

# Exploring the relationship between receiving and offering online social support: A dual social support model



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## ARTICLE INFO

### Article history:

Received 28 January 2014  
Received in revised form 15 December 2014  
Accepted 3 January 2015  
Available online 14 January 2015

### Keywords:

Community identification  
Dual social support model  
Online support community  
Self-efficacy  
Social support  
Willingness to offer support

## ABSTRACT

Drawing on the taxonomy of social support and the transactional model of stress and coping, we proposed a dual social support model to study online social support exchange behaviors. Our model predicts that receiving problem-focused and emotion-focused support from others enhances coping resources; in turn, these coping resources are the primary drivers of the willingness to offer support to others. We empirically tested the proposed dual social support model using data collected from 212 users of online support communities. The results indicate that the problem- and emotion-focused mechanisms simultaneously, yet differentially, determine the willingness to offer support.

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## 1. Introduction

In addition to allowing commerce, entertainment, and social networking, the introduction of the Internet and the Web has allowed virtual social support groups to take place virtually. *Social support* comprises aid and assistance (including, among other things, informational and emotional support) that are exchanged via social relationships and interpersonal transactions. An online support group is an area within cyberspace where individuals exchange social support to manage their problems or stressful situations. There are online support groups for people addressing cancer, HIV/AIDS, pregnancy, weight loss, etc. Social support helps people to effectively manage stresses [24] and to mitigate the impact of a negative life event [53]. Indeed, the Internet/Web is being used increasingly for online support groups or communities [47]. These positive social network forces are worthy of both encouragement and concern because recent studies indicate that online support or self-help groups act as both primary and supplemental sources of social support [6,47,97].

The biggest challenge in fostering a virtual community is the supply of information, namely, the willingness of members to share information with others [19,20]. As with any other virtual

community, the success of online support communities depends largely on intensive interaction among members, including seeking support and offering support to each other. Offering support to others is especially highly valued because support seekers may stop visiting a site if their requests receive no corresponding responses from others in that group. As an outcome, online social support functions break down when members stop providing feedback to others' questions. Therefore, understanding the factors that drive individuals to offer support to others is critical. In addition, online support groups are formed by individuals who are in similar situations or have correlating experiences. The basic interaction mechanism is that the more experienced individuals or experts offer expressive or instrumental information to those who have less or no experience in managing the situation. However, those experienced individuals may leave the online support group, or experts may not be available. Therefore, the sustainability of an online support group relies on some support seekers turning themselves into support providers. This requirement elicits an interesting question: "does having received support from others in the past positively increase an individual's willingness to provide support to others?"

Social support can be classified into two types: action-facilitating and nurturant. *Action-facilitating support* is assistance that helps stressed individuals to solve or eliminate the problem causing the distress, while *nurturant support* encompasses comfort or consolation without direct efforts to solve the distressing problem [30]. Following the first question, if receiving support

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from others in an online support community does increase one's willingness to offer support to others, we want to further understand "how do different types of received support lead to the willingness to provide support?"

Guided by the two questions above, the purpose of this study is therefore to explore whether online social support can indirectly promote the willingness to provide support. We addressed the first question from the perspective of the norm of reciprocity. To answer the second question, we drew upon the transactional model of stress and coping [21,50] and proposed possible mediators between receiving and offering support. We hypothesized that receiving online social support enhances individuals' resources for coping with stress (personal coping resources), which in turn positively promotes the willingness to provide support to others. We also predicted that the willingness to offer support is primarily driven by two types of mechanisms: problem-focused and emotion-focused. The problem-focused mechanism first transfers the effect of action-facilitating support to self-efficacy and then to willingness to offer support. The emotion-focused mechanism first relates nurturant support to community identification and then to willingness to offer support.

By clarifying the above issues, this study contributes to online social support research in two ways. First, we demonstrate that the receiving of support does indeed lead to a willingness to offer support, which explains the sustainability of online communities. Second, by applying the transactional model of stress and coping, we further illustrate how the distinct effect of each type of support received can promote the willingness to offer support. The organization of this paper is as follows: the next section reviews the literature relevant to social support and the transactional model of stress and coping. In this section, we also develop a dual social support model and propose relevant research hypotheses. We describe the research methodology and present the results of the data analyses in the third section. In Section 4, we discuss the research findings, the theoretical contributions, the implications of our findings, and the limitations of the study. We summarize our conclusions in the fifth section.

## 2. Literature review and hypothesis development

### 2.1. Social support

There is no universally accepted definition of social support. Shumaker and Brownell [82] defined it as "an exchange of resources between at least two individuals perceived by the provider or recipient to be intended to enhance the wellbeing of the recipient" (p. 31). Social support can be broadly defined as any process through which social relationships might promote health and wellbeing [23]. Social support groups have the characteristics of small groups and of the social supporters and are formed by individuals experiencing similar situations. There are various face-to-face social support groups offering discussions and support with a special focus on cancer, HIV/AIDS, pregnancy, and other health issues. In a social support group, members share experiences, information and emotional support. Social support has been identified as an important buffer of mental health [21,24].

Furthermore, it is one of the most well-documented psychological factors influencing physical health outcomes [88].

Although there is no universally accepted definition of social support, there is a consensus: social support is a multi-dimensional construct. Based on prior studies, Cutrona and Russell [28] identified five major dimensions of social support. Esteem support refers to expressions of regard for one's skill, abilities and intrinsic value. Emotional support refers to expressions of caring, concern, empathy and sympathy. Network support is the presence of companions with whom to engage in shared social activities. Tangible support includes offers to provide needed goods and services. Informational support is the provision of advice, factual input, and feedback on actions. As shown in Table 1, Cutrona et al. viewed esteem support and emotional support as two distinct dimensions, while Cohen and Wills [24] considered them to be interchangeable and used the label "esteem support" to represent them both. Network support is analogous to Cohen and Wills' [24] concept of social companionship, while tangible support can be mapped to Cohen and Wills' instrumental support. Table 1 maps and compares the various taxonomies of social support.

Cutrona and Suhr [30] classified these types of social support into two broad categories: action-facilitating support and nurturant support. These authors included both informational support and tangible aid in the action-facilitating support category, while emotional support and network support fall into the nurturant support category. Esteem support may serve either an action-facilitating or a nurturant function [30]. Goldsmith [41] endorsed this classification and indicated that informational support and tangible support facilitate individuals' efforts to solve a problem or change a stressful situation (problem-focused coping) and thus should be grouped into action-facilitating support. Emotional support and network support facilitate individuals' efforts to manage the emotional distress that is associated with the situation (emotion-focused coping) and thus should be grouped into nurturant support. Esteem support has two components: reassuring a person of his or her competence and reassuring a person of his or her intrinsic worth. The former component (cognitive esteem support) may facilitate problem-focused coping [30] and thus can be grouped into action-facilitating support. The latter component (affective esteem support) may facilitate emotion-focused coping by lessening the intensity of negative emotions engendered by stressful events [30] and thus can be grouped into nurturant support.

Studies of online social support exchanges exist in the literature (see Table 2). However, although these studies focus on the characteristics of online social support, it is not yet known if action-facilitating support and nurturant support enhance individuals' personal coping resources and, subsequently, promote a willingness to provide support in the context of online support groups.

### 2.2. Transactional model of stress and coping

A fundamental proposition of the transactional model of stress and coping is that stress is a product of a transaction between the individual and the environment. Stress arises from the appraisal that particular environmental demands are about to tax or exceed

**Table 1**  
Mapping between the taxonomies of social support.

Cobb [21]	House [45]	Cohen and Wills [24]	Cutrona and Russell [28]	Cutrona and Suhr [30]	Reber [72]
	Informational	Informational	Informational	Action-facilitating support	Informational
	Instrumental	Instrumental	Tangible		Tangible
Belonging	Emotional	Social companionship	Network	Nurturant support	Emotional
Emotional		Esteem	Emotional		
Esteem	Appraisal		Esteem		Appraisal

**Table 2**  
Studies of online social support.

Source	Context	Research methodology	Sample	Types of social support	Results
Coulson et al. [25]	Huntington's disease	Content analysis	1313 messages	Informational, tangible, network, emotional and esteem	Informational support (56.2%) and emotional support (51.9%) were exchanged most frequently.
Coursaris and Liu [26]	HIV/AIDS	Content analysis	5000 postings	Informational, tangible, network, emotional and esteem	Informational support (41.6%) and emotional support (16.0%) were exchanged most frequently.
Ballantine and Stephenson [7]	Weight loss	Survey	145 members	Informational and emotional	Casual browsers receive little social support and exhibit a passive communication style.
Evan et al. [37]	Postpartum depression	Content analysis	512 postings	Informational, instrumental and emotional	Emotional support is exchanged most frequently, followed by informational and instrumental support.
Love et al. [56]	Cancer	Content analysis	320 postings	Informational, emotional and esteem	Emotional support is exchanged most frequently, followed by informational and esteem support.
Oh et al. [65]	Health	Structural equation modeling	291 respondents	Appraisal, tangible, network, emotional and esteem	Emotional support has a positive and significant effect on health self-efficacy.
Yoo et al. [98]	Breast cancer	Hierarchical regression analysis	236 patients	Emotional	Exchange of emotional support has a positive effect on emotional wellbeing for patients with higher levels of emotional communication.

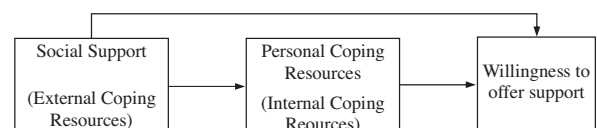
individual resources, thus threatening wellbeing [51]. According to the transactional model, two processes mediate the person–environment relationship: cognitive appraisal and coping. There are two forms of cognitive appraisal: primary appraisal and secondary appraisal [51]. Primary appraisal involves evaluating how threatening the situation is (e.g., irrelevant, benign-positive, stressful). Secondary appraisal involves evaluating one's available resources for coping with the stressful situation. Coping is the cognitive and behavioral effort that a person makes to manage demands that tax or exceed personal resources [51].

Individuals engage in a cognitive appraisal of the stressor and then consciously enact a coping strategy when attempting to manage a stressful situation [51]. Coping strategies refer to the specific efforts, both behavioral and psychological, that people employ to master, tolerate, reduce, or minimize stressful events [2]. Lazarus and Folkman [51] distinguished between two coping strategies: problem-focused coping and emotion-focused coping. Problem-focused coping involves an effort to solve or eliminate the problem that is causing the distress and is typically used in situations that are perceived to be controllable (e.g., work-related problems). Emotion-focused coping is usually defined as aiming to manage the emotional responses to the stressor and is generally used in situations where the stressor is less controllable (e.g., losing someone) [16]. Carver et al. [16] identified five aspects of problem-focused coping: active coping, planning, suppressing competing activities, restraint coping, and seeking instrumental social support. They also identified five aspects of emotion-focused coping: seeking emotional social support, positive reinterpretation, acceptance, denial, and turning to religion. Thoits [87] suggested that social support might be usefully viewed as coping assistance. He suggested that while emotional and network support aid in emotion-focused coping, tangible and informational support facilitate problem-focused coping, and esteem support assists equally well in both types of coping situations.

Coping resources are factors upon which individuals can draw in the face of stressful events and that are present before stressors occur [67]. Self-efficacy and self-esteem are two of the most studied personal resources for coping with stress. *Self-efficacy* is the belief in one's ability to cope with stressful or challenging demands [80], while self-esteem refers to a person's subjective appraisal of himself or herself as intrinsically positive or negative [81]. Most coping resources fall into internal (personal) or external (social) areas. Social supports are external resources, while

self-efficacy and self-esteem are personal coping resources. Coping resources improve individuals' ability to manage stressful events and are tied to a decrease in distress and better health outcomes [86]. In addition to their roles as antecedents of psychological outcomes, coping resources can also have indirect effects on psychological health through specific coping strategies [86]. Some social support theorists (e.g., Cohen and Wills [24]) suggests that social support may have a main or direct effect on levels of wellbeing [13,24], whereas some researchers suggest that social support may indirectly enhance individuals' wellbeing through personal coping resources [11,79].

As shown in Fig. 1, the broad model for this study has three sets of variables: social support, personal coping resources, and willingness to offer support. The conceptual model theorizes that individuals are more likely to display a strong motivation to offer support to others if they have enough resources to cope with their own stressful or challenging demands. We use Lazarus and Folkman's [51] classification of coping strategies to distinguish two types of mechanisms that relate coping resources to the willingness to offer support: problem-focused and emotion-focused. Informational support and tangible support can both help individuals to cope [22] and increase their belief in their own ability to cope with stressful situations (i.e., self-efficacy). Because informational support, tangible support and self-efficacy can aid in resolving a problem or changing a stressful situation, individuals who receive action-facilitating support may reciprocate by offering support to others. The process by which action-facilitating support increases self-efficacy and then promotes one's willingness to offer support is referred to as the problem-focused mechanism. Emotional support can help people recover from negative emotions [22], network support can increase a sense of social companionship, and affective esteem support may lessen the intensity of negative emotions. Because emotional support, network support and affective esteem support can aid in managing emotions and enhance one's emotional bond to the online support



**Fig. 1.** Conceptual model.

community (community identification), individuals who receive nurturant support may reciprocate by offering support to others. The process by which nurturant support increases community identification and then promotes one's willingness to offer support is referred to as the emotion-focused mechanism.

This study includes community identification instead of self-esteem as a component of the emotion-focused mechanism for three reasons. First, most prior studies on coping resources have focused on individual-based self-esteem, while few studies have considered group-based self-esteem as a coping resource. Bergami and Bagozzi [10] did view group self-esteem as one aspect of social identification. Second, Abrams and Hogg [1] argued that seeking self-esteem motivates social identification and group behavior, and social identification satisfies the need for self-esteem. In other words, social identification (e.g., community identification) and self-esteem are highly correlated, and part of an individual's self-worth (e.g., self-esteem) comes from social identity. Third, some studies have indicated that self-worth does not have a significant effect on an individual's attitude toward offering knowledge to others (e.g., [11]), while other studies have indicated that community identification has a strong effect on participation in virtual communities (e.g., [74]). The core concept behind the present study's conceptual model (Fig. 1) is that when individuals can resolve a stressful situation or manage the emotions associated with a stressor, they may reciprocate by offering support to others.

### 2.3. The direct effect of receiving support on offering support

#### 2.3.1. Reciprocally supportive exchange

Social support is manifested through an interactive process of giving and taking, and thus the concepts of reciprocity are particularly relevant to the motives and actions of the recipient in supportive exchanges [82]. Drawing upon Gouldner's [42] norm of reciprocity, some researchers (e.g., [64]) have suggested that reciprocally supportive exchanges promote individuals' wellbeing. To promote their wellbeing, individuals try to establish and maintain equilibrium between receiving and giving social support. Receiving more support than is being given may be detrimental to one's wellbeing because it can induce guilt, shame and a growing sense of being unable to cope independently [49]. According to the transactional model of coping, social support may have both a direct and an indirect effect on wellbeing. This study proposes extending the transactional model of coping by including the concept of reciprocally supportive exchanges. We theorize that individuals receiving social support will be willing to offer support to others for two reasons: a feeling of being obliged to return a favor and a need to promote wellbeing.

Reciprocity evokes obligations toward others on the basis of their past behavior [42]. A basic norm of reciprocity is a sense of mutual indebtedness: individuals usually reciprocate the favorable treatment they receive from others, thus ensuring ongoing supportive exchanges [82]. Returning an act of kindness can generate a sense of self-satisfaction, and failing to return a favor may lead to self-criticism. The internalized social norm may motivate people to return favors, and they feel good about themselves for "doing the right thing" [14].

Action-facilitating support helps stressed individuals to solve or eliminate the problem causing the distress, while nurturant support encompasses assistance to comfort or console without direct efforts to solve the problem. As Ridings et al. [78] have suggested, a community will not survive if reciprocity does not exist; members must contribute reciprocal rewards and must have a desire to perform beneficial behaviors toward others. Coursaris and Liu [26] conducted a context analysis of social support exchanges in online HIV/AIDS self-help groups. The results show that informational

support (41.6%) and emotional support (16.0%) were the types most frequently sought and offered. Their study suggests that members in online social support groups contribute reciprocal support. Ballantine and Stephenson [7] also found that individuals who received a high level of both informational and emotional support were the most likely to post messages in the online support network, as well as being the most likely to respond to and provide comments on the messages posted by others. Therefore, we theorize the following:

**H1.** Action-facilitating support has a positive effect on an individual's willingness to offer support.

**H2.** Nurturant support has a positive effect on an individual's willingness to offer support.

### 2.4. Indirect effect through enhancing personal coping resources

#### 2.4.1. From personal coping resources to offering support

According to Dunkel-Schetter and Skokan [34], the provider factor is one category of the determinants of support provision. Individuals' motivation to provide support is one factor that may enhance or hinder support provision [46]. Another factor that may influence support provision is limitations in or a lack of personal resources [38]. Individuals are less likely to display a strong motivation to offer support to others if they have limited resources to cope with their own stressful or challenging demands.

#### 2.4.2. Self-efficacy

Self-efficacy refers to "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" [8]. Bandura [8] states that self-efficacy influences decisions about what behaviors to undertake, the amount of effort and persistence to put forth when faced with obstacles, and finally, the mastery of the behavior.

In this study, self-efficacy is the belief in one's competence in coping with stressful or challenging demands [80]. Alessandri et al. [3] stated that people with high self-efficacy are more inclined than others to enact prosocial behaviors that benefit others and do not hesitate to make the sacrifices that these behaviors may require. Self-efficacy beliefs contribute to the capability and motivation to perform appropriate actions intended to meet others' needs for help, comfort, and support [3]. Caprara et al. [15] argue that self-efficacy beliefs are important determinants of psychosocial functioning, including voluntary actions undertaken to benefit others (e.g., prosocial behavior such as sharing, helping others and comforting). It is unlikely that people can be effective in carrying out prosocial behaviors that imply competence such as caring, helping or sharing unless they feel capable of coping with their own stressful or challenging demands.

**H3.** An individual's self-efficacy has a positive effect on his or her willingness to offer support.

#### 2.4.3. Community identification

Individuals are likely to derive a sense of self from their membership in social groups, i.e., from their social identity [90]. Tajfel [84] defined social identity as "the individual's knowledge that he belongs to certain social groups together with some emotional and value significance to him of this group membership" (p. 292). Individuals classify themselves in various social categories to facilitate self-definition within their own social environment [5,85]. Individuals generally strive to maintain a positive self-concept, and in many social contexts, people derive their self-esteem from their social group membership.



Group membership often plays a key role in determining individuals' self-esteem. This role means that one's psychological state often depends on the state of the groups that define the self. If social groups provide a person with stability, meaning, purpose and direction, then it will typically have positive implications for that individual's mental health [43]. In addition, Haslam et al. [43] argued that the shared social identity of social group members provides a basis for giving, receiving and benefiting from social support, which in turn provides individuals with the emotional, intellectual and material resources to cope with the negative consequences of their circumstances. In other words, Haslam et al. [43] view social identity as a coping resource. Because social identity is a basis for social support and an important driver of an individual's self-concept, it is reasonable to theorize that social identity is a coping resource. Prior studies that applied the transactional model of stress and coping focus only on self-based coping resources (e.g., self-esteem). Therefore, little research has been conducted to examine the relationships between social support, group-based coping resources (e.g., social identity), and willingness to offer support, especially in the context of online support communities.

Based on Tajfel [84], this study defines *community identification* as the individual's knowledge that he or she belongs to the online support community together with some emotional and value significance to him or her of this community membership. The primary interest and goal of the online support community is to help its members cope with stressful demands and challenges through social support. The more closely people identify with a group, the more the group's interests are incorporated in the self-concept, and the more likely the individual is to act with the group's best interest in mind [5,92]. Van Knippenberg [91] argued that identification elicits a sense of oneness with the social group, which leads the individual to assume the group's perspective and goals as his or her own. Utz and Saaenbergh [89] argued that members of identity groups should be willing to sacrifice their own outcome for the sake of the group outcome; that is, they should display altruistic [61], pro-group behavior. An individual's sense of oneness or identification with the social group (e.g., organization) results in that individual being engaged and attached to the group's fate [31]. Because the aid and assistance exchanged in online support communities is critical to their sustainability and success, those individuals who identify with an online support community are more likely to provide support to other members.

**H4.** An individual's identification with the online support community has a positive effect on his or her willingness to offer support.

Self-efficacy is a critically important personal resource and, theoretically, is expected to facilitate the use of other coping resources in one's goal-directed behaviors [48]. Therefore, individuals may view community identification as more important and be more likely to offer support to others if the social support they, themselves, receive enhances their self-efficacy when addressing problems or facing challenges. Individuals with a strong sense of group identification should be willing to sacrifice their own outcome for the sake of the group outcome; that is, they should display a willingness to help others [89]. However, it is unlikely that individuals who feel incapable of coping with their own stressful or challenging demands will display a willingness to help others for the sake of strong community identification. Therefore, we theorize that the effect of community identification on the willingness to offer support will be stronger for highly self-efficacious individuals than for individuals with low levels of self-efficacy.

**H5.** Self-efficacy positively moderates the relationship between community identification and willingness to offer support.

#### 2.4.4. From social support to personal coping resources

Individuals' appraisals of the adequacy of their coping resources may depend on the availability of social support [44]. Wethington and Kessler [96] suggested that social support becomes most meaningful when personal coping resources are lacking. They further suggested that the perceived availability of social support allows an individual to successfully mobilize coping resources.

#### 2.4.5. Action-facilitating support

Bandura [8] attributes the development of self-efficacy to four forces: enactive mastery (repeated performance accomplishment), vicarious experience or modeling (visualizing other people performing successfully), social or verbal persuasion (perceived encouragement and support from others), and psychological arousal (the state of psychological and emotional arousal). Individuals are often required to infer the degree of their competence through various sources of self-efficacy related information available from their social environment, i.e., direct statements, advice and reassurance from supportive others [33].

Action-facilitating support has two dimensions: informational and tangible [28]. Informational support is the provision of advice, factual input, and feedback regarding actions, while tangible support refers to the provision of needed goods (e.g., books about pregnancy). Benight and Bandura [9] theorize that social support has an enabling function that can enhance self-efficacy beliefs; therefore, individuals receiving social support are likely to hold stronger self-efficacy beliefs. Social persuasion may be viewed as a form of informational support that enhances self-efficacy beliefs [12]. Social persuasion in the form of suggestions and advice about how to cope with problems may influence individuals' self-efficacy. Informational support such as reminders of an individual's previous accomplishments may be viewed as a form of enactive mastery that may promote his or her self-efficacy [73]. In addition, informational support such as relating stories of others' accomplishments thereby enhances self-efficacy beliefs through vicarious experience [73]. Fraser and Rodgers [39] suggest that tangible support enhances self-efficacy. Tangible support helps an individual to directly resolve the problem or change the stressful situation. When individuals feel that tangible support has provided them the material goods or assistance they need, they begin to feel more able to cope with the stressful situation. Therefore, we theorize the following:

**H6.** Action-facilitating support has a positive effect on an individual's self-efficacy.

### 2.5. Nurturant support

Nurturant support involves emotional, network, and esteem support [28]. Emotional support refers to expressions of caring, concern, empathy and sympathy. Network support is the presence of companions with whom to engage in shared social activities. Esteem support refers to expressions of regard for one's intrinsic value. Drawing upon social exchange theory, Welbourne et al. [95] theorized that people's affective attachment is governed by the entity with which they are exchanging emotional support. They found that receiving emotional support in an online support community is associated with a sense of virtual community (SOVC), i.e., a sense of belonging and identification. Network support is the presence of companions with whom to engage in shared social activities [30], and identification arises from attraction and the desire to maintain an emotionally satisfying, self-defining relationship with the group [66]. An individual perceives the group's identity through a social comparison process in which persons who are similar to the self are categorized with the self [85]. A feeling of identification with a group may occur

when an individual can spend recreational or leisure time with other members who have similar interests and values or can interact with them in times of need. Abrams and Hogg [1] suggested that self-esteem motivates social identification. The esteem support supplied by others, expressed as regard for one's skill and abilities in coping with problems or facing challenges, will enhance one's self-esteem, which in turn motivates social identification. Nurturant support exchanged between members in an online support community may be viewed as indirect support from the community. This indirect support may lead to the perception that the online support community cares about one's wellbeing. Such emotionally satisfying experiences may lead individuals to identify the group's wellbeing with their own and to feel emotionally bound to the group [75]. Furthermore, based on the norm of reciprocity [42], we theorize that individuals who receive high levels of nurturant support from other members may be motivated to reciprocate, which may be manifested in stronger community identification.

**H7.** Nurturant support has a positive effect on an individual's community identification.

2.6. Control variables

To isolate the explanatory powers of social support and coping resources on the willingness to offer support, we have included two variables as control variables in our model. First, individual tenure in an online support community can have a positive effect on the willingness to offer support. Prior research has shown that tenure duration can predict knowledge sharing behavior [94]. It is conceivable that members who have been with an online support community for a long time perceive it to be valuable and therefore may have a stronger motivation to offer support to others. Second, data were collected via both a paper-based and a web-based survey; thus, the source of the data was modeled as a control variable.

Fig. 2 shows the research model containing the constructs we used and the corresponding hypotheses. First, we developed this model based on a combination of the transactional model of stress and coping [21,51] and Cutrona's [27] distinction between action-facilitating support and nurturant support. Second, this dual social support model aims at studying and explaining individuals' willingness to offer online social support. *Willingness to offer support* refers to the degree to which an individual is ready to offer support to online support group members. Our model predicts that an individual's willingness to offer support is primarily driven by two mechanisms: (1) the problem-oriented mechanism, which relates action-facilitating support to self-efficacy and willingness to offer support, and (2) the emotion-focused mechanism, which

relates nurturant support to community identification and willingness to offer support. Note that this study has focused on affective esteem support and included it as a formational component of nurturant support for two reasons. First, affective esteem may lessen the intensity of the negative emotions engendered by stressful events [30]. Second, Cutrona et al. [29] found that esteem support is highly correlated to caring support (expressions of affection and concern). In addition, prior studies have indicated that esteem support conveys affection [60,63] and respect [60].

3. Research methodology

Approximately 14–23% of pregnant women experience depression [35]. One important risk factor affecting maternal wellbeing during pregnancy is lack of social support [36]. Accordingly, the proposed research model was tested with pregnant women who were currently using online support communities.

3.1. Measurement development

The measurement items were adapted from the literature wherever possible [e.g., 62,69,99,71]. Content validation involved interviews with five pregnant women who had experience accessing online support communities. During these interviews, we asked these women to comment on the relevance and clarity of the questions. Based on their feedback, we developed the final measurement items for large-scale data collection. All of the measurement items used a seven-point Likert scale, anchored from strongly disagree (1) to strongly agree (7). The items are listed in Appendix A.

3.2. Survey administration

The research model was tested with data from the users of online support communities or groups focusing on pregnancy. To increase the number of responses, we collected data via a paper survey and a Web-based survey. For the paper survey, we collected data from local obstetric (OBS) clinics. Nurses at OBS clinics asked the pregnant women who came for pregnancy check-ups whether they had experience using online support communities or groups and invited pregnant women with usage experience to complete the paper survey. For the Web-based survey, a banner with a hyperlink to our Web survey was published in virtual communities and on the BabyMother message board of a bulletin board system (BBS) that has boards discussing various issues. The BabyMother message board is used by members to share information about babies and pregnancy. Pregnant women with experience using online support communities or groups for expectant mothers were cordially invited to support our survey. Thirty randomly selected

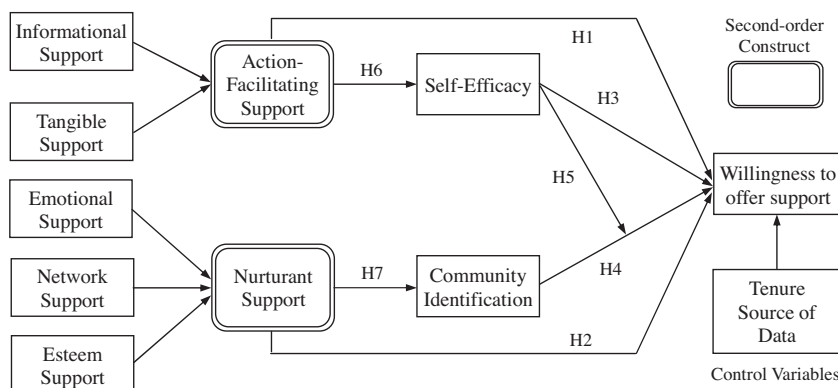


Fig. 2. Dual social support model.

**Table 3**  
Demographic information of the respondents (N=212).

Measure	Items	Freq.	Percent	Measure	Items	Freq.	Percent
Age	<26	13	6.1	Education	High school or less	32	15.1
	26–30	79	37.3		College	45	21.2
	31–35	102	48.1		University	108	51.0
	>35	18	8.5		Graduate/post-graduate	27	12.7
Internet experience (in years)	<5	45	21.3	Browsing frequency	2 times or less per month	64	30.2
	5–7	59	27.8		1–2 times per week	89	42.0
	8–10	59	27.8		3–4 times per week	27	12.7
	~11	49	23.1		Every day	32	15.1

respondents were offered an incentive of US\$17 in a gift certificate. The survey yielded a total of 212 complete, valid responses for the data analysis. Table 3 lists the demographic information of the respondents. In this study, survey participants were recruited through advertising on BBSs and in virtual communities and with the help of nurses in OBS clinics. These samples constitute convenience samples, so it is not possible to compute a response rate.

Because this survey adopted a convenience sample, non-response bias cannot be examined by comparing respondents and non-respondents. Thus, non-response bias is measured by comparing the responses of early and late responders. We split the sample into two halves based on the time when each response was received [83]. We then compared the early response group with the late response group in terms of respondent demographics (age and Internet experience) and their responses regarding principal constructs. The average ages for the early and late responders were 31.2 and 31.1, respectively, indicating no significant difference ( $t = 0.21$ ). The average Internet experience (in years) for the early and late responders was 8.5 and 7.8, respectively, indicating no significant difference ( $t = 1.13$ ). The  $t$  values for the responses on principal constructs ranged from  $-1.02$  to  $0.61$ , indicating no significant difference at  $\alpha = 0.05$ . We therefore concluded that nonresponse bias was not a significant threat. In addition, we also tested the qualitative difference between the paper-based and Web-based survey respondents in terms of respondent demographics (age and Internet experience) and their responses regarding principal constructs. The  $t$  values range from  $-1.45$  to  $1.67$ , indicating no significant difference at  $\alpha = 0.05$ .

### 3.3. Data analysis

The data analysis utilized a two-step approach, as recommended by Anderson and Gerbing [4]. The first step analyzes the measurement model, while the second tests the structural relationships among the latent constructs. The aim of the two-step approach is to establish the reliability and validity of the measures before assessing the structural relationships of the model.

Confirmatory factor analysis (CFA) was applied to assess the construct validity of the eight scales using EQS 6.1 software. Action-facilitating support and nurturant support used *reflective-formative* modeling: the first-order constructs (e.g., informational support) are reflectively defined and the second-order construct is formatively defined. The rationale for operationalizing these mechanisms as formative second-order constructs is twofold: (1) their underlying dimensions are indicator variables that create or change them and (2) their underlying dimensions are not interchangeable [68]. To operationalize the second-order constructs, we first generated summated scale scores by computing the average for each of their first-order dimensions. Then, the resulting summated scale scores of the dimensions were used as

the measures for the aggregate constructs (i.e., action-facilitating support and nurturant support). Following MacCallum and Browne [58], we scaled action-facilitating support and nurturant support by fixing one of their respective indicator paths to 1.0 and setting the error variance of these two supports to 0. A necessary condition for the identification of a formative construct is that it emits at least two paths to other (reflective) constructs or indicators [58]. Action-facilitating support and nurturant support satisfy the “2+ emitted paths rule” and are thus identified as formative constructs.

#### 3.3.1. Measurement model

The adequacy of the measurement model was evaluated as to model fit, reliability, convergent validity and discriminant validity. For a measurement model to have sufficiently good model fit, the chi-square value normalized by degrees of freedom ( $\chi^2/df$ ) should not exceed 3, the Non-Normed Fit Index (NNFI) and Comparative Fit Index (CFI) should exceed 0.9, and the Root Mean Square Error of Approximation (RMSEA) should be less than 0.08 [59]. For the current CFA model,  $\chi^2/df$  was 1.936, NNFI was 0.929, CFI was 0.938, and RMSEA was 0.067, suggesting adequate model fit.

Reliability was examined using the composite reliability values. Table 2 shows that all of the values were above the commonly acceptable threshold of 0.7. Convergent validity was assessed by two criteria [40]: (1) all indicator loadings should be significant and exceed 0.7, and (2) the average variance extracted (AVE) by each construct should exceed the variance caused by the measurement error for that construct (i.e., AVE should exceed 0.50). As shown in Table 4, all of the items exhibit a loading higher than 0.7 on their respective construct, and all of the AVEs ranged from 0.65 to 0.82, thus satisfying both conditions for convergent validity.

The discriminant validity of the scales was assessed using the guideline suggested by Fornell and Larcker [40]: the square root of the AVE from the construct should be greater than the correlation shared between the construct and other constructs in the model. Table 5 lists the correlations among the constructs, with the square root of the AVE on the diagonal. All of the diagonal values exceed the inter-construct correlations; hence, the test of discriminant validity was acceptable. Therefore, we conclude that the scales should have sufficient construct validity.

The possibility of common method bias was assessed by including an unmeasured latent method factor in the full measurement model [70]. This procedure partitions the variance of the responses to a specific measure into three components: trait, method, and random error. As Richardson et al. [76] suggested, the first estimated model, the trait-only model, is a measurement model of a given independent–dependent construct pair that includes a null method construct. That is, the method construct is specified to be uncorrelated with the independent and dependent constructs, and no path to or from the method construct is estimated. In the second or method-only model, the independent and dependent constructs are null, but the paths from the method construct to all manifest indicators of the independent and

**Table 4**  
Descriptive statistics for the constructs.

Constructs	Item	Factor loading	Composite reliability	Mean (STD)	AVE
Informational support (IS)	IS1	0.730	0.90	5.56 (0.88)	0.70
	IS2	0.824			
	IS3	0.926			
	IS4	0.850			
Tangible support (TS)	TS1	0.922	0.95	4.64 (1.24)	0.82
	TS2	0.918			
	TS3	0.944			
	TS4	0.834			
Emotional support (ES)	ES1	0.789	0.95	4.70 (1.11)	0.82
	ES2	0.876			
	ES3	0.980			
	ES4	0.968			
Network support (NS)	NS1	0.713	0.89	4.97 (1.04)	0.68
	NS2	0.771			
	NS3	0.923			
	NS4	0.873			
Esteem support (ETS)	ETS1	0.776	0.92	4.94 (1.08)	0.73
	ETS2	0.809			
	ETS3	0.920			
	ETS4	0.907			
Self-efficacy (SE)	SE1	0.827	0.90	4.78 (0.97)	0.69
	SE2	0.849			
	SE3	0.802			
	SE4	0.841			
Community identification (CI)	CI1	0.747	0.88	4.09 (1.23)	0.66
	CI2	0.802			
	CI3	0.928			
	CI4	0.756			
Willingness to offer support (WOS)	WOS1	0.881	0.92	4.84 (1.04)	0.80
	WOS2	0.966			
	WOS3	0.827			

dependent constructs are estimated. The third, or trait/method model, is identical to the trait-only model, but paths are added from the method construct to all of the independent and dependent construct manifest indicators. Finally, the trait/method-R model is identical to the trait/method model, but the independent-dependent construct correlation is constrained to the value obtained from the trait-only model. If the trait/method-R model fit is significantly worse than that of the trait/method model, there is evidence of bias caused by common method variance. Comparing  $\chi^2$  values for the trait/method and trait/method-R models indicates that common method bias is not a significant problem with regard to our data:  $\Delta\chi^2 = 22$  (461 – 439),  $\Delta df = 16$ ,  $p > 0.05$ .

In addition, variance inflation factors (VIF) were used to assess the degree of multicollinearity. We conducted a regression analysis by modeling willingness to offer support as the dependent variable and the other seven variables as the independent variables. The VIF

ranges from 1.502 to 2.631, which is well below the suggested threshold of 3.3 [32]. Therefore, no significant multicollinearity problem exists with regard to our data.

We assessed the validity of action-facilitating support and nurturant support as second-order, formative constructs based on formative measurement guidelines [17,68] by (1) assessing multicollinearity among the first-order constructs and (2) examining the path weights and correlations among the first-order constructs and the second-order construct.

The VIF generated in SPSS when regressing the formative measures of action-facilitating support on its dependent variable (i.e., self-efficacy) were both 1.131, well below the 3.3 threshold [32]. The VIF generated in SPSS when regressing the formative measures of nurturant support on its dependent variable (i.e., community identification) were 2.131, 2.175 and 2.307, well below the 3.3 threshold. As shown in Fig. 2, the weights of the formative measures for action-facilitating support and nurturant support are significant, which demonstrates the significant relative contribution of the formative measures. The bivariate correlations between the formative measures of action-facilitating support and the mean of the measures of action-facilitating support were 0.732 and 0.890, respectively, which are significant at a  $p$ -value of 0.05. The bivariate correlations between the formative measures of nurturant support and the mean of the measures of nurturant support were 0.890, 0.874 and 0.891, respectively, which are significant at a  $p$ -value of 0.05. The results demonstrate the significant absolute contribution of the formative measures.

### 3.3.2. Structural model

The structural model reflecting the assumed linear, causal relationships among the constructs was tested using data collected

**Table 5**  
Correlation among constructs and the square root of the AVE.

	IS	TS	ES	NS	ETS	SE	CI	WOS
IS	<b>0.84</b>							
TS	0.34	<b>0.91</b>						
ES	0.43	0.47	<b>0.91</b>					
NS	0.56	0.45	0.66	<b>0.82</b>				
ETS	0.48	0.46	0.68	0.69	<b>0.85</b>			
SE	0.46	0.47	0.50	0.59	0.60	<b>0.83</b>		
CI	0.17	0.44	0.49	0.47	0.45	0.52	<b>0.81</b>	
WOS	0.42	0.53	0.54	0.59	0.62	0.60	0.55	<b>0.89</b>

Note: Diagonal elements (in bold) are the square root of the average variance extracted.



**Table 6**  
Model fit indices for the structural model.

Model fit indices	Results	Recommended value
Chi-square statistic $\chi^2/df$	2.493	$\leq 3$
NNFI	0.921	$\geq 0.9$
CFI	0.937	$\geq 0.9$
RMSEA	0.084	$\leq 0.1$

from the validated measures. As shown in Table 6, the model fit indices for the structural model were within accepted thresholds.

Fig. 3 shows the results of the structural path analysis. Six out of the nine paths were significant, with a *p*-value of less than 0.05. Overall, the base model accounted for 53.0% of the variance in the willingness to offer help (Fig. 3). Thus, the fit of the overall model is fairly good.

**4. Discussion and implications**

*4.1. Summary of the results*

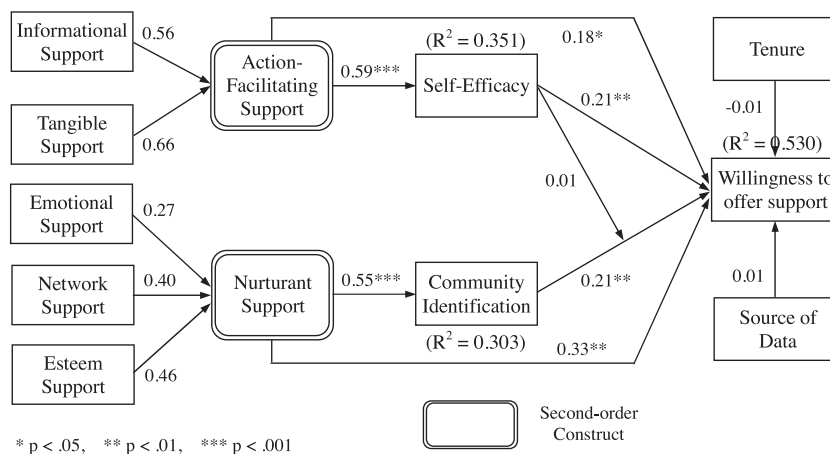
The purpose of this study was to thoroughly examine the complex relationships between social support, personal coping resources and the willingness to offer support in the context of online social support. The findings of this study provide strong support for our dual social support model, which posits that action-facilitating support and nurturant support may directly or indirectly determine individuals' willingness to offer support.

Of all of the findings, the most important is the nearly equal importance of the problem-focused mechanism and the emotion-focused mechanism in driving willingness to offer support. In the problem-focused mechanism, action-facilitating support has a strong effect on self-efficacy, which in turn is nearly equally important as community identification as a driver of willingness to offer support. As for the emotion-focused mechanism, nurturant support has a strong impact on community identification. Prior research indicates that self-efficacy is strongly related to coping behaviors ( $\beta = 0.32$ ), e.g., coping with HIV [57]. In this study, the direct effect of self-efficacy is not as powerful ( $\beta = 0.21$ ). One possible explanation is that the dependent variable concerns an individual's willingness to help others rather than that individual's ability to cope with his or her own stressful events. However, this study shows a spillover effect from self-efficacy in which an individual who feels capable of coping with his or her own stressful or challenging demands can be effective in engaging in prosocial behaviors to help others solve their problems. The concept of

“identity-based attachment to the group” in Ren et al.'s [74] study is similar to the “community identification” concept in this study. Ren et al. [74] found that identity-based attachment to the group did not have a significant effect on members' willingness to help other members or willingness to help the group in the context of a movie recommendation website. One possibility is that identity-based attachment to the group is more likely to foster a sense of oneness with the online support community, which leads members to be more willing to take the group's goals (help people) as their own and to sacrifice their own outcome for the sake of the group outcome.

Nurturant support and action-facilitating support have positive and significant effects on willingness to offer support, but their importance in directly shaping willingness to offer support are different. The results are inconsistent with Coursaris and Liu's [26] findings that informational support was the most frequently sought and offered in online HIV/AIDS self-help groups. Emotional support was provided at a moderate level. Esteem support and network support were rather infrequently exchanged, and tangible support was minimal. A possible explanation for this inconsistency is that the needs of people with stigmatizing diseases (e.g., HIV/AIDS) are different from those of people with other types of stress. Another explanation is that the frequency of social support exchanges is not equal to the importance of the exchanged support. The results are also inconsistent with Wang et al.'s [93] findings that emotional support is associated with increased group commitment, and informational support is negatively associated with group commitment. These authors speculate that information exchanged in unmoderated health support groups may lack accuracy, credibility and usefulness. For this reason, people may leave online health support groups because they perceive that the information they receive is not helpful. In this study, expectant mothers may have found the exchanged information and tangible support helpful; therefore, they were willing to contribute reciprocal support. The discussion above suggests that the effect of each social support dimension may not unfold in the same way for all online support groups.

The results do not confirm that high self-efficacy strengthens the positive effect of community identification on willingness to offer support. This finding implies that community identification by itself is perhaps sufficiently relevant to explain individuals' willingness to offer support, whatever their level of self-efficacy. The insignificant interaction effect also implies that community identification will not strengthen the positive effect of self-efficacy on willingness to offer support. In addition, the control variables (tenure and source of data) do not have a significant effect on willingness to offer support.



**Fig. 3.** SEM analysis of the research model.

Our results indicate that the formative weight of tangible support is higher than that of informational support, making them non-equally important sources of action-facilitating support. Similarly, emotional support, network support and esteem share different levels of importance in the formation of nurturant support. A possible explanation is that tangible support helps an individual to directly resolve the problem or change the stressful situation. In addition, tangible support and esteem support were less frequently offered in online support groups for expectant mothers and are thus more valuable to expectant mothers. Accordingly, tangible support was more sought after than informational support when forming action-facilitating support to enhance self-efficacy and the willingness to offer support. Similarly, esteem support was more sought after than emotional and network support when forming nurturant support to enhance community identification and the willingness to offer support. These findings suggest that the type of social support exchanged in online support groups must be understood in terms of the specific purposes or outcomes that members expect.

#### 4.2. Theoretical implications

Reciprocity has been considered to be a norm that facilitates the exchange of information or knowledge in virtual communities [e.g., 18; 20]. However, modeling reciprocity is limited as a direct determinant of knowledge sharing behavior or as the offering of help to others because it implies but does not explicitly examine the direct relationship between receiving favors and giving favors. By introducing a dual exchange perspective, we explicitly built the direct relationship between receiving support and the willingness to offer support. The findings indicate that receiving social support has a significant impact on the willingness to offer support, confirming the role of reciprocity in facilitating social support exchange. In addition, the construct of social support has been regarded solely as emotional support or treated as a unidimensional construct in some studies of virtual communities. However, the identification of social support with emotional support is problematic because it ignores both the multi-dimensional nature of social support and the fact that emotional support is one of the dimensions of social support. For example, Ridings and Gefen [77] indicated that the second most popular reason that people join virtual communities with health/wellness and professional/occupational topics is social support, which was defined as obtaining and giving emotional support. This study classified social support into two types, action-facilitating and nurturant, and operationalized them as second-order constructs, each with multiple dimensions. In this sense, this study contributes to the literature by theoretically highlighting the duality of social support and empirically demonstrating the nearly equal indirect effects of action-facilitating support and nurturant support in driving willingness to offer support.

The construct of social support has been treated in information systems (IS) research as the antecedent or consequence of relationship building [e.g., 54]. However, discussion of social support from the perspective of relationship building is limited because it ignores the important role of receiving social support in contributing to the development of individuals' coping resources and willingness to offer support. For example, Leimeister et al. [52] examined the antecedents of the formation of virtual relationships between cancer patients within virtual communities as well as its effect on social support. They recognized that social relationships can be readily established to help patients cope with their disease through social support. However, they did not empirically examine the consequences of social support. This study provides us with a better understanding of the direct and indirect relationships between receiving and giving social support.

Although the transactional model of stress and coping has been available for many years, the fact remains that much of the scholarly effort surrounding it has been limited to face-to-face social support. This study expands the horizon of stress and coping research to the context of online social support exchange. This study contributes to the literature by integrating the concept of dual social support with the stress and coping model to propose a dual mechanism model to explain the routes from social support to personal coping resources and willingness to offer support. The results showed that the relative importance of action-facilitating support and nurturant support in the direct mechanisms is different from that in the indirect mechanisms. The direct effect of nurturant support on willingness to offer support is stronger than that of action-facilitating support. These results suggest that in online support groups for expectant mothers, nurturant support is more likely than action-facilitating support to motivate individuals to reciprocate the favorable treatment they receive from others.

We also found that receiving support generates indirect effects on the willingness to offer support through different routes. Specifically, receiving action-facilitating support increases one's efficacy in coping with stress, whereas receiving nurturant support enhances individuals' identification with the online support community. More importantly, problem-focused and emotion-focused mechanisms share nearly equal indirect effects on an individual's willingness to offer support. This finding demonstrates that to better explain individuals' willingness to offer support, problem-focused and emotion-focused mechanisms should be simultaneously taken into account. A number of virtual community studies in the IS field have focused on a mixed mechanism or on only one of the two social support mechanisms as a predictor of behavioral outcomes [e.g., 54; 55]. This study suggests that a narrow focus on one of the two mechanisms or a mixed mechanism—as often done in past research—would be limited in studying the relative importance of the diverse routes to behavioral outcomes.

#### 4.3. Implications for practice

This study has two major implications for practitioners. First, a major implication of the dual model is that a clear understanding of the psychological mechanisms through which social support operates (or *how* it operates) is critical to the promotion of willingness to offer support. Our findings indicate that self-efficacy plays an equally important role in promoting individuals' willingness to offer support as the expression of their identification with the community. This finding suggests that most expectant mothers in our sample infer the extent of their capabilities to address pregnancy-related problems through various sources of self-efficacy information from interactions in the online support community. Informational support such as direct statements, advice and reassurance from supportive others regarding the individual's ability are among the possible sources. In addition, tangible support would also help expectant mothers build confidence in their ability to address pregnancy-related problems. Therefore, website owners should promote the offering of informational and tangible support. They should hold activities that encourage individuals to share their own experiences or stories of accomplishments in dealing with stressful situations. In addition, a webmaster may offer credits to those who offer tangible support (e.g., facility recommendations or clothes) to others.

Second, receiving emotional support has a relatively weak effect on the formation of nurturant support. From the perspective of a webmaster, it would be especially unfortunate to interpret the results as implying that emotional support is less important to

promoting the willingness to offer support. The appropriate interpretation is that when network support is taken into account, emotional support is less important in forming community identification. An analysis of social support exchanges in online HIV/AIDS self-help groups indicated that emotional support was ranked as the second most frequently exchanged type of support [26]. Therefore, we still encourage webmasters to provide incentives to encourage members in online support communities to offer emotional support to those expectant mothers because emotional support increases identification, which in turn leads to the willingness to offer support. An online support community with a significant number of active members offering support to those who need support is one key factor that attracts others to join the community. Some functions, such as the “like” function in Facebook or the “+” function in Google+, can be offered to allow members to easily provide emotional support.

#### 4.4. Limitations and future research directions

This study is not without limitations. First, cross-sectional data were used to examine our proposed model. As an outcome, only intention was captured. Some may argue that intention does not fully represent actual behavior. Therefore, future studies are encouraged to collect multiple-wave data to verify the relationship between support receiving and support offering behaviors. Second, the research context was expectant mothers. Expectant mothers are certain to also receive support from other channels such as friends, relatives, hospital nurses or face-to-face support groups. It is therefore reasonable to believe that online communities may not be the major source of support received by expectant mothers. This context also reflects on the moderate coefficients between support received and other variables and the variance of variables explained by support received. Therefore, future studies are encouraged to examine our model in different contexts, especially those contexts in which online social support serves as a critical source of support. Possible research contexts include online support groups for HIV/AIDS and rare diseases.

## 5. Conclusion

This study attempted to expand the horizon of social support research, which has been largely limited to health related and organizational behavior, by examining the direct and indirect effects of social support on willingness to offer support in the context of an online support community for expectant mothers. By integrating the concept of dual social support (i.e., action-facilitating and nurturant support) and the transactional model of stress and coping, we proposed that two mechanisms drive willingness to offer support. Our findings indicate that social support has both direct and indirect effects on willingness to offer support and that problem- and emotion-focused mechanisms simultaneously (yet differently) determine the willingness to offer support. We believe that the model proposed in this paper is not conceptually limited to dedicated online support communities for expectant mothers but should also be applicable to other online services such as social network sites. Certainly, more effort should be directed to further reveal the complex relationships among receiving social support, personal coping resources, and providing social support. We hope that the model proposed in this study can lay a useful foundation for future work in this important area.

### Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.im.2015.01.003>.

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