Reciprocity Norms and Information-Sharing Behavior in Online Consumption Communities: An Empirical Investigation of Antecedents and Moderators

Peiyu Pai
Assistant Professor, National Chengchi University, Taipei, Taiwan
p.pai@nccu.edu.tw
Tel: +886- 2939-3091 (#81100)

Hsien-Tung Tsai
Professor, National Taipei University, Taipei, Taiwan
hstsai@gm.ntpu.edu.tw
Tel: +886- 8674-1111 (#66690)

Correspondence concerning this paper should be addressed to Peiyu Pai,
64, Sec 2, Zhi-Nan Road, 116 Taipei, Taiwan

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Authors’ Biographical Statements

Peiyu Pai is an assistant professor at the Department of Business Administration of National Chengchi University, Taiwan. She received her Ph.D. degree from Warwick Business School, the University of Warwick, UK. Her research interests include user adoption behavior, online community cultivation, and customer relationship management. Her research has been published or is forthcoming in *Decision Support Systems, Information & Management*, and *International Journal of Human-Computer Studies*.

Hsien-Tung Tsai is a professor in the College of Business at National Taipei University, Taiwan. When this article was initiated, he was a visiting scholar in Ross School of Business, the University of Michigan. He received his Ph.D. in Marketing from National Taiwan University. His current research interests include contribution behavior in online groups, human-computer interactions, brand communities, and customer relationship management. His research has been published or is forthcoming in several journals, including *MIS Quarterly, Decision Support Systems, Information & Management, International Journal of Human-Computer Studies, Journal of Business Research*, and *Psychology & Marketing*. 
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ABSTRACT

This study pursues a better understanding of information-sharing behavior in online consumption communities by investigating both its antecedents and moderating mechanisms. Using self-reported data collected over two periods, as well as objective behavioral data, the authors show that a reciprocity norm functions as a proximal determinant of information-sharing behavior. This norm also channels the effects of social, hedonic, and utilitarian community values on sharing behavior. The results reveal that the conversion of reciprocity norms into information-sharing behavior depends on individual and contextual conditions. These significant insights reflect the integration of consumer resource allocation theory with a reciprocity framework to establish an explanatory platform for members’ information-sharing behavior in online communities. Both theoretical and practical implications are discussed.

Keywords: information-sharing behavior, online consumption community, receptivity, reciprocity norms, self-efficacy.
INTRODUCTION

The growing influence of social media has prompted increased academic and mass-media attention to online consumption communities (e.g., [3,104,121]), defined as online groups in which members’ interactions reflect their shared enthusiasm for or knowledge of a specific consumption activity [25,76]. Such communities allow members to affiliate with like-minded others, to obtain purchase advice, and/or to share product/service experiences [25,62]. Managers can also leverage the shared information from consumption communities to improve their products or services [4,67,89]. These developments give rise to a new question: Is it possible to encourage greater information-sharing behavior among community members who interact through technology-mediated communication, and if so, how?

The norm of reciprocity is likely a key mechanism underlying members’ information-sharing behavior (e.g., [30,36,37,72,83,118,125]). Gouldner [57] argues that this universal social norm requires people to return some benefits for any benefits they receive. Community members who hold strong, positive reciprocity norms feel obligated to reciprocate for any beneficial resources they receive from their online communities, because the reciprocation process “reinforces self-esteem and the self-concept, confirms the need to reciprocate, and promotes predictability” [8,p.276]. Despite the apparent importance of the norm of reciprocity for guiding members’ information-sharing behavior, empirical evidence of this link has been inconsistent. For example, Wasko and Faraj [118] employ a social capital lens to examine knowledge sharing in electronic networks of practice; they find that reciprocity has no effect on the helpfulness of a contribution, but exerts a significant, negative impact on contribution volumes. Wiertz and de Ruyter [125] investigate firm-hosted
commercial online communities, in which customers interact to solve others’ service problems, and find that the norm of reciprocity is not associated with information contributions. However, several studies (e.g., [31,37,106]) assert that reciprocity norms have positive effects on members’ information-sharing behavior, even in anonymous settings, such as Internet browsing.

These conflicting findings suggest the likely presence of moderators, which could explain the weak and inconsistent relationships between the predictor and the outcome [18,93]. We accordingly undertake three tasks in this study. First, we draw on consumer resource allocation theory from consumer psychology to examine potential moderators of the link between reciprocity norms and information-sharing behavior. This theory states that people allocate various resources to behavioral decision-making processes, including cognitive ability, time, effort, and motivation [20,100,127]. Because decision making involves complex resource-processing tasks, the reciprocity norm alone might not be enough to trigger information-sharing behavior. Rather, according to developments in consumer resource allocation theory, some internal and external resources moderate the effects of behavioral drivers. For example, in their study of consumers’ repurchase decision making, Seiders et al. [108] suggest that individual characteristics such as income, relational characteristics such as relationship age, and marketplace (i.e., contextual or situational) characteristics such as competitive intensity moderate the effect of satisfaction as a behavioral driver. In turn, they posit that these three categories of moderators might be generalizable and encourage studies that investigate additional individual and contextual characteristics [108,pp.39-40]. To complement existing conceptual approaches and focus explicitly on members’ information-sharing behavior in online consumption communities, we adopt a similar contingency approach and develop a framework that examines the three types of moderators in members’ decision-making processes. To the best of our knowledge, this
study is the first empirical analysis of whether the effect of the norm of reciprocity on
information sharing is contingent on these three moderating mechanisms.

Second, little research investigates antecedents of the norm of reciprocity in online
communities, even though empirical studies on these factors are extremely important due to
the various investments associated with building and maintaining online communities. With
better knowledge of these multifaceted determinants, community cultivators can make more
efficient resource allocation decisions. According to social exchange theory [23,65],
embedded obligations result from exchanges of value or favors. Research on group
participation behavior also indicates that three levels of community interaction value—social,
hedonic, and utilitarian—contribute to the reciprocity norms shared among community
members [45,67,113]. To more fully understand information-sharing behavior, we propose
and test a model in which these three dimensions are antecedents of the reciprocity norm, and
then investigate their relative importance. With this approach, we can test the entire model
simultaneously and thus account for all the variable effects.

Third, to test our proposed model, we undertake a longitudinal field study that
combines self-reported and objective behavioral data. This approach constitutes a natural
experiment [34], in that it investigates the effects of treatments that researchers cannot, or
would find it difficult to, manipulate (e.g., social interactions). Moreover, we collect
independent and dependent variable data separately, to reduce the possibility of same-source
or common method biases and to improve our causal inferences [99]. With this empirical
assessment, we also respond to calls for a more comprehensive framework that models the
complexity of exchange processes in online communities with longitudinal designs [81,118].

In the next section, we present our conceptual framework and research hypotheses.
We then describe our research methodology and present the empirical evidence, after which
we discuss the findings and their theoretical and practical implications. We conclude with
limitations of our study and future research avenues.

THEORETICAL BACKGROUND AND HYPOTHESES

The conceptual framework in Figure 1 depicts the ways we attempt to address extant research gaps. We next define each relevant construct and develop theoretical rationales for their causal relationships.

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Information-Sharing Behavior and the Norm of Reciprocity

From a value creation perspective, members’ information-sharing behavior constitutes a significant source of collective value in online communities [11,88,89,111]. We regard this behavior as an extra-role construct that differs meaningfully from traditional, passive participation behaviors (e.g., viewing articles, visiting community websites). Noting the central role of members’ information-sharing behavior for an online community’s success and recognizing that the very nature of online communities diminishes the emphasis on visible and tangible dimensions of communal life (e.g., face-to-face social activities, neighborhoods), we attempt to determine which factors shape information-sharing behavior in online community settings.

Prior attempts to explain member sharing behaviors are dominated by reference to the reciprocity framework [30]. This interpersonal construct appears fundamental to social stability and drives relational exchanges [22,57,65,87]. Despite repeated calls for investigations [8,91], little relationship management research focuses on reciprocity norms. According to Gouldner [57], the norm of reciprocity reflects embedded obligations created by exchanges of benefits or favors. Similarly, Becker [22,p.4] argues that the norm of reciprocity
can be summarized in specific rules: “We should return good for good, in proportion to what we receive; ... we should resist evil, but not do evil in return; ... we should make reparation for the harm we do.” Gouldner [57] uses the phrase “norm of reciprocity” to refer to two parties who mutually reinforce each other’s actions; however, as Ekeh [49,p.48] notes, generalized norms of reciprocity refer to situations in which “an individual feels obligated to reciprocate another’s action, not by directly rewarding his benefactor, but by benefiting another actor implicated in a social exchange situation with his benefactor and himself.” In such generalized forms, reciprocation involves multiple actors and indirect benefits. This description better fits online communities, in which returns are not necessarily immediate and may involve exchanges in-kind or simply helping a mutual friend in the online community (e.g., [118,122]). Some researchers (e.g., [15,68,119]) also suggest that in contrast to personal exchanges between two individuals where there is an expectation of direct reciprocity, reciprocity in electronic networks of practice may be generalized. Because members may receive beneficial resources from specific members or from the online community (e.g., accumulated information), a member who holds positive reciprocity norms would feel obligated to help other members or create value for the collective. Over time, these returns produce a balanced exchange [122].

In an empirical study of an online peer-to-peer file-sharing network, Giesler [55] observes a strong generalized norm of reciprocity that stabilizes the focal social exchange system. In addition, Bagozzi [8] suggests that the norm of reciprocity provides self-regulatory control over volitions and actions; therefore, it should be an essential component of purposive behavior in social exchange settings. In general, meeting obligations helps members maintain a positive self-image as someone who repays debts, and avoid the social stigma associated with violations of this reciprocity norm [87]. Accordingly, members with a sense of mutual indebtedness should be motivated to pay forward any beneficial treatment by sharing
information with the community. In an online context in particular, tangible elements may be less salient, so the norm of reciprocity can be an important “push factor” that shapes members’ information-sharing behavior [118,125]. On this basis, we propose the following:

**H1:** The norm of reciprocity has a positive impact on information-sharing behavior.

**Antecedents of the Norm of Reciprocity**

Dholakia et al. [45] and Jang et al. [67] investigate online community behavior and propose that community characteristics are distal causes of member behaviors, whose effects function through more proximal variables, such as the norm of reciprocity. Community participation involves complex member–member and member–community exchange processes. Thus, we have conducted 14 in-depth interviews¹ with members of various online consumption communities, who had participated in these communities for periods ranging from four months to five years, in order to reflect the need for a better understanding of the information sharing behavior of online community members². The group consisted of 6 men and 8 women, with a wide range of ages (17 to 59 years) and occupations (e.g., student, teacher, salesperson, homemaker, marketing executive, engineer, retired businessperson, and online community officer). A summary of interviewee profiles appears in Table 1; Appendix 1 represents the key phrases that reflect recurring perceptions of respondents [59], drawn from interview transcripts. The results of the preliminary study also indicated modifications to the measurement items to suit our research context. Based on the interviews, we identified

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¹ With regard to sample size, scholars have suggested that samples of 8 to 12 respondents are sufficient for generating themes in this type of qualitative work [84,105]. Other scholars suggest sampling should continue until saturation or redundancy is reached in interviewees’ responses [59,78,110]. Based on these two suggestions, we selected a sample of 14 online community members.

² We developed a standard interview format in which we asked participants to report their perceptions of the online environment and provide examples of their involvement in the online community activities (including factors that motivated them to share articles and photos). Questions included, “In your opinion, which factors motivate members to actively share information in an online community?” and “Could you please indicate the factors that influence the reciprocal behaviors when responding to other members?” We prompted participants to provide reasons for their willingness to share (or not share) information in online communities and to express their attitudes about participating in online communities. In particular, we asked them to detail the way(s) in which they communicated.
three salient participation factors—perceived member support (social-focused factor),
enjoyment (hedonic-focused factor), and community informativeness (utilitarian-focused
factor)—as likely antecedents of members’ sharing behaviors. These factors are additional to
the three factors that moderate the relationship between the respondents’ reciprocity norms
and their information-sharing behavior (self-efficacy, relationship duration, and community
receptivity).

Social dimension of community value: perceived member support. Prior research
suggests that perceived member support is particularly important for creating and fostering
the social climate necessary to encourage active participation in an online community,
especially when members are geographically dispersed [74,77,81,85,123]. For example,
text-based online communities tend to suffer from the absence of relationship-building cues
that are common in physical contexts because they lack verbal nuance and nonverbal cues
[123]; therefore, members consider other indicators of relationship exchange benefits [101].

In online communities, perceived community member support can meet members’
needs for emotional support, affiliation, esteem, and approval [96], just as support from
friends in daily life serves as a need-fulfilling mechanism [39]. Greater member support also
may indicate that fellow members have invested time, effort, and other irrecoverable
resources in the relationship. Such relationship investment accelerates the assessment of other
members’ friendliness, which in turn produces a debt to reciprocate the kindness [44].

From recipients’ perspectives, positive actions induce a sense of indebtedness that is
highly aversive and can be reduced only through reciprocation [109]. By reciprocating
benefits received from other members, they help maintain a high-quality member–member
exchange [120]. In another study of online community interactions, Chan and Li [30] suggest
that perceived member support creates psychological ties that motivate parties to maintain the relationship and set expectations of reciprocation. Moreover, other members’ support fulfills socio-emotional needs and makes members feel more like insiders than outsiders [48], which should prompt a stronger norm of reciprocity. An interviewee described the importance of perceived member support for inducing the norm of reciprocity as follows: “I found members help each other by answering questions in a very short time. For example, I asked a question and the solution appeared within 2 minutes. That’s a form of members’ benevolence, and in addition to thanking the replier, I felt strongly indebted to reciprocate this goodness.” This discussion implies that perceived member support produces a sense of obligation to care about the community’s welfare, leading to the following hypothesis:

**H2:** Perceived member support has a positive impact on the norm of reciprocity.

**Hedonic dimension of community value: enjoyment.** Enjoyment refers to the extent to which the activity of interacting with other members in an online community is perceived to be enjoyable in its own right beyond the utilitarian value [43]. Scholars suggest that enjoyment significantly influences online group members’ decision-making processes and that members’ integration in an online community is a function of their pleasurable experiences during the participation process [35,45,94]. This argument is in accordance with Nambisan and Baron’s [89] contention that the hedonic benefits received from past group engagement encourage the development of psychological ties with the group. According to a review of affective-processing mechanisms [38], positive emotions elicited during past experiences can leave strong affective traces in people’s episodic memories. In turn, such marked memory is highly accessible to current cognitive operations, particularly when an evaluation of the relevant experience (i.e., a decision whether to participate) is required [124]. For members’ participation decisions, a positive feeling of hedonic rewards typically functions as a self-regulation mechanism that creates a felt obligation to care about the
According to social exchange theory, individual parties enter into and maintain relationships with the expectation that doing so will be rewarding [23,65]. Members’ interactions in online communities can help establish relationships and create social capital, which members can retrieve when they need help [53,83]. Blau [23,p.6] describes inter-actor exchange as an ongoing reciprocal process in which individual actions are “contingent on rewarding reactions from others.” In essence, enjoyment reflects a member’s intrinsic reward, received during past participation processes, which influences him or her to imagine the pleasant, successful aspects of an upcoming experience [7,124]. Thus, hedonically rewarding experiences during past group participation lead members to feel more obligated to reciprocate beneficial resources for their online communities. For example, an interviewee described: “The community brings me so much pleasure, so I feel I owe a favor to the community. Whenever I have time to visit a nice restaurant, I will share my experience and comments with others in the community. I view it as a kind of reciprocation, and I hope my articles can make others feel enjoyment too.” From this discussion, we hypothesize the following:

**H3:** Enjoyment has a positive impact on the norm of reciprocity.

**Utilitarian dimension of community value: community informativeness.**

Informativeness is the degree to which a community offers information that members perceive as useful. This perceptual construct may differ from the objective number and type of information because it reflects whether members perceive the information they receive as accurate, relevant, credible, and, thereby, of use to them [29,92]. Online communities can be significant sources of information for members to solve problems, generate ideas, or validate decisions, and therefore members should believe that these communities offer valuable information, which has crucial implications for the development of member–community
relationships [122].

Research on online community cultivation confirms that a member’s perception of a community’s informativeness facilitates his or her relationship with the community (e.g., [35,45,94]). The rationale underlying this viewpoint is the tendency of members to view online communities as viable partners and even assign animate characteristics to them [101]. Chan and Li [30] argue that rich, useful information resources provided by the online community create psychological bonds that encourage members to stay in that community and set expectations of reciprocation. Specifically, websites characterized by high informativeness can prompt consumers to consider them valuable, which increases the benefits they receive [46]; the perception of gained value also should increase consumers’ motivation to reciprocate [106]. That is, when members benefit from browsing information provided by other members or receiving information of value, they feel obligated to pay back the community in the future [117]. For example, one interviewee said: “Whenever I decide to visit an unfamiliar place with my family, I check the discussion in this online community, which is very resourceful. I always gain useful information. As I get help from the members, although I don’t know them personally, I feel it is only right to give back and help someone else in the group. So, I share my experience in return, by posting a reply after I visit that place.” Thus, we propose the following:

**H4:** Community informativeness has a positive impact on the norm of reciprocity.

**Moderating Effects**

As the subject of online community participation is multidisciplinary, we integrate consumer resource allocation theory, the relevant literature, and qualitative findings to determine the three levels of the moderator characteristics (i.e., self-efficacy, relationship duration, and community receptivity) that influence members’ information-sharing behavior.
in online community settings. First, regarding a person’s cognitive ability to allocate personal resources, we adopt a view of self-efficacy that considers what a person can do, rather than what he or she wants to do or knows how to do [86]. That is, self-efficacy is more than a personality trait: it is a domain-specific motivational belief [126] that can change and be influenced [16]. Self-efficacy appears as a critical individual-level moderator of decision making in both organizational [69,103] and consumer [42,126] behavior research. We extend this application to an online community context because self-confidence in one’s ability to engage in a task influences behavior within computer-mediated environments [62].

Second, relationship duration represents a likely relational moderator. When a person registers as a community member, his or her investments of time, effort, and other irrecoverable resources create psychological ties, such that he or she strives to maintain the relationship and comes to expect reciprocation [23,44]. Thus, the duration of the relationship should reflect the extent to which members plan and want to maintain their relationship with the online community. Third, on the basis of our interview findings, we conjectured that community receptivity likely has an important moderating role, such that it might facilitate the influence of reciprocity norms on information sharing. As indicated by our interviewees, even people with strong reciprocity norms might not contribute unless the online group provides a context that they believe facilitates the open exchange and discussion of diverse ideas, as this type of setting offers additional opportunities for members to exchange resources. Our next hypotheses (H5-H7) are based on this foundation.

*Member moderating influence: self-efficacy.* Self-efficacy refers to “the judgments of one’s capability to organize and execute the courses of action required to produce given attainments” [17,p.3]. Bandura [16,p.123] suggests that “in their daily lives, people continuously make decisions about what courses of action to pursue and how long to continue
those they have undertaken.” A person’s belief in his or her ability to perform tasks successfully influences thought patterns and emotional reactions during anticipatory and actual exchanges with the environment [50]. People generally avoid activities they believe exceed their coping capabilities, but they undertake and perform with assurance those tasks they judge themselves capable of managing [16].

In this study, we draw on consumer resource allocation theory to suggest that self-efficacy positively moderates individual decision-making processes. Brown et al. [26] argue that self-efficacy is an important personal resource required to meet challenging tasks. In this vein, when members lack such cognitive resources despite their strong feelings of indebtedness toward online communities, they are less likely to provide information for fellow members. This is especially the case because creating content for fellow members is effortful to a greater or lesser degree. Recent studies (e.g., [12,108]) suggest that effortful decision making engages complex processes: A decision maker evaluates what types of and how much psychological resources are necessary, which then serve as input for decision-making processes. If members with the reciprocity norm have a strong sense of personal mastery, they should take proactive stances toward information-sharing behavior and be more persistent in meeting challenges. From the self-regulation perspective, the norm of reciprocity is a relatively passive participation driver, whereas self-efficacy is an active motivational impetus that facilitates the transformation of a reciprocity norm into information-sharing behavior. Thus, we propose the following:

**H5:** Self-efficacy enhances the positive relationship between the norm of reciprocity and information-sharing behavior.

**Relational moderating influence: relationship duration.** Relationship duration refers to the length of time a person has been a member of an online community. This definition is
consistent with Palmatier et al.’s [91,p.140] idea in a customer relationship management context: “Relationship duration is the length of time that the relationship between the exchange partners has existed.” Essentially, member–community relationships are evolutionary, time-adjusted associations [41], and such a process involves cognitive assimilation of the self with a particular in-group, which prompts the person to align his or her self-perception and goal commitment with those of contextually relevant in-group prototypes [64]. In other words, members with longer relationship duration recognize that they share core or defining attributes and therefore come to view themselves as interchangeable representatives of the community [1]. Consumer psychology literature also suggests that experienced members have more accurate expectations of others’ responses to their community needs, because the community’s rituals, traditions, and occasions for social interactions become known to members gradually and engender positive in-group attitudes and cohesion [12,114].

Relationship duration is also an important moderator of the consumer decision-making process (e.g., [41,108]). Members’ judgments of recent exchange outcomes, based on reciprocity norms, should depend on the cumulative effect of their long-term interaction experiences in the community [71]. Research on online community behavior affirms that newcomers’ participation is often driven by some specific task orientation, such as information seeking [83]. At this stage, members might not care much whether they benefit the community through their participation, but they care deeply about whether their own specific needs get fulfilled [11,95]. Moreover, they might not possess comfortable routines for interacting with and predicting the responses of others, so they reevaluate their assumptions about how other members will interpret and respond to their related events [21]. Members who continue to participate over time can form meaningful interpersonal relationships and interact with others in the community to accomplish a wider range of joint
goals. Members with longer relationship duration likely to develop greater relationship quality with the community members and to establish a clear understanding of their roles within the group structure [90,114]. Therefore, the possibility that members’ norms of reciprocity will transform into actual sharing behavior increases over time. That is, members with greater relationship duration exhibit relatively stronger links between reciprocity norms and information-sharing behavior than members with shorter relationship durations. Thus,

**H6**: Relationship duration enhances the positive relationship between the norm of reciprocity and information-sharing behavior.

*Community moderating influence: community receptivity.* Community receptivity represents the extent to which the community members listen to one another and are open to others’ ideas [27,116]. In general, decision-making processes are moderated by the strength of the demands associated with a situation [19], and online community research suggests that a community atmosphere that encourages openness signals the community’s own member-centric orientation (e.g., [116]). If so, members should experience their participation as an expression of their selves, which influences their cognitive connection with the online community, building on the assumption that “each person has a true inner self and can only achieve self-fulfillment as an authentic human being by expressing this inner self through actions in the external world” [28,p.6]. When members perceive freedom from pressures to behave in certain ways, the psychological distance between their selves and their community decreases [3].

In addition, effective inter-member communication requires free-flowing exchanges of information, both factual and emotional [116]. When an online community provides an atmosphere that encourages listening and openness, members should enjoy more frequent, bidirectional communication with others [51]. This communication process facilitates the
generation of ideas and affects the widespread dissemination of information, in the form of members’ decisions about whether to contribute. When the reciprocity norm has been elicited, members’ proactive participation behavior is likely to result if they are exposed to rich, freely shared ideas or information. In contrast, in “strong situations,” considerable community demands or inter-member pressures tend to induce conformity [19,p.112]. Such coerced participation processes produce prevention-oriented emotions (e.g., fear, anxiety) and elicit defense reflexes, such that members perceive situational threats and the potential for loss [61]. In these conditions, members may exhibit limited engagement with the online community, regardless of strong reciprocity norms. Therefore, members who perceive the community as open to different opinions should demonstrate stronger links between the reciprocity norm and information-sharing behavior. Thus,

**H7:** Community receptivity enhances the positive relationship between the norm of reciprocity and information-sharing behavior.

**Control Variables**

In addition to the drivers and moderators, we posit that members’ information-sharing behavior depends on their education levels [40] and past behavior [11]. Level of education is usually included as a control variable when studying individuals’ psychological abilities because it can influence actual performance. Moreover, in individual decision-making processes, past behavior influences future behavior insofar as availability and anchoring/adjustment biases affect individuals’ information processing [115], which in turn determines their future behavior. We control for these effects by including the two variables in our conceptual framework (see Figure 1).

**RESEARCH METHOD**
Research Setting

We approached a large online community platform provider in Taiwan to test the hypotheses. This online community platform was established in December 2006, initially as a place for restaurant ratings and gourmet food recommendations, but it gradually became a discussion forum for sharing information about restaurants, cosmetics, and travel. This platform offers a famously stable system and a user-friendly interface. To become members, users register by choosing a unique name and password; they also provide their real names, accurate e-mails and home addresses, though such information is only visible online if the members choose to disclose it. The platform notes that member’s information will not be used or disclosed without the consent of the member. According to the community platform executive officer, this platform has attracted more than 500,000 registered members in total, and it prompts about 450,000 website visits per day (including lurkers, as reading posts does not require registration). Its contributing members tend to be female students, office workers, and homemakers, mainly ranging in age from 18 to 40 years.

In the forums, consumers exchange information about their experiences visiting restaurants, tasting a new menu, or trying out a recipe, and many of them keep travel diaries. Information is visible to every other member in real time and easily accessible through a searchable archive (e.g., members can use the search engine to review all posts about a specific restaurant). Members communicate asynchronously by posting messages and replying to other posts on the boards. In short, this online community constitutes a social organization, in which customers’ discussions about consumption issues are interspersed with personal conversations, humor, social support, and helping behaviors [2].

As in any voluntary social group, the members vary in both their reciprocity norms and their perceptions of community value. Reciprocating behaviors include giving and receiving information and social support to and from other members; members frequently
reveal their willingness to help, and share their own consumption experiences with others [30]. For example, when a member asks for recommendations of a restaurant for a family gathering, the thread likely prompts various suggestions from peers, followed by sincere appreciation from the thread leader. The interactions also exhibit community receptivity and openness, in that members appear to feel free to express their own ideas in this friendly environment and share opposing viewpoints.

This community also has a badging system, to recognize members’ contributions and thereby help enhance their sense of self-efficacy. The community platform votes on weekly or monthly rankings of the “hottest” and “most professional” posts. Winners receive virtual currency that can be redeemed for restaurant coupons, or badges that demonstrate their competence to display on their own personal pages. Data about each member’s information-sharing behavior accumulates in the platform provider’s database, including the number of articles each member has created, the number of photos they have shared, the popularity of posted messages (articles and photos), the number of badges they have received, and member demographic information.

In addition to online interactions, community members may meet offline, during planned events such as monthly lunches or dinners, meetings, and outings. Moreover, the platform provider has observed that some businesses (e.g., restaurants) visit the online community to learn about consumers’ experiences and potential product or service improvements. External vendors also offer vouchers to community members (sometimes through the platform), to encourage them to try a newly created dish or innovative product packages.

Data Collection

We used a longitudinal approach to test the proposed model, such that we examined
information-sharing processes over time. We gathered data through direct observations of community sharing behavior and self-completed, web-based questionnaires. Initially (T1), we used questionnaire items to measure the three antecedents of the reciprocity norm. In the follow-up phase (one month later, T2), we employed a second questionnaire to assess both the norm of reciprocity and the proposed moderators. We then retrieved data about the numbers of articles and photos that members created after the survey. We retrieved all data with members’ consent.

The platform provider offered assistance by forwarding our e-mails to members to explain the purpose of the survey and encourage participation, as well as guarantee the confidentiality of all responses. The online version of the questionnaire was sent to 3,000 members, selected at random from the community’s mailing list. To ensure that less frequent visitors had a chance of being in the sample, the provider helped us send e-mails to members’ alternative e-mail addresses, which were required when they registered as members. To encourage respondents to complete both phases of the questionnaire (i.e., T1 and T2), we promised a shopping voucher valued at NT$200 (approximately US$7) for each valid response. Overall, we received 568 completed questionnaires after two follow-up requests in each stage, for a usable response rate of 18.9%. The gender split was roughly 58.5% female and 41.5% male, with an average age of 28.8 years. The participants were well-educated; approximately 96.7% held at least a high school diploma. To test for non-response bias, we compared early and late respondents in the first stage on key study variables. Respondents who returned completed questionnaires within one week represented early respondents (n = 161, 28%), and those who responded in the last week were late respondents (n = 91, 16%).

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3 Longitudinal research can capture temporal order, because it assesses the influence of a predictor at a time subsequent to its cause, especially in causal relationships that may be less contiguous in nature and emerge only after an extended period of time. With an appropriate temporal boundary, our longitudinal research design displays causal inferences; it also separates the collection of independent and dependent variables, which reduces the potential for same-source or common method biases and thereby improves causal inference.
The lack of significant differences on key measures indicated that non-response bias was not a concern.

**Measures**

Consistent with prior online community research [37,118,125], we operationalized information-sharing behavior using two measures from the community platform’s records: (1) the total number of articles created and (2) the total number of photos shared with the community during the two months after the completion of the survey. With regard to article posting frequency, our data show that 29.6% of respondents did not post articles during the month after our data collection, but many members (49.1%) posted 1–10 articles, and 4.8% contributed more than 30 articles during that time. The average number of posted articles was 7.37, with a standard deviation (SD) of 12.33. Photo sharing frequency ranged from 0 to 1154, with an average of 28.74 photos posted (SD = 94.19). To reduce skewness, we followed Tabachnick and Fidell’s [112] suggestions and used a logarithmic transformation of the number of articles and the number of photos, then averaged them to form a single indicator of information-sharing behavior for the structural equation model. The mean value was 4.52 (SD = 2.31).

In Table 2, we list the items in the online questionnaire, all of which were adapted from previous studies and relied on seven-point scales (1 = “strongly disagree,” 4 = “neutral,” and 7 = “strongly agree). The English-language questionnaire was translated into Chinese by a Chinese marketing professor. Two doctoral students then independently translated the questionnaire back into English to verify its accuracy. On the basis of comparisons of the original and back-translated versions for semantic equivalence, two bilingual English–Chinese speakers refined the survey [24].
We measured the specific constructs of our proposed framework as follows:

Perceived member support relied on a three-item scale adapted from Eisenberger et al. [48] and Ridings et al. [97]; enjoyment was a three-item scale adapted from Koufaris [75]; community informativeness was a three-item scale adapted from Chen and Wells [33]; and the norm of reciprocity used a three-item scale adapted from Wiertz and de Ruyter [125]. The members’ past behavior control variable used objective data, retrieved from the community platform providers’ database. Specifically, we recorded the number of articles posted by respondents in the month before they answered the questionnaire. It ranged from 0 to 70 articles, though 188 respondents (33.1%) did not post articles. The average was 5.02 (SD = 8.27) articles.

RESULTS

Following Anderson and Gerbing [5], we adopted a two-step approach to test the models. First, we conducted a confirmatory factor analysis (CFA) to assess the measurement properties of the reflective latent constructs. Second, we performed structural equation analysis to test the research hypotheses. We ran all the models using LISREL 8.54 [70]. We assessed the goodness-of-fit of the models using chi-square tests, the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), the non-normed fit index (NNFI), and the comparative fit index (CFI). Satisfactory model fit requires nonsignificant chi-square tests, SRMR and RMSEA values less than or equal to 0.08, and NNFI and CFI values greater than or equal to 0.90 [66,82].

Measurement Model Evaluation

Internal consistency. We used two measures to evaluate the internal consistency of
the constructs: composite reliability (CR) and average variance extracted (AVE). As we show in Table 2, the CRs ranged from 0.77 to 0.93, and the AVEs ranged from 0.63 to 0.80, above the recommended cut-off levels of 0.60 and 0.50, respectively [13]. Therefore, all constructs exhibited good internal consistency.

**Discriminant validity.** We assessed the discriminant validity of the measures using three approaches. First, we built a CFA model with 7 constructs and 15 measures. The results showed that the model fit the data well, with the following goodness-of-fit statistics: $\chi^2(72) = 137.80$, $p \approx 0.00$, RMSEA = 0.039, SRMR = 0.030, NNFI = 0.99, and CFI = 0.99. We also checked whether the correlations among the latent variables were significantly less than 1 [13] and constructed 95% confidence intervals for each correlation coefficient. Because none of the confidence intervals included 1, we obtained strong evidence of discriminant validity.

Second, we applied chi-square difference tests, in which we compared a CFA model that constrained the correlation between a pair of constructs to 1 against an unconstrained CFA model. To indicate discriminant validity, the unconstrained model must fit significantly better than the constrained model [14]. As we reveal in the Appendix 2, the pairwise chi-square difference tests indicated that in each case, the chi-square difference statistic was significant at the 0.001 level, in support of discriminant validity.

Third, as we show in Table 3, the diagonal elements (square roots of the AVE for each construct) were greater than the off-diagonal elements, indicating that each construct shared more variance with its measures than with other constructs [52]. Taken together, these results suggested that all the measures of the constructs in the measurement model achieved discriminant validity.

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*Take in Table 3 about here*
Structural Model Evaluation

The overall fit statistics indicated that the hypothesized model offered a good representation of the structures that underlie the observed data ($\chi^2[77] = 155.44$, $p \approx 0.00$, RMSEA = 0.042, SRMR = 0.035, NNFI = 0.99, and CFI = 0.99). Specifically, the impact of the norm of reciprocity on information sharing behavior was significant ($\beta = 0.18$, $p < 0.001$), in support of H1. Perceived member support related positively and significantly to the norm of reciprocity, with a standardized $\gamma$ coefficient of 0.18 ($p < 0.05$), in support of H2. The results also supported the positive, direct relationship between enjoyment and the norm of reciprocity, as we proposed in H3 ($\gamma = 0.36$, $p < 0.001$). As we predicted in H4, a positive and significant relationship emerged between community informativeness and the norm of reciprocity ($\gamma = 0.19$, $p < 0.001$). Regarding the control variables, education level did not relate significantly to information-sharing behavior ($\gamma = 0.05$, $p > 0.05$), but members’ past behavior correlated positively with it ($\gamma = 0.43$, $p < 0.001$). The overall R-square values were 0.40 for reciprocity norms and 0.23 for information-sharing behavior.

Tests of Mediation and Rival Hypotheses

To confirm the model’s validity, we performed three formal tests of mediation for the paths from the antecedents of the norm of reciprocity to information-sharing behavior. Thus we could determine whether additional direct paths, unspecified in the hypothesized model, might be significant. For example, to assess the direct path from perceived member support to information-sharing behavior, we compared our proposed model (Figure 1) with a model that contained this additional path. The difference in the chi-square values of the two models, with one degree of freedom, revealed the significance of the added path ($\chi^2[1] = 0.96$). Because the difference was not significant though ($p > 0.32$), we concluded that this direct path was insignificant. That is, the norm of reciprocity fully channeled the effect of perceived member
support on information-sharing behavior. This procedure is equivalent to Baron and Kenny’s [18] recommendations for testing mediation with multiple regression models [12]. In Table 4, we summarize the results of these mediation tests; all the effects were insignificant, confirming the robustness of our proposed model.

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**Take in Table 4 about here**

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**Results of Moderating Influences**

To test our hypotheses pertaining to the moderating effects, we conducted multiple-group analyses [70]. We built separate structural models for the two subgroups and performed moderation tests to identify any differences in the respective coefficients of the hypothesized paths. In the baseline model, we allowed the effect of the norm of reciprocity on information-sharing behavior to vary across groups. In the second model, we constrained this effect to be equal across subgroups. If the model with the equality constraint fit the data significantly worse than the baseline model, the moderator variable exerted an influence on the key relationships [70].

Regarding the moderating influence of self-efficacy, we split participants according to their composite scores on two items adapted from the Personal Efficacy Beliefs Scale [98] (CR = 0.87; AVE = 0.77): (1) “I have confidence in my ability to contribute to the online community, such as writing articles or sharing photos” and (2) “I am self-assured about my capabilities to write articles or share photos for my online community.” Respondents rated these items on seven-point interval scales, ranging from “strongly agree” to “strongly disagree.” We then calculated the composite score for each respondent and used a median split to separate the groups. In line with our expectations, the relationship between the norm of reciprocity and information-sharing behavior differed significantly for low versus high
self-efficacy groups ($\Delta \chi^2 = 4.08, \Delta df = 1, p < 0.05$; see Table 5), in support of H5. We used similar procedures to test H6: We split participants according to the length of their relationship with the community. However, in contrast with our prediction in H6, the path from the norm of reciprocity to sharing behavior did not differ for members with longer versus shorter relationship durations ($\Delta \chi^2 = 0.31, \Delta df = 1, p > 0.57$). Finally, we split participants according to their composite scores on two community receptivity items, which we adapted from van Dolen et al. [116] (CR = 0.77; AVE = 0.63): (1) “The community members are open to my ideas” and (2) “The community members are willing to listen to me.” In line with our expectations, the relationship between the norm of reciprocity and sharing behavior differed significantly for low versus high receptivity groups ($\Delta \chi^2 = 4.05, \Delta df = 1, p < 0.05$), in support of H7.

Assessing Common Method Bias

Common method bias occurs in virtually all research contexts but is especially a problem in cross-sectional designs and for measures based solely on perceptions. To reduce common method biases, we employed a longitudinal design and captured measures of real behavior with the platform system. Bagozzi [10] explicitly notes that this approach is less susceptible to common method bias than cross-sectional designs or designs with measures that feature only perceptual responses or perceptual responses combined with self-reported behavioral measures. In addition, we adopted several tactics to assess the potential for common method biases. First, we employed Lindell and Whitney’s [79] marker variable assessment technique. None of the significant correlations in the overall model became insignificant after we included this marker variable though. Second, we added an unmeasured latent method factor and allowed all self-reported items to load on both their theoretical...
constructs and the method factor [10]. All item loadings on the common method factor were much lower than the loadings on their respective constructs. The structural model estimates for our hypothesized effects also remained virtually unchanged after we introduced the method factor. According to these criteria, common method bias did not present a significant threat in this study.

DISCUSSION AND IMPLICATIONS

This study contributes to a better understanding of information-sharing behavior by investigating its antecedents and the conditions in which the norm of reciprocity affects such behavior. With a longitudinal design and multiple measurement sources, we find that social, hedonic, and utilitarian community factors strongly influence the development of reciprocity norms. Furthermore, individual and contextual moderating mechanisms encourage the conversion of reciprocity norms into information-sharing behavior. These moderating effects help explain why even members with high reciprocity norms might not explicitly or consistently contribute information to an online community. Overall, we clarify the theoretical relationship between the norm of reciprocity and information-sharing behavior and improve our understanding of how different distal antecedents can jointly explain members’ participation decisions.

Theoretical Implications

Antecedents of reciprocity norms. This study advances our current understanding of the antecedents of the norm of reciprocity in online community settings. The results show that perceived member support, enjoyment, and community informativeness are important with respect to eliciting the norm of reciprocity, which in turn influences members’ information-sharing behavior. First, the hedonic community value of enjoyment is relatively
more important than the other two antecedents in triggering the norm of reciprocity. This result lends support to the idea that engaging in sharing behavior involves emotion-oriented decision making about whether such actions will induce hedonic rewards. From another angle, forward-looking, positive emotions result when a person engages in “prefactual appraisals” [56], such that he or she imagines pleasant aspects of the upcoming experience, in accordance with his or her previous participation. In turn, this hedonic community value influences the development of the norm of reciprocity.

Second, perceived member support positively influences the reciprocity norm. Existing member supportive behavior includes appropriate responses to special requests or kept promises. Fellow members’ support offers an indication of their benevolence and integrity [54] and a representation of their relationship investment in the online community; in turn, a psychological tie may result, leading to an expectation of reciprocation [44]. This finding provides support for the following proposition by Ridings et al. [97,p.277]: “Greater responsiveness from others would indicate a willingness to help other community members and also increases the reciprocal nature of the community itself, showing adherence to norms.” In contrast, limited interaction or indifference among members may lead to doubts about the potential for feedback benefits, hindering further sharing behavior [47].

Third, community informativeness also represents a significant antecedent of the reciprocity norm, because when members benefit from resourceful content in an online community, they are more likely to feel obligated to reciprocate to the community by sharing information. These results further confirm and explain the role of information provision in enhancing member participation in online communities. In related research, Wiertz and de Ruyter [125] examine the moderating effects of information value on the relationship between reciprocity and knowledge contributions in firm-hosted commercial communities. They argue that the more valuable the information a customer receives from the community,
the stronger his or her feelings of indebtedness and obligation to reciprocate should be; however, their findings do not support the expected moderating effects of information value on the relationship between reciprocity and information contribution. Instead, they cite a significant direct effect of information value on the quantity of information contribution. Our results complement their findings, in that we examine the relationship between informativeness and information-sharing behavior through the norm of reciprocity. The importance of community informativeness in the information-sharing process also is consistent with existing research (e.g., [30]) and reinforces the importance of accumulating useful information—a critical success factor for the sustainability of any online community.

Fourth, consumer behavior researchers (e.g., [9]) categorize determinants of behavior in social groups as either distal or proximal. Distal determinants influence a member’s decision to engage in a specific behavior; proximal constructs determine the maintenance or persistence of effort. In studies on citizenship behavior, Bagozzi [8] and De Wulf et al. [44] argue that the norm of reciprocity can function as a proximal determinant that not only channels the effects of distal antecedents (i.e., perceived member support, enjoyment, and community informativeness) on information-sharing behavior, but also reinforces efforts to support the group’s success. A decision to contribute proactively to a community is a manifestation of voluntary effort to help it succeed. These results provide some support for a process model of group participation that combines distal and proximal determinants in one model.

**Moderating influences.** Our research takes a step toward resolving the controversy surrounding the link between the reciprocity norm and information-sharing behavior by investigating three moderating mechanisms: individual, relational, and contextual conditions. The findings indicate that only individual and contextual conditions significantly moderate the relationship between reciprocity norms and information-sharing behavior. These
significant moderating effects have important implications for both reciprocity theory and group participation research [37,118]. Both perspectives assume that people who embrace reciprocity norms make every reasonable effort to follow through on them. However, our findings suggest that not everyone is equally likely to do so. The conversion of a reciprocity norm into actual sharing behavior depends on the member’s self-efficacy and perceptions of community receptivity.

In this sense, our study deepens and extends prior research by demonstrating that the effect of the reciprocity norm on information-sharing behavior is contingent on self-efficacy. Consider, for example, a member who lacks the knowledge and skills needed to contribute information (e.g., unfamiliar with the community’s shared narratives or specialized vocabulary). He or she is less likely to engage in information-sharing processes, regardless of reciprocity norms. For this member, listening to other members’ discussions without directly participating could be the best way to maintain psychological safety. The more members learn about the community, the greater their role clarity becomes, such that they may find opportunities for relationship-specific investments. This finding extends existing models (e.g., [32,37,118]) by showing that individual attributes of online community members moderate the effects of the social norm-based driver of contributions. By investigating this moderating effect, we specify an additional theoretical boundary condition for predictions of information-sharing behavior that have relied on reciprocity norms, and thus we help establish “circumstances under which the hypothesized connections are not expected to hold” [58,p.829].

In addition, our results indicate that community receptivity strengthens the link from the reciprocity norm to information-sharing behavior, such that community members may have inherent needs to experience their participation behavior as freely chosen and volitional. Members gravitate toward online communities that help them experience well-being by
providing opportunities for them to fulfill their autonomy needs. Ryan and Deci [102] suggest that within social group settings, humans are active agents who engage their surroundings in attempts not only to master and assimilate aspects of their social environments, but also to accommodate interesting, important aspects of those environments. Support for members’ autonomy in online communities is an essential element that leads to more positive relationship outcomes. Especially in online groups, evolving openness, inclusiveness, and rapport can signal the group’s member-centric orientation; members then experience their participation as an expression of the authentic self (e.g., traits, values), which encourages even more relationship investments [116].

Finally, relationship duration does not enhance the effect of reciprocity norms on information-sharing behavior; the coefficient change moved in the hypothesized direction but was non-significant. One explanation for this insignificant moderating effect is the nature of the online community environment, in which members can communicate practically unlimited information about community characteristics (e.g., scripts, rules, norms, values) through multiple channels (e.g., plain text, graphic images, interactive links). These unique attributes of the online environment help newcomers conveniently consume the communities’ rituals and traditions. In turn, members’ learning and assimilation processes in online environments, compared with those in face-to-face contexts, should be more efficient and effective. Junior members can establish a clear understanding of the online communities (e.g., rituals, social relationship structure). From a multiple-group analysis viewpoint [70], junior and senior member subgroups do not differ in the respective coefficients of the hypothesized paths. That is, the path from the norm of reciprocity to sharing behavior does not differ for members with longer versus shorter relationship durations ($\Delta \chi^2 = 0.31, \Delta df = 1, p > 0.57$). We also conducted a post hoc analysis using quantile regression [73] and uncovered asymmetric effects of relationship duration on information-sharing behavior: Relationship duration exerts a greater
impact on members in the bottom and upper quantiles but a lesser effect in the median quantiles. This asymmetric effect may neutralize the stronger moderating influence of relationship duration on the link between the reciprocity norm and information-sharing behavior. This issue merits further investigation.

**Practical Implications**

The results of this study offer several opportunities to facilitate information sharing in online communities by enhancing members’ perceived norm of reciprocity. We not only confirm the significant role of reciprocity norms in online communities, but also highlight the importance of managing social-, hedonic-, and utilitarian-focused drivers. The link between reciprocity norms and information-sharing behavior appears contingent on members’ self-efficacy and community receptivity, which has several implications for online community managers.

First, creating pleasurable experiences for members during their participation in online consumption should be the community’s main objective. Our results reveal that many participants appear interested in pursuing hedonic value. Enjoyable experiences can be derived from both member–community and member–member interactions. Regarding the former, website designs and animation effects in community interaction systems can enhance members’ experience by attracting attention and creating fun experiences. For the latter, members often enjoy helping like-minded others by answering questions or sharing personal consumption experiences; appropriate recognition of these contributions provides enjoyment to the contributors and often encourages further reciprocation. An effective form of recognition can facilitate connections between each contributor and recipient; for example, a community platform mechanism can encourage recipients to leave an appreciative message for the member who provided the information. This mechanism could help recipients reduce
their sense of indebtedness while also enhancing community-wide reciprocity norms.

Second, perceived member support strongly increases the norm of reciprocity, which in turn leads members to engage in sharing behaviors. The results suggest that encouraging members’ information-sharing behaviors likely requires existing members’ timely support, to ensure assessments of members’ benevolent orientations and create obligations to reciprocate their friendliness [44]. Therefore, online community managers should design interactive interfaces that enable members to have timely conversations (two-way and many-to-many communication) that feature problem-solving, feedback, and discussions. Community managers can also attempt to increase perceptions of the benefits of reciprocity by highlighting situations in which requests for help prompted rapid responses [72]. Such interactions make member support more salient; the more caring and benevolence sensed by members, the more likely they are to develop reciprocity norms in response to their felt obligations to share information with others.

Third, we highlight the crucial role of community informativeness in guiding members’ reciprocal behaviors. To enhance perceptions of community informativeness, managers should help generate accurate, up-to-date, useful, and rich information resources for members and motivate them to engage in reciprocal interactions. This recommendation reflects our finding that community informativeness can cause members’ norms of reciprocity to flourish: they obtain valuable information from others and feel obligated to reciprocate with useful information. To help members gain the information they need, online community managers should provide a user-friendly infrastructure and efficient software programs that can filter and monitor user-generated content [30]. They also should encourage members to opt in to permission-based communications and then proactively deliver customized information of interest. For example, rich information in an online consumption community might include a vivid display of gourmet food or restaurant environments, which
can encourage members to participate in additional discussions or stimulate actual restaurant visits. Group consumption also can follow from online consumption communities, which increases purchase likelihood [80]. The combination of an informative platform and social commerce opportunities reinforces a sense of community for members (through the norm of reciprocity and social influence) and helps ensure longer relationships with the platform.

Fourth, online community managers can benefit from leveraging the moderating variables we examined, because the transformation of reciprocity norms into information-sharing behaviors depends on the presence of self-efficacy and community receptivity. Because members’ self-efficacy perceptions depend on their past experiences and are modified by personal performance, managers should highlight the success of customers’ past participation experiences and encourage repetition [17]. Community managers also should support opportunities for social learning. Particularly for newcomers, clear communication and accurate descriptions of community norms can help with determinations about where to devote effort and thereby reduce incorrect self-efficacy assessments [126]. Finally, members may avoid proactively sharing information because of their fear of being perceived negatively by others; to mitigate this, community managers should work to maintain the openness and comprehensiveness of their online environments, which in turn will enhance the transformation of reciprocity norms into actual sharing behaviors.

**Limitations and Further Research**

Our study contains several limitations that suggest avenues for additional research. First, it includes members of a single online consumption community, focused mainly on travel and gourmet food topics. Information-sharing behaviors might differ in other types of online communities (e.g., fantasy, firm-hosted commercial communities). For example, in transaction-based online communities, extrinsic rewards or incentives likely have greater
influences on contribution quality and quantity [60]. Rothaermel and Sugiyama [101] state that the features of an online community are the most important for motivating contributors. As such, this issue merits further investigation. Moreover, this community mainly includes Taiwanese members (though some members reside in Hong Kong, Singapore, and mainland China). Further research should investigate whether information-sharing behaviors are similar in other cultural contexts. Cross-country comparisons could identify the effect of reciprocity norms. National culture influences behavior and thus should have implications for group interaction behaviors [63,107].

Second, we consider members’ information-sharing behaviors, which usefully limits the scope of our analysis but excludes other contribution behaviors, such as assistance in recruiting new members. However, our proposed model should apply even when we relax this definitional constraint. That is, the recommendation of a community to potential participants likely requires a reciprocity norm mechanism.

Third, we limit our discussion to the individual level, even though members may contribute on behalf of a subgroup, such as when a small group of members arranges a social event for everyone. In this case, the spokesperson of the subgroup acts as a representative and posts information for the benefit of the wider community. Our study may underestimate these behaviors; further research should extend the scope and apply mediating mechanisms to the subgroup level. Such an extension would require new theories about how motivational forces operate at this level.

Fourth, researchers could investigate the influence of infrastructure on members’ information-sharing behavior. Market research indicates that many members abandon posts before they publish them, and Koh et al. [74,p.70] argue that “an inadequate communication infrastructure increases communication costs for members and constrains community activities.” Therefore, researchers should analyze the moderating effects of members’
satisfaction with the infrastructure on their sharing processes.
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Figure 1. Conceptual Framework

**Social-Focused Factor**
- Perceived Member Support

**Hedonic-Focused Factor**
- Enjoyment

**Utilitarian-Focused Factor**
- Community Informativeness

**Member Moderator**
- Self-Efficacy

**Relational Moderator**
- Relationship Duration

**Community Moderator**
- Community Receptivity

**Norm of Reciprocity**

**Information-Sharing Behavior**

**Control Variables**
- (1) Education Level
- (2) Past Behavior
Table 1. Interviewee Profiles

<table>
<thead>
<tr>
<th>#</th>
<th>Nickname</th>
<th>Gender</th>
<th>Age</th>
<th>Marital Status</th>
<th>Occupation</th>
<th>Interview Length (Hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Allan</td>
<td>Male</td>
<td>45</td>
<td>Married</td>
<td>Photographer</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Bob</td>
<td>Male</td>
<td>32</td>
<td>Single</td>
<td>Marketing executive</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Cindy</td>
<td>Female</td>
<td>45</td>
<td>Married</td>
<td>Teacher</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Emma</td>
<td>Female</td>
<td>59</td>
<td>Married</td>
<td>Retired businessman</td>
<td>1.5</td>
</tr>
<tr>
<td>5</td>
<td>Eric</td>
<td>Male</td>
<td>40</td>
<td>Married</td>
<td>Engineer</td>
<td>1.5</td>
</tr>
<tr>
<td>6</td>
<td>Grace</td>
<td>Female</td>
<td>17</td>
<td>Single</td>
<td>Student</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Helen</td>
<td>Female</td>
<td>40</td>
<td>Married</td>
<td>Homemaker</td>
<td>1.5</td>
</tr>
<tr>
<td>8</td>
<td>John</td>
<td>Male</td>
<td>22</td>
<td>Single</td>
<td>Student</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Johnny</td>
<td>Male</td>
<td>43</td>
<td>Married</td>
<td>Online community officer</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>Joyce</td>
<td>Female</td>
<td>50</td>
<td>Married</td>
<td>Homemaker</td>
<td>1.5</td>
</tr>
<tr>
<td>11</td>
<td>Mike</td>
<td>Male</td>
<td>35</td>
<td>Married</td>
<td>Salesperson</td>
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<td>12</td>
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<td>Single</td>
<td>Teacher</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Sandy</td>
<td>Female</td>
<td>21</td>
<td>Single</td>
<td>Student</td>
<td>1</td>
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<tr>
<td>14</td>
<td>Sophia</td>
<td>Female</td>
<td>24</td>
<td>Single</td>
<td>Office worker</td>
<td>2</td>
</tr>
</tbody>
</table>
Table 2. Summary of Measures

<table>
<thead>
<tr>
<th>Construct</th>
<th>Measures&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Standardized Factor Loading&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Norm of Reciprocity</strong></td>
<td>(1) I would feel an obligation to do whatever I can to help the community achieve its goals. 0.88</td>
<td></td>
</tr>
<tr>
<td>(CR = 0.89, AVE = 0.73)</td>
<td>(2) When I receive help in this community, I feel it is only right to give back and help others. 0.84</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) I would feel an obligation to take time from my personal schedule to help the community if it needed my help. 0.84</td>
<td></td>
</tr>
<tr>
<td><strong>Perceived Member Support</strong></td>
<td>(1) Community members respond to my ideas quickly. 0.83</td>
<td></td>
</tr>
<tr>
<td>(CR = 0.85, AVE = 0.66)</td>
<td>(2) When I raise questions or concerns, my fellow members address them immediately. 0.86</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) Help is available from the community members when I have a problem. 0.74</td>
<td></td>
</tr>
<tr>
<td><strong>Enjoyment</strong></td>
<td>(1) I find participating in this community enjoyable. 0.86</td>
<td></td>
</tr>
<tr>
<td>(CR = 0.88, AVE = 0.72)</td>
<td>(2) I find participating in this community fun. 0.85</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) I find participating in this community interesting. 0.83</td>
<td></td>
</tr>
<tr>
<td><strong>Community Informativeness</strong></td>
<td>(1) The information provided by this community is useful. 0.94</td>
<td></td>
</tr>
<tr>
<td>(CR = 0.93, AVE = 0.80)</td>
<td>(2) The information provided by this community is helpful. 0.89</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3) The information provided by this community is resourceful. 0.85</td>
<td></td>
</tr>
<tr>
<td><strong>Self-Efficacy</strong></td>
<td>(1) I have confidence in my ability to contribute to the online community, such as by writing articles or sharing photos. 0.94</td>
<td></td>
</tr>
<tr>
<td>(CR = 0.87; AVE = 0.77)</td>
<td>(2) I am self-assured about my capabilities to write articles or share photos for my online community. 0.89</td>
<td></td>
</tr>
<tr>
<td><strong>Community Receptivity</strong></td>
<td>(1) The community members are open to my ideas. 0.94</td>
<td></td>
</tr>
<tr>
<td>(CR = 0.77; AVE = 0.63)</td>
<td>(2) The community members are willing to listen to me. 0.85</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> All items were assessed on seven-point scales, anchored at 1 = strongly disagree, 4 = neutral, and 7 = strongly agree.

<sup>b</sup> All factor loadings are significant at p < 0.001.

Notes: CR = composite reliability; AVE = average variance extracted.
### Table 3. Correlation Matrix and Summary Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation(^a)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Information-Sharing Behavior</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Norm of Reciprocity</td>
<td>0.19 (0.07)(^b)</td>
<td>0.85(^c)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Community Informativeness</td>
<td>0.10 (0.05)</td>
<td>0.47 (0.05)</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Enjoyment</td>
<td>0.13 (0.05)</td>
<td>0.59 (0.06)</td>
<td>0.53 (0.05)</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Perceived Member Support</td>
<td>0.08 (0.05)</td>
<td>0.53 (0.05)</td>
<td>0.50 (0.05)</td>
<td>0.70 (0.05)</td>
<td>0.81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Educational Level</td>
<td>0.03 (0.06)</td>
<td>-0.08 (0.05)</td>
<td>-0.15 (0.04)</td>
<td>-0.12 (0.04)</td>
<td>-0.07 (0.04)</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Past Behavior</td>
<td>0.44 (0.06)</td>
<td>0.04 (0.05)</td>
<td>0.06 (0.05)</td>
<td>0.09 (0.04)</td>
<td>-0.02 (0.04)</td>
<td>-0.01 (0.05)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>4.52</td>
<td>5.48</td>
<td>5.36</td>
<td>6.09</td>
<td>6.02</td>
<td>3.51</td>
<td>5.27</td>
<td></td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>2.31</td>
<td>1.09</td>
<td>1.10</td>
<td>0.89</td>
<td>0.92</td>
<td>0.99</td>
<td>8.89</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)All correlations are significantly less than 1.00.

\(^b\)Standard errors appear in parentheses.

\(^c\)The figures on the diagonal are the square roots of the average variance extracted score for each construct.
### Table 4. Mediation Tests

<table>
<thead>
<tr>
<th>Model</th>
<th>Added Path</th>
<th>Goodness-of-Fit</th>
<th>Tests of Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>(M_0)</td>
<td>Baseline Model: Hypothesized Paths</td>
<td>(\chi^2(77) = 155.44, \ p \geq 0.00,) RMSEA = 0.042, NNFI = 0.99, CFI = 0.99.</td>
<td>--</td>
</tr>
<tr>
<td>(M_1)</td>
<td>Perceived Member Support → Information-Sharing Behavior</td>
<td>(\chi^2(76) = 154.48)</td>
<td>(M_0-M_1: \chi^2(1) = 0.96, \ p &gt; 0.32)</td>
</tr>
<tr>
<td>(M_2)</td>
<td>Enjoyment → Information-Sharing Behavior</td>
<td>(\chi^2(76) = 154.76)</td>
<td>(M_0-M_2: \chi^2(1) = 0.64, \ p &gt; 0.42)</td>
</tr>
<tr>
<td>(M_3)</td>
<td>Community Informativeness → Information-Sharing Behavior</td>
<td>(\chi^2(76) = 155.38)</td>
<td>(M_0-M_3: \chi^2(1) = 0.02, \ p &gt; 0.88)</td>
</tr>
</tbody>
</table>

Notes: RMSEA = root mean squared error of approximation; NNFI = non-normed fit index; CFI = confirmatory fit index.
Table 5. Results for the Moderating Effects

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Moderators</th>
<th>Standardized Coefficient for the High Group</th>
<th>Standardized Coefficient for the Low Group</th>
<th>$\Delta \chi^2$ ($\Delta df = 1$)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>H5</td>
<td>Self-Efficacy</td>
<td>0.28** ($N = 288$)</td>
<td>0.10* ($N = 280$)</td>
<td>4.08 ($p &lt; 0.05$)</td>
<td>Supported</td>
</tr>
<tr>
<td>H6</td>
<td>Relationship</td>
<td>0.20** ($N = 284$)</td>
<td>0.15** ($N = 284$)</td>
<td>0.31 ($p &gt; 0.57$)</td>
<td>Not Supported</td>
</tr>
<tr>
<td></td>
<td>Duration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H7</td>
<td>Community</td>
<td>0.23** ($N = 278$)</td>
<td>0.06 ($N = 290$)</td>
<td>4.05 ($p &lt; 0.05$)</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>Receptivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05. **p < 0.001.
Appendix 1. Sample Comments Describing Participation Factors

<table>
<thead>
<tr>
<th>Participation Factors</th>
<th>Illustrative Respondent Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived member support</td>
<td>I found members help each other by answering questions in a very short time. For example, I asked a question and the solution appeared within 2 minutes. That’s a form of members’ benevolence, and in addition to thanking the replier, I felt strongly motivated to reciprocate this kindness. From then on, I could empathize with others who are in a situation similar to mine, so I am happy to help as much as possible. (Mike, M, 35, married, sales)</td>
</tr>
<tr>
<td></td>
<td>In this community, members are very supportive of each other. For example, I posted a request, saying: “Does anyone have the free coupons (previously printed on newspapers) for X restaurant? I need one, because I plan to take my family there this weekend.” You won’t believe that on the same day I received five friendly replies to offer their free coupons to me. More surprising was that I knew none of them! How can they be so kind to a stranger? Such “strangers’ kindness” touched me and made me feel deeply indebted to the whole community (as I don’t know who they are). I told myself I would do something good to return such kindness. Two weeks later, I provided two free movie tickets to community members who were interested in seeing that movie. (Allan, M, 45, married, photographer)</td>
</tr>
<tr>
<td></td>
<td>I feel most members are quite involved in the discussions, very passionate in sharing ideas about the related topics, and help is always available from the community when someone asks for support. In addition, the members usually show their appreciation in their request when they ask questions. I can see that the members support each other without hesitation, which makes me feel that I need to respond them in a similar way too. Goodness should be returned with goodness, shouldn’t it? (Joyce, F, 50, married, homemaker)</td>
</tr>
<tr>
<td></td>
<td>Once, I posted my newly created recipe (actually, that’s my first time trying that recipe), and I encouraged other members to comment on that. I knew it might be criticized, or acknowledged that my recipe is OK. But I didn’t expect a series of discussions about different suggestions on how to make my recipe better. It seems many people are interested in my recipe, and I am truly thankful that I can get feedback from the experts. Therefore, I adopted and enhanced my own recipe and tried to post my comments on others’ recipes. I know this reciprocity will make us all better. (Cindy, F, 45, married, teacher)</td>
</tr>
</tbody>
</table>
Enjoyment

*I do enjoy interacting with other members; it’s like entertainment. I love to talk with like-minded others. We have similar interests in gourmet food and nice restaurants, and we share similar values too. I am thankful to the community members for bringing happiness to me, so I feel like doing the same for them. I will share my diaries with the community members, in order to contribute some information that I hope will be valuable to them.* (Eric, M, 40, married, engineer)

*I love browsing others’ opinions about nice restaurants. It’s so much fun to see the photos of delicious food and read members’ responses. I am also touched by the time and effort they spend on writing the introductory articles as well as taking and uploading those photos. It makes me feel like sharing my own experiences with others who are also interested in gourmet food. We usually have conversations that are full of joy.* (Grace, F, 17, single, student)

*Personally I love to explore new things, such as trying new recipes and visiting a newly opened restaurant, but it’s a pity I am usually busy with work and have no time to visit new places. So reading others’ “food diaries” is an exploration for me. The community brings me so much pleasure, so I feel I owe a favor to the community. Whenever I have time to visit a nice restaurant, I will share my experience and comments with others in the community. I view it as a kind of reciprocation, and I hope my articles can make others feel enjoyment too.* (Bob, M, 32, single, marketing executive)

*I am always interested in reading others’ stories about testing a new menu or visiting a well-known restaurant. After all, others’ experiences are my best lesson for personal experience. I’ve learned a lot from other members…. It may be strange to say so … but the more I read, the more indebtedness I feel to the community. So I will reply to others’ questions as long as I have similar experiences. I think it’s an “exchange” process, isn’t it?* (Emma, F, 59, married, retired businessperson)

Informativeness

*Every time, when I select a restaurant for my family gathering, I first check the discussions in this consumption community, because I have found the community is full of useful information. Members share their own tasting experience in detail, including locations, costs, pictures of gourmet food, and descriptions of the service. After I visited the same restaurant, I wanted to share my feedback on their recommendations, because I felt a social expectation to reciprocate as one of the group.* (John, M, 22, single, student)
The community has lots of useful information that I am interested in. I feel like an expert after reading and studying the posts carefully [laughing]. I appreciate the learning process in the community, and I am respectful of the information contributors. I think I gain a lot from the community, and I should do something in return. If someone asks for comments, I will respond to the post as long as I have an idea. (Sandy, F, 21, single, student)

This community is a very good source for nice restaurants. The members share true experiences, and the opinions are fairly stated. I can always quickly find the information I need. This site is wonderful; I benefit from it a lot. I hope I can give others the same sort of help that I receive. (Pauline, F, 31, single, teacher)

Whenever I decide to visit an unfamiliar place with my family, I check the discussion in this online community, which is very resourceful. I always gain useful information. As I get help from the members, although I don’t know them personally, I feel it is only right to give back and help someone else in the group. So, I share my experience in return, by posting a reply after I visit that place. (Mike, M, 35, married, salesperson)

Self-Efficacy

Although I feel I need to return the help I’ve received from the community, I would participate in the online discussion more actively if I was more knowledgeable about food-testing, good at typing my ideas into words, or had more confidence in my ability to write good reviews. (Joyce, F, 50, married, homemaker)

I hope to return the help I received from other members in this online community, of course, but honestly I give much less than I get. I tried to provide encouragement to other posts (such as “I cannot agree more!” or “You’re great!”). It is because I feel that many people in the groups are experts, and I don’t think I can provide something valuable to the groups, and I am afraid that my posting will confuse other people, even! (Helen, F, 40, married, homemaker)

It is natural to help others in the online community, as it is the right thing to do, particularly when I have got help at some point in the past. I always feel like sharing my personal experience when I see others ask for opinions about a restaurant I’ve been to, because I know that question is easy for me to answer (as I’ve experienced it) but difficult for someone who hasn’t been there. (Sandy, F, 21, single, student)
I love to give feedback for those who helped me before, but sometimes I am not confident that I have the capability or expertise to post something valuable to them, so I usually browse for information only. I know it is not right, I feel indebted to the community, but I just cannot do much. (Grace, F, 17, student)

The longer I stay in the online community as a member, the more interactions I’ve seen. I’ve experienced a lot in the community, and I’ve got a sense that I am one of the “families” in this community. I’ve got beautiful memories with the community members because we shared a lot with each other as time goes by. When I became more involved in the community, I firmly believe that when people gain some valuable information from the community, then it is only fair to contribute some information too. I personally do so, as I expect the public good might disappear if no one contributes to it. (Allan, M, 45, married, photographer)

I remembered that when I was a newcomer in the community, I mostly browsed the information. Although I felt somehow guilty that I was only taking but not giving, I did not know how to return my thankfulness. As time went on, I became a senior member and helping others has become something I do without thinking, simply based on a sense of responsibility, because I’ve gained so much from the community and I’ve felt an obligation to return the favor to other members in the community. (Sophia, F, 24, single, office worker)

Based on our database of members’ conversations and their actual contribution behavior (such as the numbers of articles and photos shared in the community), we found that junior members are usually “receiving” more than “giving” advice in the community. They may show their indebtedness by replying short posts such as “I don’t know how to return your favor, but thank you very much for your help, deeply appreciated!” when their questions are answered by a group of welcoming members. However, we found the members with longer membership return the favors they’ve got quite directly. For example, when they receive help from others, they will reply “Thank you for your help. Just let me know if I can help you in any way, because I hope to return your kindness.” (Johnny, M, 43, married, online community officer)
Now I feel myself an insider (not an outsider) of this community, because I’ve joined the conversations for about one year. I understand the way of communicating appropriately; for example, members call each other “Da-Da” to show their respect to the group, and members have the moral responsibility to help each other. I’ve gained much information I need, received others’ kind help, and benefited a lot from the community, so I feel I am obligated to spend my time helping the community when needed. However, I started to help others by sharing my experience to other members only few months ago, as I didn’t think I was ready to do so before then. (John, M, 22, single, student)

<table>
<thead>
<tr>
<th>Community Receptivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>I appreciate that this online community is open to everyone’s ideas. It gives me a sense of freedom to choose what I’d like to see. It’s important for me to see the multiple viewpoints people have about a restaurant, including positive and negative word of mouth. The diversity gives me great flexibility in what I can do, as well as how I perform as a member in the community. More specifically, it allows me to freely post my ideas when I receive other members’ help and I feel that I should reciprocate their kindness. (Bob, M, 32, single, marketing executive)</td>
</tr>
</tbody>
</table>

The community members are open-minded about different viewpoints and willing to listen to me, which I appreciate a lot. I fully understand that it is not easy to be objective, because we are all humans. But here I can see that every comment is respectful, by most members. Such a friendly environment allows everyone who ever received help from the community to feel free to share his/her ideas, and not worry about causing any quarrels in the group. (Sophia, F, 24, single, office worker)

I stopped joining another online group just because I got tired of seeing the insults among some members. I admit that I loved that online community as I used to check the information about movies and felt I should also share my opinions after I saw a movie. I did join the conversations several times to reciprocate my thankfulness. However, since I realized that the members were not rational and objective in posting a review, I tended to avoid feeling constrained or forced in the interactions. So I just quit my membership in that group. (Helen, F, 40, married, homemaker)
One of the members complained to us that although he received a lot of help from the community and he looks forward to repaying them by sharing his own visiting experience, he is bored with some members who not only have big egos but also refuse to accept any opposite opinions. He said, “I don’t want to communicate with those arrogant people and they threaten the openness of our online community.” We realize it’s a serious problem that will tremendously damage the participation intentions for those who intend to return their favors to the community. (Johnny, M, 43, married, online community officer)
### Appendix 2. $\chi^2$ Statistics Regarding Discriminant Validity of Factor Pairs

<table>
<thead>
<tr>
<th>Construct</th>
<th>1&lt;sup&gt;a&lt;/sup&gt;</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Information-Sharing Behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Norm of Reciprocity</td>
<td>$\chi_d^2(1)=174.17$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Community Informativeness</td>
<td>$\chi_d^2(1)=191.91$</td>
<td>$\chi_d^2(1)=108.59$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Enjoyment</td>
<td>$\chi_d^2(1)=203.8$</td>
<td>$\chi_d^2(1)=96.08$</td>
<td>$\chi_d^2(1)=82.9$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Perceived Member Support</td>
<td>$\chi_d^2(1)=234.46$</td>
<td>$\chi_d^2(1)=110.97$</td>
<td>$\chi_d^2(1)=98.5$</td>
<td>$\chi_d^2(1)=66.84$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Educational Level</td>
<td>$\chi_d^2(1)=367.13$</td>
<td>$\chi_d^2(1)=348.23$</td>
<td>$\chi_d^2(1)=312.54$</td>
<td>$\chi_d^2(1)=307.86$</td>
<td>$\chi_d^2(1)=286.5$</td>
<td></td>
</tr>
<tr>
<td>7. Past Behavior</td>
<td>$\chi_d^2(1)=178.19$</td>
<td>$\chi_d^2(1)=212.24$</td>
<td>$\chi_d^2(1)=214.61$</td>
<td>$\chi_d^2(1)=210.24$</td>
<td>$\chi_d^2(1)=267.75$</td>
<td>$\chi_d^2(1)=302.59$</td>
</tr>
</tbody>
</table>

<sup>a</sup>The difference in the chi-square values of the two models (i.e., the baseline and the constrained model), with one degree of freedom