offline shopping channels as well. For example, in the context of shopping communities, offline relational partners are often located in close geographically proximity, which naturally leads to richer face-to-face communications, while most online shopping relational partners never meet face-to-face, and (asynchronous) text conversation are most widely used as the major communication method [14]. Also, offline relationship typically requires higher levels of transparency of partners' identities, such as age, gender, ethnicity, and social status, whereas online communities allow for much more anonymity in interpersonal interactions [93]. Additionally, the level of social connectedness differs in online and offline relationships. In online settings, one may remain as a follower and never reciprocates in the unilateral relationship, which is very rare in typical offline

relationships, due to social pressure and impression management needs in individuals' social circles [168].

Online shopping communities like the eBay community and shopping groups on Facebook engage users with similar interests and experience, which turn online shopping into a social and collaborative activity. While most academic studies have examined user participation in online shopping communities from a business and marketing perspective [35], less is known about the relationship formation through user participation and interaction in this new type of online communities.

3.7 Summary

This chapter introduced collaborative online shopping as a prevailing online activity where people shop for products and socialize with other users on online platforms. From a social and relational perspective, this chapter also discussed some effects that may have impact on user behavior in a collaborative shopping context, such as product categorical effect for sharing items with others and similarity-attraction effect users may discover during social interactions. This chapter concluded by examining the emergence of online shopping communities, which is a new type of social context and platform for user socialization and relationship formation in online settings stemmed from people's everyday activities. The next chapter will discuss about gaps in knowledge and users' interpersonal social relationship formation in a collaborative online shopping context.

CHAPTER 4

EXPLORATION OF USER SOCIALIZATION AND RELATIONSHIP FORMATION IN A COLLABORATIVE ONLINE SHOPPING CONTEXT

4.1 Introduction

The previous chapters reviewed related sociological and psychological research that examined theories into people's socialization (Chapter 1) and relationship formation (Chapter 2). However, the dynamics of interpersonal relationships evolve as technology advancement opens more opportunities to connect people from anywhere and at any time [9]. The evidence from social psychologists clearly shows that humans respond to the same stimuli in different ways across various relationship contexts and the meaning of stimuli to the individual may change dramatically with changes in the context of the relationship [171]. According to prior social network research [165], context is important in human behavior and relationship formation. This chapter will review prior research into social relationships in computer-mediated environments, and explore a new context for user socialization and relationship formation in online settings.

4.2 Social Relationship in Computer-Mediated Environments and Virtual Communities

With the advent of the information age, people are using electronic media for communication more frequently, and social relationships between people are also increasingly resorting to online communications. However, there is little evidence to suggest that the dynamics of social relationships in offline interactions can be simply replicated in various online settings [64]. For example, in a traditional face-to-face environment, the assessment of homophily (the tendency to seek out and be attracted to others similar to oneself) is based on cues such as age, gender, ethnicity, as well

as social and professional status, but in an online environment, these cues may be "filtered out," by being missing, reduced, hidden, or even intentionally falsified [24]. While early studies in user interaction and socialization, based on the cues-filtered-out model of computer-mediated communication, found the technology-based interaction led to lower levels of communication satisfaction, and could be less productive than face-to-face interaction [72, 86], more recent works focusing on social bonding and communicating among individuals found positive, socially rich, interpersonal relational behaviors in developing both friendships and romantic relationships in the context of online communities [166, 173].

Social interactions and relationship formations in virtual communities are quite different than the real world. In traditional offline communities, people meet others first, get to know them, and then decide whether or not to form relationships. In the virtual world, people get to interact with others, and then decide whether or not to form relationships and even meet them in person [143]. There is a more fundamental difference between a real and virtual community: communication patterns. In the real world, much of the communication is synchronous, face-to-face, and based on verbal and gestural expressions, while in the computer-mediated environments, communication is often asynchronous and largely based on printed word or text-based messages [135]. As a result, the way people socialize and form relationships in computer-mediated environments, to a large extent, is quite different from the patterns observed through traditional face-to-face communications [28, 131, 169].

Living in the era of social media, humans have introduced new methods to interact within the virtual world of digital communications, which led to a variety of online virtual communities, such as social communities (e.g., Facebook), support communities (e.g., healthcare forum), interest-based communities (e.g., online gaming forums, sports forum), location-based communities, and information/knowledge-sharing communities (e.g., Wikipedia, Quora) [9]. However, even within these

virtual communities, prior findings with regard to users' social interaction and online relationship formation are inconsistent, in terms of relationship types [74], self-disclosure [119], distinct qualities for relationship formation [34], and social network structure [177], due to the significant shift of relational cues, personal constructs, and typical communication modes from traditional relationship formation theories into intensively text-based computer-mediated settings. As suggested by prior works, context matters in people's social behavior and relationship formation [165] and all types of collaborative activities, either offline or online, bring unique opportunities to observe and understand human's social behavior [190].

4.3 Exploration of an Emerging Online Context for User Socialization and Relationship Formation

Recent developments in e-commerce and social media have attracted more individuals to come online and have interactions with other users on online marketplaces and shopping forums, as well as their friends on social networking sites. With the access of online transactions, along with users' participation in sharing, discussion, and referrals on social media and retailers' sites such as Amazon.com, Best Buy, and eBay, this dissertation aims to extend the existing knowledge to the investigation of social relationships in a collaborative online shopping context. For example, traditional social matching systems facilitate and support matching based on romantic intimacy, mainly online dating (e.g., Tinder, Match.com, OKCupid), and a wide range of social needs as well, including professional network (e.g., LinkedIn), group event planning (e.g., Doodle, Meetup), and information sharing (e.g., Yelp, Foursquare, TripAdvisor, Pinterest) [163]. The characteristics of social shopping—where users shop for products and interact by reviewing, commenting, discussing, and recommending products on multiple online platforms—create enormous potential for forming new social connections and improving existing relationships.

As pointed out in Chapter 1, shopping has been historically regarded as a "crass and commercial" environment instead of an important arena of community life, sociologists appear to have by default relegated this area to researchers in marketing and consumer behavior, and therefore the social nature of the marketplace has long been neglected [7, 89, 111]. While most prior research has examined how to take advantage of users' participation on social media sites and applications, contributing to the sales of products and services [87, 88, 110], very few have examined the social and relational nature of online shopping—how shopping, as a collaborative social activity, shapes people's social relationships. Even for the sparse existing studies that have examined shopping from the social and relational perspectives, such as [89], [93] and [133], the focus of these studies are either increasing users' shopping experience or understanding the chemistry among users in virtual communities as untapped marketing sources, rather than understanding the dynamics of online social relationship in a shopping context and supporting user interaction to facilitate interpersonal relationship formation.

4.4   Summary

This chapter discussed relationship formation in both offline and online settings. As the contexts and environments change for social interactions, prior research has suggested the differences in human behaviors to communicate and form relationships in various types of virtual communities. The emergence of online shopping communities brings new opportunities to observe and understand human social relationship formation from a new online perspective, while prior research has long been neglecting the social nature of shopping and disproportionately focused on the marketing and business perspectives. The next chapter proposes the main research questions to

be explored and a research agenda to understand and support user interaction and relationship formation in an emerging online context.

CHAPTER 5

RESEARCH AGENDA

5.1   Introduction

The empirical agenda for this dissertation is designed to deliver insights from three perspectives. (1) First is to provide a comprehensive and theorized understanding of user socialization and relationship formation in an under-studied online setting. As prior literature indicated that shopping has long been regarded as a commercial environment rather than a place of people's community life [7, 76, 89, 111] in existing sociology and psychology research on human social interaction and relationship formation, it is both interesting and important to gain knowledge of human social interaction and relationship formation in this collaborative activity that may provide a new and broader perspective to understand human's social relationships. (2) Second is to explore an under-studied online context to enrich people's social life and expand social matching opportunities. The insights gained from this examination will help researchers and designers in related areas design and develop technologies that better understand and support user interaction and interpersonal relationship formation in online settings, creating more opportunities for users to discover, maintain, and improve social relationships with others who share similar values or interests. (3) Third is to empirical test an interface prototype in real-world environments, as a meaningful exploration to better facilitate the discovery and development of social connections/relationship through a computer-mediated collaborative human social activity. In particular, there are three main research questions stemming from these areas that are to be explored. This chapter presents a research agenda to explore these questions.

5.2 Research Question

To explore this emerging online social context for user socialization and relationship formation in people's everyday collaborative activities, this dissertation aims to take a human-centered design approach examining how software may facilitate user interaction and socialization, and lead to relationship formation in a context of collaborative online shopping. The specific research questions that arise from the research are:

- RQ1: How do people use 1) social networking sites (e.g., Facebook, Instagram) and 2) online reviews/forum (e.g., Amazon, eBay, Quora) to participate in collaborative online shopping?

    - *RQ1.1: Do people have preferences of categories of products to share on social networks? If so, what factors do people consider when deciding categories of items to share on social networks?*

    - *RQ1.2: What are the social goals and challenges in people's collaborative social shopping activities?*

    - *RQ1.3: How do impression management and formation affect user participation in collaborative online shopping?*

- RQ2: How do people participate in online shopping communities?

    - *RQ2.1: Why do users join online shopping communities?*

    - *RQ2.2: What factors keep users active and making contributions to online shopping communities?*

    - *RQ2.3: Can users develop social relationships through interaction on shopping topics in online shopping communities? Why or why not?*

- RQ3: How can a human-centered design of software facilitate user participation and social relationship formation in a context of collaborative online shopping?

    - *RQ3.1: Who are participating in collaborative online shopping communities? (What are the social characteristics of collaborative online shoppers?)*

    - *RQ3.2: How do different design elements of software affect user participation and socialization in collaborative online shopping environments?*

5.3 Study 1 (RQ1.3)

Study 1 represents a first step in understanding the status quo – how users participate in collaborative online shopping activities by using existing online platforms and social media systems. This study entails semi-structured interviews with active social shopping users. The objective of the study is to gain a broad understanding of user behavior, relational goals, and challenges in collaborative online shopping, as well as incentives and deterrents that impact their engagement and interpersonal interactions with others.

5.4 Study 2 (RQ1.1, RQ1.2)

Sharing about shopping items or products is typically the key of any meaningful interactions in the context of collaborative online shopping. We also understand that items that people shop for online are quite different, in terms of how likely people would share with others. For example, buying a Christmas tree is different from buying a box of toilet paper, and buying a baby stroller is different from buying a screwdriver. Past research examined people's categorical preferences of shopping in online and offline channels, and indicated that people do prefer to purchase certain categories of items online, and certain categories of items offline [102]. The objective of Study 2 is to focus on users' posting behavior from social perspectives, to understand what categories of items people prefer to share and have more social values by using online survey questionnaires and quantitative data analysis.

5.5 Study 3 (RQ2.1, RQ2.2, RQ2.3)

Technology allows people with similar interests and experience to share, comment, and discuss about shopping from anywhere and at any time, which leads to the emergence of online shopping communities. This next study focuses on how people participate and socialize in the setting of online communities [93]. Study 3 entails a combination

of lab experiments and qualitative focus groups to examine how people participate and socialize in the setting of online communities to understand interpersonal social relationship formation in this context.

5.6 Study 4 (RQ3.1)

Each user has unique needs in collaborative online shopping and may use online shopping communities differently. Some want to receive flash deal information, some want opinions on their shopping interests, while others enjoy being a part of a community with people of similar interests. A successful human-centered design must understand different types of users and their needs, as well as the level of willingness to engage in conversations and matching with others. Study 4 entails both qualitative and quantitative analysis to identify complex and diverse characteristics of social shoppers and members in online shopping communities. The personas are intended for use by researchers, designers, and practitioners to provide tailored content and support appropriate socialization to engage users and encourage individualized contribution to online shopping communities.

5.7 Study 5 (RQ3.2)

Findings from the previous studies are used to frame user struggles and challenges on existing online platforms to socialize and form relationships with others. Following a research through design approach [199], this framing is used to theorize and reflect on potential design components. Study 5 describes an online user study with embedded innovative interface design components to address users' needs and struggles in real-world settings, followed by analysis and assessment of the user behavioral data.

5.8 Summary

This chapter raised three main research questions to be explored in the dissertation, and put forward a research agenda to answer each of the research questions

sequentially. Five studies combining qualitative, quantitative, and design-research methods are outlined in this chapter. The following chapter outlines findings from Study 1, a qualitative study of user participation and challenges in collaborative online shopping activities.

CHAPTER 6

STUDY 1: HOW SOCIAL IS SOCIAL SHOPPING? – A QUALITATIVE STUDY OF USER PARTICIPATION IN THE CONTEXT OF SOCIAL SHOPPING (RQ1.2, RQ1.3)

6.1   Introduction

The increasing popularity of social networking services (SNS) and applications has created opportunities for new business models [167], and ways to measure and influence the behavior of consumers [106]. Shopping in a social interactive environment enabled by SNS and applications brings a different user experience to consumers, compared with that of brick-and-mortar stores and on traditional online commerce websites [132]. Social shopping is regarded as having the potential to revolutionize online shopping activities, with recent trends moving from product-centered commercial environments to more user-centered online communities [100]. Social shopping allows users to communicate, write reviews and comments, rate products, and share their experience while shopping on the Internet [71], rather than having unidirectional interactions where users search for and purchase products provided by businesses [180]. Therefore, shopping experiences in the context of social shopping involve more social and collaborative interactions between users, leading to benefits including increasing sales, stimulating user engagement, and strengthening business and user relationships [101]. The social attributes of products and shopping experience have been seen as a major factor and contributor in online shopping activities [77, 183].

While most prior research examines how to take advantage of users' participation on SNS and applications, and contribute to the sales of products and services [87, 110], very few have examined the social and relational perspectives of social shopping—how shopping, as a collaborative social activity, shapes people's social relationships [184]. Recent developments in e-commerce and social media

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have attracted more individuals to interact with other users on online marketplaces and shopping forums, as well as their friends on social networking sites. With the access of online transactions, along with users' participation in sharing, discussion, and referrals on social media and online sites, researchers may better investigate social relationships in a social shopping context. For example, traditional social matching systems facilitate and support matching based on romantic intimacy, mainly online dating (e.g., Tinder, Match.com, OKCupid), and a wide range of social needs as well, including professional network (e.g., LinkedIn), group event planning (e.g., Doodle, Meetup) and information sharing (e.g., Yelp, Foursquare, TripAdvisor, Pinterest) [163]. The characteristics of social shopping—where users shop for products and interact by reviewing, commenting, discussing, and recommending products on multiple online platforms—create enormous potential for forming new social connections and maintaining current social relationships.

However, the problem is that in the field of "social shopping," most popular media channels as well as academic research mainly focus on the "shopping" aspect and largely overlook the "social" characteristics [68]. For example, ratings and reviews on social media and online marketplaces have been considered as one of the key constructs that shape consumers' behaviors in online shopping activities, as individuals may easily post product reviews and rate items, directly impacting others' shopping intentions [33]. SNS websites, like Facebook and Instagram, are no longer only places for people to chat, share, and "like", but, more importantly, serve as platforms for interpersonal interactions and communications [71]. Conversely, the social potential of online shopping activities has been largely overlooked by existing research.

6.2 Research Question

This chapter aims at a good understanding of why current social shopping systems struggle to facilitate initiating new social connections and enhancing existing relationships, and what specific factors are key in designing social-oriented, engaging social shopping systems. In particular, the study described in this chapter explores the following research questions of the dissertation:

- RQ1.2: What are the social goals and challenges in people's collaborative social shopping activities?

- RQ1.3: How do impression management and formation affect user participation in collaborative online shopping?

6.3 Methodology

We used a qualitative approach to examine the research questions above. More specifically, we conducted semi-structured interviews with 20 people who are active in both online shopping and social media usage. We pre-screened the participants and chose to only interview the participant who reported to "have at least one purchase in the past three months" (i.e., active in online shopping) and "have used any social media in the past month" (i.e., active social media user). We used an open coding scheme to derive themes and theoretical constructs.

6.3.1 Participants

We recruited participants primarily using flyers, with the exception of two participants, who learned about the study by word-of-mouth from their friends. All interviewees participated in the research study on a voluntary basis, and were paid $5 for in-person interviews or a $5 Amazon e-Gift Card for online interviews. We conducted 17 of the 20 interviews in-person at a location of the participant's choosing, namely universities, coffee shops, and libraries. The other 3 interviews were conducted

online using WebEx audio chat due to logistical and scheduling issues. Of the participants, 13 identified as male and 7 as female, with ages ranging from 18 to 36. Self-identified ethnic breakdowns included: 5 White, 4 Black, 2 Latinx, 5 Asian, and 4 Middle Eastern. No participants identified with multiple ethnicities.

6.3.2 Data Collection and Analysis

All interviews were audio recorded and transcribed for further data analysis. The interviews ranged from 21 to 39 minutes in length. Summaries of each interview were written before the end of the day when the interview was conducted. A Grounded Theory approach was used for the qualitative analysis of interview data. We went through an iterative independent coding process to allow themes in the data to emerge naturally, and we then generalized theories from these themes. We used open-coding with two independent coders coding the transcripts for emerging themes around the three research questions.

The interview guide went through three updates through the course of our study, making minor adjustments to the questions to focus on emerging themes from previous interviews. The initial interview guide aimed to grasp a broad understanding of participants' online shopping habits and social media usage with regard to shopping. Next, we updated some questions to focus on people's interactions with others on both social networks with regard to the topic of shopping and the use of review sections/discussion forums on various online marketplaces. Finally, we made minor adjustments to include the examination of people's challenges during their collaborative social shopping processes on existing online systems (both social media and online marketplaces), and the expectation of how their social shopping needs can be better addressed.

6.4   Findings

In total, we recorded and transcribed 583 minutes of semi-structured interviews. A Grounded Theory approach was used for qualitative analysis of our interview data, with two independent coders coding the transcripts to look for emerging themes around our research questions. The findings discussed below are the end result of the iterative coding process, which are illustrated through representative quotes with their names changed to protect participants' privacy.

6.4.1   User Participation in Social Shopping through Social Media, Reviews Sites, and Shopping Forums

Interview data shows that participants generally identified two major types of platforms where they participate in collaborative social shopping activities:

- Social Media (e.g., Facebook, Instagram, YouTube, WhatsApp) – where they share, discuss, comment, and recommend with people in existing social networks; and
- Review Sites/Forums (e.g., Amazon reviews, eBay reviews, camera forums) – where they interact with people who are outside their current social networks, but share similar shopping interests and/or experience with them.

6.4.1.1 Users share and discuss about shopping on social media when they perceive the benefits of exchanging shopping information.   Participants were inclined to post on their social media about their shopping interests or products they have purchased, when they were satisfied with the product and believed the information can be useful to their friends. As Sheila put it,

> "I also bought a blender last month, and I shared that too, because lots of people want to use blenders in India. Three of my friends bought that, and it's just $9 in Walmart. They really loved it. I shared the stuff, because I really like the product."

Several participants expressed the appreciation of shopping posts by their friends on social media,

> "They are very good. If I'm in the need of a laptop, then if I'm getting these types of deals, it's always good, right? I'm feeling like if he gets the good deal, let me check it, the same deal, and I can get a laptop. It's always good, right?" (Daniel)

Participants illustrated how conversations emerged from sharing shopping on social media, and lead to additional interactions beyond shopping. Elizabeth told us, "One time my friend shared a makeup palette that she bought. Then someone else commented on, 'Oh I was thinking about buying this. How do you like it so far?' And then they went on a conversation about how she likes the product and this is why I like the product, this is where I got it. And they started talk about other topics. It kind of went from there."

People expect responses and looked for useful information from their friends when they posted something on social media. Alan shared his experience with us,

> "If I buy a laptop, or if I post like I want to buy an iPhone or phones, something like that, once you have read posts of pictures of it, we can have discussions of that, like 'do you know which phone is better', 'do you have any deals for phones? If so, please share it with me', or something like if you know some phone experts."

Additionally, people believed that sharing products that interested them presented their personality and preferences too, as Zach told us, "Usually people also get to know about the product, like what the product is about, why I'm interested in purchasing, and what quality I usually prefer to purchase. They also like to share some idea."

6.4.1.2 Users switch to private messaging when shopping interactions are defined within small social circles. In some cases, the conversations happened only within a small group of people. For example, as Sheila told us, "This blender is only on WhatsApp. Only a few who are close to me, and I knew who would buy. I literally told three of them, and three of them bought it. I'm really good at guessing who would need those." Richard also echoed on using WhatsApp for shopping communications with his Aunt and Uncle,

> "Whenever I found something nice, I sent the Amazon link to my aunt and uncle in California by using WhatsApp, because I trust them very much, for their tastes and they are well-informed ... for most of the things I shop, I ask my aunt and uncle. A few times I ask my cousin, too, because he's of my age, and I ask him about some electronics, also in WhatsApp."

More often when people had initiate post open to a large audience, but then turned to a talk between small groups. We repeatedly heard that people were switching from open discussions on social media about shopping to private channels, when the initial connections were established and people would like to set the scope of the topic to be within a small social circle. "Yes, definitely more so (shopping-related postings) on Facebook, especially with family." as Patrick told us, "Obviously you follow all your friends on Facebook, but when you want to be more specific, you either talk to them through your phone directly, or through WhatsApp, or stuff like that." Communication channels switched from "open discussions" (e.g., Facebook, Instagram) to "messaging" (e.g., text, WhatsApp, Messenger) when the respondent chose to react in private, as mentioned by Chris, "Usually it's like if I share something (about shopping) on Instagram or whatever, they might send me back a message too, and then usually the conversation is done in WhatsApp, or Messenger."

6.4.1.3 Online forums facilitate user interactions, while product reviews are useful for shopping research. In addition to their family and friends, most participants used online forums and website reviews to know more of the products they were interested in shopping for. While it may not be surprising to us that people were more intensively using user-generated resources (e.g., reviews, videos) for their shopping activities, it is still interesting to discover the differences in the use patterns of various platforms. Interview findings show how using product reviews make it easy for people to gain knowledge of the products and compare different items. Claire told us,

> "I do look the review section in each of the product and to make sure that's exactly what I'm looking for. And I also examine the photos very thoroughly . . . since most of the stuff I buy is from Amazon, users review many times, because user review make it easy to know the product and shopping things."

Some users felt that they were a part of the community, and had the responsibility to contribute as well, "I read other people's reviews, and I value other people's time and efforts. . . I do the YouTube review and the actual ratings and reviews of the product, because other people might also want to get some information from me." (Serena)

Though participants relied on product reviews to do research and make purchasing decisions for their shopping trips, most collaborative activities on the review sites are target-specific (with regard to one specific product) and lack mutual interaction between users (i.e., users passively consume the reviews on the system, or write a review but are not involved in any subsequent conversations). In comparison, on the discussion forums, people more actively engaged in the conversations, sought people with similar interests, and the interactions went beyond any specific product. As John put it, "I would care about other people (on the forum), because they have

interests similar to mine, so we are not just talking about cameras or lens, but also the techniques or places we went (for photography)." Samantha also liked forums better than product reviews, "I use both (reviews and forums), but definitely forums are better, because you get to know they are real people, you know, not just IDs and reviews ... you get to 'talk' with them like friends."

6.4.2 Users' Relationship Expectations and Challenges in the Context of Social Shopping

6.4.2.1 Users find it beneficial for the bond when engaged in shopping topics with family and friends. From our interviews, we found that in most situations, people believed shopping conversations positively contributes to their social connections with their relational partners. For example, Alan told us, "It really helps (with the bond). They feel that I find them important to help me make my decisions. They feel they are important to me." Similarly, another participant also talked about the impact of shopping topics on his social relationships,

> "Impacts on the relationship? It's always a positive. You are helping them, right? You are not forcing them to buy something. We are just sharing our experience and getting to know if you can get better deals, better products. Yes, we are not forcing anyone. We are just sharing the experience, trying to help them." (Steve)

Some participants also explained how these shopping conversations lead to the enhancement of their social bonds. As Zach put it,

> "They (shopping conversations) definitely do help with the bond. If they show me a video, I watch it, and that's it. If they show me shoes or clothing stores and then I buy from, someone's gonna ask one day, like 'yo, where did you get your shoes from?' 'My friend showed me the site

where I got them from. That's where I got my copper Foamposite.' It kind of does build into the bond of the friendship."

Another participant, Jack, also described how shopping topics positively impact his friendship with others,

"So if I see something nice, I might show it to my friend, and if they see something nice, they show it to me. It feels like we are thinking of each other all the time, and that's what friendship means. For family, it's the same thing ... it means we care for each other."

6.4.2.2 Users are more likely to share their purchases on social media, when they think it's either *big* or *smart*. Delving deeper into people's preferences of shopping contents to be shared on social media, we found that people were likely to share either it's an expensive purchase or a great bargain to attract attentions from their friends. As Daniel put it,

"Most of the time, when it's like a huge purchase, they usually show it off, 'I have got this', on social media, to let other people know 'I have this'... Some of the times, it might a showing off. Otherwise, if I buy a good t-shirt from Amazon, why would I post it online? It might be that I got a good deal. I buy this t-shirt and it was usually $30 and I got it for $5. If I bought something like that, then I can post it."

Elizabeth had similar thoughts as well, as she usually shared expansive fashion purchases on social media, but not things that she thought to be "normal". As she told us,

"Usually for me it's like fashion purchases (to be shared on social media). I did buy a laptop in August, but I didn't share that, because I really

think people wouldn't be interested in that post ... Because it was just a laptop for school. I didn't think people would 'wow' about my laptop."

6.4.2.3 Users exhibit anxiety and uncertainty of sharing and discussing about shopping on social media. We repeatedly heard that people were reluctant of sharing items on their social media, because they are not sure about other people's reactions and attitudes. Jack told us, "(why not sharing on social media?) Because I'm very shy for the thing, for buying things and sharing it on social media. I don't know how other people think about the post. So I ask my friends only." One reason that may deter people from sharing items on social media was the lack of interaction. However, we found that even though your friends did not explicitly "like" the post, they were actually expecting and paying attention to the products you shared on social media,

> "I usually wouldn't respond to her, but I would think that this is nice, or sometimes if I see something, and think maybe I want that. If it's really nice, I would go and look up in stores for the product." (Janie)

Another reason that may possibly prevent people from sharing products on social media was the emergence of online influencers who shared "everything" on social media, leaving an impression to people that "sharing is a professional job" (Sheila). For example, Daisy told as,

> "Someone that I follow on Instagram, she's the blogger. So sometimes she'll show, when she's at a store, she'll post a picture of the things she likes and she tries on. So I could see what she's interested in buying, and she will show them. And sometimes if she buys something, she will show pictures or videos of these are the stuff that I bought."

When asked about the attitudes toward sharing items on social media, most participants would not get annoyed, as long as it was not spamming their news feeds. As Elizabeth said,

"If they share too much of it, if they share every single thing they buy, it can get annoying. But if it's kind of occasional thing, something really special to them, or they just felt like sharing it, by all means, go ahead."

6.4.3 Impression Management and Formation in Collaborative Shopping Activities

6.4.3.1 Users carefully select the contents to share on social media. In line with prior impression management research on online participation [94], users post contents on social media for self-efficacy and to establish personal image among their social circles. Liz, who shared a lot of her photography on Facebook, told us, "I can post my own content, things I like, things I'm proud of ... I'll post photos whether it's of myself or if I was doing something that I'm proud of. Or taking some photos, consider them to be photography." Similarly, Amanda also carefully picked what to share and what not to share on social, so as to maintain her impression among friends,

"I would like to share things that represent who I am, so that other people can see that these pictures are consistent with who I am, not disconnected from that... Maybe sometimes I will be doing silly things with my friends and having fun, but I wouldn't necessarily want that to be there, because I don't want someone to get a wrong impression, because that's not the person that I wanna convey who I am."

Additionally, we repeatedly heard people sharing contents on social media about their vacations. For example, Chris told us,

"The last thing I posted was when I went to a Starbucks Reserve Bar. I posted when I got there. I have never been there before. The last picture before that was my friends with me on vacation, so we took a picture of three of us. The picture before that, I was also on vacation, and I posted a picture of water."

6.4.3.2 Users tend to refer to specific person(s) for shopping advice based on the item types. Our interview findings suggested that people were more inclined to repeatedly ask for suggestions and opinions from the same person, or small group of friends. We found that people often had their list of "go-to" person(s) for each type of items they would like to shop. For example, Bob told us, "For electronics, I usually prefer a friend. One of my friends, he's good at electronic things, because he usually buys all the electronics online, like Amazon or somewhere. That's why I ask for his opinion. He's good at that." Daniel had the same shopping habit as well, as he put it, "I have two elder sisters, and both of them are married now. They are familiar with the recent trends. They know particularly about fashion. They know what guys wear these days ... for clothing, I always ask them for suggestions."

People picked their "go-to person(s)" based on their jobs, personal image, and day-to-day communications with others. Occupation or working history can be a strong indicator of a person's expertise. As Jack said,

"If they have good knowledge about it, then I will definitely ask them. Then I don't need to figure out who knows about it... Let me give an example. My friend he was working at a mobile shop, so definitely he would have a good knowledge about the new model, and what features are the good ones. If they are in the field, it obviously tells us that they have good knowledge about it. Whenever I wanna buy a phone or some other electronic stuff, I like to ask him."

In comparison, Zach knew his friends better through everyday interactions,

"In your group of people, you have a sense like who dresses nice, and who is good at sports, and who knows political stuff, and who knows math, because that's the birth of your friendship . . . If I know my friend, I know him for being stylish, for being sporty, and so on so forth. So for me, whenever I need to ask for advice, I know whom to go to."

6.5   Discussion

Our data from interviewing 20 online shoppers and social media users demonstrated the way people engage themselves in collaborative online shopping activities with their family and friends, as well as other users through online reviews and discussion forums. While technology allows convenient communication with existing social network, easy access to tremendous information, and opportunities to reach out to more people, it also presents challenges of smooth interpersonal interactions in the context of social shopping. The interviews brought to light two main forms of user participation in current social shopping systems.

First, people use their social media platforms to collaboratively shop with their family and friends, including sharing products and shopping information, asking for suggestions, making recommendations, etc. Participants expressed mixed attitudes toward sharing and discussing about shopping on social media. On the one hand, users consider social media as a powerful tool, in terms of information exchange and dissemination, to reach the maximum of their existing social networks, and possibly more through reposts and retweets. Sharing shopping on social media (e.g., Facebook, Instagram) is the most efficient way to get useful and reliable feedback from their existing social circles. On the other hand, people tend to switch to private messaging channels (e.g., text, WhatsApp, Messenger) as long as they found their communication partners regarding specific shopping topics, due to the uncertainty

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of the "social appropriateness" of shopping conversations on general social media platforms, which is consistent with prior research findings on user deliberation of posting contents on social media [55]. This makes it difficult for other users to engage in the subsequent conversations and join if they have useful knowledge or information. Second, people use reviews to research on the products they are interested in purchasing and engage in conversations with other users in discussion forums. Online reviews and forums provide another way for users to know about the items and explore other people who shared similar shopping interests or experience. Interestingly, we found that users exhibit different patterns in the use of these two systems. For online marketplaces (e.g., Amazon, eBay reviews), the reviews are typically listed by product, rather than by the time when the review is posted for a type of items, which means users need to wait for an extended time if they want to communicate with other people. As a result, the asynchronicity of communication mechanism limits the possibilities of more interactions between users. Therefore, though users often read and sometimes write reviews on online shopping marketplaces, participants reported that they rarely engage in interactions with other users. For shopping forums (e.g., camera), more real-time conversations happen between users, which lead to more opportunities for interactions with other users on the shopping topics they are interested in discussing about. Participants reported that sometimes the conversation went from initial conversation to a broader topic, which suggested that meaningful interactions could be established between forum users. However, the limitations of discussion forums are that people find it hard to "friend" or follow another user on the forum, and thus impossible for subsequent interactions in the future.

From the interview data, we also identified the major challenges people face when participating in social shopping include the concerns for social appropriateness to share shopping on social media with existing friends, and lack of access to

communities of people who shared similar shopping interests. The findings are in line with prior impression management research on people's behavior in online systems [94], which suggested efficacy with impression management predicted the level of online participation. On social media, users try to maintain a consistent image within their social circles, so they are selective of the contents to post on their timelines. As mentioned by some participants in our interview, they would ask for shopping advice on social media, if they consider the products "cool enough". In comparison, people have little concerns for maintaining their social image on review sites and shopping forums, but further interactions between users with similar shopping interests are limited by the setting of current forums, as well as the uncertainty of "social appropriateness" to extend the interactions beyond the scope of shopping on discussion forums.

Despite all these challenges, participants found collaborative shopping activities with their family and friends beneficial for the social bonds. We learned from the participants that shopping conversations lead to more interactions between family and friends, and thus positively contribute to enhancing existing social relationships for collaborative shoppers on social media. The findings reported in this study indicated that collaborative shopping activities, under certain circumstances, serve to improve people's social ties. These observations also suggest that social shopping activities could be a promising introductory context for facilitating social matching on review sites and online shopping forums.

6.6 Design Implications

In this section, we consider how the findings from the interviews could be implemented for people to actively engage in social shopping activities, and lead to positive impact on social relationships through sharing, recommending, and discussing about shopping with others. Based on our study, we identified the major challenges people

face in the use of current online systems. These limitations negatively affected the enthusiasm of user participation in social shopping activities, and significantly decreased the possibilities of subsequent interactions between users on shopping forums and between family and friends on social media. We propose the following design recommendations for existing online systems to improve the user engagement and participation in the context of social shopping.

6.6.1 Social Functions Supplemented on Review Sites and Shopping Forums

We found that users were likely to discover people with shared shopping interests on platforms such as review sites and shopping forums, but further social actions were typically not offered in these systems. As a result, people found it very hard for interactions between specific users to be continued on these platforms, if they intended to. To address this problem, social functions such as "follow" or "friend" could be added as a complement to discussion features, so as to better promote user participation and engagement on these platforms.

Since most shopping websites and forums already require users to register accounts for posting any contents, adding social functions would not necessarily be technically complex. This would allow users to keep record of other users who shared the same shopping interests or experience, further conversations on shopping topics, and explore potential online shopping partners for future references. The benefits brought by this implementation would not be limited for shopping advice per se, but might contribute to extending shopping conversation into various contexts as well. For example, supposing George wants to buy a camera and finds Tim's review about a specific camera to be thoughtful on a camera forum, George may either "follow" Tim for his following reviews on various cameras and lens, or even "friend" Tim, based on mutual acceptance, to have deeper conversations about the best camera

that accommodates George's needs. Through the conversations, George and Tim may find other interests in common, such as photography and traveling, which presents potential social matching opportunities in the context of shopping interactions.

Another implementation of introducing social functions to facilitate people's social shopping activities could be adding "reviewer recommendation" feature on online marketplaces (e.g., Amazon, eBay, Best Buy). Similar to the concept of "product recommendation," the strategy that the majority of shopping websites adopt to recommend related purchases to a user based on the products the user has browsed or purchased, "reviewer recommendation" feature would allow users to find people who have experience of using products that are related to the users' shopping interests, and have the willingness to share the experience with the user. To implement this feature without annoying the users, online platforms would need to explicitly ask for people's consent of joining the "recommendation program." One of the ways this could be implemented is by explicitly asking if users are willing to sharing more experience with future individual shoppers, when they post reviews about certain products on the websites. This feature would allow users to have more personalized communications channels with fellow shoppers, and explore potential shopping partners for future shopping activities, which may ultimately become "Amazon friends" under certain circumstances.

6.6.2   Social Shopping Context Demonstrated on Social Media Sites

While continuous interactions were naturally facilitated, we found that the major challenge of social shopping on social media was the uncertainty of other people's attitudes of engaging in such shopping conversations. When users share and discuss about shopping with a broader range of their friends, they do not know how other people would react and the impact on their impression management efforts on the platform. Therefore, even if people perceived the power of social media

for shopping advice seeking and information exchange, users exhibited anxiety of initiating the shopping posts and tended to switch to relatively private channels when communication partners were found.

To address the problem, social media sites would need to construct a context which users feel confident that shopping topics are "socially appropriate" to share and discuss about on the platform. One of the ways this could be implemented is through a special tag of something like "shopping" or "#shopping." When implemented, users would need to explicitly turn the feature on in the system to view any of their friends' posts with a special "shopping" tag. The design helps to filter who are annoyed or not interested in viewing their friends' shopping-related posts on social media, as they would not see any of these posts without turning on the feature. In this case, users would feel comfortable sharing and discussing about shopping by using the "shopping" tag, and be confident that it is "socially appropriate" to be engaged in such collaborative shopping interactions with their family and friends on social media sites.

Additionally, since social media sites often use an ad-based business model, meaning users have the access to the service for free, but the data is used for advertisers to sell products and services. Making it comfortable and socially appropriate to share and discuss about shopping helps with better understanding of people's shopping interests and needs, which socially and financially benefit the social media platforms as well.

6.7 Limitations

There are several limitations of this study should be noted. Only a limited number of subjects were interviewed in the Northeast region of the U.S. The subjects were mainly students and young professionals in their 20s and 30s. Their view and behaviors might differ from older adults or people living in other regional areas.

In addition, we are aware of a certain self-selection bias, since all participants voluntarily signed up for the interviews. There was an economic incentive for participants to be interviewed. Though we tried to minimize this effect as much as possible, it might still cause potential sampling bias that may affect the validity of findings presented in this work.

6.8   Summary

Social shopping enables people to share and discuss about shopping in collaborative shopping environments. While much work has focused on using *social* data to promote *shopping*, fewer works have examined the way people *socialize* in the context of *shopping* as a collaborative activity. This chapter reported on results from semi-structured interviews (N=20) to gain insight into people's perceptions and challenges in social shopping-related activities. The results show that online shopper believe that shopping-related interactions have a positive impact on their social bonds. However, there is uncertainty around the appropriateness of discussing shopping in online marketplaces, forums, and social networking sites between strangers and friends, which acts as a strong deterrent that limits further interactions between users with shared shopping.

The qualitative research was exploratory, aimed at developing an initial understanding of user participation in current social shopping platforms, and focused on examining how people's social relationships can be established and enhanced through online collaborative shopping activities. We used semi-structured interviews to uncover underlying motivations and challenges that influence people's interests in online shopping with other people across different systems and contexts. Our study supports that shopping interactions lead to positive impact on people's current social relationships under certain circumstances, and identifies concerns of "social

appropriateness" as the major challenges that negatively affect user participation in social shopping on existing online systems.

CHAPTER 7

STUDY 2: UNDERSTANDING USERS' CATEGORICAL ITEM SHARING PREFERENCES ON SOCIAL NETWORKS (RQ1.1)

7.1 Introduction

Social shopping is a rapidly developing area, promoted by the popularity and advancement of social networking sites (SNSs) [106]. Enabled by social networking technology, social commerce has emerged as a derivative of "e-commerce," where users communicate, write reviews and comments, rate products, and share the experience while shopping on the Internet [71]. Shopping in a social interactive environment enabled by social media systems provides a different experience compared with shopping in brick-and-mortar stores and on traditional retailers' websites [132]. The rapid growth of services using a combination of social networking and e-commerce raises many research questions about the characteristics of social commerce, as well as opportunities to optimize people's experience by personalizing interfaces to combine online shopping activities and social relationships. Typically, social shopping is a form of Internet-based social media that allows people to actively participate in the marketing and selling of products and services in online marketplaces and communities [186], and involves properties like word-of-mouth, trusted advice, or buying with the help of friends [114]. Extending Mathwick's [116] online consumer behavior typology, social behavior and attributes in online shopping have been focused on relationship building that leads to new product discovery and the development of feelings of warmth and satisfaction through the online shopping process [159]. Despite the lack of standard definition for social commerce, the power of users' participation in online shopping activities has been widely recognized by many scholars in business management and information systems.

Researchers have discovered that social relationships and user interactions influence consumer behavior [71]. However, there is a lack of current social commerce research about how online shopping activities and the personalization of shopping experience may have impacts on social relationships, and how the influence varies among different categories of shopping behaviors has not been widely studied. Though theoretical evidence for the fusion of social and commercial activities has been confirmed [109], only a few studies examine product categorical effects and differences in consumers' behavior and expectations in the context of online and social commerce.

7.2   Research Question

As a foundational work of the under-studied area, one major objective of this chapter is to identify the space for social relationships to emerge in the context of social shopping – the categories of products and services that people prefer to share and talk with others when shopping online – to inform interface design of social shopping apps that integrate personalized experience of shopping and social interactions in the future. To be more specific, the research question to be explored in this chapter is:

- RQ1.1: Do people have preferences of categories of products to share on social networks? If so, what factors do people consider when deciding categories of items to share on social networks?

7.3   Methodology

7.3.1   Task

This chapter's study had three major objectives for understanding people's categorical preference in the context of social commerce: 1) to identify the categories of items people prefer to share on a popular social network; 2) to understand the factors that lead to the preferences; and 3) to determine whether an "intention-behavior gap"

exists in people's sharing of shopping activities on social networks. We examined these three objectives through the use of a two-condition study.

We developed an online survey on SurveyMonkey, and conducted studies with two different conditions – the first measuring *intention* and the second examining *actual actions* of people's item sharing on Facebook. Each of the tasks consisted of three parts in the survey questionnaire: 1) social network and online shopping background; 2) item sharing task; and 3) factors for posting.

All of the survey questions were identical in both the *intention* and *behavior* conditions, with only the assigned item sharing task differing between the two conditions.

For the *intention* group, the first part of the survey consisted of participants answering questions about how long and how frequently they have shopped online, and how many Facebook friends they have in total. Next, in the second part of the survey, the participants had to choose 2 to 5 items from Amazon.com that they would share with their family and friends on Facebook, and provide the links to the items in the questionnaire. They did not have to actually post these items on their Facebook timeline. Finally, after completing the item sharing task, in the third part of the survey, the participants had to rate different factors that may have impacted their item selections, such as privacy concerns, information seeking, and common interests among Facebook friends.

The *behavior* group followed the same overall structure of the design as the *intention* group. However, for the second part of the survey, instead of listing the links of items in the survey as the *intention* group did, the participants of the *behavior* group had to actually post links of their selected items on their Facebook timeline, and upload screenshots of their item postings via a Dropbox link accessible to the researchers. Like the *intention* group, in the third part of the survey, the *behavior*

Table 7.1 Experimental Design of the Two Conditions in the Task

Part	Condition 1: Intention	Condition 2: Behavior
Background Info.	Social network and online shopping experience	
Item Sharing Task	1. Pick 2 to 5 items from Amazon.com	1. Pick 2 to 5 items from Amazon.com
	2. List the links to the items on the survey	2. Share the items on Facebook timeline
		3. Take a screenshot and upload
Factors for Posting	Rating of considering "factors" when deciding which items to share on Facebook	
Compensation	$0.10 per person	$0.30 per person

group participants then rated the factors that impacted their choices of items shared on Facebook.

As shown in Table 7.1, the objective of the experimental design of our tasks was to set up two separate tasks for the participants, while keeping as many parts identical as possible in the study.

7.3.2 Participants and Recruitment

Social commerce refers to the use of social media for commercial activities that are driven primarily by social interactions and user contributions [129]. We targeted people that are both users of Facebook and online shoppers, defined as individuals who self-reported that they had made purchases online within the past two years. We used Amazon Mechanical Turk (MTurk)—an online marketplace where individuals can get paid for completing small Human Intelligence Tasks (HITs)—to recruit our participants.

We set our compensation to be high enough to attract participants, but also as low as possible to minimize participants' sense of obligation to complete our HIT. The participants in both the *intention* and the *behavior* groups were allowed to quit

at any time after starting their tasks. To determine a fair market compensation rate for our HITs, we surveyed and participated in other's existing tasks on MTurk for one week, focusing particularly on tasks that required similar time and effort.

For the *intention* group, we set our compensation rate as $0.10 per person, based on the payment and time/effort needed for other similar HITs at that time. As mentioned in the previous section, each participant was asked to pick 2 to 5 items from Amazon.com that they would share (but not actually post) on their Facebook timeline with their family and friends, and provide the links to these items in the online survey. A total of 113 people participated in the intention group, providing a total of 352 valid item links.

For the *behavior* group, we tried to keep the compensation at $0.10 initially, but failed to attract enough participants at this level, as additional effort is required to finish the task. We raised our compensation to $0.30 per person for the additional effort required to actually post items/links on their Facebook timeline and provide us with screenshots. We offered this HIT after completing our data collection for the *intention* group to minimize the chance of the same MTurk worker from participating in both of our conditions. To ensure that we did not include past *intention* group participants in our analyses of *behavior* group participants, we asked the *behavior* group participants to prepend their unique MTurk worker identification number to their screenshot filenames, so we could exclude repeat participants. In total, 98 behavior group participants generated 202 valid item postings on their respective Facebook timelines. Figure 7.1 shows examples of screenshots from the participants in the *intention* group.

We collected data over several months during different times of the week and day. Also, our demographic data in Table 7.2 suggests that our group was fairly well distributed. We received more educated females, which was consistent with other's observations in MTurk recruitment [145]. Table 7.2 shows the demographics, social
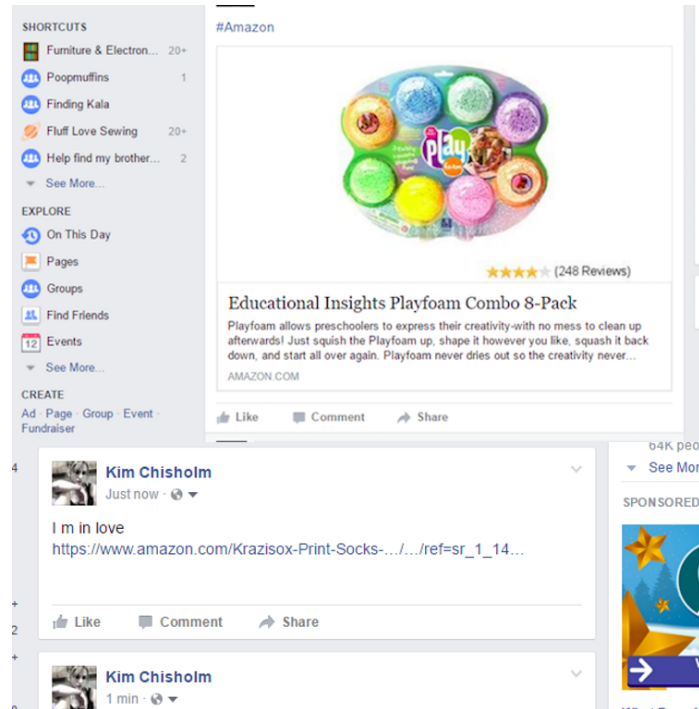
Figure 7.1 Screenshots of Facebook postings uploaded by a participant in the behavior group.

connections, and online shopping background information of the participants for each of the two conditions in our HIT.

7.4 Results

7.4.1 Categories of Items Sharing on Social Network

As mentioned in the previous section, we asked the participants to choose 2 to 5 items that they would share on social networks from Amazon.com, the most popular shopping website in the U.S. For the purpose of data analysis, we classified the participants' selection of items by using the existing first-tier categories that each item belongs to on Amazon.com. Based on the responses, some of the Amazon-brand product lines are listed as independent categories on the Amazon website, such as Fire TV and Echo & Alexa. These categories were then adjusted based on the nature of the items. For example, if the participants picked Amazon Fire TV or Echo Dot

Table 7.2 Participants' Demographic and Background Information

	Characteristics	Intention (n=113)	Behavior (n=98)
Gender	Male	32.7%	39.8%
	Female	67.6%	60.2%
Age	18-24	13.3%	14.3%
	25-34	49.2%	59.2%
	35-44	23.9%	14.3%
	45 or older	13.3%	12.2%
Race	Hispanic	9.7%	10.2%
	White	61.1%	68.4%
	Black	14.2%	12.2%
	Asian	11.5%	5.1%
	American Indian	2.7%	4.1%
	Other	0.9%	0.0%
Education	High school or lower	20.4%	11.2%
	Bachelor	69.0%	76.6%
	Advanced degree	10.6%	12.2%
Online Shopping History	More than two years	85.8%	74.5%
	Two years or fewer	14.5%	25.5%
Online Shopping Frequency	Once every week	29.2%	32.7%
	Once every month	38.9%	37.8%
	Once every 3 months	22.1%	16.3%
	Less than once every 3 months	10.7%	13.3%
Number of Facebook Friends	100 or fewer	27.4%	30.6%
	101-200	18.6%	22.4%
	201-300	17.7%	12.2%
	301 or more	36.5%	34.7%

Table 7.3 Results of Item Sharing Tasks by the Intention Group (n=113)

Category	Count
Electronics & Computers	92
Home, Garden & Tools	62
Beauty, Health & Grocery	52
Clothing, Shoes & Jewelry	37
Movies, Music & Games	34
Toys, Kids & Baby	29
Books & Audible	19
Sports & Outdoors	14
Handmade	10
Gift Cards	3
Total	**352**

in our HIT, the item was categorized under "Electronics & Computers" for further analysis.

We recorded the 352 links provided by the participants in the *intention* group. Table 7.3 presents the product categories of items that the participants indicated they would share on their social network accounts. "Electronics & Computers" (92), "Home, Garden & Tools" (62), and "Beauty, Health & Grocery" (52) were the top three among the major product categories, accounting for half of the total item selections, followed by "Clothing, Shoes, & Jewelry" (37), "Movies, Music & Games" (34), and "Toy, Kids & Baby" (29).

We recorded the 202 uploads provided by the participants in the *behavior* group. Table 7.4 presents the product categories of items that the participants actually shared on their Facebook timelines with their family and friends. The results of our study showed "Electronics & Computers" (49), "Home, Garden & Tools" (36), and "Toy, Kids & Baby" (26) were the top three among the product categories for the behavior group, with "Movies, Music & Games" (25), "Clothing, Shoes, & Jewelry" (22) and "Beauty, Health & Grocery" (13) ranked from the fourth to the sixth.

Table 7.4 Results of Item Sharing Tasks by the Behavior Group (n=98)

Category	Count
Electronics & Computers	49
Home, Garden & Tools	36
Toys, Kids & Baby	26
Movies, Music & Games	25
Clothing, Shoes & Jewlry	22
Beauty, Health & Grocery	13
Books & Audible	12
Sports & Outdoors	10
Handmade	5
Automotive & Industrial	4
Total	**202**

7.4.2 Factors of Item Sharing on Social Network

To understand how our participants made their item selection choices to share on Facebook with their family and friends, we used semantic differential scales for several items as shown below. These ordinal rating scales are designed to reflect participants' thoughts during their decision-making processes in the study.

We examined the responses using the twelve label items (see Table 7.5), including details of items, privacy concerns, general feedback, and common interests, in the online survey. After indicating the items to share on their social network site, participants rated their agreement to the twelve statements listed in Table 7.5 on a scale from: 1 (Strongly Disagree) to 7 (Strongly Agree). The frequencies of the responses are as shown in Table 7.6.

Since the measuring scale used in this study was not from prior work, we performed factor analysis [189] to uncover underlying factors (constructs) for the 12 label items (in Table 7.5). We ran the Factor analysis (Principal Axis Factoring) with Oblimin rotation on the responses to the 12 label items. A low communality (<0.4) suggests that an item is not adequately explained by any of the factors. We

Table 7.5 Label Items and the Measurements in the HIT

Label	Measurement
	"Please rate how you agree/disagree with the following statements: I posted the specific items that I chose on my Facebook page, because ... "
Detail	... I'd like to know more details about the items from my friends (e.g., material, function, and durability).
Privacy	... I considered privacy an important factor when deciding which items to post.
Appropriate	... I considered the items as socially appropriate.
Feedback	... I'd like to get feedback from my friends about the shopping experience with the item (e.g., shipping, return policy, and customer support).
Interest	... some of my friends might be interested in the items I was sharing.
Common	... the items could elicit common interests.
Price	... I'd like to get feedback about the price I should pay for the item(s).
General	... I would like more general information about the item(s).
Comfort	... I felt comfortable letting my friends know the items I was interested in.
Discuss	... the posting may encourage discussion among my friends.
Similar	... my friends have shared/posted similar items.
Concern	... I had no privacy concerns for the items I was sharing.

Table 7.6 Frequencies (%) of Label Items Constructing the Research Variables (N=211)

Ratings of the label items for considering products to share on social network

	1	2	3	4	5	6	7
Detail	5.2%	9.5%	10.0%	13.7%	21.3%	24.6%	15.6%
Privacy	5.2%	9.5%	11.8%	12.8%	16.1%	20.4%	24.2%
Appropriate	1.9%	2.8%	4.3%	7.1%	14.2%	32.7%	37.0%
Feedback	7.1%	6.2%	8.5%	11.4%	19.9%	27.0%	19.9%
Interest	2.4%	2.8%	4.3%	8.5%	17.1%	33.6%	31.3%
Common	3.3%	1.4%	6.6%	9.5%	19.9%	32.2%	27.0%
Price	9.0%	9.0%	8.1%	10.9%	17.1%	23.7%	22.3%
General	8.3%	5.2%	10.0%	17.1%	18.5%	22.7%	18.0%
Comfort	4.3%	3.3%	4.3%	4.3%	16.6%	32.7%	34.6%
Discuss	2.4%	3.8%	7.1%	10.4%	17.1%	32.7%	26.5%
Similar	5.7%	10.0%	10.0%	13.3%	13.7%	25.6%	21.8%
Concern	5.7%	6.6%	5.7%	14.7%	14.7%	24.6%	28.0%

1: Strongly Disagree; 2: Disagree; 3: Slightly Disagree; 4: Neither Agree nor Disagree; 5: Slightly Agree; 6: Agree; 7: Strongly Agree

performed the factor analysis iteratively and removed label items as needed, based upon communalities being too small and/or evidence in the Structure Matrix of cross loading. For example, we removed the "privacy" label item during the first iteration of factor reduction analysis, as the communality was 0.29 (<0.4). We then performed the second iteration with the remaining items, and removed label items, "similar" and "concern," as needed in subsequent iterations. The iterative process continued until all label items returned satisfactory communalities and factor loading values, for a total of three iterations. We also examined the residuals each time to ensure whether another factor should be included. After a series of Factor Analysis iterations, we found a two-factor solution, with no cross-loadings and adequate communalities, for nine of the label items as shown below in Table 7.7, which bold values indicate the classification of the label items into variables of interest. Based on the results, we consolidated the factors into two new variables, *Information* ($\bar{X} = 4.79$, sd= 1.55) and *Sociality* ($\bar{X} = 5.57$, sd= 1.26).

Table 7.7 Results of Factor Loadings

	Information	Sociality
Detail	**0.798**	0.390
Feedback	**0.741**	0.372
Price	**0.824**	0.348
General	**0.811**	0.346
Appropriate	0.321	**0.707**
Interest	0.345	**0.877**
Common	0.307	**0.789**
Comfort	0.413	**0.854**
Discuss	0.480	**0.770**

After a normality test of the data, we used a paired t-test to compare the two variables of interest: Information and Sociality. There was a significant difference in the values for *Information* ($\bar{X} = 4.79$, sd= 1.55) and *Sociality* ($\bar{X} = 5.57$, sd= 1.26), t(210)=-7.407, p<0.001. The results showed the participants considered significantly

higher impacts of *Sociality* than *Information* for products to share on social network. This suggests, compared with seeking *information* from their Facebook friends, the participants considered *sociality* of the products (e.g., common interests, discussion among friends) as a higher priority factor in deciding what items to share on social networks.

We used non-paramedic statistical tests for our analyses because a Kolmogorov-Smirnov one-sample test on our data revealed that it was not normally distributed. Then we performed non-parametric bivariate correlation tests for Information, Sociality, and the background variables listed in the methodology section. The level at which the participants perceived *Information* and *Sociality* was not significantly correlated with any of the demographics variables (age, gender, or race). With regard to the online shopping background, we found, interestingly, *sociality* did have significant negative correlations with "Online Shopping History" as shown in Table 7.8, which suggests that participants with shorter online shopping history considered more of *sociality* of the products when sharing the items on social networks with their family and friends. However, no statistically significant relationships were discovered between the variables of interests (*Information* and *Sociality*) and "Number of Facebook friends" or "Online Shopping Frequency."

Table 7.8 Correlations of Data for Variables of Interest

	Information	Sociality	OSH*
Information	1.0	r=.42, p<.01	r=.04
Sociality		1.0	r=-.16, p<.05
OSH*			1.0

OSH = Online Shopping History

7.4.3   Product Category Comparison of the Two Groups

To address the intention-behavior gap, we compared the items that participants in each of the two groups chose to share on social network. In our HIT, participants

in the *intention* group provided us with the links to the products, while those in the *behavior* group were asked to post the items on their Facebook timelines and upload the screenshots of their postings as proof of their task completion. Table 7.9 presents the combined category counts of the items that our participants chose to share in the HIT.

As shown in Table 7.9, the top six categories were consistent across the two groups of participants, but with a different ranking order in some of the popular product categories. For example, "Electronics & Computers" were the favorite categories for participants in both groups, while "Beauty, Health & Grocery" dropped from 3rd place for the intention group to 6th place for the *behavior* group. Moreover, we noticed "Toys, Kids & Baby" came 3rd in ranking for the *behavior* group with a much higher percentage than that by the *intention* group.

Table 7.9 Results of Item Sharing Tasks for Each Category

Category	Intention (n-352)	Behavior (n=202)	Ranking Difference
Electronics & Computers	26.1%	24.3%	0
Home, Garden & Tools	17.6%	17.8%	0
Beauty, Health & Grocery	14.7%	6.4%	-3
Clothing, Shoes & Jewelry	10.5%	10.9%	-1
Movies, Music & Games	9.7%	12.4%	+1
Toys, Kids & Baby	8.2%	12.9%	+3
Books & Audible	5.4%	5.9%	0
Sports & Outdoors	4.0%	5.0%	0
Handmade	2.8%	2.5%	0
Gift Cards	0.9%	0.0%	-1
Automotive & Industrial	0.0%	2.0%	+1

7.5   Discussion & Design Implications

The findings demonstrate people's categorical preferences of sharing items on social networks with family and friends. By examining the results of the survey responses,

we also identified the factors of postings, *Information* and *Sociality*, which have an impact on people's choices of items to share on Facebook. In this study, the comparison of the results from the *intention* group and the *behavior* group also generated some interesting implications for business managers and social commerce researchers.

7.5.1   Categorical Preferences of Social Shopping

Categorical preference indicates consumers' behaviors and likelihood of satisfaction toward different types of products [42]. The results of the study show that people do have categorical preferences of sharing certain products on social networks. For example, "Electronics & Computers" items were the most widely shared by the participants in our HIT across both conditions, followed by "Home, Garden & Tools," "Beauty, Health & Grocery," "Clothing, Shoes, & Jewelry," "Movies, Music & Games," and "Toy, Kids & Baby," among the popular categories for people to share on Facebook. Our findings are consistent with previous research on consumer preferences of online and offline shopping methods [102]. The preference patterns emerged as people become more reliant on online shopping channels, and shopping activities evolving into social behaviors as a phenomenon of global interest for marketers, businesses, and researchers [12]. To inform future research, this study identified the preferable categories of products that may facilitate "bridging" channels between shopping activities and social relationships. For example, to study the impact of shopping activities on people's social relationships, researchers may bootstrap or start their process by focusing first on the top categories that people have the most intents and willingness to share and discuss among online social communities, instead of building apps or systems that cover all categories of products and services.

7.5.2 Information Seeking and Perceived Sociality

Recent developments of social commerce enables social media users to easily share product information, seek advice from their social community about their purchasing decisions [106], and articulate attitudes toward products and services [107]. The findings of this study also confirmed that people consider information and advice-seeking as important factors when sharing products on social networks. The data from our survey suggested that one major driver of people sharing items on social networks is the feedback from their social friends, including price, functionality, product details, and customer experience. In addition, we found that perceived *sociality* of products also plays an important role for people to consider sharing items with their family and friends. This study found that people prefer to share items that may provoke common interests among friends and trigger discussions on social networks. It might not be surprising to identify a correlation between *sociality* of products and people's sharing preferences. However, this study contributes a new dimensional attribute of product to consider for future research to understand people's behaviors, attitudes, and preferences in social commerce and social relationships. For researchers and developers, the focus of designing such social apps and systems should be building an online community that engages people in discussions and interactions, rather than an online shopping Question-and-Answer platform.

7.5.3 Comparison of *Intention* and *Behavior*

One objective of this work was to examine the "intention-behavior gap" in the context of categorical preferences in social commerce. To address this question, we compared the results from two separate groups, an *intention* group and a *behavior* group. The data shows that the two groups of participants shared the top six categories of items in our HIT, but not necessary in the same order, with "Electronics & Computers" being the most popular category to be posted on social networks.
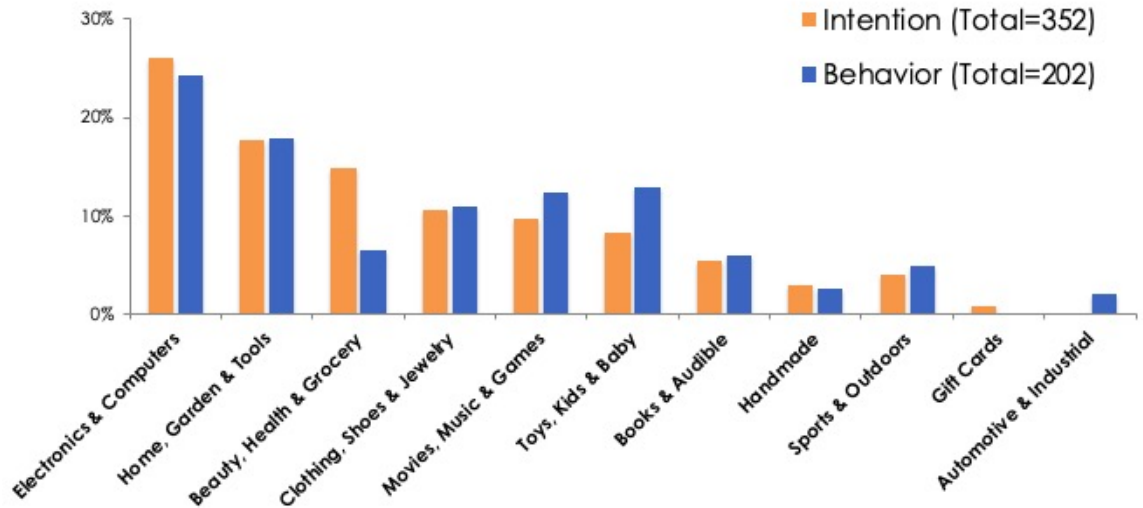
Figure 7.2 Summary of study results for the two groups of participants (% adjusted).

Though these results do not indicate a strong "intention-behavior gap," it is still interesting to notice and analyze the differences in the ranking order of some popular categories of items between the two groups of participants, as shown in Figure 7.2. For example, a much higher percentage of participants in the *behavior* group preferred children-related products to actually be posted on their Facebook timelines. There are several possible interpretations of the results in our HIT. The higher rank of "Toy, Kids & Baby" in the behavior group might be because *sociality* played a more important role when the participants were asked to actually post the items of their choice on Facebook. In comparison, the participants in the *intention* group were just required to provide the links to the items instead of posting them on social networks.

Therefore, it is possible that the participants of the *intention* group were confused with the differences between "what to buy" and "what to share" in this context, while the *behavior* group more clearly focused on the "sharing" – social attributes of the items that they chose to share with their family and friends.

7.6 Limitations

We recognize that our study has several limitations that may post threats to the generalizability of the results. First, MTurk allows participants to self-select into HITs, and our HIT only required that participants were residing in the U.S. Also, MTurk workers are considered tech-savvy, as they need to complete tasks on online platforms. The sampling bias may also limit the generalizability of our results to a more general public.

Second, the categories of items that Amazon.com carries as a retail website are also limited. For example, our participants were not able to choose certain items, such as cars, hotels, and travel packages, to share on social networks in our HIT at that time. Some of these categories may also have high *sociality* attributes that may serve as good fits for people to share and discuss with their family and friends, to establish, maintain, and improve their social relationships. Additionally, user habits of shopping on Amazon.com may also differ from that on other online platforms, which may affect the participants' sharing choices in this study.

Third, there was an economic incentive for participants to participate in our HIT. Though we tried to minimize this effect as much as possible, it might still be possible that MTurk workers just completed the task for the monetary gain without thinking seriously about the task, especially for the participants in the *intention* group, as they did not have to actually post on their social networks.

7.7 Summary

Social shopping connects people's shopping activities with their social communities. Much work has leveraged social network data to promote sales of products and services. However, less is known about the impact of shopping activities on people's social relationships. This chapter explored people's categorical preferences of items to share on social networks. By comparing the results from the *intention* group

and the *behavior* group, we found slight differences between people's intentions and actual behaviors in sharing items with their family and friends on Facebook. As a foundational work of an under-studied area, this study identified the preferable categories of products that may bridge between shopping activities and social relationships. For example, to examine the impact of shopping activities on people's social relationships, researchers may start their work by designing apps or platforms with prioritized focuses on the top categories that people have the strongest willingness to share and discuss, instead of building social shopping apps or systems that cover all categories. From the results of the study, we also discovered that people consider *sociality* of the items more than *information seeking* when deciding what to share on Facebook. The results suggested that those *sociality* factors, such as common interests and discussions among social community, have greater impact on people's preferences of sharing items on social networks, than seeking information and purchasing advice from their friends.

CHAPTER 8

STUDY 3: UNDERSTANDING USER INTERACTION IN ONLINE SHOPPING COMMUNITIES FROM THE SOCIAL AND RELATIONAL PERSPECTIVES (RQ2.1, RQ2.2, RQ2.3)

8.1   Introduction

Social shopping has emerged amid the growing use of online shopping and social media systems [39], involving user-centered online communities that encourage user-generated content and interactions such as reading and writing reviews, rating products, and sharing shopping experiences [71, 91]. As an activity that naturally lends itself to social interaction [193], the social foundation of shopping has led to increasing collaborative online shopping activities and formation of online shopping communities (OSCs) [140].

The formation of OSCs is based on recent developments in e-commerce and social media, where users find and interact with others who share similar shopping interests and/or experiences [45]. In this study, we define "online shopping community (OSC)" as an extension of "*social* shopping community" (online shopping through social media engagement and interaction [130]). We consider a broad range of online platforms as part of OSCs, including retailer site communities (e.g., Best Buy Community Forum), deal-sharing communities (e.g., Slickdeals), online review forums (e.g., Laptop Mag), and social media shopping groups (e.g., Facebook Groups).

While there are numerous studies on customer participation in online social shopping communities [110], most existing literature studied social shopping from the marketing strategy perspectives, including the impact of customer participation on consumers' decision-making of purchase [3], brand awareness [50], and customer loyalty [65]. Only a few studies have investigated online communities from the social and relational perspectives [193]. For example, from the view of the social responsibility theory, Li & Li [105] advocated social media sites as independent

social actors, where consumers can establish social relationship in the context of collaborative shopping activities. Social support theory viewed emotional support and information support as important determinant of user participation in social shopping communities [106]. However, the relationship formation in OSCs still remains underexplored.

8.2   Research Question

This study shifts the focus from the marketing interests of consumer participation in social shopping to the relationship formation among user participation of OSCs. To be more specific, this chapter aims to understand whether, how, and why OSCs may facilitate social connection/relationship through user interaction. As more people turn toward online platforms and engage in online communities for product reviews, ratings, sharing, and recommendation [123], it is important to understand this new type of social community from a social relational perspective. Also, since social shopping emerges as a form of "social need" that encourages people to be connected with others [193], a good understanding of user interaction and relationship formation in OSCs may lead to enormous potential for social matching opportunities. This chapter will explore the research questions:

- RQ2.1: Why do users join online shopping communities?

- RQ2.2: What factors keep users active and making contributions to online shopping communities?

- RQ2.3: Can users develop social relationships through interaction on shopping topics in online shopping communities? Why or why not?

8.3   Methodology

We used a mixed method to examine the research questions above. We conducted a series of 6 study sessions. Each study session had 4 participants and was a

combination of a lab experiment and a follow-up focus group discussion among these participants. For all sessions, the lab experiment portion ranged from ranged from 33 to 42 minutes, and the follow-up focus groups lasted between 38 to 47 minutes.

8.3.1 Recruitment and Participant Details

Recruitment focused on people who actively engaged in social shopping activities and online shopping communities with other users on online platforms. The participants were recruited at NJIT and pre-screened by using an online sign-up form that asked about shopping interests, online shopping history, and social shopping experience. We only accepted those who self-reported to have posted contents on online shopping platforms (e.g., product review sites, deal-sharing communities, shopping discussion forums) and/or engaged in shopping groups on social media in the past three months. This criterion was used to ensure that participants were active social shoppers and online shopping community members for the study.

A total of 33 NJIT students filled out the sign-up form, of which 24 participated in the study. Fourteen (58.3%) participants were female, and gender was balanced as much as possible across all study sessions. Four out of six sessions had 2 male and 2 female participants, while the remaining two consisted of 3 female and 1 male. The average age of the participants was 23.2 (SD = 3.58), with a range of 18 to 31. Breakdown of ethnicities was as follows: 7 White, 9 Asian, 4 Black, 3 Latinx, and 1 Native American. Each participant was paid $10 for completing the lab experiment and the follow-up focus group, which lasted from 73 to 83 minutes, though we allowed the participants to quit after the lab experiment for partial payments.

8.3.2 Experiment Procedure

As described above, each of the 6 study sessions consisted of 4 participants and was comprised of two parts: a lab experiment and a focus group. For the lab

experiment, all participants were asked to do two mini tasks, one individual task and one group task. Similar to marketing experiments that investigate consumers' shopping behavior, we provided a cover story of a shopping scenario to the participants for each individual and group task.

The shopping scenario for the tasks in the study was "recommending a laptop for an incoming college student for both entertainment and study use". The scenario was used because all selected participants indicated "electronics (e.g., laptop)" as their shopping interests in the sign-up form, and "electronics" is regarded as a shopping category of "high sociability" (i.e., a category more likely to initiate discussions)" [183]. For the individual task, we asked the participants to come up with a product recommendation by using online forum posts and product reviews. For the group task, we created a Facebook group called "social shopping group" for the study. Each participant was given a gender-neutral pseudonym (e.g., Alex, Hayden, Jackie, Leslie) for real-time text conversations within the shopping groups. We let the discussion among the participants continue until a consensus recommendation was reached among all group members. At the end of each individual and group task, a survey questionnaire was given to each participant to evaluate the perceived connection with online review provider/forum user (individual task) and shopping partner (group task). We altered the order of individual and group task after each of the 6 study sessions to control for any possible order effects [150]. During the course of in-person lab experiments, all participants were separated to avoid any verbal and non-verbal interactions except for the computer-mediated text conversation in the group tasks.

After the lab experiments were completed, we held focus groups to discuss the past tasks with each group of participants. The focus group protocol aimed to learn about the participants' thoughts of the two mini tasks, compare the shopping tasks
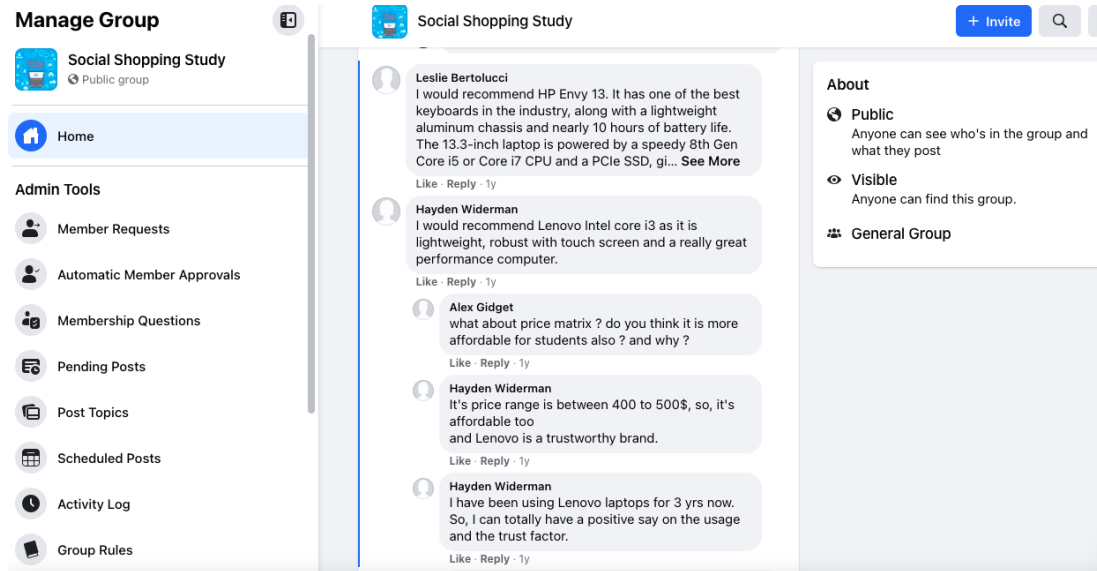
Figure 8.1 Sample snapshot of participants' interaction on the shopping topic in the group task, where they are discussing a product (laptop).

with their past social shopping experience, and talk about the experience of engaging in online shopping communities in their day-to-day online shopping activities.

The study setup was designed for two main purposes. First, the two mini tasks in the lab experiments were designed to replicate the two typical participation types and social structure in online shopping communities: unilateral, where most users stay as follower to receive information from the platform; and reciprocal, where users exchange text conversations with others, as well as receiving information and contributing knowledge to the community. Second, as the concept of "social shopping" and "online shopping communities" are sometimes vague and inconsistent [12], we used the mini tasks as the examples for the participants to connect and recall their real-world experience in the focus groups. We believe the experimental design was appropriate, as participants discussed about the mini tasks they conducted in the experiment, for example: "That's what I typically do in my life... somewhere [online] I just read other people's posts and never say anything, but in my [Facebook] group, I always talk to people and I kind of enjoy the discussion."

8.3.3 Questionnaire Measures

We used a survey questionnaire from existing computer-mediated communication literature [83] with minor modifications to measure participants' perceived connection with others in a social shopping context. Similar to the operationalization of "attraction" and "relationship" as "willingness to meet" in social matching [117], we operationalized "social relationship formation" in our study as the measurement of "would like to keep as contact" for future shopping interaction.

For the purpose of the study, we believed it to be challenging for the participants to remember and evaluate multiple subjects, which might result in confusion and misunderstandings. Therefore, we decided to ask the participants to evaluate their perceive connection with only one subject per task. For each individual task, we asked the participants to note the username of "your most impressive online forum/review user", and for each group task, the evaluation was based on "your most impressive shopping partner in the group". The questionnaire was provided to each participant immediately after they have finished the individual task and group task, respectively.

Participants were given a survey to evaluate "the online forum/review user" after each individual task (see Appendix D). The first scale was a 5-item, 7-point Social Connectedness Scale (Cronbach's $\alpha = 0.87$) (Van Bel et al., 2009). The endpoints of the items were labeled "(1) Totally disagree" to "(7) Totally agree." This social connectedness scale consisted of items addressing the feelings of closeness and shared thoughts between the participant and the chosen online users (e.g., "I often know what s/he feels" and "I feel that s/he often knows what I think").

The second scale was the Inclusion of the Other in the Self (IOS) Scale. The IOS measures perceived intimacy [11] using a 2-item, 7-point pictorial item (see Appendix D). Each of the pictures in the first item shows two circles labeled "Self" and "Other", and the second items shows "Self" and "Community", while "community" was defined in the questionnaire as "the most impressive shopping

forums/review sites you used in the task". In each picture of the two items, the circles overlap more and more, from non-touching to almost fully overlapping. Participants are asked which of the pictures most closely represents the relationship with other user and the platform of their choice in general.

Finally, participants were asked to rate how much they agreed with the statement "I would like to keep the him/her as my contact on the platform" on a 7-point scale. The end-points of this scale, which was specifically designed for the purposes to measure the relationship formation, were labeled "(1) Totally disagree" to "(7) Totally agree."

For evaluation of "the shopping partner in the group" after each group task, the questionnaire was identical in most parts, with only two exceptions (see Appendix E). First was for the second item in IOS Scale, we defined the "community" as "the shopping group" in the group task. Besides, in the final part which we measured the relationship formation, we added an additional statement "I would like to keep the shopping group as my contact on the platform" for the participants to rate on a scale of "(1) Totally disagree" to "(7) Totally agree". In this case, the Cronbach's α for Social Connected Scale was 0.85.

8.3.4 Focus Group Data Collection and Analysis

All focus groups were audio recorded and transcribed for data analysis. The focus groups ranged from 38 to 47 minutes in length. The protocol started with questions about the thoughts of conducting the tasks in the study and how they compare the two types of user participation and interaction in a social shopping context. Then we asked the participants about their social shopping experience, motivations, behavior, expectations, and challenges on online platforms. Some of the literal questions that asked about their experience were: "Why do you participate in the [online shopping group/community]?" and "How do you evaluate your relationship with

other [group/community] members?", where specific groups or communities depend on the response from previous questions. However, other questions that asked more generally about their regular activities and interactions with others also contained discussions on the topics.

As an exploratory work in this field, this study used a Grounded Theory approach for qualitative analysis of the focus group data. We went through iterative independent coding process to allow themes to emerge naturally from the data. We then generalized theories from the themes. We used open-coding and arranged the codes in groups and hierarchies to determine emergent themes. High-level codes included "experience, motivations, evaluation", as well as emotional codes such as "support, relationship, connectedness".

8.4   Findings

8.4.1   Results of the Lab Experiment

After normality tests of our data, a paired-sampled t-test was conducted to compare the three attitudinal measures in individual and group task conditions. Table 8.1 presents the mean scores of each variable and the outcomes of the overall results. There was a significant difference in each of the three variables: connectedness, intimacy, and willingness to keep the connection. For each of the three measures, participants rated higher for the perceived connection with the shopping partners (group task) than that with the online forum/review users (individual task). The results suggest that when engaging in text conversations within a shopping group, our participants are more likely to keep the shopping partners and the group for future interactions, if possible, than merely consuming information from other users on online shopping platforms.

The lab experiment examined the effects of two types of user participation of social shopping on participants' evaluation of their relationships with others and the

Table 8.1 Comparison of Participants' Perceived Connections in the Individual and Group Task Conditions (N = 24)

Measure	M (SD) Individual	M (SD) Group	Diff. (SD)	t (23)	p
Connectedness	2.60 (0.48)	4.81 (0.41)	-2.20 (0.58)	-18.55	<.01
Intimacy	2.45 (0.57)	4.54 (0.74)	-2.08 (0.72)	-14.23	<.01
"Would like to keep contact ..."	2.25 (1.07)	5.02 (0.52)	-2.77 (0.86)	-15.79	<.01

community. The experimental manipulation tested two conditions and found that participants, when engaged in text conversation within an online shopping group, evaluated their partners and the community more positively, than users on online forum and review sites, for informational purposes only.

Compared with unilaterally retrieving information from online platforms, participants that engaged in real-time text conversation within the computer-mediated online group on a shopping topic reported feeling more connected to their partner, feeling more intimate, and were more likely to state they would keep their partner and the group as contacts for future interactions.

These encouraging findings support that users are more willing and likely to develop a social connection/relationship in online shopping communities when they are facilitated with real-time text conversation to discuss on a shopping topic, whereby the likelihood and willingness of relationship formation decrease significantly when their participation in online shopping platforms are limited to unilateral informational purposes only.

The statistical analysis suggested positive correlation between conversational interactions and interpersonal social relationship formation in online shopping groups; however, there is more to be discovered about why and how such connection or relationship may be developed in various scenarios, and what other factors may also affect user participation and relationship formation in online shopping communities.

To further explore the underlying rational and factors, a qualitative approach was used next to get a better, comprehensive understanding of this topic.

8.4.2 Findings of the Focus Groups

As this study aimed to understand user participation and interaction in online shopping communities from social and relational perspectives, we focused on the interpersonal relationships between the users, rather than a seller-buyer relationship in most existing market research. We collected qualitative data from the six groups to to get a general understanding of the life-cycle of how users join/quit an online shopping community, the typical participation and interaction patterns, and user evaluation of their relationship with others in this context. In this section, we present representative quotes with pseudonyms to protect participants' privacy.

8.4.2.1 Joining/quitting an Online Shopping Community. Since all participants claimed to be an active member of online shopping platforms (e.g., review sites, forum, social shopping group) when they signed up for the study, we asked about how they joined their respective group(s), as well as when and why they started perceiving themselves as a part of the community. While there are different motivations, we found that "opportunism" is the dominant reason for joining an online community. In fact, most people expected to "grab (the information) and go" in the first place. As Jack said, "I was trying to buy a new lens for trip to France at the time, so I looked at all the reviews on the (camera) forum, and that's when I created an account on the forum because you need an account to read the posts ... then I pretty much enjoyed talking with other people there, as I think I can learn something from them and we do like similar stuff." Linda echoed with what Jack said, "I consider myself a part of Slickdeals community (a deal-sharing website). At first, I go there just to check the deals, and I have never considered writing anything for several months, until once I engaged in a conversation about a Nest camera deal on Black Friday.

After that, when I started to discuss with others now and then, I feel I'm a part of it (the community)."

A few participants joined the community through their existing friends, either online or offline, which is more common in user-generated online shopping groups on social media. As Marilyn told us, "I joined the fashion group on Facebook because one of my friends invited me to. There were about 20 people in the group, and now it's almost 80. We have discussions about clothes, shoes, accessories almost everyday . . . obviously I don't engage in every conversation, but I would say I'm fairly active." Interestingly, another way to create and join the online shopping community was the formation of a subgroup from a larger community, due to the desire for more active participation from the members. For example, Ashley mentioned how she joined a shopping group on WhatsApp, "We were all from a jewelry group on Facebook, of about 30-40 people, but when we realized that it's always a few of us being active, we decided to create a new group with just the active guys . . . we thought it's just easier if we want everyone to kind of participate. As you know, it's always awkward to kick someone out."

Most of the participants have experience of leaving/quitting online shopping communities, especially when they feel emotionally detached with other members in the community. "You don't necessarily get new information every day, but when you feel you have less to share and talk about with other people there, you know it's time to leave (an online electronics forum)." Frank said to us. Due to the relatively loose social structure in online settings, most "quits" happened in a silent way. "You never really need to tell them you have decided to quit. All you have to do is to remain inactive for a while, and everybody knew you're leaving," Angel said. Echoing Angel's statement, James said, "Yeah, for sure, I never say goodbye to online people, nobody does that." However, it's not always the case with a silent quit. Active quits are more likely to happen when participants have earned some status in the community.

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As Ivan said, "I quit (an online camera forum) because it's too much work. I've got to focus on my studies ... I know there are some people following my posts on the forum, and I have to let them know I will not be contributing anymore." People also tend to say goodbye explicitly when the online communities are relatively small, and the relationships among the members are regarded as close. As Anne told us, "There were only 9 of us in our group (online fashion group), and people kind of know each other. I told them I have to 'quit' when I got pregnant, as we are kind of friends in a way, so I guess I need to tell them I'm moving on to something else."

8.4.2.2 Participation and Interaction in Online Shopping Communities. While there are various participation types and roles that users play in online shopping communities—some participated more as contributors, whereby some played more of the follower roles—our work focused on understanding the user behavior in online shopping communities from the social and relational perspectives. More specifically, the questions asked in our focus groups aimed to identify the motivations that facilitated user participation and interaction and kept users active in the communities. Three main themes emerged along these lines: information exchange, community social status, and emotional support.

8.4.2.2.1 Information Exchange. Seeking information was a major theme among the participants when engaging and participating in online shopping communities, especially during the early stage of their membership. It is very common that people were just to look for useful knowledge about any specific products, brands, or retailers for a period of time when they first joined the communities. The "opportunistic" motivation was echoed by many participants. "Basically nothing for the first two months. I was there trying to get what's trending (handbags) right now. They share pictures of the celebrities and themselves, and all I did was 'liking' them."

Natalia said, when asked about the first time she had posted anything on a Facebook handbag group.

While it is not too surprising to learn that "opportunism" is a major motivation for participation in early-stage users, many participants came to contribute somehow when they realized they wanted to stay with the community for a longer time. Some felt they had a moral responsibilities to reciprocate for the benefits they received from others and the community. For example, when asked about why and when she started to write things on a deal-sharing community, Linda said, "Other people are talking about a lot of interesting things and I think I got really useful information from them. So, I guess I have to do something, like sharing the deals I learned from somewhere else, and telling other people about something I have used, either good or bad." Others felt sharing information is essential for the success of the entire community, as Jack said, "It (information sharing) is the key of our forum. If everyone just takes it and go, but never leaves anything there, the forum is going to be dead pretty soon... when people ask a question that I think I know the answer to, I go and tell them. That's why we are here, to help each other." Some shopping groups/communities even explicitly made "kick-out" rules for members based on their "activeness." For instance, "In our (Facebook) group, you get like one-month grace period. After that, we need to make comments or new posts at least every a couple of days. Otherwise, you get kicked out by the group administrator." Elizabeth said, "We are not saying that you should be active every day. Although we lose some people, obviously, but definitely we don't want free riders."

8.4.2.2.2 Community Social Status.

Another major motivation of user participation and contribution emerged among the participants in our study was the pursuit of social status within online shopping communities. Similar to other virtual communities, social status are typically earned in online shopping communities

by (1) badge or star systems, where users accumulate through their activities in the communities, and (2) reputation, where users (username/user ID) were well recognized and appreciated by other members of the social group/communities.

Some users enjoyed interacting with other users and contributing to the community, partly because of the social status incentive. "With the badges (next to the username in user profile), everybody looks up to you, which makes you feel so good," Explained by Zach, an online electronics forum user, "You get points for logging on, making comments, sharing links, and 'likes' of your posts from other users. Whenever you reach a certain amount of points, you are entitled with higher ranks. I'm not saying I'm doing all the stuff only for the points, but definitely it's a bonus for what I have done." Zach's statement was echoed by some other participants too, including Jack, who said, "We don't get any points or badges, but everyone in the (camera) community knows my ID, as I have actively been there for quite a long time. When I say something, people believe what I said… I always give my honest opinions for what I know, and I like the feeling of being influential, to some extent."

However, though participant generally agreed that they enjoyed higher social status within the communities, it is not always a good thing to be considered "influential." It is also interesting to learn about the emotional tolls of those "high-ranking" users in online shopping communities. "Sometimes you also feel the pressure too. They expect you to know everything, but it's not always the case." stated Henry, who is a reputable member of an electronics group on Facebook, "You know about the laptops doesn't mean you know everything about it. I can give general recommendations for people, but I can't make everyone happy." While enjoying being "influential" in the community, those high-ranking members also felt pressure keeping their hard-earned reputation and feeling obligated to make positive contributions to others.

8.4.2.2.3 Emotional Support. Different from early-stage users, conversations between long-time members of online shopping communities often go beyond information exchange. In fact, many participants talked about the importance of the emotional attachment to others on their interactions in the community. "It's more than just talking about shopping for clothes, handbags or shoes. It's about a lifestyle that all of us sort of admire." Explained by Marilyn, "I think it's like a big family. You feel comfortable talking to them, because you know they are always supportive." Jack added, "My mom never understands why I spent so much time and money on these stuff, and called it totally useless. So when I talk to other people on the forum, I feel so relieved. I guess there are a lot of people like me there, and that's why I have been there (the forum) for so many years." Actually, many participants discussed about the emotional belongness to the community as a prominent reason that kept them staying active with others on a regular basis and/or for a long period of time.

There were a mix of participants who described themselves as "naturally caregivers" and those who presented themselves more "supportive" online than in person. Henry enjoyed "caring" for others in the community, though sometimes it cost him hours of understanding the requirements and expectations. He also talked about the emotional roots of helping others on this topic. He said, "I feel happy helping with others and being thanked by them. I have been in those situations too. It's a big investment (to purchase a laptop), and you always want to make the right decision... I do this in my life as well, as people know you are good at this. To be honest, I don't know how to say 'no' to them (laugh)." For the latter group, they felt less "responsibilities" of making things "right" online, than in their real life. "When someone shares their life story, you know they just need your support. I might point something out if it's a friend in my neighborhood. But online, everyone is supportive, and so I am." Most participants mentioned that they have given to or received emotional support from others in their interactions with others within

online shopping communities, though only a few said they normally talked about "life beyond shopping."

8.4.2.3 User Evaluation of their Relationships with Others and the Community. RQ2.3 focused on the relationship formation in online shopping communities. While the results of lab experiments showed that people were more likely to keep the connection with others when they engaged in more real-time text conversation with others, the underlying factors that affect user perception of the relationships formation with shopping partners, however, still remain unknown. The questions in the focus groups asked about how users perceive and evaluate their relationships with others in online shopping communities through their daily interaction on shopping topics.

8.4.2.3.1 Weak Social Ties. A few participants described their relationships with someone in online shopping communities as "subfriendship," which is referred to as more than an acquaintance, but less than a friend. "I can't really say we are friends. We share similar interests, have interesting conversations . . . when I need some suggestions on clothes or bags, she's always the first one to put comments." Jennifer said, when asked to describe her relationship with someone she had the most interactions with in the community, "but I don't know nothing [anything] about her, like how she looks, where she lives, or what college does she go to. But since we often talk to each other on Facebook [group], I feel she's someone that I can trust."

Not surprisingly, participants talked about the more positive impacts of emotional support with others on their relationships, than informational exchange. As Marilyn mentioned about her partner on a Facebook fashion group, "Most of the time we discuss about clothes, shoes, or other stuff, but sometimes we talk about life, marriage, or work, I think it's getting something meaningful." Though the connections are perceived to be weak, most participants would go to someone in the

community for communications beyond shopping. "We know each other by talking about phones and computers (on Facebook group), but occasionally we also discuss about things like sports or movies," Angel said.

8.4.2.3.2 Unilateral and Reciprocal Relationships. As mentioned earlier, there are two major social structure forms in online communities: unilateral and reciprocal. As we learned from the participants, unilateral social structure is typically formed and facilitated in most forums and review sites, while reciprocal structure is more common in shopping groups on social media sites, such as Facebook and WhatsApp. In a unilateral social structure, more people participated as followers, where only a few center users contribute on a regular basis. In this case, interpersonal relationships can hardly emerge within the communities. As James said, "I would say our interaction is very limited, as only a few people are actually posting things. . . you can never build anything with someone who never shows up."

In comparison, in a reciprocal community, connections between users are more likely to emerge through the interaction. In particular, users get to know each other through conversational interactions, where timely responses are expected from relational partners. As Elizabeth told us, "In our (Facebook) group, everyone participates and respond to others very quickly, and that's why we get along with each other. . . If you are just reading product reviews on a website, or never get responded, you don't have that feeling, of human, you know." Many participants agreed with Elizabeth's statement, and acknowledged the importance of the conversational interaction. "You want to be connected with real people, you want discussions, otherwise you don't need a community," said by Ivan. In general, we found that "human contact" were much appreciated in the evaluation of their interaction with others, while people have much lower evaluation of their relationship with other users when they use the community as "information bulletin." When asked to compare

the two tasks they did in the lab experiments and recall their real-world experience of participating in various platforms and communities, Jack said, "I went there (Amazon.com) just to look at the reviews. I spent quite a long time there, but I didn't even pay attention to who posted it, even for those that I think are of good quality... I think interaction is really important. When you have conversations with others, you are somehow more connected." These findings are consistent with the lab experiment results in our study.

8.5 Discussion

The emergence of social shopping has encouraged and facilitated interaction between strangers based on similar shopping interests and experience, which further lead to the formation of a relatively new type of communities on various online platforms. While most studies on social shopping have focused on the factors that influence purchasing behaviors, this study aimed to examine user participation and relationships in online shopping communities from the relational perspectives. In addition, we conducted a lab experiment to study the relationship formation between users through interactions in a social shopping context, and the results are supportive of the emergence of potential online social connection/relationships among users in online shopping communities.

8.5.1 Informational and Emotional Support in User Participation and Relationship

Informational support and emotional support have been characterized in social support theory as the major supportive factors for user participation and behavior in traditional online communities [70]. Extending this theoretical framework, we inquired into how the informational support and the emotional support affected

user interaction in a social shopping context, as well as their participation and interpersonal relationships in the emerging online shopping communities.

Social support is essential in online shopping communities because supportive interactions among members let them feel closer to one another and more comfortable in exchanging information [106]. One of the most interesting findings was the differences in the roles that these two types of support played in the process. The results suggested that most people joined and started to participate in the online shopping communities mainly for informational purposes. However, emotional support played a more important role in keeping members active and contributing to the community for the long term.

In other words, users who only experience informational support are more likely to stay "opportunism" and less likely to generate psychological belongingness to the community. In fact, they felt less of a part of the community, resulting in low desire of contribution to the community and connection with other members. On the contrary, many participants, as active members of their individual online shopping groups/communities, reported the psychological sense of emotional support developed through interaction with other members, either on or beyond shopping topics, positively affected their participation and relationship with others. In addition, we also discovered that the two types of social support also vary based on the social structure within the community. On social media-based online shopping communities, where reciprocal structure is more common among a relatively small number of members, the interactions are more conversational and often go beyond the shopping topics to other aspects of life, such music, movie, sports, and social news. As a result, emotional support is more likely to be facilitated in these "small and close" groups and communities. However, in most review sites or forum-based communities, there are usually more strict rules set about what is allowed to be shared and discussed. Therefore, unilateral social structures are more typical on these platforms, where only

a few central users make contributions on a regular basis and most basic users stay as followers. With less opportunities for conversational and supportive interaction between average users, information support becomes sole and dominant motivation for the majority of these communities.

8.5.2 Relationship Formation in Online Shopping Communities

This study inquired into the relationship formation through various types of interactions in online shopping communities. The results of the lab experiments supported that people were more willing to keep the connection with the shopping partner and the group (M = 5.02, SD = 0.52), when they engage in conversational interactions with relational others in the study. In comparison, our participant showed significant lower willingness to keep connected with others on shopping forum or review sites (M = 2.25, SD = 1.07), with information-seeking as the sole purpose for activities in this experimental condition. A deeper qualitative analysis of the focus group data reflected on experiment results and identified interesting themes of online shopping communities from the perspectives of relationship formation among the users.

One possible explanation for our experimental results would be that users preferred "human contact," when evaluating their interaction and relationship with others. As much as information-seeking was a fundamental motivation in user participation in the context, the way users received and shared information greatly impacted on the formation of interpersonal relationships. There was a noted different between when the information was exchanged through conversational interaction between members versus through centralized dissemination within the communities. In conversational interactions, users were engaged with others in a certain period of time and online space, a typical communication pattern that people usually experience in offline settings [108]. During the focus groups, many participants regarded real-time

text conversation as a type of computer-mediated interaction with other "human contacts." In comparison, users perceived more of a relationship between human and "system", when using online forum and reviews to inform shopping activities. As a result, users typically paid more attention to the information itself rather than the user(s) who generated it, which negatively affected the potential formation of interpersonal social connections or relationships.

Another possible explanation would be the social structure type and relationship formation in online shopping communities. As noted in existent literature, online relationship form and end quickly in unilateral structure [146], whereby reciprocated online interactions have a strong effect on users' psychological commitment in online communities [127]. In the context of online shopping communities, users, in a unilateral social structure, typically grab information from the central users on the platforms to inform their online shopping activities. Combined with low participation desire, less responsibilities to contribute and committed to the communities decrease the motivation and opportunities to develop interpersonal relationships with other community members. However, in reciprocal online shopping communities, the decentralized hierarchical social structure makes nearly all members relational accessible to others. With a combination of high commitment to the community and willingness to contribute, users may discover more similarities and sympathies through iterative interactions, as well as being open to form interpersonal connections and/or relationships.

8.6   Technological Implications

In this section we consider how the findings from the study could be used to implement new techniques for people to actively engage in online shopping communities, which may lead to positive effects on the relationship formation among users and potential social matching opportunities on the basis of similar shopping interest and experience.

As discussed in depth in the previous section, we identified the different roles that the information support and emotional support played in user participation and interaction by using the theoretical framework of social support theory. In addition, we used a mix of lab experiment and focus groups to examine whether and why social relationships may emerge within the online shopping communities, and how the relationship formation varied in unilateral and reciprocal structures. Based on these findings, we propose the following design recommendations for existing online systems to encourage participation in the context of social shopping, facilitate interpersonal relationship formation between average users, and improve user experience in online shopping communities.

The motivation to becoming a member in online shopping communities are often tied with informational purpose. From a relational perspective, users join online shopping communities mainly for the demands of information and knowledge to inform their own shopping decisions, but they stay active and keep contributing to the community only when they feel connected with others. Therefore, one of the major challenges of facilitating user engagement and interpersonal relationships, in fact, is how to increase users emotionally connected to other members and belongingness to the online shopping communities.

Though there are many interface components or system structure solutions to the challenge, one of these could be as simply as "conversations," typically referred to as real-time text conversations in online context. As we learned from our participants, mostly active members of online shopping groups/communities, advocated conversational interaction as the most effective way to develop connectedness and relationships with others within the communities.

There might be several reasons why "conversation" is preferred by experienced and active online shopping community members and have positive impacts on perceived connectedness with others. First, similar to offline relationship formation

processes, one may discover and evaluate personalities and interests of the relational others in online communities. Typical comments or reviews on shopping sites or forums may limit the interaction on the product itself such as specs and price, however, real-time conversations between users would allow the interaction to extend to other areas. For example, discussions on a camera or lens might lead to the discovery of other common interests, such as photography and traveling. Second, users experienced the feeling of emotional support, either helping others or being helped, during the course of informational and emotional exchange in those real-time conversations. As we learned during the focus groups, such emotional support played a more important role than informational support in keeping users active and triggering contribution to the communities in the long run. Third, "conversation" between average users helps with building a reciprocated and decentralize social structure within the online shopping communities, a supportive climate for interpersonal relationships to foster and develop.

If conversation between users may prompt emotional connectedness and belongingness to online shopping communities, how could it be supplemented to existing online platforms? In fact, many online shopping communities currently adopt reputation or badge systems to encourage user participation, where users get points or stars for every activity completed, such as logging in, leaving comments, answering questions, sharing information and knowledge. Based on the findings of this study, we propose that "collaborative mini shopping tasks," such as the one we described in the study: helping one to pick a laptop for college, could be added to online shopping platforms or communities as a supplement of routine objectives or missions for users to complete.

There are several benefits possibly associated with this implementation. First, collaborative mini tasks would naturally create scenarios for real-time interpersonal conversations between users. As it would be socially challenging for users to initiate

conversations with other members who they are not familiar with. In this case, the social awkwardness of interaction initiation could be overcome by technology-assisted teaming up process. Second, since joining small teams promotes one's contribution behavior in online communities [2], we also expect the collaborative mini tasks would increase the willingness to contribute and helping behavior for community members. As we found in our study, reciprocal social interaction has positive impact on users' emotional perception of connectedness with others and belongingness to the community in general. Third, this implementation would allow users to engage in a smaller group of the community, have real-time interaction, and collaboratively complete a task with other active members. Through the collaborative tasks, users may develop desire to keep contact or even "friend" with specific partners for future shopping or non-shopping interactions, as exemplified and supported by our lab experiment results.

These technological implications are based on the findings about user participation in online shopping communities from a social and relational perspective. In particular, these design recommendations should not be confused as a call for system design to facilitate user participation and impact their purchasing decisions. Our goal is to examine users' participation in the social shopping and online shopping communities, to understand the interpersonal relationship formation or potential social matching opportunities through user interaction in a shopping context.

8.7   Limitations

This study had limitations that should be noted for further examination and additional research. First, only a limited number of college students in a northeastern state participated in the lab experiment and focus groups. Their views, attitudes, behaviors might not be representative of people in all age groups or living in various regions. Future studies might extend this research work on samples from a broader

age groups and geographic areas. Second, we used "electronics" as the category of products for shopping interactions in our lab experiments. Future research could explore how interaction on different types of products may have impact on user participation and relationships in a social shopping context. It would also be interesting to compare the differences between different types of online shopping communities and the effect of various product categories on users' participation and perception of shopping interaction with others. Third, we are also aware of self-selection and self-report bias that this study may suffer from. Though we use prescreening question in the sign-up form, we didn't have the resources to check for the answers. Therefore, as much as we want our participants to be active social shoppers and online shopping community members, the recruitment largely depended on the accuracy and honesty of the self-reported data. As we offer economic incentives for participating in the study, the sampling bias might affect the validity of the findings. To minimize this bias, future works could recruit participants from the active members of existing online shopping groups and communities.

8.8   Summary

The combination of online shopping and social media contributes to the increase of social shopping activities. Technology allows people with similar interests and experience to share, comment and discuss about shopping from anywhere and at any time, which leads to the emergence of online shopping communities. This chapter reported on a mix of lab experiments and focus groups with 24 participants who actively engage in online shopping communities. Insights from this study identifies how informational support and social support affect user participation and relationships, the impact of social structure on interpersonal relationship formation between community members, and the development of desire to be socially connected with others through real-time text conversations on shopping topics.

The emergence of social shopping connects people with similar shopping interests on virtual online spaces, and thus creates the opportunities of online shopping communities for those social shoppers to communicate and interact. User interaction with others and contribution to the community are strongly tied with the informational support and social support they have experienced through interpersonal interactions, social structure of the communities, whether unilateral or reciprocal, perceived connectedness with others, and belongingness to the communities.

This mixed method study also explored the relationship formation in social shopping context. Users may develop desire to be socially connected with other members through real-time context conversations on shopping topics. The results echo on the findings of our qualitative data, which suggests a reciprocated, emotionally supportive climate positively impacts on user participation, contribution, and relationship formation within the communities. Based on the findings, a series of technological implications have been discussed to facilitate emotional support and interpersonal interaction between the users, such as collaborative mini shopping tasks supplemented as a way to encourage user "conversations" and contribution behavior.

CHAPTER 9

STUDY 4: PERSONAS IN ONLINE SHOPPING COMMUNITIES (RQ3.1)

9.1   Introduction

Enabled by the growing use of online shopping and social media platforms, social shopping brings users a unique context of e-commerce [89]. Traditionally, online shopping has long been regarded as a solitary activity, but technological advancements have challenged and changed the way people search, compare, purchase, comment and review products on online platforms [178]. This new form of online shopping allows for more types of user participation and interactions [132]. There are two major types of social shopping platforms identified in prior research studies: social media sites that incorporate commercial features, including advertisement and online transactions; and e-commerce websites that incorporate social features to support and encourage social interactions [32, 63].

As an activity that people enjoy doing collaboratively [66] and part of the socialization process [191], the social attributes of shopping has led to increasing interpersonal social and collaborative activities on shopping topics, where people with similar shopping interests find each other and interact by exchanging information, knowledge, and experience on certain products and services [130]. Examples of such online shopping communities include retailer site communities (e.g., Best Buy Community Forum), deal-sharing communities (e.g., Slickdeals), online review forums (e.g., Laptop Mag), and social media shopping groups (e.g., Facebook Groups) [185].

Contrasting traditional online communities, user participation in online shopping communities largely depends on directed information flows among its members and the interaction with others, i.e., members' participation and contribution [35, 177]. To date, many related academic studies on social shopping have focused on the impact

of customer participation on consumer purchase decisions rather than examining the motivations that keep users participating in and contributing to the communities [36]. However, as indicated by Cheung et al. [35], before business practitioners can influence users' decision-making process through user contribution in online social shopping platforms, they must first ensure that their customers are willing to participate and share comments and feedback with others. Given the enormous potential of online shopping communities as both a business platform for marketing and a user-centric community for interpersonal interaction and socialization, the first step to a successful human-centered design of social shopping platforms and online communities for each user is to understand different types of users and what their needs are, as well as the level of willingness to engage in conversations and interact with others. Therefore, this study aims to explore the personalized motivation of user participation and contribution to identify various types of personas in online shopping communities.

9.2 Research Question

Each user has unique needs in social shopping and the use of online shopping communities [67]. Some want to get flash deal information [104], some want opinions about their shopping interests [188], while others enjoy being a part of a community with people having similar interests [185]. These personal motivations and contexts may result in unique and complex user needs for personalized behavioral patterns of engaging in online participation and interaction with others on shopping topics, as well as making consistent contributions to online shopping communities. Based on our findings, this chapter presents personas representing varying user needs in their interactions with others, knowledge-contribution behaviors to the platform, and motivations of being part of the communities.

- RQ3.1: Who are participating in collaborative online shopping communities? (What are the social characteristics of collaborative online shoppers?)

9.3 Methodology

With regard to the persona development process, Brickey et al. [23] summarized and suggested that various persona development approaches generally share four steps: (1) Identify target users, (2) Collect user data, (3) Group users into personas, and (4) Create and present persona details.

We followed the methodology of the persona development process, and focused on the first three stages. As suggested by Mulder and Yaar [125], the grouping step (step 3) is critical to the effectiveness of the eventual personas because it should capture the needs of all users interviewed, identify key differences between users, and result in clusters that are easy to describe to system interface designers. In our work, we emphasized on online shopping community participants' behavioral characteristics rather than demographics. While we understand that these extra fictitious details are useful constructs for talking about personas, especially in making them a more realistic "person" in combination with usage scenarios, we intentionally avoided these fictitious details as not to shift the focus from the core details of the personas.

The methodology of creating our personas consisted of a three-step process involving (1) semi-structured interviews, (2) focus groups, and (3) an online survey. Data and findings from each step informed the design of the next step. The first two steps, interviews (n=20) and focus groups (n=24), aimed to identify the complex and diverse characteristics of social shoppers and members in online shopping communities. Based on this data, we generated initial groupings of personas using open coding and affinity diagramming. For the third step, we constructed survey questions and used Amazon's crowd-sourcing platform, Mechanical Turk (Mturk) to collect responses (n=194) to cluster social traits, extract behavioral characteristics, and identify personas in online shopping communities.

9.3.1 Semi-structured Interviews

We conducted our semi-structured interviews with 20 people who self-reported to be active social shoppers. Similar to our past studies (e.g., Study 1 and 3), we pre-screened the participants and chose to only interview those who reported to "have shared and discussed about shopping topics on social media in the past month" to ensure we recruited only active social shoppers. We used an open coding scheme to derive themes and theoretical constructs.

We recruited the participants mainly by using campus flyers at NJIT, with the exception of two participants, who learned about the study by word-of-mouth from their friends. All participants were paid $5 in either cash or Amazon e-gift card for in-person interviews or online interviews, respectively. We conducted 17 of the 20 interviews in-person at a location of the participant's choosing, namely on university campuses, coffee shops, and libraries. The other 3 interviews were conducted online using WebEx audio chat due to logistical and scheduling issues. Of the participants, 13 were male, 7 were female, and ages ranged from 18 to 36 (median 24) years old. Breakdown of ethnicities was as follows: 5 White, 4 Black, 2 Latinx, 5 Asian, 4 Middle Eastern.

All interviews were audio recorded and transcribed for further data analysis. The interviews ranged from 21 to 39 (median 33) minutes in length. Summaries of each interview were written before the end of the day when the interview was conducted. A Grounded Theory approach was used for the qualitative analysis of interview data. We went through an iterative independent coding process to allow themes in the data to emerge naturally, and we then generalized theories from these themes. We used open coding with two independent coders coding the transcripts for emerging themes around the research questions.

The interview guide went through some minor updates through the course of the interview study, making minor adjustments to the questions to focus on emerging

themes from previous interviews. For example, the initial interview guide aimed to grasp a broad understanding of participants' social shopping experience. The updated included some questions to focus on people's interactions with others on both social networks with regard to shopping and the use of review sections/discussion forums on various online marketplaces. We also made minor adjustments to include the examination of people's challenges during their collaborative social shopping processes on existing online systems (both social media and online marketplaces), and the expectation of how their social shopping needs can be better addressed.

9.3.2 Focus Groups

Next, we conducted a series of 6 focus groups with 4 participants in each study session. The objective of the focus groups was to further explore users' social characteristics, behavioral patterns, and motivations in their participation in online shopping communities, by facilitating conversations among experienced members [185].

Recruitment was focused on people who actively engaged in social shopping activities and online shopping communities with other users on online platforms. Similar to our interview study, the participants were recruited by campus flyers at NJIT and pre-screened using an online sign-up form that asked about shopping interests, online shopping history, and social shopping experience. To ensure we talked to active social shoppers participating in online shopping communities, We only accepted those who self-reported to have posted contents on online shopping platforms (e.g., product review sites, deal-sharing communities, shopping discussion forums) and/or engaged in shopping groups on social media in the past three months.

A total of 33 United States college students filled out the sign-up form. All 24 students who met our eligibility criteria participated in the study. Fourteen (58.3%) participants were female, and gender was balanced as much as possible across all study sessions. Four out of six focus groups had 2 male and 2 female participants, while

the remaining two consisted of 3 female and 1 male participants. Our participants' ages ranged from 18 to 31 (median 22) years old. The breakdown of ethnicities was as follows: 7 White, 9 Asian, 4 Black, 3 Hispanic, and 1 Native American.

All focus groups were audio recorded and transcribed for data analysis. The focus groups ranged from 38 to 47 minutes in length. The protocol started with questions about the participants' social shopping experience, including reading, posting, motivations, expectations, and challenges on online platforms. Some of the literal questions that asked about their experience were: "Why do you participate in the [online shopping group/community]?" and "How do you evaluate your relationship with other [group/community] members?", where specific groups or communities depend on the response from previous questions. However, other questions that asked more generally about their regular activities, as well as how and why they read and post information in online shopping communities.

To analyze the focus group data, we went through iterative independent coding process and then generalized theories from the themes. We used open-coding and arranged the codes in groups and hierarchies to determine emergent themes. High-level included "experience, motivations, evaluation," as well as emotional codes such as "support, relationship, connectedness."

9.3.3 Online Survey

The qualitative studies provided us with preliminary results on personas that characterizes people's motivations, preferences, and behavioral patterns when participating in online shopping communities. We used these preliminary findings to construct survey questions to reach a larger number of participants and examine how much they agree with the social characteristics we generated from the initial qualitative findings.

We developed an online survey by using Google Form, and used MTurk to recruit online participants. The survey was first piloted on 20 subjects, which resulted in minor changes in the wording to improve clarity. The survey questionnaire was made up of 3 major parts. The first part consisted of two qualifying questions to ensure the participants "have posted on online shopping platforms (e.g., product review sites, online shopping forums) in the past three months" and/or "have engaged in shopping groups (e.g., electronics, fashion, sneakers) on social media platforms (e.g., Facebook, WhatsApp) in the past three months." Any participants who answered "no" to both questions were not allowed to proceed with the remaining survey questions. The second part asked about demographic information, including gender, age, ethnicity, and educational background. The third part asked about a person's online shopping experience and behavior based on various perspectives: (1) objectives of participating in social shopping and online shopping communities; (2) information sharing/posting behavior; and (3) information consumption/reading behavior. An open-ended question was added at the end of each category in this part to elicit additional responses and thoughts in their participation in online shopping communities.

We set the initial payment at $0.60 per assignment based on the payments of other similar MTurk assignments at the time (in regards to time required and task complexity). This is to keep in line with the current federal minimum wage ($0.12/minute, or $7.25/hour) and also higher than the amount a recent survey of online MTurk workers indicated as fair compensation ($0.10/minute) [154]. The survey results were used for cluster analysis based upon the Euclidean distance in Python, and then compared against the initial qualitative findings on the grouping of personas. In the next section, we describe how we developed the survey questions based on initial qualitative findings from the interviews and focus groups around user behaviors and motivations in online shopping communities. We then present

the personas that emerged from the initial qualitative findings, as well as the cluster analysis of the online survey results.

9.4   Findings

9.4.1   Survey Question Constructs Inspired by the Qualitative Studies

Based on the analysis of our interview and focus group data, we identified three main themes that are generally related to distinctive user preferences and behavioral patterns in their participation of online social shopping platforms and communities: reading behavior, posting behavior, and motivations for participation.

The reading (information consumption) category involved questions regarding participants' information-seeking methods, the frequency of reading and visits, and their attitudes towards existing information on online platforms and discussions within the groups or communities. Some participants expressed higher trust about the overall ratings and reviews provided by online platforms, while others preferred to read more personalized posts from fellow members on products and services that interested them. Most participants typically read posts around specific products or categories of items, whereas some follow specific users from certain platforms and groups to be informed of latest trends or deals. Many participants indicated that they usually read posts that are highlighted by platforms, but a few participants also told us that they would like to explore all available forum posts or group discussions before making any purchasing decisions, if possible.

The posting (information sharing) category asked the participants the frequency of posting, how they ask and answer questions, elicit others' opinions and suggestions, and whether they tend to initiate discussion within online shopping groups or communities. From the interview and focus group studies, we learned that some people posted for both asking for others' opinions and sharing their own thoughts

on others' threads, while others typically only post when they are in need of help on making purchasing decisions on certain products.

The motivation category involved reasons why the participants joined and visited online shopping platforms and communities on a regular basis. The findings from the interview and focus group studies suggested that most participants cited information-seeking as the most prominent factor, while some also valued the social communication and support from other members who share similar shopping interests and experience, and a few participants appreciated the feeling of building up a community together.

9.4.2 Preliminary Findings on Personas

From the diagram analysis of our qualitative data, we found that people exhibited various behavioral characteristics in terms of information consumption (reading), information sharing (posting), and personalized motivations in their participation in online social shopping platforms and communities. These findings indicate that some common user behavioral patterns include looking for specific information, soliciting opinions and suggestions on products, experiencing reciprocated support between community members, and staying informed about the latest trend(s). Therefore, based on these findings and observations, we identified the existence of four major prototypical types of active participants (i.e., personas) in online shopping communities. The four personas and representative characteristics are presented as below and are also used as a group-matching criterion in Study 5:

- **Opportunists**: Seek targeted shopping information online only and leave when they get it.
- **Contributors**: Constantly share information online, write reviews, and answer questions for other users on various platforms and in online shopping communities.

- **Explorers**: Browse a large amount of shopping and product information (e.g., deals, reviews, product specifications/details not provided by manufacturers) and regularly ask for suggestions and opinions about products and retailers from others.

- **Followers**: Participate in online groups and communities to stay updated about certain categories of products (e.g., fashion, sneakers, watches).

These four personas illustrate various behavioral social characteristics that online shopping community members possess and exhibit in their day-to-day participation. However, since personas are typically transitional and one person may be represented by multiple personas, we then used a larger scale survey to reach more online shopping community participants and examine how these personas cluster around users' personalized motivations and behaviors in online shopping communities. Therefore, we translated the findings from the two qualitative studies into a survey questionnaire, and then disseminated the survey to 200 active members of online shopping community on MTurk. As discussed in previous sections, the survey asked about demographics, reading and posting behavior, and motivations for participation in online shopping communities.

9.4.3 Overall Survey Results

In Table 9.1, we present the demographics of the survey respondents from MTurk. We found the majority of our participants were in their 20s and 30s. The participants were evenly distributed between male and female, and most of them (90%) had more than 6-month experience in participating in online shopping groups and/or communities.

The survey results showed that the majority of respondents were active participants in online shopping platforms and communities (as expected from our qualifying questions), with 74.4% reading online threads for shopping purposes at least a few times a week, 71.5% posting online threads on shopping topics at least a few times a month, and 71.8% participating in online groups and communities a few times a month, or more frequently. Tables 9.2– 9.4 present a detailed percentage

Table 9.1 Demographics of MTurk Survey Respondents (N=194)

	Characteristics	Percentage
Gender	Male	48.1%
	Female	51.9%
Age	18-24	16.2%
	25-34	44.1%
	35-44	23.5%
	45 or older	16.2%
Ethnicity	*Hispanic*	***14.7%***
	Non-Hispanic	***85.3%***
	White	62.7%
	Black	21.2%
	Asian	16.7%
Experience in Online Shopping Groups and/or Communities	More than 2 years	31.8%
	1 to 2 years	43.9%
	6 months to 1 year	14.4%
	3 to 6 months	8.3%
	1 to 3 months	1.6%
	None or less than 1 month	0.0%

Table 9.2 Frequencies (%) of Label Items Constructing the Category of Reading Behavior (N=194)

	1	2	3	4	5	6	7
I read as much information as possible.	2.0%	0.0%	11.2%	12.2%	14.3%	41.8%	18.4%
I trust what other people post.	3.1%	8.2%	7.1%	15.3%	44.9%	15.3%	6.1%
I need lots of supporting details for me to believe.	1.0%	4.1%	9.2%	15.3%	32.7%	24.5%	13.3%
I look for personalized experience with products.	3.1%	5.1%	9.2%	22.4%	20.4%	26.5%	13.3%
I look for general product information.	3.1%	2.0%	9.2%	9.2%	24.5%	34.7%	17.3%
I know what information I am looking for.	4.1%	2.0%	7.1%	15.3%	16.3%	34.7%	20.4%
I selectively choose what information to read.	2.0%	2.0%	9.2%	15.3%	23.5%	33.7%	14.3%
I visit online shopping platforms/groups/forums on a regular basis.	4.1%	5.1%	8.2%	17.3%	28.6	24.5%	12.2%

1: Strongly Disagree; 2: Disagree; 3: Slightly Disagree; 4: Neither Agree nor Disagree; 5: Slightly Agree; 6: Agree; 7: Strongly Agree

breakdown of the participants' answers to each of the questions in the three main categories: reading behavior, posting behavior, and motivations for participation.

These results show the overall responses from the participants on MTurk, and illustrate how and why people read, post, and are motivated to participate in online social shopping communities. Next, we describe each persona in more detail by using a combination of the findings from the qualitative studies and a cluster analysis of the survey results.

9.4.4 Social Characteristics of Personas

From the qualitative studies, we identified four main types of users in online social shopping communities with corresponding characteristics in their reading behavior,

Table 9.3 Frequencies (%) of Label Items Constructing the Category of Posting Behavior (N=194)

	1	2	3	4	5	6	7
I ask questions.	1.0%	7.1%	5.1%	13.3%	23.5%	33.7%	16.3%
I initiate discussions.	4.1%	14.3%	13.3%	11.2%	26.5%	17.3%	13.3%
I answer others' questions.	3.1%	9.2%	10.2%	8.2%	30.6%	30.6%	8.2%
I share my personal experience.	3.1%	6.1%	7.1%	13.3%	26.5%	31.6%	12.2%
I share my opinions on products.	3.1%	3.1%	7.1%	13.3%	24.5%	36.7%	12.2%
I share good deals with others.	6.1%	9.2%	10.2%	12.2%	23.5%	26.5%	12.2%
I share emotional support with other members.	13.3%	12.2%	9.2%	20.4%	20.4%	17.3%	7.1%
I warn about spams and ads.	9.2%	13.3%	6.1%	17.3%	17.3%	27.6%	9.2%
I engage in conversations with others on non-shopping topics.	11.2%	16.3%	12.2%	14.3%	15.3%	20.4%	10.2%
I solicit others' opinions on certain products.	10.2%	10.2%	7.1%	21.4%	16.3%	25.5%	9.2%

1: Strongly Disagree; 2: Disagree; 3: Slightly Disagree; 4: Neither Agree nor Disagree; 5: Slightly Agree; 6: Agree; 7: Strongly Agree

Table 9.4 Frequencies (%) of Label Items Constructing the Category of Motivation (N=194)

	1	2	3	4	5	6	7
To exchange shopping information	0.0%	4.1%	5.1%	15.3%	28.6%	30.6%	11.2%
To exchange opinions on products and experience	4.1%	5.1%	8.2%	17.3%	16.3%	35.7%	13.3%
To have conversational interactions with others	7.1%	10.2%	14.3%	15.3%	22.4%	21.4%	9.2%
To keep up with the most updated trend	9.2%	8.2%	11.2%	13.3%	19.4%	27.6%	11.2%
To be part of a community that interests you	9.2%	6.1%	10.2%	15.3%	20.4%	25.5%	13.3%
To exchange emotional support with other members	15.3%	11.2%	6.1%	17.3%	17.3%	22.4%	10.2%

1: Strongly Disagree; 2: Disagree; 3: Slightly Disagree; 4: Neither Agree nor Disagree; 5: Slightly Agree; 6: Agree; 7: Strongly Agree

Table 9.5   Cluster Analysis of the Survey Results Indicating Related Characteristics of Each Persona

		Opportunist	*Contributor*	*Explorer*	*Follower*
Reading	Targeted Search	X			
	Read All		X	X	X
	Trust People				X
	Look for Personal	X		X	
	Need Supporting	X		X	
	Selective Choose	X			
Posting	Ask Question			X	X
	Initiate Discussion		X		
	Answer Question		X		
	Share Experience		X		
	Emotional Support		X		
	Solicit Opinions	X	X	X	
	Engage Others		X		
Motivation	Shopping Info	X		X	
	Exchange Experience		X	X	
	Conversations		X		
	Keep Up with Trend				X
	Emotional Exchange		X		

posting behavior, and motivations for participation. The cluster analysis of the survey data showed some overlaps in the characteristics of the personas of opportunists, explorers, and followers, whereas the dominant behavioral patterns of contributors were featured as knowledge/information sharing, emotional exchange, and community building. Similar to prior persona studies in other online communities [78], we found that individuals in online shopping communities possess one dominant persona, but may sometimes illustrate characteristics from multiple personas. Individuals with one dominant persona may transition to another persona as their level of their participation and experience in their online shopping communities evolves and their goals and needs change. As a result, the findings from both our qualitative and survey data suggest that the personas are not mutually exclusive, and one may possess a mixture of behavioral characteristics across different personas. Next, we will discuss each persona with their main corresponding behavioral patterns and motivations for participation in online shopping communities. For the representative quotes, we have changed the names of our participants to preserve their privacy and anonymity.

9.4.4.1 Opportunists. Opportunists are usually occasional visitors to online shopping platforms and/or groups with specific objectives. Those who just joined an online shopping forum or group are usually opportunists, performing targeted searches about specific products that they consider purchasing, comparing other users' posts of personal experience with the products, and rarely post on the platform or within the social shopping platforms and communities. Opportunists prefer to stay silent as a reader and leave when they feel they have got enough information to make any well-informed shopping decisions. For example, as Jerome told us during a focus group, "I always have something in my mind when I read the posts (on an online sneaker forum) ... I found the forum about a year ago by search on Google, and

then I have the forum bookmarked and visit whenever I wanna know about some sneakers."

With regarding to reading behavior, opportunists do not typically read posts or threads in depth. When searching for information about products, they tend to gather information from multiple platforms, including product websites, online reviews, forums, and social shopping groups. However, due to the large volume of information to process, opportunists typically skim through all available information and quickly jump from one site to another. For instance, Catherine shared her experience in online shopping forums and a Facebook fashion group, "I got lots and lots of information everyday, but I don't necessarily pay attention to all of these... Most of the time I just skim and if there's anything that look interesting to me, I check it out on different sites." David also echoed this sentiment, saying "I don't read all the posts, as I wanna be efficient in collecting all the useful information... It's not like a reading assignment, you know, you get to know what is useful and what is not. You have the sense when you've been there for a while."

When asked about why they joined and participated in online shopping groups and communities, many opportunists preferred the personal/directed, conversational discussions about products, rather than the general information (i.e., specifications) and reviews on websites, such as those on Amazon and Best Buy's websites. For example, Daniel explained, "I enjoyed reading people's conversations on the forum, and I like the personal experience part shared by those people. On Amazon, you also see the ratings and reviews, but they are more general, not too related to someone like me." Daniel continued his discussion, comparing the reviews on Amazon and users' posts on an online camera forum, "When you wanna buy an advanced lens, you trust actual people more than the ads, and you know, the reviews are not that reliable on Amazon." Jeremy also shared similar thoughts on more personalized feedback on products during the focus group, "In my [Facebook] group, people share about deals

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and others comment on if it's a good deal or not... I feel like someone is so kind that he knows about everything and is always willing to help."

9.4.4.2 Contributors. Distinctively different from opportunists, contributors regularly post information and support other members in online shopping communities. They view online shopping forums or groups as a social space for both informational and emotional exchange. Contributors are typically regular visitors of those online shopping communities, participating in discussions, posting to share information and answer questions, and building up a community to engage people who share similar shopping interests.

For many contributors, they usually have their "main" group or community which they often contribute to. In most circumstances, they also played a role in administrating or moderating in their communities. Contributor do not visit the online shopping communities for specific shopping purposes. Instead, they consider it more as part of their daily routine to read the new posts from their last visit. In terms of reading behavior, they try their best to at least skim through all unread posts as much as possible, and carefully evaluate the information quality of a post. As Samantha told us during her interview, "Everyday when I wake up, I go through all the posts that I left from last night (in a Facebook cosmetic group), to see what other people are talking about (cosmetics). Things go super-fast and you need to catch up with it, otherwise you feel left behind... People reply to my posts very quickly, but they are not always helpful. You have to filter the information by yourself."

With regard to the posting behavior, contributors are willing to share information, deals, personal experience with fellow members and to help others by answering questions within the communities as much as they can. Contributors are usually experienced users of the online shopping platforms or groups, so they feel they have the responsibility to help others as they also have personally benefited

from the community in the past. As explained by David, a veteran user of an online electronics forum, "When I first joined the forum, I asked a lot of questions and I really appreciated the help from other users. Even if we don't know each other in person, we become friends on the forum and talk about laptops and cell phones all the time... Now when I see other people's posts, and I think I can help on this, I will definitely do so and I like the feeling of having a big family that supports each other."

For contributors, the motivations for participating in online shopping communities are typically beyond practical reasons. Their primary goal of their participation is usually to build up a community for people to socially interact, and they believe regular posting and conversations are an effective way to keep up with and connect with the members in the community. As said by Linda about her Facebook fashion group, "The key of running a Facebook group is to make a community that connects people and make people active. The first thing you need to do is to share what you know and help each other... The sense of community is the most important thing that people value, and I have always wanted to have in our group."

9.4.4.3 Explorers. Explorers participate in online shopping communities primarily for informational purposes. However, unlike opportunists who have very targeted goals of information search, explorers typically do not necessarily know what they are looking for when visiting or engaging in discussion within their shopping forums or groups. Instead, they tend to generally explore what other people are talking about and expect to be surprised by creative products or unusual shopping tips. For example, Diana described her experience during her focus group, "I don't have anything specific in mind. I just go there [an online deal-sharing forum] and see what other people are talking about. You never know what you don't know... Once I found a guy talking about automatically generating the 20% coupon code of Bed Bath Beyond by himself. I tried it and it actually worked."

Explorers do not only read posts, but also post questions and opinions in online shopping communities. However, rather than asking about specific products, explorers usually post things to initiate discussions in a more general way or challenge other members by providing "unusual" experience on certain products. For example, Zach explained what he typically posts on an online sneaker forum, "I don't ask about the shoes that I want to buy, because nobody can tell you how they feel on your feet, you know. The thing that I post is usually about the trend or why people would prefer one thing over another... Sometimes my opinions are different from others on some very popular shoes and I believe it helps to listen to different voices."

In general, explorers are curious and open to new shopping ideas or creative products. They are always ready to be surprised when participating in online shopping communities. Most of the explorers enjoyed their visits to the posts on shopping forums and discussions within shopping groups. As Jack, an experienced member of an online camera forum for more than 3 years explained, "I view it [participating in online shopping communities] more as a way to relax and discover new things, rather than gathering information and do product research for buying stuff."

9.4.4.4 Followers. Followers typically stay quiet in their shopping groups/forums and use it to keep up with trends. Similar to opportunists, followers occasionally visit online shopping communities. However, unlike opportunists and more similar to explorers, followers usually do not have "any assumptions when [going on] forum, and [...] let people['s posts drive] what is interesting" (Jenna). Most followers are passive information readers and rarely challenges information in other people's posts or comments. As Luiz told us during his interview, "I just got into the thing [collectible cards], and I think of the forum as more of a place to know and learn about it ... no, I never challenge them [other users]. I know I'm a newbie here."

With regard to posting behavior, followers might post questions occasionally, but it is very uncommon for them to share any new information or personal experience within their online shopping communities. Instead, their posts typically are follow-up questions based on other members' posts. For example, Ellen has shared her experience in a Facebook fashion group during the focus group, "People in my group have a good sense of fashion. I've been following them for a long time. Usually when they say something (handbag or fashion shoes) is gonna be popular, everyone around me will be talking about it after a few weeks... I do post sometimes, but I just follow what they've been talking about."

9.4.4.5 Summary of Personas. Table 9.6 shows the four personas with representative characteristics regarding their motivations for participation, reading behavior, and posting behavior in online shopping platforms and groups. As discussed in earlier sections, we consider the personas as dynamic and mutually inclusive prototypes of participants in online shopping communities. The findings from the two qualitative studies and survey suggest users may sometime possess characteristics across multiple personas. An individual user may also develop characteristics and transition from one persona to another over time as their participation patterns evolve and roles within the online shopping communities change. For example, it is very common for new users join communities as "followers" or "opportunists" However, as they continue to be a member of the community for an extended period of time, especially if they develop "a sense of community" or "have a feeling to repay what they've got from others" (David), they may transition to being "contributors" and voluntarily assume the responsibility of building up a community.

Table 9.6 Summary of Each Persona with the Representative Characteristics of Their Motivations for Participation, Reading Behavior and Posting Behavior in Online Shopping Communities.

Persona Type	Motivation of Participation	Reading Behavior	Posting Behavior
Opportunists	To collect the information they need to make purchasing decisions	Perform targeted search on the products that they are interested	Very rarely post things in online shopping communities
Contributors	To build up a community for people who share similar shopping interests	Read as many posts as possible and carefully evaluate the quality of the posts	Regularly post to share information, answer questions, and support others
Explorers	To look for new ideas, opinions, or products from others	Skim through online posts and threads for unusual things that surprise them	Post questions and information to initiate discussion or solicit others' opinions
Followers	To keep up with the latest trend	Browse information and discussion threads among other people	Rarely post and primarily post only follow-up questions upon existing discussion threads

9.5 Discussion

9.5.1 Understanding and Supporting Various Needs of the Personas in Online Shopping Communities

This chapter's study identified four major types of participants in online shopping communities, based on their motivations, reading, and posting behaviors. Similar to other online communities [78], only a small portion of the participants post and contribute to their respective communities regularly, while most participants visit online shopping communities for informational purposes. There is an imbalance in the supply and demand of high-quality posts, especially personalized shopping experience or advice.

Traditionally, companies and online retailers play a significant role in providing product information [89] and moderate customer discussion [35] in online shopping communities. However, this study found that more individualized informational demands have emerged among participants and not yet been well addressed by

existing systems. For example, participants who had the Explorer personas are particularly looking for "unusual" posts or novel ideas that surprise them. Even for participants of Opportunist personas, some of them also highly prefer discussions on products or services based upon personal experience from fellow members in their respective communities over "mainstream" reviews that are typically available on established platforms like Amazon or Google.

To increase the supply of such personal experience, reviews and recommendations from individual users in online shopping communities rather than marketers, one of many possible ways would be to identify those participants who had Contributor personas, encourage the knowledge-sharing behaviors of the Contributors to the community, and facilitate the transition of participants from other persona types into Contributors.

To encourage the contribution behavior in online communities, previous literature suggested the challenges around commitment and members' willingness to share can be addressed by: identity-based commitment (where users' contributions to the communities come from the feeling of the responsibilities to fulfill a mission together), and bonds-based commitment (where users participate and contribute as a result of friendship or feeling close to other individuals within the groups) [142]. In the context of online shopping communities, there might be a smaller chance of users developing a strong empowering identity involved in being part of a group like some online cancer-supporting communities. Instead, bonds-based commitment may work better among users who share similar shopping interests or experience, which includes both the informational and emotional exchange on shopping topics, as well as the sense of membership within the communities. Though Contributors only account for a small number of participants in online shopping communities, as we found from the study, they play a critical role in posting information, answering questions, and

providing emotional support to others, and thus help building up a community that engages various types of users to visit, discuss, and share on a regular basis.

In addition, we discovered that the personas identified in this study are dynamic and transitional. As a result, users may also develop the contribution behaviors as their participate within online shopping communities. For example, prior studies suggested "conversational interaction" may facilitate users' interpersonal social connections within online communities [185], which increase the personal attachment among the community members. As users feel more socially connected with other members and the community in general, Opportunists, Explorers, and Followers are more likely to engage and contribute to their respective communities. To facilitate a socially connected environment and the development of social ties within the communities, we need to understand the various persona types with regard to their reading behavior, posting behavior, and motivations so as to support the individualized social needs for the participants. When users engage in online shopping groups/communities, the possibilities of socialization and relationship formation may depend on the matching of users with complementary users. For example, Explorers are more likely to develop social connections through interactions with Contributors, as these two groups of users present complementary behavioral characteristics. However, it is unrealistic to expect Explorers and Opportunists to communicate and develop such relationships. Practitioners and designers may use the findings from this study to better support user engagement and interaction, address users' informational and emotional needs, and facilitate knowledge-sharing behaviors within online shopping communities.

9.5.2 Technological Implications

As presented in the previous sections, we identified the various types of personas and the quality information imbalance in supply and demand in online shopping

communities. We also examined the motivations of user participation and interaction within the communities. Based on the findings, we propose the following recommendations to support user needs and inform future design of online shopping platforms and groups. These implications aim to identify user types, facilitate user interaction to form bonds-based commitment, and encourage contribution behaviors among community members.

First, online systems may profile users and cluster their activity history (i.e., readings and postings) to adjust the layout of the site contents and personalize the user experience in their visits to online shopping platforms/groups. For example, participants of the Opportunist or Explorer persona type may have a higher demand for posts of product reviews, shopping tips, and item recommendations. However, Contributors may desire to have a different layout of the content page that summarize the latest questions raised by fellow members. At any point of time, user profiles and activity history offer rich details for the systems to examine the dominant persona type, so as to provide personalized contents for users to explore in online shopping communities.

Second, as users' knowledge-sharing behavior and contribution to the community are largely associated with their perception of connectedness with other members and their respective community, the challenges of facilitating user interaction that leads to bonds-based commitment within online shopping communities need to be addressed. One of the possible solutions to the challenge would be "conversations" among online shopping community members, on or beyond shopping topics. As indicated by previous studies [185], conversational interactions support both informational and emotional exchange in online communities, and thus lead to positive impact on establishing social ties among community members. For example, conversational discussions on a camera forum may lead to discovery of common hobbies like photography and traveling. As we learned from the qualitative studies, such

conversations may also provide emotional exchange and support to facilitate the feeling of being part of a community among members, which is essential to the transition from participants of the Opportunist persona to Contributors.

Third, to address the information imbalance in supply and demand from individual users, designers need to encourage individualized contributions from the community members, especially the Contributors. Currently, point or badge systems are most widely used to encourage user participation and posting behaviors in most online communities. However, as we learned from this study, "human response" is also highly appreciated as stimuli of knowledge-sharing behavior. In other words, rather than getting points or level upgrades, participants would like to have more interactions with other people when they have posted on online platforms or groups. Therefore, future research may work on the distribution of users' posts based on various types of user personas, to ensure any individual users have the appropriate relevant information to read and reply. The increase in the chance of interpersonal interactions on those user-generated posts can result in sustainable contribution behaviors within online communities in a long run.

9.6   Limitations

Despite the findings from the use of mixed-methods in this chapter, we are also aware of the limitations that may warrant further examination of the study results. First, our personas and findings are based on a relatively small number of participants. Personas, by nature, are highly qualitative constructs that can be difficult to quantify [78]. As a result, the personas generated from the study are not mutually exclusive and possess some overlapping characteristics across various persona types. Second, we extracted motivation, reading, and posting behaviors as the major characteristics from the qualitative studies to construct and cluster personas based on the survey respondents. However, due to the limitation of the sample size, there might

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be additional behavioral patterns that are not fully identified from the qualitative studies and therefore not included in the survey questionnaire. Third, this study may also include self-selection and self-report bias. Although we pre-screened participants and targeted only active online social shopping community members, the recruitment unavoidably depends on the accuracy and honesty of the self-reported data in the sign-up form of the qualitative studies or the qualifying questions of our online survey.

9.7 Summary

Online shopping communities have emerged amid the growing social shopping activities and involve user-centered online platforms that encourage user-generated contents and interactions such as reading and writing reviews, rating products, and sharing shopping experiences. However, similar to other online platforms and communities, online shopping communities face challenges to provide tailored contents and support appropriate socialization to engage users and encourage individualized contribution to the communities. To provide unique, personalized support for each individual user, this chapter developed personas in online shopping communities based on their motivations for participation, as well as reading and posting behaviors. Based on the findings from 20 interviews and focus groups with 24 active online shopping community participants, we developed an online survey on MTurk to investigate the characteristics of the personas and received 194 valid responses. Four persona types emerge after the analysis of both the qualitative and quantitative data – Opportunists, Contributors, Explorers, and Followers.

Social shopping and the emergence of online shopping communities allows users with similar shopping interests to communicate and interact. The four types of personas identified in this chapter help illustrate the complex nature of user participation and behaviors in online shopping communities. Our work contributes to a comprehensive understanding of the dynamics of personalized motivation and

behavioral patterns of various personas in online shopping platforms and groups. Moreover, findings of this study also present the challenge of information balance in supply and demand from individualized contribution to the communities. Our findings suggest that a socially connected and interactive community benefits both the informational and emotional exchange within the communities. Inspired by the findings, a series of design implications have been discussed to identify user types, facilitate user interaction to form bonds-based commitment, and encourage contribution behaviors among community members.

CHAPTER 10

STUDY 5: INTERPERSONAL RELATIONSHIP BUILDING AND THE EFFECTS ON USER PARTICIPATION AND BEHAVIORS IN ONLINE SHOPPING COMMUNITIES (RQ 3.2)

10.1 Introduction

Users often join online shopping communities (OSCs) to seek support and interact with others with similar shopping interests and experience. The success of OSCs also largely depends on user engagement and contribution, and therefore the nature of collaborative online shopping presents a unique context for interpersonal relationship building opportunities. Extending prior research, this study reports on an online experiment with 50 participants to examine users' relationship building in computer-mediated online shopping groups, as well as the effects on user participation and contribution behaviors in a social shopping context. The results show that users may develop desires to be socially connected after working on collaborative problem-solving tasks, and that higher social connectedness positively affects user engagement in OSCs. We also find that informational support typically serves as the starting point of other types of online social support and social capital establishment. Therefore, such help-giving, collaborative tasks facilitate social support and develop social capital that have significant impacts on user behaviors over time.

10.2 Methodology

10.2.1 Recruitment and Participant Details

We used an online sign-up page in Google Forms to recruit participants online to run a total of 10 study sessions with 5 participants in each session. The overall recruitment criterion was set to recruit only "active members" in OSCs, with the form including two qualifying questions to ensure the participants had at least posted/shared once in the past three months on online shopping platforms or shopping groups on social

media. Snowball sampling was then used to recruit participants. We shared a link to the sign-up form on social media with a brief description of the study and encouraged the first-degree connections to repost/retweet the link so as to reach more users online. All participants were required to fill up the sign-up form, where they answered questions about demographics, shopping interests, and social shopping behaviors (reading, posting, and motivations for participation). In addition to the age (18 or older), location (residing in the U.S.), and language (proficiency in both reading and written English) criteria, we pre-screened the responses and only recruited those who self-reported to have posted on online shopping platforms (e.g., product review sites, shopping discussion forums) and/or engaged in shopping groups on social networking sites in the past three months.

A total of 50 people (from 118 respondents) were selected to participate in the study, split into 10 groups. Of these, 27 (54%) participants were male, with a mean age of 29.9 years (SD = 6.47). Participants self-identified as: 16 White, 14 Asian, 9 Latinx, 6 Black, and 5 Middle Eastern. All participants were paid $10 (Amazon gift card) for completing the experiment.

10.2.2 Experimental Procedure

We matched the participants into groups of 5 based on their demographics (i.e., gender and age), shopping interests, and behavioral characteristics in OSCs. Table 10.1 shows the participant background and grouping information for each of the 10 study sessions. The goal of the matching strategy was to group participants with similar shopping interests and a balance of genders. Moreover, as Study 4 found that social connections or relationships are more likely to be established between online shopping community members with complementary attributes, another goal of the matching strategy was to evenly distribute participants of every persona type into each of the ten study groups, with a particular focus on "Contributor" type of users, who play a critical

Table 10.1 Demographics of Participants and Grouping Information of the Ten Study Sessions

	Treatment Groups				Control Groups		
Age	Gender	Ethnicity	Shopping Interests	Age	Gender	Ethnicity	Shopping Interests
		Group 1				**Group 1**	
27*	Male	Black	Electronics, Photography	32*	Female	Black	Electronics, Photography, Fashion
30	Female	Asian	Electronics, Photography, Fashion	26	Male	Asian	Electronics, Photography
38	Male	White	Electronics	27	Male	Asian	Electronics
38	Male	White	Electronics, Photography	26	Male	White	Electronics, Photography
31	Female	Asian	Electronics, Fashion	25	Female	Black	Electronics, Fashion
		Group 2				**Group 2**	
25*	Male	Black	Electronics, Photography	24*	Female	Hispanic	Electronics, Fashion
25	Female	Middle Eastern	Electronics, Photography, Fashion	28	Male	White	Electronics, Fashion
24	Male	White	Electronics, Photography, Fashion	39	Female	White	Electronics, Fashion
42	Female	Asian	Electronics, Photography, Fashion	33	Male	Black	Electronics, Photography, Fashion
31	Male	Middle Eastern	Electronics, Photography	39	Male	White	Electronics, Photography
		Group 3				**Group 3**	
23*	Female	Asian	Electronics, Photography, Fashion	21*	Female	Black	Electronics, Photography, Fashion
27	Female	Middle Eastern	Electronics, Photography, Fashion	23	Male	Hispanic	Electronics, Photography, Fashion
25	Female	Middle Eastern	Fashion	26	Male	Hispanic	Electronics, Fashion
42	Male	White	Electronics, Fashion	24	Female	Asian	Electronics, Fashion
33	Male	Black	Electronics, Fashion	45	Female	White	Fashion
		Group 4				**Group 4**	
29*	Male	Asian	Electronics	31*	Male	Middle Eas	Electronics, Fashion
24	Male	Asian	Electronics, Photography	28	Male	White	Electronics, Photography
36	Male	Hispanic	Electronics	39	Male	White	Electronics
39	Female	Asian	Electronics, Fashion	26	Female	Hispanic	Electronics, Fashion
29	Female	Asian	Electronics, Photography, Fashion	39	Female	White	Electronics, Photography, Fashion
		Group 5				**Group 5**	
27*	Female	Black	Electronics, Photography, Fashion	22*	Female	White	Electronics, Fashion
36	Male	Middle Eastern	Electronics, Photography, Fashion	29	Female	Hispanic	Electronics, Fashion
33	Male	Asian	Electronics, Fashion	23	Male	White	Electronics
37	Female	White	Fashion	19	Male	White	Electronics, Photography, Fashion
29	Female	Asian	Electronics, Fashion	21	Male	Asian	Electronics

* Participant pre-screened as OSC user of Contributor type

role in engaging and bonding all types of online shopping community users for both informational and relational purposes. We used the participants' sign-up responses related to their reading, posting, and motivation of participation, to categorize them into the user types/personas in OSCs as defined previously in Study 4.

The 10 study sessions were conducted by using an online messaging platform, Slack, with customized embedded apps to facilitate social interactions among the participants for a time period of 5 consecutive days. Five of the ten study groups were randomly assigned as the treatment group, while the remaining 5 groups were the control group. All the groups performed similar tasks, such as sharing shopping interests, discuss about products and experience, and making comments and

suggestions to others' posts. The major difference between the control and treatment groups was the incorporation of collaborative problem-solving tasks (e.g., "helping a college student to choose a laptop"), where the participants were provided a cover story of specific shopping scenarios to work on collaboratively, as shown in Figure 10.1. For the treatment groups, the two collaborative tasks were incorporated in the system during the study period in the middle of Day 2 and Day 4, while the control groups did not have this setting. The cover story was given during a 30-minute time slot in Day 2 and Day 4 at a time that all participants had previously committed to. The settings were implemented to facilitate real-time text conversations and users' help-giving behaviors within a small group. During the 5-day study sessions, participants were interacting by using text and/or pictures as they would normally do in most messaging apps such as Slack. All other activities (e.g., sharing, commenting, recommending, and answering questions) during the study sessions were all voluntary, though we encouraged all participants to show a "reasonable participation level" as part of the consent agreement.

Besides the problem-solving tasks, participants in all groups were encouraged to share about real products/items or flash deals with group members during the period of study sessions, for immediate responses (recommend/don't recommend) and/or more elaborated text responses from other group members. The setting was to allow for regular interaction on shopping topics between group members. We assigned each participant a gender-neutral pseudonym (e.g., Alex, Hayden, Jackie) during the study to anonymize identities and hide any potential pre-existing social connections. We posted one "shopping tip" or "flash deal" information to the group as a conversational "icebreaker" for the participants every morning on Days 2, 3, 4 and 5. After each study group has concluded the session, every participant was asked to fill out a questionnaire to evaluate their generally perceived social relationship building with other members and the group.

Figure 10.1 Screenshot of the participants working on a collaborative task during the study.

10.2.3 Questionnaire Measure

To measure the user participation and willingness to interact and socialize, we used both the behavioral data (e.g., number of posts) gained throughout the study sessions and a post-survey after each session has concluded. With regard to the survey measure, we adapted survey scales from prior social media and social shopping research [83] to measure participants' perceived connection to others within the group. Similar to the existing studies, we operationalized social relationship formation as to whether they "would like to keep [shopping partner/group] as shopping contact(s)" for future shopping interactions.

The survey questionnaire consisted of three parts and the evaluation was based on "the most impressive partner during the study" of each participant's choice. The first scale was a 5-item, 7-point Social Connectedness Scale (Cronbach's alpha = 0.89) [170] (from 1-Totally Disagree to 7-Totally Agree), addressing the feelings of closeness and shared thoughts between the participant and the chosen online user (e.g., "I often know what s/he feels" and "I feel that s/he often knows what I think").

Next was the Inclusion of the Other in the Self (IOS) Scale [11], which measures perceived intimacy using a 2-item, 7-point pictorial scale. The first item shows two circles labeled "Self" and "Other", and the second labeled "Self" and "Community". The images of the circles increasingly overlap, from non-touching to almost fully overlapping. Participants chose the pictures that most closely represented their perceived connection with another user, and the shopping group in general.

Finally, participants rated their agreement with the statement "I would like to keep him/her as my contact on the platform," and "I would like to keep the shopping group as my shopping contact," on a 7-point scale (from 1-Totally Disagree, to 7-Totally Agree). The participants also indicated "yes or no" if they would be willing to be contacted by the partner of their choice.

Table 10.2 Comparison of Participants' Perceived Connections from the Two Conditions

	Social Connectedness	Intimacy	Willingness to keep contact
Treatment (SD)	4.37 (0.57)	4.62 (0.60)	4.22 (0.68)
Control (SD)	3.16 (0.47)	3.10 (0.61)	2.84 (0.62)
Difference (SD)	1.20 (0.15)	1.52 (0.17)	1.38 (0.18)
T (48)	8.152	8.865	7.484
P-value	<.01	<.01	<.01

10.3 Results

10.3.1 Collaborative Problem-Solving Task on Relationship Building

One objective of the study was to measure whether the collaborative problem-solving task embedded within an online shopping group impacts users' relationship building. Therefore, after normality tests of our data, we ran a two-sample t-test to compare the three attitudinal measures in treatment and control conditions.

Table 10.2 presents the mean scores of each variable and the outcomes of the overall results. There was a significant difference in the variables: connectedness, intimacy, and willingness to keep connection/contact. For each of these measures, participants in treatment groups (with collaborative problem-solving tasks) all rated higher for the perceived connection with their chosen shopping partner and their group compared to those participants in the control conditions.

The results suggest that when users participated in collaborative help-giving tasks within a shopping group, those participants were more likely to indicate that they wanted to keep their shopping partner/group for future interactions, rather than having it be a one-time-benefit type of interaction. The result is also consistent with the participants' responses to the "yes or no" item on "would you be willing to be further contacted by the partner of your choice," where 9 (out of 25) answered "yes" from the treatment groups, compared with 2 (out of 25) "yes" from the control groups.

In summary, as suggested by prior works [106], our study examined the effects of implementing social features to facilitate both informational and emotional exchange among the community members in real-world online settings for 5 consecutive days, and measured participants' evaluation of their relationships with others and the community. Users who participated in collaborative help-giving tasks within online shopping groups felt more connected to their partner(s), felt more intimacy, and were more likely to keep their partner and shopping group as contacts for future interactions.

10.3.2 Social Connection on User Participation and Contribution

Another objective of this study was to measure how relational building among community members impact user participation and contribution behaviors. We operationalized user participation and contribution as the "number of posts," compared with the attitudinal variables: connectedness, intimacy, and willingness to keep the connection/contact. Figure 10.2 shows the average number of user posts in each of the five days from the participants in both the treatment and controls, respectively.

However, we noticed that users' posting habit may have an impact on the recorded number of posts during the online studies. For example, most participants had long, comprehensive posts around the discussion topics, whereas some used it more like a chat with multiple separated "sends," resulting in a higher number of posts/sharings recorded. Therefore, as suggested by prior works [112], we took a conservative approach, adjusting user post numbers by combining the posts together if posted on the same topic within a very short period time and no interactions happened between the several posts from one user. For example, as shown in Figure 10.3, we consider the five posts from a single user together as one adjusted post for further data analysis.
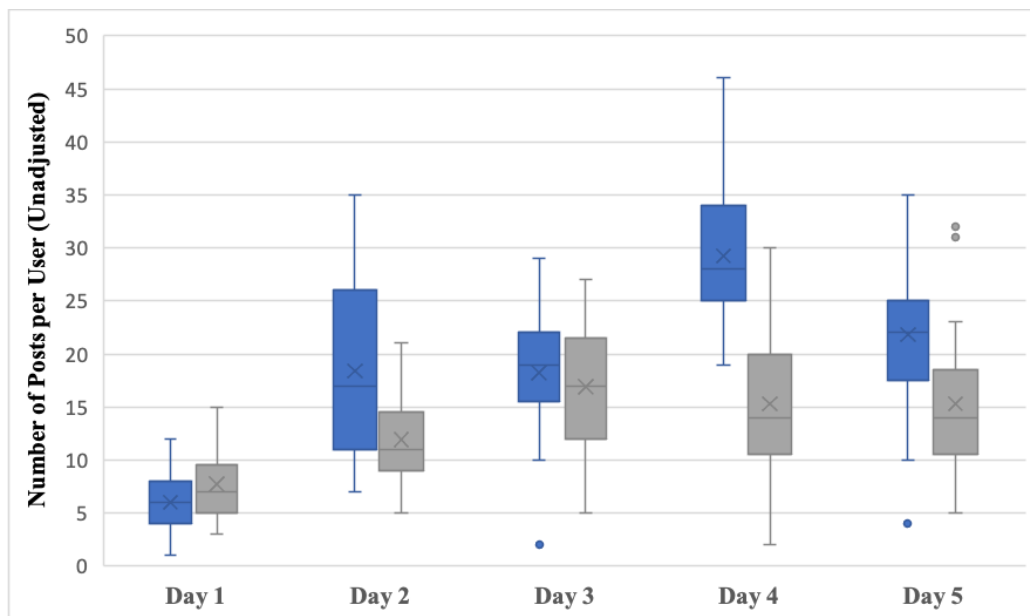
Figure 10.2 Average number of user posts in each day (treatment in blue and control in gray).
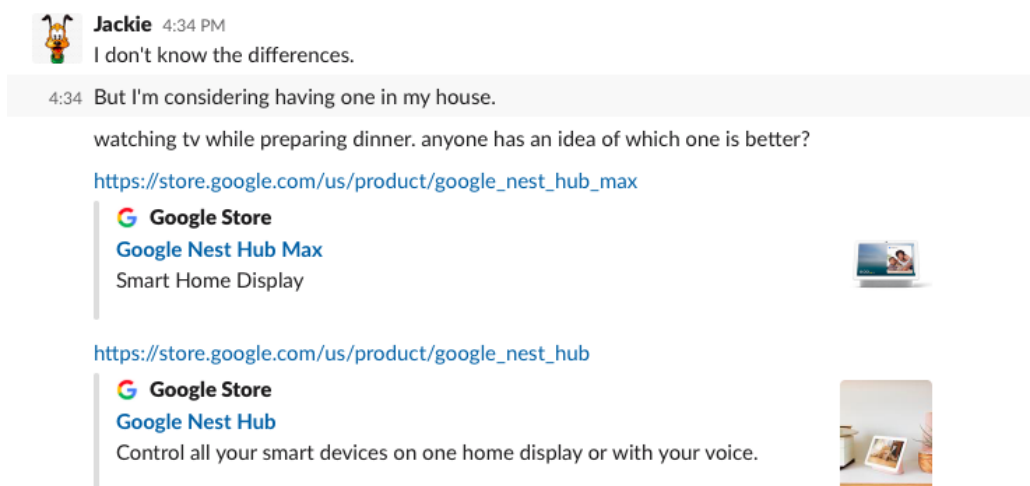
Figure 10.3 Sample post from users in study sessions.
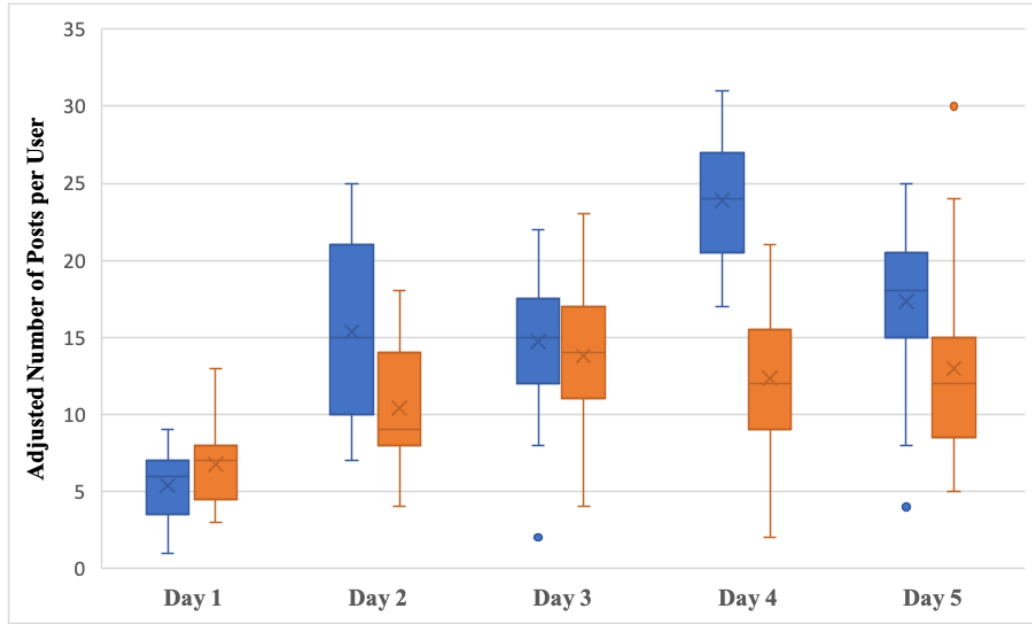
Figure 10.4 Average adj. number of user posts in each day (treatment in blue and control in orange).

Figure 10.4 shows the comparison of the average adjusted user posts in each of the five days during the study period. The distribution of the adjusted number of posts generally follows similar patterns as the unadjusted data, but it better reflects the nature of the users' underlying participation and contribution levels. Therefore, we use the adjusted number of user posts for further data analysis.

Linear regression analysis was conducted to examine the impact of the three attitudinal variables on the total number of user posts during the 5-day period of the study. Table 10.3 shows the results that the number of user posts are significantly associated with online community members' perceived social connection with others within the group. However, no significant influences were discovered between user posts and the other two variables, intimacy and "willingness to keep contact." All three attitudinal variables explained 55.8% of the adjusted number of user posts, indicating that important factors were considered comprehensively.

Additionally, we examined the impact of collaborative problem-solving tasks on user participation and contribution, operationalized as the "number of posts."

Table 10.3 The Regression Model on Adj. Number of Total Posts (N = 50, Adj. R-square = 0.558)

Predictor	Beta	P-value
Social Connectedness	2.348	0.023*
Intimacy	1.359	0.181
Willingness to keep contact	0.398	0.692
Significant at the 0.05 level		

As mentioned in previous sections, we implemented the collaborative tasks on Day 2 and Day 4 for all treatment groups, with the expectation that these tasks would naturally lead to higher number of posts from the participants on these two specific days. Therefore, rather than comparing the total number of posts across the study sessions, we compared the average daily posts only on Day 3 and Day 5, separately. As the adjusted number of daily posts per user are generally normally distributed, we also used a two-sample t-test for this analysis (as shown in Table 10.4). The results suggested no significant differences in user posting behavior in Day 3 (after the first collaborative task), but a significant impact on user participation and contribution behaviors on Day 5 (after the second collaborative task), where participants in treatment groups posted significantly more than those in control conditions.

Table 10.4 Comparison of Participants' Average Daily Posts from the Treatment and Control Conditions

	Day 3	Day 5
Treatment (SD)	14.72 (4.48)	17.32 (4.98)
Control (SD)	13.80 (4.86)	12.96 (5.70)
Difference (SD)	0.92 (1.32)	4.36 (1.51)
T (48)	0.696	2.881
P-value	0.49	<.01

10.4 Discussion

Our findings demonstrate that collaborative problem-solving tasks can significantly increase users' relationship building in a social shopping context, and therefore increase users' participation and engagement with online shopping groups or communities. In response to RQ1, the results indicated that users in treatment groups exhibit higher willingness to be connected with others and the group (Table 10.2), compared to those in control groups. Regarding RQ2, we found that users in treatment groups tended to post and contribute more within the shopping group with participating in the collaborative problem-solving tasks (Table 10.4). However, the differences in user posts were only significant in Day 5 (after the second task), but not in Day 3 (after the first task). The results present some interesting findings.

First, the difference in users' relationship building responses might be due to the various types of social support users had received during the study. As indicated by existing literature, informational and emotional support have been characterized as major supportive factors for user participation, interaction, and behavior in traditional online communities [70].

In this study, all participants experienced informational support, as they exchanged shopping information, deals, left comments, and made recommendations to other members. For treatment group participants, the implementation of collaborative tasks provided opportunities for them to practice a unique type of "teamwork" and form emotional support. As users participated and interacted in the collaborative tasks with a shared goal, a supportive environment formed to make them feel comfortable and emotionally closer with one-another.

Additionally, the mediated-discussion setting also helped facilitate the initial conversational interactions, and therefore accelerated the foundation for reciprocal behaviors, where more questions and advice-seeking requests were answered by fellow team members. We believe that the combination of "teamwork" and reciprocity

positively encouraged the psychological sense of emotional support developed through interaction with others, which in turn led to the development of interpersonal relationships, as well as the psychological belongingness to the community.

However, similar to other online collaborative computer-mediated contexts (e.g., online gaming [60]), the nature of social shopping made it difficult to separate various types of social support. Informational support typically plays a crucial role in developing emotional support, and most user participation and interactions in the study were based on the exchange of flash deals, recommendations of products, and sharing of personal shopping experience. Afterwards, when emotional support developed, we observed that users were more willingly to participate and contribute to the community, providing more informational support to other members that led to additional emotional support opportunities within the communities. Therefore, social support is intertwined in the context of OSCs, where information support serves as the starting point of how other types of social support, such as emotional support, may develop.

Second, this study found that social connectedness exerts a significant influence on user participation and postings within the communities. Social ties among the members lead to engaging and contributing more to the development of the online communities by helping others, such as sharing information, solving problems, providing emotional support, and contributing knowledge [176]. Findings from this study are consistent with the prior research, as we observed that participants who perceived higher social connectedness with others interacted, posted, and contributed significantly more content within the group.

However, we found that the influence on user participation was not significant when it came from the other two factors, "intimacy" or "willingness to keep contact." One possible explanation would be the distinction between different types of social ties established among community members. In this study, social connectedness could

be categorized as weak social ties that led to more interpersonal interactions and psychological relatedness to the community. In contrast, "intimacy" or "willingness to keep contact" by definition suggests "strong social ties," which typically takes more time to develop and impacts user behaviors in the long term rather than in a short period of time [106]. Because of the relatively short study window of 5 days in this study, it is unclear what would happen in situations where users interact and communicate over a longer period of time. Future research could further examine how users develop strong/weak social ties in the context of OSCs and how these social ties affect user participation and contribution behaviors.

Third, this study examined the impact of collaborative problem-solving tasks on user participation and contribution, operationalized as the "number of posts." Treatment groups received two separate collaborative tasks on Days 2 and 4, and we compared the average daily number of user posts after each of these tasks, respectively. Interestingly, the impact of the task was only significant after the second task (Day 5), while there was no significant difference in user behaviors after the first task (Day 3). There might be several interpretations of the results.

It is possible that the embedded collaborative problem-solving tasks help facilitate users' emotional support and therefore impacted users' behaviors, which is typically based upon other types of social support (e.g., informational support) in online virtual communities [60]. Therefore, it is not surprising to see a more significant impact of the second collaborative problem-solving tasks than the first ones in our study, as previous studies also indicated such emotional influence and social ties may affect users' engagement and contributing behaviors in the long term [195].

Another possible explanation could be that since the implementation of collaborative problem-solving tasks was relatively new to online community members, our participants went through a learning curve to adapt to the setting. As a result, compared to the first tasks, participants might have better understood the expected

goal of the second collaborative tasks and enjoyed interpersonal interactions during the process.

Future research may also take into consideration the timing and cumulative effects of implementing these collaborative tasks in online virtual communities, as informational support serves as the starting point of all types of other social support in most cases. Overall, our study results show promising potential of such collaborative problem-solving tasks facilitate help-giving environments and interpersonal relationship building, leading to supportive environments that encourage user engagement and contributions to OSCs.

10.5   Limitations

Our study has several limitations that may warrant further examination of the results. First, all participants were recruited from social media platforms by using a snowball sampling method. Though we pre-screened participants and targeted only active online social shopping community members, the recruitment unavoidably depends on the accuracy of the self-reported data in the sign-up form. We are aware of the potential self-selection and self-report bias in this study. Second, since we formed groups of participants with similar shopping interests and backgrounds, a large number of participants who indicated "electronics" as one of their main shopping interests were selected into the study. As a result, our results may be particular to a selected group of online shopping community members. Additionally, though we tried to balance the demographic background of the participants as much as possible, we were aware of the imbalance of some factors (e.g., ethnicity, between the control and treatment groups), where the treatment groups were made up of more Asian and Middle Eastern participants and control groups with more Whites and Latinx, may potentially affect the validity of the study results. Third, as mentioned in the Methodology section, we pre-screened all participants to ensure at least one

"Contributor" type of user was in each of the ten groups. The grouping strategy was used to facilitate interpersonal interactions among groups members in a relatively short period of time. Therefore, the group dynamics might be slightly different from typical online groups, where there may not always be a Contributor type user within any specific online virtual communities.

10.6   Summary

Social shopping and the emergence of OSCs allow users with similar shopping interests to interact, presenting opportunities for interpersonal relational building in a unique online context. In addition, the success of OSCs depends on user engagement and contribution. Drawing from the findings of previous studies, we implemented an online experiment to examine users' relationship building in computer-mediated online shopping groups and the effects of interpersonal relationships on user behaviors in a social shopping context. The results show that users may develop desire to be socially connected after working on implemented collaborative problem-solving tasks within the group, and the perceived social connectedness may encourage user engagement and contribution behaviors in OSCs. Moreover, we found that such help-giving, collaborative tasks lead to developing social capital and facilitating social support that have more significant impacts on user behaviors over the long term, as informational support typically serves as the starting point of other types of social support and bonding establishment in online contexts.

CHAPTER 11

GENERAL DISCUSSION AND CONCLUSION

Collaborative online shopping has emerged amid the growing use of e-commerce and social media systems, involving user-centered online communities that encourage user-generated content and interactions such as reading and writing reviews, rating products, and sharing shopping experiences. As an activity that naturally lends itself to social interaction, the social foundation of shopping has led to increasing collaborative online shopping activities and formation of online shopping communities. The formation of online shopping community is based on recent developments in e-commerce and social media, where users find and interact with others who share similar shopping interests and/or experiences. This dissertation shifts the focus from the marketing interests of consumer participation in social shopping to the relationship formation among user participation in collaborative online shopping activities and online shopping communities. The works in this dissertation aim to understand whether, how, and why users participate, socialize, and facilitate social connection/relationship in a shopping context. As more people turn toward online platforms and engage in online communities for product reviews, ratings, sharing, and recommendation, it is important to understand this new type of online collaborative and social activity from a social relational perspective. Also, since collaborative online shopping emerges as a form of "social need" that encourages people to be connected with others and form online virtual communities, a good understanding of user interaction and relationship formation in a shopping context may lead to enormous potential for social matching opportunities.

11.1 Dissertation Summary

This dissertation shifts the focus from the marketing focus of consumer participation in collaborative online shopping to the social and relational perspectives of user participation and socialization in a context of collaborative online shopping. This dissertation explores a new online context to understand whether, how, and why collaborative online shopping activities and online shopping communities facilitate social connection/relationship through user interaction on social shopping platforms. Since collaborative online shopping emerges as a form of "social need" that encourages people to be connected with others [193], a comprehensive understanding of user interaction and relationship formation in online shopping communities may lead to enormous potential for social matching and recommendation opportunities.

The contribution of this dissertation is two-fold. One is to understand how existing online platforms and social media systems support user interaction and socialization in a shopping context, the user preferences, goals, and challenges in users' perceptions and relationship formation of social connections with others, and how shopping interactions may facilitate social connections and relationships through various types of user interactions. The other is to leverage the knowledge gained from the empirical studies to find ways to support user interaction from social and relational perspectives, so users can both develop new social connections and enhance existing social relationships through collaborative online shopping activities. Findings of this dissertation help improve the existing understanding of user interaction in a shopping context and identify a new form of social context and platform for user socialization and relationship formation. Contributions of this dissertation include an understanding of user socialization and relationship formation in an under-studied online setting, exploring a new online context to enrich people's social life and expand social matching opportunities, and a proof-of-concept interface prototype to better facilitate the discovery and development of social connections/relationship

in a computer-mediated online environments. The findings from this dissertation make both theoretical and empirical contributions to the field of human-computer interaction and computer-supported cooperative work that would be useful to users, researchers, and designers of social shopping systems, as well as social network and social matching platforms in general.

11.1.1 Collaborative Online Shopping Presents Opportunities to Form Online Virtual Communities and Facilitate Interpersonal Social Relationship

The rapid growth of online shopping and usage of social networking services has led to the emergence of collaborative online shopping activities—an online platform that allows users to connect with each other to discover, share, compare, rate, recommend, and review products [130, 178]. Compared with traditional online shoppers, collaborative online shopping users have evolved from traditionally passive information receivers to information co-creators and provide a substantial amount of user-generated content [172]. Prior studies identified two major types of social shopping platforms: social networking sites with embedded commercial features, such as advertisement and online transactions, as well as online retail websites with interpersonal social features embedded to support and encourage social interactions among users [32].

Traditionally, interactions about shopping products and services mainly took place between acquaintances and store assistants, where the scope of communication was limited by time and place [182]. Even online shopping has long been regarded as a solitary activity until the development of social media kindled significant changes [178]. Today's consumers can easily and freely talk about products with acquaintances at a distance and like-minded strangers with common product interests in online groups and communities [73, 82].

Researchers and practitioners are paying increasing attention to both the commercial impact [35, 130, 177], as well as the social and relational perspectives [32, 185] of online shopping communities. The social attributes of shopping have led to increasing interpersonal social and collaborative activities in online shopping. Users often join online shopping communities to seek support from others when they encounter product problems [81]. Some customers who receive good social support exhibit pro-social actions, such as assisting other members in trouble, giving valuable feedback about shopping experience, and recommending products to others [195].

Technological advancements allow online shopping communities to emerge and operate through social media platforms (e.g Facebook groups), retailer site communities (e.g., Best Buy Community Forum), deal-sharing communities (e.g., Slickdeals), and online review forums (e.g., Laptop Mag). Since social shopping presents as a new type of "social need" that encourages connecting with others and potential social matching opportunities [193], many related academic studies have also used social theories to explain emergent phenomena, such as social responsibility theory [105], social support theory [106], and salience of reciprocity [31], which suggest that user interactivity in the context of collaborative online shopping shifts the consumption orientation from the use value of products or services toward a desire to reinforce peer-to-peer bonds through "linking value."

This dissertation contributes to explore this emerging online social context for user socialization and relationship formation in people's everyday collaborative activities. The five studies described in this dissertation present findings and make contributions to a comprehensive understanding of user participation, socialization, and relationship building in the context of collaborative online shopping, as well as emerging online shopping communities.

11.1.2 Study 1: Qualitative Exploration of User Participation and Challenges from the Social and Relational Perspectives in Existing Collaborative Online Shopping Systems

The first study of this dissertation described a qualitative study to understand how users participate in collaborative online shopping activities by using existing online shopping platforms and social media systems, with a focus on user engagement and interpersonal social interaction. Study 1 identified the major challenges users face in current collaborative online shopping systems and proposed design implications to address these challenges. For review sites and shopping forums, the challenge is that these platforms provide a way for users to know about the items and explore other people who shared similar shopping interests or experience, but users need to wait for an extended time if they want to communicate with other people. As a result, though users often read and sometimes write reviews, participants reported that they rarely engage in interactions with other users, which limits the possibilities of more interactions between individual users. For social media sites, we identified the major challenges people face are the concerns for social appropriateness to share shopping on social media with existing friends, and lack of access to communities of people who shared similar shopping interests.

Study 1 found that users were likely to discover people with shared shopping interests on platforms such as review sites and shopping forums, but further social actions were typically not offered in these systems. As a result, people found it very hard for interactions between specific users to be continued on these platforms, even if they intended to. To address this problem, social functions such as "follow" or "friend" could be added as a complement to discussion features, so as to better promote user participation and engagement on these platforms. Another implementation of introducing social functions to facilitate people's social shopping activities could be adding "reviewer recommendation" feature on online marketplaces, like Amazon, eBay, or Best Buy. Similar to the concept of "product recommendation,"

the strategy that the majority of shopping websites adopt to recommend related purchases to a user based on the products the user has browsed or purchased, "reviewer recommendation" feature would allow users to find people who have experience of using products that are related to the users' shopping interests, and have the willingness to share the experience with the user.

As for social media sites, we found the biggest concern is that users don't know if it's socially appropriate to share and talk about shopping publicly. To address this challenge, social media sites would need to construct a context which users feel confident that shopping topics are "socially appropriate" to share and discuss about on the platform. One of the ways this could be implemented is through a special tag of something like "#shopping." When implemented, users would need to explicitly turn the feature on in the system to view any of their friends' posts with a special hashtag. The design helps to filter who are annoyed or not interested in viewing their friends' shopping-related posts on social media, as they would not see any of these posts without turning on the feature. In this case, users would feel comfortable sharing and discussing about shopping by using the "shopping" tag, and be confident that it is "socially appropriate" to be engaged in such collaborative shopping interactions with their family and friends on social media sites.

11.1.3 Study 2: Quantitative Assessment of User's Posting Behavior and Categorical Preference in a Collaborative Online Shopping Context

The first study provided an overall picture of user participation and challenges in collaborative online shopping activities. The objective of Study 2 was to focus on users' posting behavior from social perspectives, to understand what categories of items people prefer to share and have more social values by using online survey questionnaires and quantitative data analysis.

Sharing about shopping items or products is typically the key of any meaningful interactions in the context of collaborative online shopping. Also, the social attributes

of items that people shop online are quite different, in terms of how likely people would share with others. For example, buying a Christmas tree is different from buying a box of toilet paper, and buying a baby stroller is also different from buying a screwdriver. Early research in online shopping studied people's categorical preferences of shopping in online and offline channels, and the results indicated that people do prefer to purchase certain categories of items online, and certain categories offline [102].

Study 2 identified the preferable categories of products that may "bridge" between shopping activities and social relationships. For example, to design an effective personalized interface of integrating online shopping in social interactions, researchers may start their work by designing apps or platforms with prioritized focuses on the top categories that people have the strongest willingness to share and discuss, instead of building social shopping apps or systems that cover all categories. The results of the study show that people do have categorical preferences of sharing certain products on social media. For example, "Electronics & Computers" items were the most widely shared by the participants. The findings are consistent with previous research on consumer preferences of online shopping channels as well.

Study 2 also discovered that people consider "sociality" of the items more than "information seeking" when deciding what to share on Facebook. The results suggested that those "sociality" factors, such as common interests and discussions among social community, have greater impact on people's preferences of sharing items on social networks, than seeking information and purchasing advice from their friends. A paired t-test showed that variable of "sociality" is significantly higher than "information," indicating that perceived "sociality" of products plays a more important role than information seeking for people to consider sharing items on social networks. Study 2 found that people prefer to share items that may provoke common interests among friends and trigger discussions on social media.

11.1.4 Study 3: Mixed-Method Online Study of User Participation and Interaction in Online Shopping Communities from the Social and Relational Perspectives

Technology allows people with similar interests and experience to share, comment, and discuss about shopping from anywhere and at any time, which leads to the emergence of online shopping communities. The next study focused on how people participate and socialize in the setting of online communities [93]. Study 3 entails a combination of lab experiments and qualitative focus groups to examine how people participate and socialize in the setting of online communities. The objective of study 3 was to explore user participation and establishment of social connection through interactions within online shopping groups/communities.

The results suggested that when engaging in text conversations within a shopping group, the participants are more likely to keep the shopping partners and the group for future interactions, if possible, than merely consuming information from other users on online shopping platforms. These findings support that users are more willing and likely to develop a social connection in online shopping communities when they are facilitated with real-time text conversation to discuss on a shopping topic, whereby the likelihood and willingness of relationship formation decrease significantly when their participations in online shopping platforms are limited to unilateral informational purposes only.

Study 3 found that conversational interaction advocated as the most effective way to develop connectedness and relationships with others within the communities. There might be several reasons why "conversation" have positive impacts on perceived connectedness with others. First, similar to online relationship formation processes, one may discover and evaluate personalities and interests of the relational others in online communities. Typical comments or reviews on shopping sites or forums may limit the interaction on the product itself such as specs and price, however, real-time conversations between users would allow the interaction to extend to other areas.

For example, discussions on a camera or lens might lead to the discovery of other common interests, such as photography and traveling. Second, users experienced the feeling of emotional support, either helping others or being helped, during the course of informational and emotional exchange in those real-time conversations. As we learned during the focus groups, such emotional support played a more important role than informational support in keeping users active and triggering contribution to the communities in the long run. Third, "conversation" between average users helps with building a reciprocated and decentralize social structure within the online shopping communities, a supportive climate for interpersonal relationships to foster and develop.

11.1.5 Study 4: Mixed-Method Study to Identify Personas in Online Shopping Communities

Each user has unique needs in social shopping and the use of online shopping communities. Some want to get flash deal information, some want opinions on their shopping interests, while others enjoy being a part of a community with people of similar interests. These personal motivations and contexts result in unique and complex user needs for personalized informational and emotional support that we found as the major incentives for people's participation and socialization with others on shopping topics. A key step to a successful human-centered design of social shopping platforms for each user is to understand different types of users and what their needs are, as well as the level of willingness to engage in conversations and matched with others. The objective of Study 4 was to explore various types of user behaviors and expectations in collaborative online shopping and online shopping community members, so as to facilitate interpersonal interaction and social relationship establishment.

Collaborative online shopping and the emergence of online shopping communities allow users with similar shopping interests to communicate and interact. Study

4 help with identifying different types of users based on their reading behavior, posting behavior, and values sought. This study identified four types of personas that help illustrate the complex nature of user participation and behaviors in online shopping communities. Based on the findings from a combination of interviews, focus groups, and online survey, four persona types emerge after the analysis of both the qualitative and quantitative data—Opportunists, Contributors, Explorers, and Followers.

Study 4 contributed to a comprehensive understanding of the dynamics of personalized motivation and behavioral patterns of various personas in online shopping platforms and groups. Moreover, this study also identified the challenge of information balance in supply and demand from individualized contribution to the communities. The findings suggested that a socially connected and interactive community benefits both the informational and emotional exchange within the communities. In particular, when users engage in online shopping groups or communities, the possibilities of socialization and relationship formation may depend on the matching of users with complementary users. For example, *explorers* are more likely to develop social connections through interactions with *contributors*, as these two groups of users present complementary behavioral characteristics in the context. However, it is unrealistic to expect *explorers* and *opportunists* to communicate and develop such relationships. Based on the findings, Study 4 also discussed a series of design implications to identify user types, facilitate user interaction to form bonds-based commitment, and encourage contribution behaviors among community members.

11.1.6 Study 5: Mixed-Method Online Experiment to Examine Users' Interpersonal Relationship Building and the Effects on User Behavior in Online Shopping Communities

Findings from Studies 1 to 4 along with literature review are reflected upon to design a research artifact that would facilitate user participation and socialization in a context of collaborative online shopping interactions. This approach culminated in the design

of a novel collaborative shopping interface prototype for users that prompts users to experience conversational interactions on shopping topics and have problem-solving discussions to work on mini shopping tasks with others, such as "helping a new college student to choose a laptop."

Similar to most existing text-based messaging interfaces, the prototype is based on users' unstructured or open discussions on any topics they choose. To facilitate user interaction and social connectedness, the interface prototype incorporates collaborative help-giving, problem-solving mini-tasks to encourage conversational exchange and users' belongingness to the group/community. In the context of online shopping communities, the problem-solving scenarios are recommended to be based on item types of high socialities (e.g., electronics, toys), as those mini-tasks also serve as "ice-breakers" for any subsequent user contribution and social interactive behaviors. Leveraging insights from studies 1 to 4 of this dissertation, the design prototype is expected to prompt users to be engaged in community-building discussions in interest-based groups, encourage team-building and contribution behavior to the community, and facilitate interpersonal relationship formation in a collaborative online shopping context.

Collaborative online shopping activities and the emergence of online shopping communities allow users with similar shopping interests to interact, presenting opportunities for interpersonal relational building in a unique online context. In addition, the success of online shopping communities depends on user engagement and contribution. Drawing from the findings of previous studies, Study 5 implemented an online experiment to examine users' relationship building in computer-mediated online shopping groups and the effects of interpersonal relationships on user behaviors in a social shopping context. The results show that users may develop desire to be socially connected after working on implemented collaborative problem-solving tasks within the group, and the perceived social connectedness may encourage user

engagement and contribution behaviors in online shopping groups and communities. Moreover, Study 5 found that such help-giving, collaborative tasks lead to developing social capital and facilitating social support that have more significant impacts on user behaviors over the long term, as informational support typically serves as the starting point of other types of social support and bonding establishment in online contexts.

Study 5 suggested a positive relationship between users' conversational interactions and relationship formations in a social shopping context. The results echoed on the findings from the previous studies (e.g., Chapter 7 and 8), where we posited that users value "social support" more than "informational support" when socializing with others on shopping topics and beyond. Study 5 also confirmed that online shopping presents an emerging social context and platform, for a tremendous benefit for users who participate in collaborative online shopping activities, to establish new social connections and improve existent relationships. Instead of providing more information to the users, design components of facilitating meaningful communications among users on a regular basis are key to keep users active and engaging on these online social shopping systems and communities.

11.2 Concluding Discussion

This dissertation leverages social theories to explain how and why shopping presents an emerging online context for interpersonal interaction and social relationship building opportunities. Related literature was reviewed and a series of studies were then described to identify the challenges users face on existing platforms, as well as how software design constructs may contribute to overcome the challenges and provides opportunities to facilitate user interaction and relationship establishment in a collaborative online shopping context.

11.2.1 Reflecting on Collaborative Online Shopping as an Emerging Social Context

The first two studies of this dissertation examined user behavior and preference when engaging in collaborative online shopping activities with their family and friends on social media, as well as other users through online reviews and discussion forums. While technology allows convenient communication with existing social network, easy access to tremendous information, and opportunities to reach out to more people, user participation and interaction are still limited by the challenges posted on existing social shopping platforms. In this section, we review the main motivations, challenges and preferences when users participate in collaborative online shopping activities and explore how design constructs may serve to accommodate these emerging user needs from social and relational perspectives.

11.2.1.1 Motivations of Participation and Challenges of Interaction in a Shopping Context. There are two main online platforms for people to shop collaboratively and interact with others on shopping topics: social media systems and online shopping review/forum sites. People use social media platforms to collaboratively shop with their family and friends, including sharing products and shopping information, asking for suggestions, making recommendations, etc. Multiple studies in this dissertation found that social media users expressed mixed attitudes toward sharing and discussing about shopping on SNS platforms. There might be several possible explanations why the motives and deterrance are intertwined. On the one hand, users consider social media as a powerful tool, in terms of information exchange and dissemination, to reach the maximum of their existing social networks, and possibly more through reposts and retweets. Sharing shopping on social media (e.g., Facebook, Instagram) is the most efficient way to get useful and reliable feedback from their existing social circles. On the other hand, people tend to switch to private messaging channels (e.g., text, WhatsApp, Messenger) as long as they found their

communication partners regarding specific shopping topics, due to the uncertainty of the "social appropriateness" of shopping conversations on general social media platforms. The findings are consistent with prior research findings on user deliberation of posting contents on social media [55], which, as a result, makes it difficult for other users to engage in the subsequent conversations and join if they have useful knowledge or information.

People also regularly use product reviews posted by others to research what they are interested in purchasing and engage in conversations with other users in discussion forums. Online reviews and forums provide another way for users to know about the items and explore who shared similar shopping interests or experience. Interestingly, users exhibit different patterns when they use the two systems for collaborative online shopping activities. For online marketplaces (e.g., Amazon, eBay reviews), the reviews are typically listed by product, rather than by the time when the review is posted for a type of items, which means users need to wait for an extended time if they want to communicate with other people. As a result, the asynchronicity of communication mechanism limits the possibilities of more interactions between users. Therefore, though users often read and sometimes write reviews on online shopping marketplaces, they rarely engage in interactions with others. For shopping forums (e.g., camera, sneaker), more real-time conversations happen between users, which lead to more opportunities for interactions with other users on the shopping topics they are interested in discussing about. Sometimes, the conversation may even go beyond initial conversation to a broader topic, which suggested that meaningful interactions could be established between forum users. However, the limitations of discussion forums are that people find it hard to "friend" or follow another user on the forum, and thus impossible for subsequent interactions in the future.

The studies in this dissertation identified the major challenges people face when participating in social shopping include the concerns for social appropriateness to

share shopping on social media with existing friends, and lack of access to communities of people who shared similar shopping interests. The findings are in line with prior impression management research on people's behavior in online systems [94], which suggested efficacy with impression management predicted the level of online participation. On social media, users try to maintain a consistent image within their social circles, so they are selective of the contents to post on their timelines. As a result, they would ask for shopping advice on social media, only if when they consider the products "cool enough". In comparison, users have little concerns for maintaining their social image on review sites and shopping forums, but further interactions between users with similar shopping interests are limited by the setting of current forums, as well as the uncertainty of "social appropriateness" to extend the interactions beyond the scope of shopping on discussion forums.

Nonetheless, most users found collaborative shopping activities with their family and friends beneficial for the social bonds, as shopping conversations often lead to more interactions between family and friends, and thus positively contribute to enhancing existing social relationships for collaborative shoppers on social media. The findings reported in this study indicated that collaborative shopping activities, under certain circumstances, serve to improve people's social ties. These findings also suggest that social shopping activities could be a promising introductory context for facilitating social matching on review sites and online shopping forums.

11.2.1.2 Categorical Preference of Product Sharing in Collaborative Online Shopping. Sharing about shopping items or products is typically the key of any meaningful interactions in the context of collaborative online shopping. Items that people shop online are quite different, in terms of how likely people would share with their family and friends. For example, buying a Christmas tree is different from buying a box of toilet paper, and buying a baby's stroller is also different from

buying a screwdriver. Early research in online shopping studied people's categorical preferences of shopping in online and offline channels, and the results indicated that people do prefer to purchase certain categories of items online, and certain categories offline. To explore collaborative online shopping as an emerging context for social relationship building, it is important to understand what items users would like to share and the underlying factors of their categorical sharing preferences.

Study 2 (Chapter 7) indicates that people do have categorical preferences of sharing certain products on social networks. For example, "Electronics & Computers" items were the most widely shared by the participants in the study, followed by "Home, Garden & Tools," "Beauty, Health & Grocery," "Clothing, Shoes, & Jewelry," "Movies, Music & Games," and "Toy, Kids & Baby," among the popular categories for people to share on Facebook. To inform future research, these identified preferable categories of products may facilitate "bridging" channels between shopping activities and social relationships. For future works to study the impact of shopping activities on people's social relationships, researchers may bootstrap or start their process by focusing on the top categories that people have the most intents and willingness to share and discuss among online shopping communities, instead of building apps or systems that cover all categories of products and services.

The findings of this study also confirms that people consider information and advice-seeking as important factors when sharing products on social networks. The results suggested that one major driver of people sharing items on social networks is the feedback from their social friends, including price, functionality, product details, and customer experience. In addition, the perceived sociality of products also plays an important role for people to consider sharing items with their family and friends. The study found that people prefer to share items that may provoke common interests among friends and trigger discussions on social networks. It might not be surprising to identify a correlation between sociality of products and people's sharing preferences.

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However, this study contributes a new dimensional attribute of product to consider for future research to understand people's behaviors, attitudes, and preferences in collaborative online shopping and social relationship building. For future works, the focus of designing such social shopping apps and systems should be building an online community that engages people in discussions and interactions, rather than an online shopping Question-and-Answer platform.

11.2.2 Reflecting on User Behavior, Social Interaction, and Relationship Building in Online Shopping Communities

11.2.2.1 Social Support Theory in Online Shopping Communities. The emergence of collaborative online shopping activities has encouraged and facilitated interaction between users based on similar shopping interests and experience, which further lead to the formation of a relatively new type of communities on various online platforms. While most studies on social shopping have focused on the factors that influence purchasing behaviors, our study aims to examine user participation and relationships in online shopping communities from the relational perspectives. In addition, we conducted a lab experiment to study the relationship formation between users through interactions in a social shopping context, and the results are supportive of the emergence of potential online social connection/relationships among users in online shopping communities.

Informational support and emotional support have been characterized in social support theory as the major supportive factors for user participation and behavior in traditional online communities [70]. This dissertation inquired into how the informational support and the emotional support affected user interaction in a social shopping context, as well as their participation and interpersonal relationships in the emerging online shopping communities.

The reason that social support is essential in online shopping communities is because supportive interactions among members let them feel closer to one another and more comfortable in exchanging information [106]. The most interesting finding was the differences in the roles that these two types of support played in the process. The results suggested that most people joined and started to participate in the online shopping communities mainly for informational purposes. However, emotional support played a more important role in keeping members active and contributing to the community in the long run.

The studies in this dissertation suggested that users who only experience informational support are more likely to stay "opportunism" and less likely to generate psychological belongingness to the community. In fact, they felt less of a part of the community, resulting in low desire of contribution to the community and connection with other members. On the contrary, many participants, as active members of their individual online shopping groups/communities, reported the psychological sense of emotional support developed through interaction with other members positively affected their participation and relationship with others.

Additionally, the two types of social support also vary based on the social structure within the communities. On social media-based online shopping communities, where reciprocal structure is more common among a relatively small number of members, the interactions are more conversational and often go beyond the shopping topics to other aspects of life, such music, movie, sports, and social news. As a result, emotional support is more likely to be facilitated in these "small and close" groups and communities. However, in most review sites or forum-based communities, there are usually more strict rules set about what is allowed to be shared and discussed. Therefore, unilateral social structures are more typical on these platforms, where only a few central users make contributions on a regular basis and most basic users stay as followers. With less opportunities for conversational and supportive interaction

between average users, information support becomes sole and dominant motivation for the majority of these communities.

11.2.2.2 Social Relationship Formation in Online Shopping Communities. Results of the studies supported that people are more willing to keep the connection with the shopping partner and the group, when they engage in conversational interactions with relational others in the study. In comparison, users showed significant lower willingness to keep connected with others on shopping forum or review sites, with information-seeking as the sole purpose for activities in this experimental condition.

One possible explanation for the finding would be that users preferred "human contact," when evaluating their interaction and relationship with others. As much as information-seeking is a fundamental motivation in user participation in the context, the way users receive and share information greatly impacted on the formation of interpersonal relationships. There is a noted different between when the information is exchanged through conversational interaction between members versus through centralized dissemination within the communities. In conversational interactions, users are engaged with others in a certain period of time and online space, a typical communication pattern that people usually experience in offline settings [108]. Users often regard real-time text conversation as a type of computer-mediated interaction with other "human contacts." In comparison, users perceive more of a relationship between human and "computerized system," when using online forum and reviews to inform shopping activities. As a result, users typically pay more attention to the information itself rather than the user(s) who posted the content, which negatively affects the potential formation of interpersonal social connections or relationships.

Another possible explanation would be the social structure type and relationship formation in online shopping communities. As noted in existent literature, online

relationship form and end quickly in unilateral structure [146], whereby reciprocated online interactions have a strong effect on users' psychological commitment in online communities [127]. In online shopping communities, users typically grab information from the central users on the platforms to inform their online shopping activities in a unilateral social structure. Combined with limited participation desire, low responsibilities to contribute and commit to the communities decrease the motivation and opportunities to develop interpersonal relationships with other community members. In reciprocal online shopping communities, decentralized hierarchical social structure makes nearly all members relational accessible to others. With a combination of high commitment to the community and willingness to contribute, users may discover more similarities and sympathies through iterative interactions, as well as being open to form interpersonal connections and/or relationships.

11.2.2.3 User Types in Online Shopping Communities. Each user has unique needs in social shopping and the use of online shopping communities. Some want to get flash deal information, some want opinions on their shopping interests, while others enjoy being a part of a community with people of similar interests. These personal motivations and contexts result in unique and complex user needs for personalized informational and emotional support that we found as the major incentives for people's participation and socialization with others on shopping topics.

A mixed-method study in this dissertation examined various user behavioral characteristics in terms of information consumption (reading), information sharing (posting), and values sought (objectives) in collaborative online shopping activities and communities. The results discovered some common user behavioral patterns include looking for specific deal information, soliciting opinions and suggestions on products, experiencing reciprocated support between community members, and staying up with the latest trend(s). Based on these findings and observations, the

main user types in online shopping communities are: Opportunists, Contributors, Explorers, and Followers—where Contributors play a critical role in building up a community that engages various types of users to visit, engage, discuss, share, comment, and contribute.

The user types in collaborative online shopping are important to a comprehensive understanding of various types of behaviors and expectations. However, the user behavioral types are dynamic and transitional, as members may develop the contribution behaviors as they interact with others and participate within online communities over time. In particular, from social and relational perspectives, when users engage in online shopping groups/communities, the possibilities of interpersonal interaction and relationship formation may depend on the matching of users with complementary users. For example, Explorers are more likely to develop social connections through interactions with Contributors, as these two groups of users present complementary behavioral characteristics in the context. However, it is unrealistic to expect Explorers and Opportunists to communicate and develop such relationships.

11.2.2.4 Personalized Experience and Building Socially Connected Online Shopping Communities. Four major types of users are identified in online shopping communities, based on their motivations, reading, and posting behaviors. Similar to other online communities [78], only a small portion of the users post and contribute to their respective communities regularly, while most visit online shopping communities for informational purposes. There is an imbalance in the supply and demand of high-quality posts, especially personalized shopping experience or advice.

In the context of online social shopping communities, traditionally, companies and online retailers play a significant role in providing product information [89] and moderate customer discussion [35]. However, the studies in this dissertation found

that more individualized informational demands have emerged among participants and not yet been well addressed by existing systems. For example, participants who had the Explorer personas are particularly looking for "unusual" posts or novel ideas that surprise them. Even for users of Opportunist type, some of them also highly prefer discussions on products or services based upon personal experience from fellow members in their respective communities over "mainstream" reviews that are typically available on established platforms like Amazon or Google.

To increase the supply of such personal experience, reviews and recommendations from individual users in online shopping communities rather than marketers, one of many possible ways would be to identify those users of Contributor type, encourage the knowledge-sharing behaviors of the Contributors to the community, and facilitate the transition of users from other behavioral types into Contributors.

The persona types identified in this dissertation can be used to encourage the contribution behavior in various online communities. As suggested by previous literature, one of the challenges around user commitment and members' willingness to contribute can be addressed by: identity-based commitment (where users' contributions to the communities come from the feeling of the responsibilities to fulfill a mission together), and bonds-based commitment (where users participate and contribute as a result of friendship or feeling close to other individuals within the groups) [142]. In the context of online shopping communities, there might be a smaller chance of users developing a strong empowering identity involved in being part of a group like some online cancer-supporting communities. Instead, bonds-based commitment may work better among users who share similar shopping interests or experience, which includes both the informational and emotional exchange on shopping topics, as well as the sense of membership within the communities. Though Contributors only account for a small number of participants in online shopping communities, as we found from the study, they play a critical role in posting

information, answering questions, and providing emotional support to others, and thus help building up a community that engages various types of users to visit, discuss, and share on a regular basis. The findings from this dissertation can also be applied in other interest-based online communities, such as online gaming and event planning communities.

11.2.2.5 Embedding Collaborative Problem-solving Tasks to Facilitate Interpersonal Interaction and Social Relationship Building in Online Shopping Communities. Inspired by literature review and the results of the studies, the findings of this dissertation demonstrate that embedded collaborative problem-solving tasks in the setting of online shopping groups/communities can significantly increase users' relationship building in a collaborative online shopping context, and therefore increase users' participation and engagement with online shopping groups/communities. In combination with the social support theory as discussed in earlier sub-section, the impact of such collaborative mini tasks on user behavior and relationship building can be explained in various ways.

The impact of collaborative problem-solving tasks on users' relationship building might be due to the various types of social support users had received during the study. As indicated by existing literature, informational and emotional support have been characterized as major supportive factors for user participation, interaction, and behavior in traditional online communities [70]. During the last online experiment study of this dissertation, all participants experienced informational support, as they exchanged shopping information, deals, left comments, and made recommendations to other members. For treatment group participants, the implementation of collaborative tasks provided opportunities for them to practice a unique type of "teamwork" and form emotional support. As users participated and interacted in the collaborative tasks with a shared goal, a supportive environment formed to

make them feel comfortable and emotionally closer with one-another. Additionally, the mediated-discussion setting also helped facilitate the initial conversational interactions, and therefore accelerated the foundation for reciprocal behaviors, where more questions and advice-seeking requests were answered by fellow team members. We believe that the combination of "teamwork" and reciprocity positively encouraged the psychological sense of emotional support developed through interaction with others, which in turn led to the development of interpersonal relationships, as well as the psychological belongingness to the community.

Additionally, social connectedness exerts a significant influence on user participation and postings within the communities. Social ties among the members lead to engaging and contributing more to the development of the online communities by helping others, such as sharing information, solving problems, providing emotional support, and contributing knowledge [176]. However, we found in the study that the influence on user participation was not significant when it came from the other two factors, "intimacy" or "willingness to keep contact." One possible explanation would be the distinction between different types of social ties established among community members, as social connectedness could be categorized as weak social ties that led to more interpersonal interactions and psychological relatedness to the community in the study. On the contrary, "intimacy" or "willingness to keep contact" by definition suggests "strong social ties," which typically takes more time to develop and impacts user behaviors in the long term rather than in a short period of time [106]. Future research could further examine how users develop strong/weak social ties in the context of online shopping communities and how these social ties affect user participation and contribution behaviors, as well as the effect of such problem-solving tasks on users' social relationship formation in other interest-based online communities.

11.3 Future Work and Design Implications

This dissertation explored how collaborative online shopping presents an emerging social context to facilitate interpersonal interaction and social relationship building. Future work can more thoroughly explore the theoretical and empirical constructs that may be influencing users' willingness to participate, contribute, interact, and socially connect with others in a collaborative online shopping context and effective social shopping platforms to be designed in the future. From a relational perspective, users participate in collaborative online shopping activities and join online shopping communities mainly for the demands of information and knowledge to inform their own shopping decisions, but they stay active and keep contributing to the community only when they feel connected with others. Therefore, one of the major challenges of facilitating user engagement and interpersonal relationships, in fact, is how to increase users emotionally connected to other members and belongingness to the online shopping group and/or communities.

As discussed in earlier chapters of this dissertation, though there are many interface components or system structure solutions to address the challenge, one of these could be as simply as "conversations" among average users on or beyond shopping topics. In this dissertation, we used collaborative mini tasks to create scenarios for real-time interpersonal conversations between users. As it would be socially challenging for users to initiate conversations with other members who they are not familiar with, the social awkwardness of interaction initiation could be overcome by technology-assisted teaming up process. Future research or design components may use other techniques to facilitate users' conversational interactions.

In addition, future work can also broaden the demographic range of the participants included in the experiments of user interaction and relationship building in a collaborative online shopping context. The participants in most studies of this dissertation were predominantly college students and young professionals within the

ages of 20s to mid 30s. Future work can also explore the user interaction and social relational behaviors among users from older age groups. Future research may use the findings and design implications discovered in this dissertation, such as persona types, user interaction and behaviors, and embedding collaborative problem-solving tasks into online platforms, to understand and facilitate users' social interactions and relationship formation in other online communities.

The emergence of collaborative online shopping activities connects people with similar shopping interests on virtual online spaces, and thus creates the opportunities of online shopping communities for those social shoppers to communicate and interact. The studies in this dissertation conducted an exploratory investigation of user participation and relationships in this new type of online communities from the social and relational perspectives. While there is still much to be explored, the overall results of the studies in this dissertation show promising potential of collaborative shopping and online shopping communities as an opportunistic context for social interaction and interpersonal relationship building. The theoretical and empirical knowledge gained from this dissertation, such as the impact of social support and social structure of online communities upon user participation and contribution behaviors, may also inspire future research works of interpersonal relationship building in other online contexts and virtual communities (e.g., livestreaming shopping and online gaming community) as well, to explore interpersonal social relationship formation in various online platforms and communities.

APPENDIX A

RECRUITMENT FLYER FOR STUDY 1

This is the campus flyer used in Study 1 to recruit participants.

APPENDIX B

INTERVIEW GUIDE FOR STUDY 1

This is the protocol for semi-structured interviews in Study 1.

Hi, my name is Yu Xu and I am a PhD student at NJIT. We are doing a project that intends to understand people's online shopping activities and interactions on social media ....

B.1 Warm-up Questions

Did you find this place okay? How did you find this place? How was your day? What did you do this weekend/ this morning/yesterday? Can you tell me about your routine (how their day goes)? What are your hobbies?

What did you think about certain event? Do you like coffee?

Where are you from? Tell me about yourself? What do you do? What is your occupation?

B.2 Basic Questions about Online Shopping

How long have you been shopping online?

How often do you shop online on average?

Are you more likely to use your computers or mobile devices (e.g., smart phones, tablets) to do online shopping?

What kind of things do you usually shop online? Why?

What kinds of things usually shop in physical stores? Why?

What websites / apps do you use for online shopping? Why?

Do you usually use deal sites for your online shopping activities? Why or why not?

How do you decide to shop/not to shop on certain websites/ apps?

Can you tell me step by step how you made your last purchase online?

Generally, what type of things do you consider when you are shopping online?

B.3 Social Media

What social media do you use?

On average, how long do you spend on social media everyday?

What do you usually do on social media sites/apps?

Why do you use these social media apps on a regular basis?

Have you tried other social media apps but decided not to use any longer?

What features of these social media do you like/use the most? Why?

Can you describe what types of interactions you have with your family and friends on social media?

B.4   Social Shopping

Can you describe your online shopping experience? =¿ give specific example, What do you like / dislike?

How do you research on products you are interested in?

How do you typically start your shopping trips online? How do you know if your friends would be interested in the products that you share on social media?

Would you share about good deals with your family and friends, if you find any? Why or why not?

How do you like other people sharing shopping information (e.g., what they are interested/what they bought/products they are comparing) on social media?

How do other people react to your sharing of shopping experience on social media?

What items have you shared on social media with your family and friends? Why?

How do you decide what you want to/don't want to share on social media? (e.g., categories/characteristics/context)

Have you noticed any differences in your interactions with your friends on shopping activities and other topics? (e.g., comments with more words or more details, get to know other people's expertise or experience)

What impact do you think talking with other people on social media have on your shopping activities?

What impact do you think sharing shopping activities on social media have on your interactions with other people?

Do you think there are any differences in people's online discussions about shopping activities and in person conversations (i.e., face-to-face interactions)?

B.5   Ending Questions

Is there anything that we didn't cover that you would like to talk about?

If there were an app that did X, how would feel about that?

APPENDIX C

SURVEY QUESTIONNAIRE USED IN STUDY 2

This is the survey questionnaire used in Study 2 for participants recruited from Mechanical Turk.

C.1 Demographics

What is your age?

    18-24 years old

    25-34 years old

    35-44 years old

    45-54 years old

    55-64 years old

    65 years old or older

What is your gender?

    Male

    Female

    Decline to say

Ethnicity origin (or Race): What categories best describe you?

    White

    Hispanic, Latino, or Spanish origin

    Black or African American

    Asian

    American Indian or Alaska Native

    Middle Eastern or North African

    Native Hawaiian or Other Pacific Islander

    Some other race, ethnicity, or origin

What is the highest degree or level of school you have completed?

    No schooling completed

    Nursery school to 8th grade

    Some high school, no diploma

    High school graduate, diploma or the equivalent (e.g., GED)

    Some college credit, no degree

Trade/technical/vocational training

Associate degree

Bachelor's degree

Master's degree

Professional degree (e.g., M.D., J.D.)

Doctorate degree (e.g., PhD)

C.2 Online shopping and social network experience

How long have you been shopping online?

Never

Less than a month

1-6 months

6 months to a year

More than a year

How often do you shop online on average?

Once every day

Once every week

Once every month

Once every 3 months

Once every 6 months

Once every year

Once in a few years

Never

C.3   Task

1. Please choose 2-5 products on Amazon that you would like to share with your family and friends on your Facebook page, and provide the links to the products of your choice in the comment box below.

2. Please rate how you agree/disagree with the following statements: (On a scale of 1 to 7, choose from Strongly Disagree to Strongly Agree)

I posted the specific items that I chose on my Facebook page, because:

I posted the items to seek information.

I'd like to know more details about the items from my friends (e.g., material, function, and durability).

I'd like to know what price I should pay.

I'd like to get feedbacks about the shopping experience from my friends (e.g., shipping, return policy, and customer support).

I shared the items to elicit common interests. Some of my friends might be interested in the items I shared.

My friends have shared/posted similar items as well. The posting may encourage discussions among my Facebook friends.

I consider privacy an important factor when deciding which items to post.

I feel comfortable letting my friends know the items I am interested in.

I consider the items as socially appropriate.

I have no privacy concerns for the items I shared.

APPENDIX D

SURVEY QUESTIONNAIRE USED IN STUDY 3 (FOR INDIVIDUAL TASK)

This is the survey questionnaire used in Study 3 after participants have completed the individual task.

Please write the name of your most impressive forum/review user during the study:

The following questions are based on the person that you wrote down.

1. I feel that s/he shares my interests and ideas.

Totally disagree   1   2   3   4   5   6   7   Totally agree

2. I feel I have a lot in common with him/her.

Totally disagree   1   2   3   4   5   6   7   Totally agree

3. I feel that s/he knows what I think.

Totally disagree   1   2   3   4   5   6   7   Totally agree
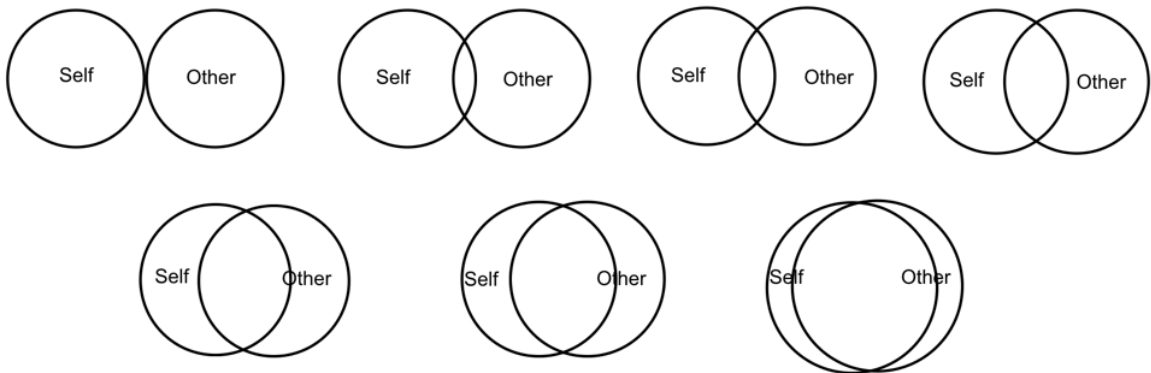
4. I feel that I can talk about anything with him/her.

Totally disagree   1   2   3   4   5   6   7   Totally agree

5. I feel that s/he and I can communicate well with each other.

Totally disagree   1   2   3   4   5   6   7   Totally agree

6. Please circle the picture from below that best describes your relationship with him/her (other).

7. Please circle the picture from below that best describes your relationship with the shopping forums/review sites (community).

8. If possible, I would like to keep him/her as my contact on the shopping platform.

Totally disagree   1   2   3   4   5   6   7   Totally agree

APPENDIX E

SURVEY QUESTIONNAIRE USED IN STUDY 3 (FOR GROUP TASK)

This is the survey questionnaire used in Study 3 after participants have completed the group task.

Please write the name of your most impressive shopping partner during the study:

The following questions are based on the person that you wrote down.

1. I feel that s/he shares my interests and ideas.

Totally disagree   1   2   3   4   5   6   7   Totally agree

2. I feel I have a lot in common with him/her.

Totally disagree   1   2   3   4   5   6   7   Totally agree

3. I feel that s/he knows what I think.

Totally disagree   1   2   3   4   5   6   7   Totally agree

4. I feel that I can talk about anything with him/her.

Totally disagree   1   2   3   4   5   6   7   Totally agree

5. I feel that s/he and I can communicate well with each other.
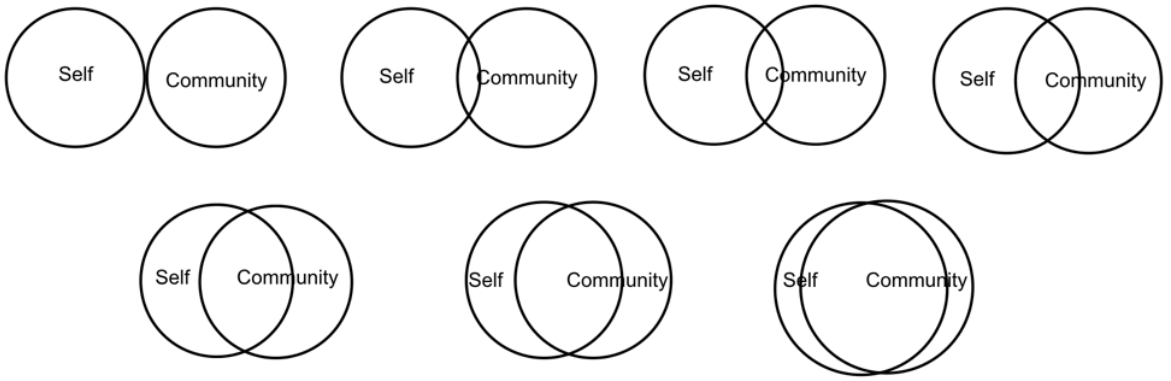
Totally disagree   1   2   3   4   5   6   7   Totally agree

6. Please circle the picture from below that best describes your relationship with him/her (other).

7. Please circle the picture from below that best describes your relationship with the shopping group (community).

8. If possible, I would like to keep him/her as my contact on the shopping platform.
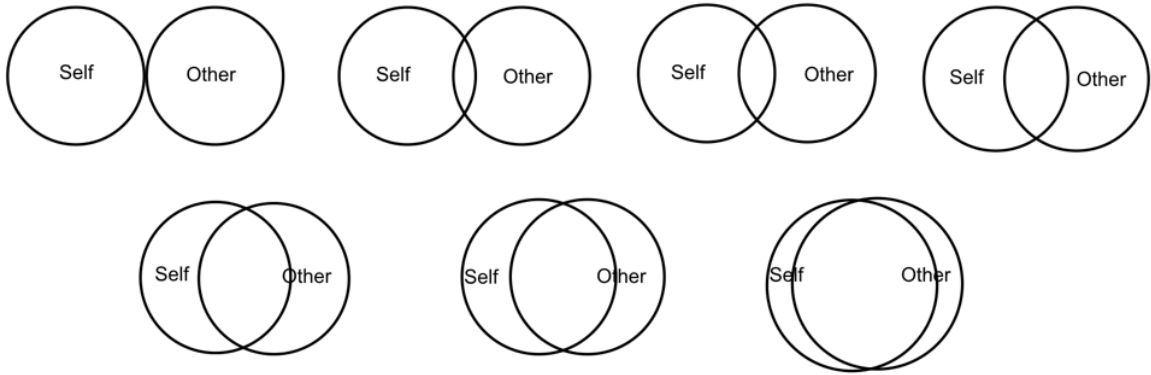
Totally disagree   1   2   3   4   5   6   7   Totally agree

9. If possible, I would like to keep the shopping group as my contact on the shopping platform.

Totally disagree   1   2   3   4   5   6   7   Totally agree

SURVEY QUESTIONNAIRE USED IN STUDY 4

This is the survey questionnaire used in Study 4 for online participants.

F.1   Qualifying Questions

(If a subject chooses "No" to both questions, s/he will not be qualified for the study.)

1. Have you posted on online **shopping** platforms (e.g., product review sites, online shopping forums) in the past three months?

Yes

No

2. Have you engaged in **shopping** groups (e.g., electronics, fashion, sneakers) on social media platforms (e.g., Facebook, WhatsApp) in the past three months?

Yes

No

F.2   Demographics

1. What is your age?

2. What is your gender?

Male

Female

Decline to answer

3. Are you of Hispanic, Latino, or Spanish Origin?

Yes

No

Decline to answer

4. How would you describe yourself?

White

Black or African American

Asian

Middle Eastern

American Indian or Alaska Native

Other

5. What is the highest degree or level of school you have completed?

   Some high school

   Associate degree

   Bachelor's degree

   Master's degree

   Doctorate degree

   Other

6. What is your marital status?

   Single, never married

   Married or domestic partnership

   Widowed

   Divorced

   Separated

F.3   Reading Behavior

1. How often do you **read** online threads/comments/reviews for shopping purposes?

   Everyday

   A few times a week

   A few times a month

   A few times a year

   Never

   Other

2. Please rate how you agree/disagree with the following statements: (On a scale of 1 to 7, choose from Strongly Disagree to Strongly Agree)

When I read on online shopping platforms/groups/forums,

   I read as much information as possible.

I trust what other people post.

I need lots of supporting details for me to believe what other people described about the products.

I look for personalized experience with products/online shops.

I look for general product information.

I know what information I am looking for

I selectively choose what information to read

I visit online shopping platforms/groups/forums on a regular basis for new information

3. How do you select what information to read online shopping platforms/groups/forums? (Optional, open-ended)

F.4   Posting Behavior

1. How often do you **post** online threads/comments/reviews for shopping purposes?

Everyday

A few times a week

A few times a month

A few times a year

Never

Other

2. Please rate how you agree/disagree with the following statements: (On a scale of 1 to 7, choose from Strongly Disagree to Strongly Agree)

When I post on online shopping platforms/groups/forums,

I ask questions.

I initiate discussions.

I answer others' questions.

I share my personal experience.

I share my opinions on products.

I share good deals with others.

I share emotional support with other members.

I warn about spams and advertisements

I engage in conversations with others on non-shopping topics.

I solicitate others' opinions on certain products.

3. Please share any other intentions you have in posting on online shopping platforms/groups/forums, if any? (Optional, open-ended)

F.5   Motivation

1. How often do you **participate** in online shopping platforms/groups/forums?

Everyday

A few times a week

A few times a month

A few times a year

Never

Other

2. Please rate how you agree/disagree with the following statements: (On a scale of 1 to 7, choose from Strongly Disagree to Strongly Agree)

The reasons for participating in the online shopping platforms/groups/forums are:

To exchange shopping information.

To exchange opinions on products and experience.

To have conversational interactions with others.

To keep up with the most updated trend.

To be part of a community that interests you.

To exchange emotional support with other members.

3. Please explain any other reasons why you participate in online shopping platforms/groups/forums, if any? (Optional, open-ended)

APPENDIX G

COVER STORY USED IN STUDY 5

This is the cover story provided for the participants in Study 5 to work on a collaborative problem-solving task.

Helping a new college student to choose a laptop

I'm about to be a college student in the coming Fall. I'm choosing a new laptop for both study and entertainment purposes in college. I haven't yet decided my major between electrical engineering and computer science. I have a budget of $650, and I would like the laptop to worth every penny of it.

Helping to choose a pair of headphone for college student

I'm a college student and I just learned that I will be going back to school after summer. However, many of my classes will be online, so that I will need a new pair of headphones or earbuds. I'm using a PC and have a budget of $50 to $60. At this point, I'm still undecided of wired or wireless ones. Any suggestions and help are highly appreciated.

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