Vicarious Interactions in Online Support Communities: The Roles of Visual Anonymity and Social Identification

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Online information seekers often do not actively post or engage in interactions with others, inviting research on how passive users of online communities benefit from the information they see. Based on the social identity model of deindividuation effects model (SIDE) and social identity theory, we proposed and tested the idea that observers of a supportive interaction online could relate to the observed support seeker based on their shared gender and, in turn, become vicariously influenced by the support provider’s message to the support seeker. An experiment using a sample of young adults (N = 326) in the United States provided support to the proposition. Furthermore, the outcomes of the vicarious interaction were qualified by the genders of the observed interactants and enhanced by the lack of profile photos. The findings advance the understandings of vicarious interaction in online context and guide the design of online communities to promote mental well-being.

Lay Summary

Ample evidence shows that people benefit tremendously from participating in online health support communities, but less is understood about how people who do not actively participate in interactions benefit from these communities. We conducted an online experiment using a sample of young adults in the United States. The results showed that females, compared with males, are more likely to be persuaded to seek professional counseling for mental health issues from observing a supportive conversation online. The persuasive effect of reading supportive interactions was enhanced when female participants shared the same gender with the observed support seeker and when the observed interactants had no profile photos.

Keywords: Vicarious Interaction, Social Identification, The Social Identity Model Of Deindividuation Effects (SIDE), Visual Anonymity, Online Mental Health Community

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In contemporary society, online support communities have become a major avenue for people to seek and exchange information about health with similar others. Online support communities are a “type of virtual community with a health-related focus, which provide an online environment where individuals can connect and interact with other people who have had similar experiences to exchange information, social support, or advice” (Coulson & Smedley, 2015, p. 198). Half (51%) of young adults reported having tried to find people online with health concerns similar to their own (Rideout & Fox, 2018) and 26% of the Internet users reported reading or watching other’s experience about health issues online (Pew Research Center, 2013).

Despite the promising effect of participating in online support communities, previous research has not yet extensively addressed how individuals who never or rarely post may benefit from such communities. Passive use of social media, or the “monitoring the online life of other users without engaging in direct exchanges with them” (Verduyn et al., 2020, p. 3), was deemed detrimental to individuals’ psychological well-being for eliciting upward social comparison (Valkenburg et al., 2021). A recent meta-analysis, however, challenged the long-standing notion that only active use of social media leads to psychological well-being while passive use does not, pointing out that the effects of passive social media use on well-being may depend on the content and the sender of the message (Valkenburg et al., 2021). Nonetheless, it is unclear how passive users benefit from the information they read in social media without actively posting or engaging in interactions. Situated in the context of online support communities, the present research investigates a social identification-based mechanism through which passive users of these communities may vicariously engage in interactions they observe by identifying with the interactants and thereby benefit from the messages exchanged in the observed conversations.

Online support communities make a theoretically and empirically meaningful context for investigating vicarious online interactions because of the prevalence of lurkers in these communities (Mo & Coulson, 2013; van Uden-Kraan et al., 2008). Online environments permanently record user interactions and publicly display interpersonal conversations to a mass audience (Marwick & boyd, 2011), making them easily searchable and retrievable to site visitors who might have the same health inquiries or know someone who does. The implications of reading such masspersonal communication (O’Sullivan & Carr, 2018; Walther & Valkenburg, 2017) and the mechanisms through which passive users in these online communities relate to the conversationists, however, have not yet been fully investigated. The generally supportive nature of the messages exchanged in these communities (Wright et al., 2011) also make them a meaningful context in unpacking how passive use of social media may lead to positive psychological outcomes.

Based on the premises of social identity theory (Tajfel, 1974), we argue that passive users of online support communities may benefit from identifying with active users of these communities with whom they share the same social categories when observing them in supportive interactions with others. Specifically, we argue that observers of supportive interactions could vicariously interact with the support provider in the conversation by identifying with the support seeker. Through such a vicarious interaction, the observers could be influenced by the support provider’s message, which, in the context of this study, focuses on the benefits of seeking professional counseling for mental health issues.

Moreover, we examined how such vicarious interactions were affected by the visual anonymity of the interactants in the observed conversation. Operationalized as the presence of profile photos in the present study, visual anonymity is argued to affect the degree of identification based on the social identity model of deindividuation effects model (SIDE; Lea et al., 2001; Postmes et al., 1998, 2002; Reicher et al., 1995). Because vicarious interaction hinges upon the degree of identification between
observers and the interactants in observed interactions, it is important to understand how profile pictures—a common feature in many online communities—influence how a passive user relates to the interactants in vicarious interactions. Examining visual anonymity in vicarious interactions also provides an opportunity to test SIDE in observed, rather than direct, interactions, which most previous research already focused on (e.g., Lea et al., 2001; Lee, 2004, 2006, 2007). Our findings inform the understandings of vicarious online interaction and guide the design of online support communities to promote counseling seeking.

Observing Interactions in Online Support Communities

Online support communities, such as online fora and social media groups, are promising spaces for health care, especially for young adults (Naslund et al., 2016). These online communities are social media groups (e.g., peer-support groups on Facebook) or online fora/communities dedicated for wellbeing purposes (e.g., https://www.beyondblue.org.au/). In most cases, people in such communities are those who suffer from health issues or friends/family members of people with health issues. Supportive content in such communities are found to reduce the stigmatization of illness, facilitate mutual support, and promote help-seeking behaviors (Naslund et al., 2016; Shi & Dai, 2022). Moreover, previous research has shown that young adults’ active engagement in such online communities and communicating with peers reduce their anxiety and depression symptoms (Horgan et al., 2013).

Research has shown that quite a significant proportion of users in online support communities do not actively post (Mo & Coulson, 2013; van Uden-Kraan et al., 2008). In Japan, for instance, a survey of 253 members of four online breast cancer communities revealed that slightly more than half (51.4%) of users were lurkers (Setoyama et al., 2011). Adding to that, long-term field experiments in online breast cancer support communities showed that 54% of the participants had made no more than three posts to other users during the 5-month study (Shaw et al., 2006). In light of such trends, understanding the potential benefits of online support communities requires investigations into not only active members but also the silent lurkers.

Reading others’ conversations is one way through which individuals could passively engage in the interactions in an online support community. In online support communities where users share information about a common health concern and personal stories, it is not uncommon for users to reply to others’ comments and provide informational and emotional support (Wright et al., 2011). These conversations are searchable and retrievable to site visitors who might have the same health inquiries or know someone who does (Marwick & Boyd, 2011; O’Sullivan & Carr, 2018; Walther & Valkenburg, 2017). From reading these conversations, users could vicariously interact with the conversationists and be affected by the messages exchanged between them.

Vicarious Interaction via Social Identification

The notion that people can experience an interaction vicariously by observing an interaction has been reflected in different strands of literature. Early literature on parasocial interactions, for instance, described how audience members who watch talk shows from their home could vicariously interact with the host of the show by identifying with the audience in the studio who directly interacts with the talk show host (Horton & Wohl, 1956). Abundant empirical studies on vicarious intergroup contact also documented how reading stories of, observing interactions between (Wright et al., 1997), or merely imagining friendly interactions between an ingroup member and an outgroup member helped to reduce prejudice of the reader to the outgroup (Dovidio et al., 2011; Schiappa et al., 2005; Vezzali et al., 2012, 2015).
More recently, it has been argued that social identification enables vicarious interaction in the process of observing online interactions (Dai & Walther, 2018). Social identity theory contends that people tend to conceptualize themselves either as unique individuals or as members of certain social groups (Tajfel, 1974). When a salient group category emerges as the basis for identification, individuals categorize others as in-group or out-group members relative to themselves based on shared membership in social groups (Turner et al., 1987). As a result, individuals experience more positive affects toward in-group members, exhibit behaviors that favor them, and even feel cognitively interchangeable with them (Turner et al., 1987). Through such cognitive interchangeability, observers can experience an interaction vicariously by putting themselves in the shoes of an interactant in the observed interaction, who essentially functions as a surrogate to the observers (Dai & Walther, 2018; Dai et al., 2019).

Empirical evidence has provided initial support for the notion that Internet users can vicariously participate in interactions by identifying with interactants based on a common social category. In past studies, participants were found to be able to vicariously develop more parasocial intimacy toward a public figure by identifying with the individual who was seen in a direct friendly interaction with the public figure and who was deemed an in-group member by the participants based on either one (Dai & Walther, 2018) or multiple (Dai et al., 2019) shared social categories, more so than participants who did not share any social category in common with the observed individual. Although these studies concerned affective responses to media figures as the ultimate concepts of interest, they nonetheless supported the notion that, in the process of observing a conversation, group-based cognitive processes enable the observers to relate to the observed interactants based on common group membership, which ultimately shaped how the observers react to the messages exchanged in the conversation. Such a social identification-based vicarious interaction process may be applied to understand how observers of conversations in online support communities relate to the observed interactants and are influenced by the messages exchanged in the conversation.

While providing a theoretically meaningful framework to understand online vicarious interactions, previous research has not explicitly taken into consideration the contextual and technological factors that may shape the process of vicarious interaction. The following sessions will review the social categories that might enable social identification-based vicarious interaction in the context of observing an interaction in online support communities as well as how visual anonymity of the observed interactants may shape the vicarious interaction process based on SIDE.

Gender as a Salient Social Category in Interpreting Supportive Conversations Online

According to social identity theory, the salient social category that dictates how individuals categorize others as ingroup or outgroup members varies in different contexts (Turner et al., 1987). In the context of observing a supportive interaction, gender may function as one such salient social category that determines whether an interactant in an observed interaction is categorized as an ingroup or an outgroup member by the observer, since research suggests that gender affects the seeking and provision of social support as well as the interpretation of social support messages (Taylor, 2011).

Research has found that, compared with men, women more frequently report experiencing more psychological stress (Kawachi & Berkman, 2001). Women were also found to be better in identifying mental health issues, be more aware of mental health services, and are less hesitant to seek help (Haavik et al., 2019; Nam et al., 2010). Women who seek support were also found to experience greater benefits from such support than men do (Drummond et al., 2017; Thompson & Cavallaro, 2007). More notably, women are perceived as being more effective support givers due to their supportive, nurturing, affectionate gender stereotype (Flaherty & Richman, 1989; Spottswood et al., 2013).
Given that people of different genders are perceived to be more or less effective at giving and receiving social support, it is reasonable to expect that gender plays an important role in determining how an observer identifies with the interactants in the observed interaction and shaping how the observers react to the support messages in the conversation.

Even in primarily text-based online environments where users do not have prior history of interactions with each other, individuals exhibit linguistic behaviors that are consistent with their gender roles in offline settings (Herring & Stoerger, 2014), which enables observers of conversations to identify with them based on gender. Internet users readily attribute gender to other users based on cues available in online environments (Spottswood et al., 2013), including a message’s content (Fink et al., 2012) and linguistic style (Lee, 2007). In a past study, observers of supportive interactions attributed gender to the source of a supportive message based on the source’s username and the level of supportiveness reflected in the message (Spottswood et al., 2013).

Given the salience of gender in the interpretation of supportive messages, especially in the online environment, observers of interactions between a support seeker and a support provider in an online mental health community may relate to the interactants on the basis of gender and thereby experience the interaction vicariously. When observers read a conversation in an online mental health community where a support provider tries to persuade a support seeker into seeking counseling for mental health issues, we predict that,

H1: Observers would identify more with gender ingroup support seekers than gender out-group support seekers.

Visual Anonymity and Vicarious Online Interaction

In most cases, passive users of online support communities do not have an extensive history of interactions with people who actively post in the community. Without prior contact to provide observers with the social cues needed to form individuated impressions of others in online support communities, observers can more easily develop depersonalized, category-based perceptions of other group members (Postmes et al., 1998, 2002). Indeed, the anonymity afforded in many online support communities arguably facilitates social identification between users without any prior interpersonal contact. Unlike in face-to-face communication, Internet users in many online environments are represented merely by pseudonyms or avatars indicating personality traits or hobbies that often do not accurately represent their offline identities (Walther et al., 2010).

SIDE specifies conditions that facilitate depersonalization and social identification in online environments, with particular emphasis on visual anonymity (Lea et al., 2001; Postmes et al., 1998, 2002; Reicher et al., 1995). SIDE posits that the lack of individuating visual representations contributes to depersonalization, that is, a shift of focus from personal identity to social self-identity, and sharpens focus on their membership in social categories that the context makes salient, not characteristics that distinguish themselves from others (Lee, 2006). When depersonalization occurs in group settings where a group category is made salient, it makes it easier for people to identify with others based on shared membership to the salient social category (Lee, 2006; Walther et al., 2010). In the case of observing supportive interactions online, visual anonymity of support seekers in the observed interactions could prompt observers of the interaction to see them as members of social groups rather than unique individuals. When this is coupled with a salient social category (e.g., gender), it facilitates the observers’ identification with the support seekers based on the salient social category.
Several studies applying SIDE have shown that a lack of individuating representations in online environments facilitates depersonalization and group identification (Lea et al., 2001; Lee, 2004; Sassenberg & Postmes, 2002). Lee (2004), for example, discovered that in a group social dilemma decision task where a group identity was made salient, sharing the same avatar with other group members (i.e., lack of individuating representation) led to greater depersonalization, greater identification with the group, and, in turn, greater conformity to the group, compared with when their avatars were different. Sassenberg and Postmes (2002) discovered that the anonymity of group members prompted participants to perceive greater similarity among the members. These findings indicate that when group-based identity is rendered salient, visual anonymity in virtual settings increases depersonalization and intensifies individuals’ identification with others esteemed as in–group members.

Because vicarious interaction hinges upon the degree of identification between observers and interactants who act as surrogates for the observers (Dai & Walther, 2018; Dai et al., 2019) and that visual anonymity fosters depersonalization and identification, we predict that the lack of any visual representation of interactants in observed conversations should facilitate the vicarious interaction of observers.

H2: Observers identify more with visually anonymous support seekers than visually non-anonymous support seekers.

H3: Observers will develop a more positive attitude toward seeking counseling for mental health issues when the support seeker is their gender ingroup rather than a gender outgroup.

H4: The effect of identification with the support seeker on attitude is more pronounced when the support seeker is visually anonymous rather than non-anonymous.

H5: Observers’ identification with support seekers mediates the effect of visual anonymity on observers’ attitude toward seeking counseling, such that observers identify more with an ingroup support seeker and develop a more positive attitude toward seeking counseling when the support seeker is visually anonymous rather than non-anonymous.

Method

Design
We conducted an online experiment with a 2 (Gender of support seeker: male vs. female) × 2 (Gender of support provider: male vs. female) × 2 (Presence of photo: yes vs. no) between-subject factorial design. An equal number of male and female participants were recruited for the study through a Qualtrics online panel and they were randomly distributed into the experimental conditions.

Participants accessed the experiment via a computer and answered some preliminary questions about their mental health status. They were also asked “Which of the following would you say best describes your gender?” and were given the choices of “men” and “women.” Next, participants were randomly assigned to view one of eight versions of a screenshot of an alleged conversation between two people in an online mental health support community. Afterward, they answered questions about their perceptions of the interactants involved and their attitude toward seeking counseling when experiencing mental health issue. The institutional research ethics committee approved the questionnaire and the procedure.
Participants
Using a Qualtrics online panel, we recruited young U.S. adults 18- to 29-years old. We chose participants in this age range because they were found to have the highest risk of getting mental disorders (Arnett et al., 2014) and they were consistently found with a persistent negative attitude toward seeking help for mental health issues (Mackenzie et al., 2014). We measured participants’ mental health with indicators that gauge their severity of depression, anxiety, and stress symptoms, as these three issues are the most common mental health issues reported by this age group (Varma et al., 2021). To avoid potential harm to people with mental illness, we recruited only participants who have not been clinically diagnosed with mental disorders. Our participants were neither currently participating in counseling nor had made any appointment with a health professional in the past 12 months to discuss mental health issues. At the end of the survey, participants who completed the whole survey \((N = 361)\) were asked whether we could use their data, and ones who answered “No” and indicated that they were not cognizant enough when completing the survey \((n = 35)\) were excluded from the final analysis.

Ultimately, the sample consisted of 326 individuals with a mean age of 22.82 years old \((SD = 3.52)\), with a roughly equal share of each gender (50.6% female). Most participants were Caucasian (54.9%), followed by African American (15.3%), Asian (12.3%), Hispanic (11.7%), Native American (1.8%), Pacific Islander (0.6%), and other (3.4%). By level of education, 30.4% of the sample had not attended college, 30.7% of them had completed “some college,” 8.3% of them earned a 2-year college degree, 23.9% of them earned a 4-year college-degree, 5.5% of them earned a master’s degree, and 0.12% of them earned a doctoral or other professional degree (e.g., JD or MD).

Stimuli
In each condition, we presented participants with a screenshot from a fictitious online mental health support community that showcased a conversation between two people. The interface of the stimuli was modeled after a popular online mental health support community. In the conversation, a support seeker has posted a message about having recently suffered from mental and physical symptoms of mental disorders and expressed concerns about seeking professional mental help. The support provider replies with comforting, supportive messages designed to be high person-centered (Burleson, 2008). The conversation ends with the support seeker thanking the support provider (Figures 1 and 2).

In the context of the conversation, the genders of the support seeker and support provider were indicated by gender-specific usernames and gender-specific personal pronouns in their messages. The usernames were selected from a pretest, as described in the next subsection. In the conditions involving visual anonymity, neither the support seeker nor support provider had profile photos showing their faces, whereas both had a profile photo in the conditions involving visual non-anonymity.

Pretest
To identify appropriate usernames and profile photos for the experimental stimuli, we conducted a pretest with 173 young U.S. adults (52.6% women) 18- to 29-years old \((M = 23.48, SD = 3.67)\) who we recruited from a Qualtrics online panel. By ethnicity, most of the participants were Caucasian (56.6%), followed by Asian (20.2%), Hispanic (12.1%), African American (8.7%), Native American (0.6%), Pacific Islander (0.6%), and other (1.2%). By level of education, 25.4% had completed high
school or less, whereas 74.6% had completed at least “some college” education. The pretest’s participants did not overlap with the participants in the main study.

**Usernames**

Referring to an online mental health support community, we selected 21 usernames that intuitively appeared to be gender-specific. In the pretest, participants were asked to report whether they believed the person behind the usernames, displayed in random order, were “male,” “female,” or “could be either male or female.” The names with the least gender ambiguity and highest consensus on the intended gender perception were selected: “Cookboy” and “Pedro758” for the men, which 89% and 96% of participants perceived as males, respectively, and “Sally735” and “IreneM” for the women, which 99.4% and 97.7% of participants perceived as females, also respectively. Among the selected two pairs of male and female usernames, “Sally735” was always used to represent a female support seeker and “IreneM” was always used for a female support provider in the relevant conditions.
“Cookboy” was used to represent a male support provider in relevant conditions and “Pedro758” was used for a male support seeker.

Profile Photos
Along with usernames, the pretest also guided our selection of appropriate photos to represent men and women who were comparable in overall attractiveness, in order to minimize potential confounding factors induced by differential attractiveness between male and female support seekers. To that end, we asked participants to rate 14 profile photos of young adults—seven of men, seven of women—displayed to them at random. For each photo, participants indicated how much they agreed (1 = strongly disagree, 7 = strongly agree) that their overall impression about the particular person in the photo was positive. Based on the results of equivalence tests (Weber & Popova, 2012), we selected two photos of men and two photos of women, such that different male or female photos could be used to represent the support seeker and the support provider in conditions where their genders were
the same. Results of pair-wise comparisons in the equivalence test (Table 1) indicated the differences between the selected photos were too small to constitute even a small to medium effect size.

**Measures**

**Mental Health Status**

We assessed participants’ mental health status with the short version of the Depression Anxiety Stress Scale (DASS-21, Lovibond & Lovibond, 1995), a validated psychological screening instrument with 21 items for assessing symptoms of anxiety (7 items), depression (7 items), and stress (7 items). Examples of items are “I was worried about situations in which I might panic and make a fool of myself,” “I was unable to become enthusiastic about anything,” and “I felt that I was using a lot of nervous energy.” For each item, a point value was assigned based on the participant’s response: “Does not apply to me at all” (0 point), “Applies to me to some degree” (2 points), “Applies to me to a considerable degree” (4 points), and “Applies to me very much” (6 points).

Following the DASS-21 instructions, each participant’s scores for depression, anxiety, and stress were calculated, respectively. Based on cutoff points provided in the guidelines for the DASS-21 (i.e., 13 for depression, 9 for anxiety, and 18 for stress), scores for the three mental issues were recoded into binary variables representing whether the participant could be regarded as experiencing the symptoms of the particular condition (0 = no, 1 = yes). Last, to represent their overall mental well-being, a new variable was created by totaling the participant’s three binary variables, creating a value that represents the degree of mental health symptoms currently experienced by the participant.

**Attitude Toward Seeking Counseling**

Participants rated their attitude toward seeking counseling when they next experience mental health issues on three 7-point semantic-differential items: (1) “Extremely unimportant” to “Extremely important,” (2) “Worthless” to “Valuable,” and (3) “Undesirable” to “Desirable” (Shi & Kim, 2020). The three items were averaged to create a measurement of attitude ($\alpha = .85, M = 5.10, SD = 1.46$).

**Identification**

Participants indicated how much they identified with the support seeker in the conversation that they read. Identification was measured with four items from Cameron’s (2004) scale of social identification.

**Table 1. Means, Standard Deviations, and Equivalence Test Statistics of Photos Selected for the Main Study**

| Participant’s gender | Descriptive statistics M (SD) | Comparison with | Equivalence test statistics |
|----------------------|-------------------------------|----------------|---------------------------|
| Female 1             | 4.23 (1.44)                   | Female 2       | $t(172) = - .56, p < .001$ |
|                      |                               | Male 1         | $t(172) = - .27, p < .001$ |
|                      |                               | Male 2         | $t(172) = .21, p < .001$   |
| Female 2             | 4.28 (1.39)                   | Male 1         | $t(172) = .26, p < .001$   |
|                      |                               | Male 2         | $t(172) = .66, p < .001$   |
| Male 1               | 4.25 (1.24)                   | Male 2         | $t(172) = .50, p < .001$   |
| Male 2               | 4.20 (1.44)                   |                |                           |

*Note. All p-values are based on a small to medium effect size of $\Delta = .30$.*
that capture participants’ perceptions of their interchangeability with the surrogate interactant (i.e., the support seeker) in the observed interaction. The items included: "I have a lot in common with the person," "I feel strong ties to the person," "I find it difficult to form a bond with the person," and "I don’t feel a sense of being ‘connected’ with the person" (z = .66, M = 4.12, SD = 1.23).

Results

Manipulation Checks
Participants answered two recall questions about the genders of the support seeker and support giver in the conversation by choosing: "male," "female," or "I am not sure." Two chi-square tests revealed that the experimental manipulation was significantly associated with participants’ recall of the genders of the support seeker, \( \chi^2(2, N = 326) = 166.36, p < .001 \), and support provider, \( \chi^2(2, N = 326) = 156.01, p < .001 \). The manipulations were thus considered to have succeeded.

Covariate and Data Analysis Approach
Because the dependent variables of interest concerned participants’ identification with the support seeker and their attitude toward seeking counseling, we expected their mental health status to heavily influence those variables. Thus, before testing the hypotheses, an analysis of variance (ANOVA) was performed to examine whether the random assignment of participants to conditions equated all conditions on participants’ mental health status. The results showed that none of the experimental factors significantly differed relative to participants’ mental health status, nor did any interaction effect occur among those factors on participants’ mental health conditions (all \( p > .29 \)). However, the analysis revealed a significant effect of participants’ gender on their mental health status, \( F(1, 310) = 13.52, p < .001 \). Female participants (\( M = 1.41, SD = 1.28 \)) reported experiencing more mental health issues than male participants (\( M = 0.91, SD = 1.13, p < .001 \)). To statistically control for the confounding effect of mental health status and isolate the effect of participants’ gender as the focus of the hypotheses, all subsequent analyses included participants’ mental health status as a covariate.

H1 and H2 both concerning participants’ identification with the support seeker as the dependent variable. They were tested with an analysis of covariance (ANCOVA). In the analysis, the experimental manipulations and the participants’ gender acted as factors, while participants’ identification with the support seeker acted as the dependent variable. H3 and H4 were tested with another ANCOVA with the same predictors but with participants’ attitude toward seeking professional counseling as the dependent variable. Among the results, the covariate—that is, participants’ mental health status—significantly influenced how much participants identified with the support seeker, \( F(1, 310) = 14.54, p < .001, \eta^2 = .03 \), but not their attitude toward seeking counseling, \( F(1, 310) = 0.05, p = .83, \eta^2 = .00 \). Tables 2 and 3 detail the descriptive statistics for all of the experimental conditions.

Since most of the profile photos selected for the study appeared to be Caucasian, before running ANCOVA models with the relevant experimental factors, we ran an extended model by adding participants’ ethnicity, in order to rule out a confounding effect caused by the similarity between participants’ ethnicity and that of the support seeker. The results revealed no significant effect of participants’ ethnicity on their identification with the support seeker, \( F(1, 303) = 0.31, p = .93, \eta^2 = .00 \), or on their attitude toward seeking counseling, \( F(1, 303) = 0.44, p = .85, \eta^2 = .00 \). The analysis hence proceeded by including the factors that are reflected in the hypotheses only as well as participants’ mental health status.
Hypotheses Testing

H1 posited that, when reading conversations between support seekers and support providers, observers identify more with support seekers in their gender in-group than ones in their gender out-group. The ANCOVA did not reveal any interaction effect between participants’ gender and the support seeker’s gender. It did, however, revealed a main effect of participants’ gender, $F(1, 309) = 6.02, p = .02, \eta^2 = .01$. Female participants ($M = 4.32, SD = 1.07$) identified more with the support seeker than male participants ($M = 3.92, SD = 1.15$), regardless of the support seeker’s gender. The data were not consistent with H1.

H2 posited that, while reading conversations between support seekers and support providers, people identify more with support seekers who are visually anonymous than ones who are not. The analysis did not reveal a significant main effect of photo, $F(1, 309) = 3.71, p = .055, \eta^2 = .01$.

Table 2. Means and Standard Deviations of Participants’ Identification with the Support Seeker in All Experimental Conditions

| Participant’s gender | Female support provider | Male support provider |
|----------------------|-------------------------|-----------------------|
|                      | Female support seeker   | Male support seeker   |
|                      | With photo M (SD)       | Without photo M (SD)  |
| Female               | 4.24 (1.11) 4.61 (1.10) | 4.52 (1.07) 4.27 (1.03) |
| Male                 | 3.78 (1.39) 4.00 (0.98) | 3.78 (1.27) 3.82 (1.15) |

Table 3. Means and Standard Deviations of Participants’ Attitude toward Seeking Counseling in All Experimental Conditions

| Participant’s gender | Female support provider | Male support provider |
|----------------------|-------------------------|-----------------------|
|                      | Female support seeker   | Male support seeker   |
|                      | With photo M (SD)       | Without photo M (SD)  |
| Female               | 5.03 (1.26) 4.91 (1.66) | 4.97 (1.44) 5.64 (1.23) |
| Male                 | 5.08 (1.70) 5.10 (1.10) | 4.81 (1.39) 4.63 (1.38) |

|                      | With photo M (SD)       | Without photo M (SD)  |
|                      | 5.00 (1.43) 6.00 (1.22) | 5.83 (0.99) 5.10 (1.48) |
|                      | 4.90 (1.46) 4.95 (1.94) | 4.80 (1.61) 4.87 (1.54) |
Participants’ identification with the support seekers who had no photo ($M = 4.24$, $SD = 1.07$) was not significantly different from that with the support seekers who had profile photo ($M = 4.01$, $SD = 1.18$, $p = .055$), although the pair-wise differences fell just short of the conventional significance level. The data were not consistent with H2.

H3 posited that observers are more likely influenced by the messages of support providers when support seekers were a gender ingroup rather than a gender outgroup. H4 predicted that the effect of gender group category on attitude would be stronger when the support seekers do not have photos than when they do. Inconsistent with H3, the analysis did not reveal any two-way interaction effect between the gender of the support seeker and participants on attitude, $F(1, 309) = 1.37$, $p = .24$, $\eta^2 = .002$. For H4, although the analysis did not reveal any three-way interaction among participants’ gender, the support seeker’s gender, and photo, $F(1, 309) = 3.23$, $p = .07$, $\eta^2 = .005$, a four-way interaction emerged from the analysis, $F(1, 309) = 4.52$, $p = .03$, $\eta^2 = .006$. Because the four-way interaction might be a higher-order interaction that subsumes the predicted three-way interaction in H4, we further decomposed the interaction with simple effect analysis with Bonferroni correction. The results suggested that the predicted three-way interaction was further qualified by support provider’s gender. Specifically, when the provider was a male and when there was no photo, female participants were more persuaded by the support provider when the support seeker was also a female ($M = 6.00$, $SD = 1.22$) instead of a male ($M = 5.10$, $SD = 1.48$, $p = .048$). As such, the prediction in H4 that a gender ingroup seeker enhances the vicarious persuasion better than a gender outgroup seeker was only found on female participants who observed a photo-less male providing help to a support seeker (Figure 3). Furthermore, when female participants saw a male (i.e., a member of their gender out-group) providing advice to a female support seeker (i.e., a member of their gender in-group), they formed a more positive attitude toward seeking counseling when the female support seeker did not have a photo ($M = 6.00$, $SD = 1.22$) than when she had a photo ($M = 5.00$, $SD = 1.43$, $p = .02$; Figure 4). For male participants, when observing a female supporter giving support to a male seeker, no significant difference arose in their attitudes toward seeking counseling relative to whether the seeker had a photo ($M = 4.81$, $SD = 1.39$) or not ($M = 4.63$, $SD = 1.38$, $p = .69$). These results are consistent with the prediction of H4 with regard to photo, albeit only for female participants who observed a male providing help to another female. In sum, H4 received partial support from the data.

Last, H5 posited the mediation effect of identification—that the absence of a support seeker’s photo increases the persuasive outcome of the support provider’s message via the participant’s identification with the support seeker. The hypothesis was tested with Hayes’ (2013) PROCESS Macro (Model 4) with 5000 bootstrapped samples. Given the findings of H4, the analysis concerned only female participants and involved only conditions where a male support provider gave advice to a female support seeker ($n = 45$). The results revealed a significant effect of photo on the participant’s identification with the support seeker, $b = -.99$, $SE = .32$, $t = -3.12$, $p = .003$ (Figure 5). When photo and identification both acted as predictors for attitude toward seeking counseling, identification significantly predicted attitude, $b = .87$, $SE = .21$, $t = 4.13$, $p = .002$, while the effect of photo became non-significant, $b = .75$, $SE = .48$, $t = 1.56$, $p = .13$. The mediation index revealed a significant indirect effect of photo on attitude toward seeking counseling via identification, $b = -.86$, bootstrapped $SE = .32$, bootstrapped CI $[-1.57, -0.29]$, a non-significant direct effect of photo on attitude, $b = .75$, bootstrapped $SE = .48$, bootstrapped CI $[-0.22, 1.71]$, and a non-significant total effect of photo on attitude, $b = -.11$, bootstrapped $SE = .51$, bootstrapped CI $[-1.13, 0.91]$. These results suggest a full mediation of the effect of photo on attitude through identification among female participants who observed a male support provider giving advice to a female support seeker. Participants’ mental health status, acting as the covariate, did not significantly predict participants’ identification with the support seeker.
Figure 3. The Effect of Support Seeker’s Gender on Female Participants’ Attitude toward Seeking Counseling when Observing a Supportive Interaction between Two Photo-less Interactants

Notes. A significant effect of support seeker’s gender was only discovered when the support provider was a male. Participants’ mental health condition acted as a covariate in the analysis, which was kept at the mean value of 1.41.

Figure 4. The Effect of Profile Photo on Female Participants’ Attitude toward Seeking Counseling When Observing Social Support from a Male Support Provider

Notes. A significant effect for profile photo was only discovered when the support seeker was a female. Participants’ mental health condition acted as a covariate in the analysis, which was kept at the mean value of 1.41.
seeker, $b = .16, SE = .14, p = .26$. Nor did it influence their attitude toward seeking counseling, $b = -.15, SE = .19, p = .44$.

**Discussion**

With a web-based experiment, we investigated how passive users of online support communities vicariously interact with individuals in an observed interaction by identifying with a surrogate interactant on the basis of gender. We also investigated whether visual anonymity of the interactants in the observed interaction enhances identification between the observers and the surrogate interactant and thereby facilitates the vicarious interaction.

**Theoretical Implications**

At a theoretical level, the findings from the present study replicated and extended the prior research on vicarious online interaction. Findings that support a social identification-based mechanism of vicarious interaction emerged from the data, but only on female participants who observed an interaction where the support provider was a male. When a female observer saw a female support seeker receiving support from a male, it led to greater identification between the observer and the seeker when the support seeker was also a female rather than a male. Sharing the same gender with the support seeker led female participants to be more convinced by the support provider’s message to the support seeker in the observed interaction. These results are consistent with the prior research on vicarious interaction, which discovered that social identification between an observer and a surrogate interactant enabled the observer to vicariously interact with the other interactant in the observed interaction (Dai & Walther, 2018; Dai et al., 2019). It is worth noting that in the prior research on vicarious interactions, the outcome variables were related to impressions (e.g., parasocial intimacy toward public figures in Dai & Walther, 2018 and Dai et al., 2019). The present research demonstrated that the persuasive effects could also be experienced vicariously by observing an ingroup member interacting with the persuader.
In addition to extending the understanding of vicarious online interaction to the domain of persuasion, the findings of the present study also advanced the theoretical understanding of the mechanism of vicarious online interaction by revealing the importance of visual anonymity.

Both male and female participants identified more with the support seeker in an observed interaction when the seeker is visually anonymous rather than identifiable although the pair-wise differences fell just short of the conventional significance level. These results were consistent with SIDE (Postmes et al., 2001) and the prior research that demonstrated the positive effect of visual anonymity on depersonlization, greater perceived ingroup similarity, and ingroup identification (e.g., Lea et al., 2001; Lee, 2004; Rössner and Krämer, 2016; Sassenberg & Postmes, 2002). Extending the previous literature on SIDE, which featured mostly lab experiments where salient group identity emerged from actual interactions among participants, the present study applied and tested SIDE in the context of vicarious interaction where observers are not overtly involved in the interaction. The results demonstrate that even without direct contact, visual anonymity was still shown to facilitate social identification based on context-dependent group category, and, in turn, vicarious interaction with the observed interactants.

Meanwhile, the results revealed potential boundary conditions for vicarious online interactions that are either general or context-specific. First, the fact that the presence of profile photos dampened participants’ vicarious interaction with the support provider suggests that the lack of individuating visual information may be a boundary condition to social identification-based vicarious interaction. The highly individuating nature of photos broke the social category-based identification between observers and the support seeker in the interaction and thereby obstructed the observers’ vicarious interaction with the support provider. Given that prior research on vicarious interaction employed visual representations that enhanced a potential surrogate’s social identity rather than individual identity (e.g., profile photo showing one’s political affiliation in Dai et al., 2019), results from the current study suggest that visually identified (and therefore individuated) interactant does not seem to function well as a surrogate for the observers.

Second, the gender of the support seeker was found to only make a difference to female participants when the support provider was a male (i.e., an outgroup to the observers). These results suggest that another boundary condition to social identification-based vicarious interaction might be the presence of both ingroup and outgroup members in the observed interaction. This is consistent with self-categorization theory (Turner et al., 1987), in that only when observing two individuals who belong to different social categories, will a salient group identity emerge as the basis for social identification, and, in turn, social identification-based vicarious interaction with the observed interactants. In fact, prior research on vicarious interaction has observed similar results. Dai et al. (2019) discovered that sharing the same social categories with an individual who is seen interacting with a politician facilitated observers’ vicarious interaction with the politician, but only when the politician was a political outgroup to the other interactant in the study.

Third, the limited effect of vicarious interaction on male participants might suggest a context-specific boundary condition that is unique to the topic of the observed interaction—seeking counseling for mental health issues. A previous meta-analysis has revealed that gender has a small to medium effect size on young people’s attitude toward professional mental help seeking: Female young undergraduate and graduate students hold significant more favorable attitude toward seeking professional mental help compared with their male counterparts (Nam et al., 2010). For young males, conformity to traditional masculine norms has been found as a prominent barrier for them to seek professional help for mental health issues and also negatively impact their attitude toward this behavior (Seidler et al., 2016; Yousaf et al., 2015). It is possible that the limited persuasive effect of the support
provider’s message in the observed interaction on male participants was caused by a lack of initial favorable attitude toward seeking professional counseling in the first place. In other words, it became a ceiling effect that could not be compensated by the gender similarity between male participants and the support seeker. Consistent with this notion, the analysis from H1 in our study indeed showed that female participants identified more with the support seeker than male participants, even after controlling for the effect of mental health status.

It should be noted that while sharing the same gender with the support seeker enhanced observers’ vicarious interaction with the support provider, the results from the study do not necessarily suggest that observers will not benefit from the support messages when they do not share any common social categories with the support seeker. For example, it is reasonable to expect that information seekers in online communities should already readily put themselves in the shoes of support seekers based on shared interest in health concerns. Moreover, even if identification between the observers and the support seekers does not occur, the support provider’s messages are still expected to directly impact the observers’ attitude, given that such findings have been discovered in previous research on vicarious online interaction (e.g., Dai & Walther, 2018).

Practical Implications
In addition to the theoretical implications, our findings can also guide the design of online support communities. For one, the findings suggest that not adopting visual representations in online support communities can be beneficial, because it fosters group-based identification between observers and interactants and enhance the effects of persuasive messages in the conversations. For another, online support communities should consider adopting a triage system that prioritizes similarly gendered support seekers to boost the effect of supportive messages in observed interactions. Although the present study only tested gender as a salient category for identification, age and occupation could theoretically emerge as other potential meaningful categories to facilitate online vicarious interaction based on the context.

Limitations and Future Research
There are several limitations to the current research that should be taken into consideration when interpreting the results of the present study and when designing future research. First, the measurement of participants’ identification with the support seeker gauged their impressions of the support seeker as a person, rather than as a member to a social group (i.e., male/female support seekers in an online community). This measure, therefore, does not provide the most robust evidence for the social identification-mechanism of vicarious interaction proposed in this research. Future research should consider measuring both the observers’ interpersonal identification with the surrogate interactant and identification with the social groups to which the surrogates belong so as to directly compare their relative strength as the mechanism for online vicarious interactions. Second, we used profile photos for visual representations in the stimuli due to their highly individuating nature. Future research should replicate our results with less individuating representations of support seekers and support providers, such as cartoon figures, given that some may not prefer to share their actual photos in online communities. Relatedly, although measures were taken to maximize the equivalence of participants’ overall impressions of the photos across the conditions, our design still does not rule out the idiosyncratic confounding effects of the photos selected for this study. This calls for future research with other photos. Third, our study explored the persuasive outcomes on passive users from observing interactions in online support communities. Aside from being passive audience members of online interactions,
they may join the conversations subsequent to observing them. It would be worthwhile for future research to explore how observing interactions further affects observers’ subsequent behaviors, especially joining the conversation. Fourth, it should be noted that although the statistical evidence was in line with our predictions, the effect sizes were very small, presumably due to the fact that participants were only exposed to a single conversation in the study. Future research should explore the research question with field experiments in immersive environments where participants are exposed to multiple conversations over an extended period of time. Moreover, the gender identity we manipulated in the profile photos and user names are limited to “men” and “women.” It should be noted that the definition of gender is more complex than this binary categorization. Future research should investigate how identification occurs for individuals who hold a non-binary perception of gender and how that influences their vicarious online interaction experience. Lastly, it is worthwhile for future research to measure and control for participants’ prior experience with mental health counseling to see how the experimental factors influence attitude beyond one’s previous experience.

Conclusion

The study examined how passive users of online support communities vicariously engage in interactions they observe in the community by identifying with the interactants based on shared social category. The results provide theoretical support to SIDE and illuminate current understandings of passive use of online support communities. They also provide empirical guidance to the design of online mental health communities, regarding how the technological affordances of an online support community could be shaped to enhance passive users’ attitude toward seeking counseling for mental health issues.

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Conflict of Interest

The authors do not have conflict of interest to disclose.

Data Availability

The data underlying this article will be shared on reasonable request to the corresponding author.

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