




Perceived Costs versus Actual Benefits of Demographic Self-Disclosure in Online Support Groups

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Millions of U.S. adults join online support groups to attain health goals, but the social ties they form are often too weak to provide the support they need. What impedes the strengthening of ties in such groups? We explore the role of demographic differences in causing the impediment and demographic self-disclosure in removing it. Using a field study of online quit-smoking groups complemented by three laboratory experiments, we find that members tend to hide demographic differences, concerned about poor social integration that will weaken their ties. However, the self-disclosures of demographic differences that naturally occur during group member discussions actually strengthen their ties, which in turn facilitates attainment of members' health goals. In other words, social ties in online groups are weak not because members are demographically different, but because they are reluctant to self-disclose their differences. If they do self-disclose, this breeds interpersonal connection, trumping any demographic differences among them. Data from both laboratory and field about two types of demographic difference—dyad-level dissimilarity and group-level minority status—provide convergent support for our findings.

Keywords Communication; Dyadic; Family decision making; Field experiments; Group; Health psychology; Public policy issues; Social marketing; Social networks and social media; Transformative consumer research

Online support groups bring together people who pursue similar goals and seek social support in attaining these goals (Bradford et al., 2017; Centola & van de Rijt, 2015; Coulson, 2005; Zhang et al., 2013). Online support groups number in the hundreds of thousands in the United States (Wright, 2016), with 14 million adults participating in health-oriented groups alone in 2018 (National Cancer Institute, 2018). Hosting of online support groups is an important part of business for online platforms such as Facebook and Instagram, because the group

profiles enable precise targeting of ads and promotions to user interests (Roederkerk & Pauwels, 2016; Schumann et al., 2014; Wiertz & de Ruyter, 2007).

Interaction in online support groups involves posting and replying to posts. In well-functioning groups, as members exchange posts and their ties strengthen, they receive ongoing social support which facilitates their goal attainment (Bradford et al., 2017; Centola, 2010; Lakon et al., 2016). However, online support groups routinely struggle to realize their potential due to member disengagement (Butler, 2001; Preece et al., 2004; Ren et al., 2007, 2012; Stoddard et al., 2008). The initial interest tends to wane (Arguello et al., 2006; Petróczy et al., 2007), and ties fail to strengthen sufficiently to promote goal attainment (Brandtzaeg & Heim, 2008; Preece et al., 2004). Given that people join support groups with the explicit purpose of exchanging

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social support, their failure to build supporting ties is puzzling. While tie strength has been studied extensively both in face-to-face settings (Baer, 2010; Friedkin, 1980; Granovetter, 1973; Marsden & Campbell, 1984) and online (Gilbert & Karahalios, 2009; Jones et al., 2013; Petróczy et al., 2007; Rooderkerk & Pauwels, 2016; Shriver et al., 2013), the causes of tie weakness in online support groups remain poorly understood, impeding the pursuit of remedies.

Some studies have related the weakness of ties in online support groups to the groups' demographic heterogeneity. Indeed, online support groups tend to have broad geographic reach and to be open and inclusive (Chan et al., 2015; Zeng & Wei, 2013). As a result, online groups are typically more demographically diverse than face-to-face groups (Lieberman et al., 2005; Naylor et al., 2012; Wu et al., 2014). Noting that ties are weaker in demographically diverse online groups, it has been suggested that administrators form demographically homogenous groups to help ties strengthen (Centola, 2011; Centola & van de Rijt, 2015; Lieberman et al., 2005). However, this remedy may not always be feasible or desirable given the effort and time involved in forming homogeneous groups, and the sensitivities in segregating by protected demographics.

This research reexamines demographic diversity in online support groups and, by adopting a fresh theoretical lens and considering the self-disclosure literature (Sprecher & Hendrick, 2004; Sprecher et al., 2013), identifies a feasible new remedy to the problem of tie weakness. In online interaction, disclosing or hiding one's demographic information is a matter of choice (Forman et al., 2008; Karimi & Wang, 2017; Nosko et al., 2010; Toma et al., 2008), and people routinely experience that demographic differences impede them from strengthening their ties in face-to-face interaction (Lazarsfeld & Merton, 1954; McPherson et al., 2001). Hence, people in online support groups, in trying to form stronger ties with others, may choose to avoid self-disclosing demographic differences due to perceived relational costs. As a result, weak ties in online support groups could stem from inhibited self-disclosure of demographic differences, rather than from demographic differences per se.

An extensive literature attests, however, that most self-disclosures actually increase interpersonal liking (Collins & Miller, 1994; Cozby, 1973; Worthy et al., 1969), which strengthens social ties (Nelson, 1989; Van Hove & Lievens, 2009). Therefore, our fresh theoretical lens suggests that, if online support

group members do self-disclose their demographics, they should tend to form stronger ties with others (Collins & Miller, 1994; Cozby, 1973; Worthy et al., 1969). Stronger ties should, in turn, provide the social support that is needed for attaining the desired group goal, for example, losing weight or quitting smoking (Centola, 2010; Lakon et al., 2016). In effect, self-disclosures of demographic differences could be beneficial rather than costly.

We conducted a field study of actual online support groups for quitting smoking, as well as three controlled experiments to examine: (a) whether members of online support groups avoid self-disclosure of demographic differences due to perceived relational costs and (b) whether demographic self-disclosure, when it naturally does occur, actually leads to the benefits of stronger ties and greater goal attainment. Our studies provide convergent evidence that online support group members avoid self-disclosing their demographics when they are dyadically dissimilar from interaction partners and/or in the demographic minority in the group, due to the perceived relational cost of poor social integration, that is, not fitting in or relating to others well. But when people naturally engage in demographic self-disclosures in their ongoing dialogs, this strengthens their ties and facilitates goal attainment. Hence, a viable solution to tie weakness in online support groups may be to encourage members to self-disclose their demographics, even when self-disclosure would reveal that they are demographically different from others.

Demographic Self-Disclosure Online

Demographic Self-Disclosure

Self-disclosure is "any information about oneself that a person verbally communicates to another person" (Collins & Miller, 1994, p. 458). Self-disclosure critically shapes awareness of others' demographic identity in online interaction because of the paucity of visual, auditory, and other sensory cues that normally reveal demographics in face-to-face interaction (Desjarlais et al., 2015; Nguyen et al., 2012). When people interact face to face, they have little or no control over others' awareness of their demographics; for example, gender, age, and race are almost invariably obvious from sensory cues (Marsden, 1987, 1988; McPherson et al., 2001; Reagans, 2005, 2011; Verbrugge, 1977). Less salient demographics such as marital status are often apparent from wedding rings and surnames, and employment status is often revealed by clothing

and behavior (Harrison et al., 2002). In contrast, in online settings, the lack of face-to-face contact keeps even basic demographics hidden unless self-disclosed. Hence, self-disclosing or hiding one's demographics online is often a matter of individual choice (Forman et al., 2008; Karimi & Wang, 2017; Nosko et al., 2010; Toma et al., 2008).

The Principle of Homophily: Differences Result in Weaker Ties

We will argue that, given that people have control over the visibility of their demographics in online groups, they will tend to inhibit demographic self-disclosure when they expect it to reveal a demographic difference. This argument hinges on the principle of homophily. Homophily is the well-documented tendency of interpersonal similarities to breed social connection while interpersonal differences impede connection (Lazarsfeld & Merton, 1954; McPherson et al., 2001). Across a variety of relationship types and similarity dimensions, ties are stronger and more likely to form between similar than between dissimilar people (Marsden, 1987, 1988; McPherson et al., 2001; Verbrugge, 1977). Research has given particular attention to demographic homophily, due to the deep cultural significance of demographics such as gender, race, and age (Kleinbaum et al., 2013; Reagans, 2005, 2011; Ridgeway, 1997). Demographically similar people tend to develop stronger ties because they have more opportunities to interact (Feld, 1982; Kleinbaum et al., 2013) and have a psychological preference for such interaction (Marsden, 1987, 1988; McPherson & Smith-Lovin, 1987). Demographically dissimilar others are less likely to share commonalities (Reagans, 2005, 2011), and often seem foreign, unknown, and unpredictable (Lynch & Rodell, 2018), making interactions with them appear challenging and nonbeneficial (McPherson & Smith-Lovin, 1987; McPherson et al., 2001).

People routinely experience the tendency of demographic difference to hinder social ties in face-to-face settings (Kleinbaum et al., 2013; Reagans, 2005, 2011; Ridgeway, 1997) and may expect to have similar experiences when they are online. Some marketers have echoed this expectation by recommending that online brand communities seeking new members should post photographs of consumers who are demographically similar to potential new members and disguise their other members by posting anonymous silhouettes (Naylor et al., 2012). Thus, extrapolating from experiences of homophily in everyday life, people who

wish to build strong, supportive ties in online groups may be concerned that self-disclosing their demographic differences may hinder this pursuit and may instead choose to hide their differences.

Types of Demographic Difference and Relational Costs

Noting that people are concerned about the consequences of self-disclosing demographic differences calls for specifying what people perceive as a demographic difference and what consequences they expect that may produce weak ties. The literature on relational demography, which has examined diversity in face-to-face workplace and team settings, distinguishes two types of demographic difference (Tsui et al., 1992, 2002; Tsui & O'Reilly, 1989; Wagner et al., 1984). First, an individual may experience dyadic dissimilarity, meaning they are demographically dissimilar from a dyad partner with whom they interact. Second, an individual may experience minority status, meaning that they may be in the demographic minority in the group as a whole. Relational demography researchers have found that dyadic dissimilarity and minority status, while correlated, can be independently measured and studied (Avery et al., 2008). For instance, in a male-dominated workplace, although female dyads are in the minority, the females in these dyads are similar, creating a potential buffering effect.

Consistent with the homophily principle, relational demography work has found that both dyadic dissimilarity and minority status produce the consequence of relational costs, that is, costs to dyadic and group relationships. Such costs are generally additive or cumulative, not interactive (Harrison et al., 1998; Riordan & Shore, 1997). The most immediate and obvious relational cost of demographic difference in a group is poor social integration or weak cohesion (Harrison et al., 1998, 2002; Riordan & Shore, 1997; Tsui & O'Reilly, 1989). Group members who are demographically different tend not to be well integrated into the group; they struggle with not fitting in and not relating well to others. For instance, one study found that when members of newly formed teams were different (versus similar) in age, marital status, and/or ethnicity, they reported poor social integration with other members which in turn lowered their team's task performance (Harrison et al., 2002).

In online support groups, due to others' self-disclosures, certain members may come to realize they are demographically different from specific dyad

partners and/or from the group as a whole. On account of their past experiences with and/or observations of demographic difference, they may perceive that if they self-disclosed their own demographic difference, they may experience poor social integration which may undermine the strengthening of their ties to other group members. To avoid this relational cost, they may choose not to self-disclose the demographic. We summarize this mechanism in Figure 1 and in H1 below.

H1: In online support groups, a member's demographic dissimilarity from (versus similarity to) specific dyad partners and/or demographic minority (versus majority) status in the group will (a) inhibit self-disclosure of that demographic, and also it will (b) elicit the perception of a relational cost of self-disclosure which will (c) mediate the effects on self-disclosure inhibition.

Benefits of Demographic Self-Disclosure

Self-Disclosures and Tie Strength

The self-disclosure literature paints a very different picture of self-disclosure outcomes, suggesting that the act itself can be a powerful force that brings people together, almost regardless of the nature of the self-disclosure. Studies have found that face-to-face self-disclosure of personal information increases interpersonal liking (Ren et al., 2007; Sprecher et al., 2013), and liking in turn relates to stronger ties (Nelson, 1989; Van Hove & Lievens, 2009). An individual who self-discloses has greater liking of their dyad or interaction partner, and partner has greater liking of the self-discloser, because both attribute the behavioral act to interest in having a social relationship (Collins

& Miller, 1994; Cozby, 1973; Worthy et al., 1969). Moreover, the initial self-disclosure often triggers reciprocation and a self-reinforcing cycle of increased liking (Sprecher et al., 2013).

Self-disclosure of demographic differences may also strengthen ties because awareness of others' demographics facilitates social interaction, while identity concealment tends to convey inauthenticity and disrupt interaction (Lynch & Rodell, 2018). Importantly, the well-established link between self-disclosure and liking does not appear to depend on whether commonalities or differences are self-disclosed. Studies that have examined self-disclosure of atypical identity elements have also documented enhanced liking (Cozby, 1972; Ren et al., 2007; Sprecher et al., 2012; Trepte & Reinecke, 2013). Conversely, people who hide atypical or potentially stigmatizing identities, such as a homosexual or bisexual orientation, tend to harm their social ties (Griffith & Hebl, 2002; Ragins, 2008; Ragins et al., 2007).

Self-disclosure often occurs naturally and spontaneously in everyday conversation (Consedine et al., 2007; Greene et al., 2006; Schouten et al., 2009; Sprecher et al., 2013). Likewise, in online support groups, self-disclosure of demographics tends to occur spontaneously during ongoing conversations about the focal goal pursuit (Pechmann et al., 2015). For example, a weight loss support group member may discuss coworkers asking about their weight or diet, spontaneously revealing being employed (Bradford et al., 2017). Because self-disclosures may increase liking by both parties of the interacting dyad, the strengthening of the dyadic tie may be a combination of two effects: Self-disclosers may increase their contribution to tie strength, and so may dyad partners who receive the self-disclosures. To consider both effects, we tested two subhypotheses:

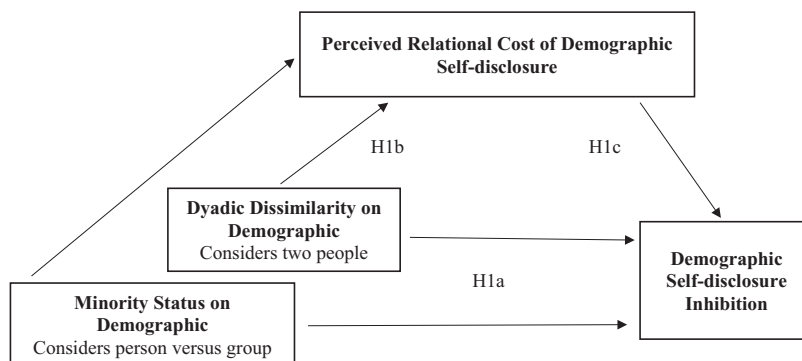


Figure 1. Inhibition of demographic self-disclosure in online support groups (H1a–c).

H2: If demographic self-disclosure occurs in discussions in online support groups (a) the self-disclosers will contribute more to the strength of their ties with their dyad partners, and (b) their dyad partners will contribute more to the strength of their tie with the self-discloser. These effects will persist whether or not the self-discloser reveals demographic dissimilarity from dyad partners or minority status in the group.

Tie Strength and Goal Attainment

Weak ties help to diffuse simple ideas and codified behaviors (Centola, 2010; Friedkin, 1980; Granovetter, 1973; Hansen, 1999) and facilitate creativity (Baer, 2010; Perry-Smith, 2014; Zhou et al., 2009). In contrast, it has been shown that strong ties are needed to conduct complex knowledge exchange (Garg & Telang, 2017; Tortoriello et al., 2012; Van Hoye & Lievens, 2009) and promote major behavior change (Bowler & Brass, 2006; Krackhardt, 1992). The goals people seek in online support groups often require complex knowledge exchange and major lifestyle changes. Hence, strong ties are needed to provide the positive influence and ongoing support that is required for member goal attainment (Centola, 2010; Lakon et al., 2016). Our predictions are formalized in H3 and Figure 2.

In online support groups, tie strengthening from self-disclosure of demographics will mediate to enhance goal attainment.

Although we expect tie strengthening to mediate by enhancing goal attainment, we do not necessarily expect a direct effect of self-disclosure (IV) on goal attainment (DV). A mediation effect does not require an IV-DV direct effect (Rucker et al., 2011; Zhao et al., 2010). We predict that demographic difference will inhibit self-disclosure (Figure 1), and so, while we expect the relatively lower level of self-disclosure to be sufficient for tie strengthening,

we do not necessarily expect it to be sufficient to directly bolster goal attainment (Figure 2).

Overview of Studies

We conducted four studies to test our hypotheses. Study 1 used field data from real online support groups for quitting smoking, which were set up as exploratory tests for a possible national roll-out. It examined if the relationships hypothesized in H1–H3 regarding demographic differences, self-disclosure, tie strength, and goal attainment occurred in real online support groups. To assess the directions of causality, we reexamined the hypotheses in controlled experiments that simulated online support group interactions. Study 2 retested H1 on the perceived relational cost of self-disclosure of a demographic difference. Studies 3–4 retested H2 on the actual benefit of demographic self-disclosure, regardless of its nature, for tie strengthening by the self-discloser (Study 3) and the recipient (Study 4). Our final hypothesis (H3) on tie strengthening mediating goal attainment was assessed in the field study only, because the short span of an experiment does not enable a realistic assessment of long-term goal attainment.

Study 1

Overview of Approach and Participants

We analyzed field data from eight Twitter support groups of adults trying to quit smoking. The members were recruited within the continental United States with ads displayed when people searched on Google for topics related to quitting smoking. Each online support group had twenty members and lasted for 3 months. Participants' demographic information was collected in a preliminary survey. Participants' self-

disclosures in posts and tie strength were coded at the end of the groups' life span, based on the

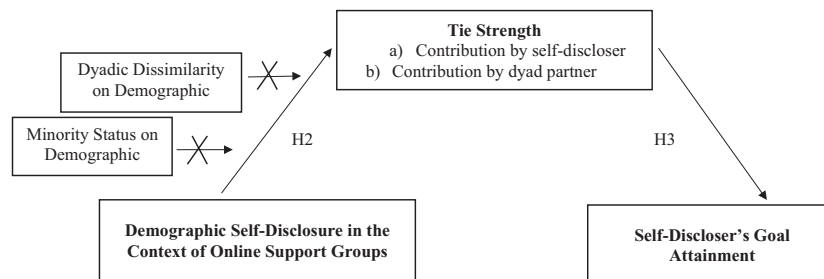


Figure 2. Benefits of demographic self-disclosure in online support groups (H2–H3).

content of all posts. We coded the posts for four demographics which were frequently self-disclosed in the online support groups: gender, age, marital status, and employment status. The online support groups were closed to the public, but all posts, including all self-disclosure posts, were visible to all members.

All group members, except no-shows who left no trace of participation, were included in the final sample of 118 people. Consistent with our focus on the strengthening of ties, we created a complete list of cases where two people in the sample formed a tie of minimal strength which could potentially be strengthened, that is, sent at least one post addressed to the dyad partner. There were 535 such partner pairs or dyads.

H1a: Methods and Results

Overview

H1a predicted that dyadic dissimilarity and/or minority status on a demographic would inhibit self-disclosure of that demographics. The outcome analyzed was a binary (yes/no) indicator of self-disclosure, which was measured for each of the four focal demographics (gender, age, marital status, and employment status) and for each of 118 individuals ($118 \times 4 = 472$ demographic-specific records). The predictor variables were a dyadic dissimilarity index for each individual and a minority status index for each individual. Both variables were measured for each of the four demographics, as will be discussed below. Two models were estimated. In the first model, the predictor variables were the dyadic dissimilarity index, the demographic, and their two-way interaction. In the second model, the predictor variables were the minority status index, the demographic, and their two-way interaction. The demographic variable was a replicate variable allowing us to examine whether the dyadic dissimilarity or minority status effects on self-disclosure were consistent across the four demographics.

Measures

Two trained coders recorded demographic self-disclosures of gender, age, marital status, and employment status in the posts of the online support group members. We focused on posts because our groups were set up on Twitter, which at the time did not allow user personal profiles or photographs. Because the posts were visible to

everyone in the group, self-disclosures counted regardless of the addressee. Here are examples of demographic self-disclosures: "I am Nancy and a mom of 2" (gender); "Being at work is easier for me than when I'm at home" (employment status); "Does anyone else have a spouse that will be smoking?" (marital status); "I'm almost 45 & been smoking 1/2-1 1/2 pks daily since age 15!" (age). Intercoder agreement on whether the self-disclosure was made was over 99% for each demographic. Intercoder agreement on the content of the post was 100% for age group (5-year intervals), 98.4% for gender, 94.4% for marital status, and 96.5% for employment status.

For each demographic, we created a binary indicator of self-disclosure, coded 1 if the individual self-disclosed the demographic and 0 otherwise ($M = 0.56$, $SD = 0.50$). In addition, considering each individual's self-reported demographics, we created an index of their dyadic dissimilarity across dyads, and an index of their minority status in the group, for each of the four demographics. The index of dyadic dissimilarity, which was specific to each demographic, was created such that 1 meant all dyads in which the individual was involved were dissimilar and 0 meant no dissimilar dyads ($M = 0.53$, $SD = 0.26$). For example, if 4 of the individual's 10 dyads were mixed gender (one male, one female), the index for gender dyadic dissimilarity was 0.4. The index of minority status, which was also specific to each demographic, was created such that 1 meant the individual had minority status in the group and 0 meant nonminority status ($M = 0.16$, $SD = 0.37$). On gender, because members of all groups were predominantly female ($M = 65\%$, range of group means 64%–69%), males were coded 1 or minority while females were coded 0 or nonminority. On employment status, because members of all groups were predominantly employed ($M = 72\%$, range 69%–82%), unemployed individuals were coded 1 or minority, while employed individuals were coded 0 or nonminority.

Because age varied widely within all groups (mean = 36, range 32–38, youngest member 18–24, oldest member 53–58), all individuals were coded 0 or nonminority, that is, no one strongly experienced being a minority. On marital status, because about half or 50/50 the members of all groups were married ($M = 56\%$, range 53%–57%), all individuals were coded 0 or nonminority, that is, no one strongly experienced being a minority. In other words, on these two demographics, there could not be a minority status effect because there was no minority (no variance on the measure).

Analyses and results

We used mixed logistic regression models because the self-disclosure outcome was binary. Model 1 included the dyadic dissimilarity index (within-subject), the demographic (within-subject), and their two-way interaction as predictor variables. Model 2 used the minority status index instead of the dyadic dissimilarity index. The results are shown in Table 1. Supporting H1a, dissimilarity on a demographic related to lower self-disclosure of that demographic ($p < .001$). There was no main effect of demographic, and no dyadic dissimilarity \times demographic interaction indicating that the negative effect for dyadic dissimilarity on self-disclosure was comparable across the four demographics. Also supporting H1a, minority status on a demographic related to lower self-disclosure of that demographic ($p < .001$). There was a main effect of demographic ($p < .001$) because self-disclosure of age was lower than for other demographics ($p < .05$). There was a minority status \times demographic interaction ($p < .001$), indicating minority status on gender had an especially strong negative association with self-disclosure ($p < .001$) while minority status on employment had a weaker negative association ($p < .05$); however, both minority status situations significantly lowered self-disclosure.

H2: Methods and Results

Overview

H2 predicted a positive relationship between demographic self-disclosure and tie strength, including (a) the self-discloser's contribution to it and (b) the dyad partner's contribution to it, not moderated by the self-discloser's dyadic

dissimilarity or minority status. The two outcome variables were measured for each member of the 535 dyads ($535 \times 2 = 1,070$ dyad-level records). The main predictor variable was self-disclosure, which was aggregated across the four demographics. To rule out dyadic dissimilarity as a moderator, we estimated models that included self-disclosure, share of self-disclosures about dyadic dissimilarity, and their two-way interaction as predictors. Likewise, to rule out minority status as a moderator, we estimated models that included self-disclosure, share of self-disclosures about minority status, and their two-way interaction as predictors.

Measures

To measure self-disclosure, we counted how many of the four demographics each individual self-disclosed (gender, age, marital status, and/or employment status; between 0 and 4) considering that all self-disclosures were visible to all parties. Then, we computed the share of self-disclosures which revealed dissimilarity from the dyad partner by comparing the individual's self-disclosed demographics to the dyad partner's demographics. Self-disclosure of dyadic dissimilarity or 1 was coded when the individual self-disclosed being dissimilar to a dyad partner, that is, male versus female, unemployed versus employed, married or living with an intimate partner versus not, or more than 5 years apart versus less than 5 years apart in age, and otherwise, 0 was coded. These codes were summed and then divided by the count of demographics that the person self-disclosed, to compute the share of dyadic dissimilarity self-disclosures for each individual and dyad.

Because self-disclosers may be aware of demographic difference in the dyad only if their partner had also self-disclosed the respective demographic,

Table 1

Dyadic Dissimilarity and Minority Status on a Demographic Related to Self-Disclosure of that Demographic (Study 1, H1a)

	<i>B</i>	<i>F</i>	<i>df</i>	Signif.
Model 1: Dyadic dissimilarity \rightarrow Self-disclosure				
Dyadic dissimilarity index	-5.58	26.02	1,464	$p < .001$
Demographic	NA	1.89	3,464	$p = .13$
Dyadic dissimilarity index \times demographic	NA	2.53	3,464	$p = .06$
Model 2: Minority status \rightarrow Self-disclosure				
Minority status index	-2.90	31.79	1,464	$p < .001$
Demographic	NA	27.50	3,464	$p < .001$
Minority status index \times demographic	NA	8.28	3,464	$p < .001$

Note. Results were obtained with mixed logistic regression models; NA due to 3 *df* effect.

in the analysis of H2a self-disclosers were considered as revealing demographic difference only if their partner had already self-disclosed the respective demographic and differed on it. In those rare cases where the individuals self-disclosed no demographics (43 of 1,070), they could not possibly convey any information on dyadic dissimilarity, and so, their share of dissimilarity self-disclosures was undefined. To avoid listwise deletion due to missing values, we used the standard approach of mean imputation to fill in the missing values. The mean represented the baseline expectation that the dyad members were demographically dissimilar.

We used a similar approach to compute the share of each member's self-disclosures which revealed minority status in the group. Self-disclosure of minority status or 1 was coded when the individual self-disclosed being in the minority on the demographic, that is, male rather than female or unemployed rather than employed, and otherwise, 0 was coded. Then, these codes were summed and divided by the count of demographics that the person self-disclosed, to compute the share of self-disclosures about minority status for each individual. Group members were nearly always informed by preceding self-disclosures that men and unemployed were in the minority: Only 1.55% of all posts were made in the absence of any information about the group's gender composition and 2.24% in the absence of any information about its members' employment status. The periods when past self-disclosures were showing the wrong category (women or employed) as the minority were even briefer—only 0.48% of the posts occurred while this was the case.

The main outcome, tie strength, was measured based on the contact frequency between the two dyad members, a standard measure in social network research (Nelson, 1989; Tortoriello et al., 2012). Contact frequency is readily observable in social media posts and correlated with perceived closeness (Jones et al., 2013). Tie strength was coded by two trained research assistants, who reviewed every post (interrater agreement = 92%). If the recipient of the post was specified, or the coders judged from its content and timing that it was addressed to a specific recipient, tie formation between sender and recipient was recorded. Posts addressed to the entire group did not count toward tie formation or tie strength. The self-discloser's contribution to tie strength was the count of posts the individual sent to the dyad partner. The dyad partner's contribution to tie strength was the count of posts the partner sent to the self-discloser.

Analyses and results

We used negative binomial models because the dependent variables were counts of self-disclosures. Observations in these models could not be assumed to be independent because each individual may appear in multiple dyads, resulting in underestimated standard errors (Kenny et al., 2006). Hence, we corrected the standard errors for clustering on both dyad members (Cameron et al., 2011; Kleinbaum et al., 2013). The first outcome considered was the self-discloser's contribution to tie strength; these results are shown in Table 2 (left side). Model 1 included as predictor variables the individual's self-disclosures across demographics, the share of these self-disclosures that were about dyadic dissimilarity, and the two-way interaction. There was a significant positive relationship between the individual's self-disclosures and their own contribution to tie strength (main effect $B = 0.42$, $SE = 0.10$, $p < .001$), regardless of the share of these self-disclosures that were about dyadic dissimilarity (interaction effect $B = 0.12$, $SE = 0.18$, $p = .50$).

Model 2 included as predictor variables the individual's self-disclosures across demographics, the share of these self-disclosures that were about minority status, and the two-way interaction. Again, there was a significant positive relationship between the individual's self-disclosures and their own contribution to tie strength (main effect $B = 0.51$, $SE = 0.09$, $p < .001$), regardless of the share of these self-disclosures that were about minority status (interaction effect $B = -0.26$, $SE = 0.33$, $p = .42$). We replicated this entire pattern of results with the dyad partner's contribution to tie strength as the dependent variable (Table 2, right side). We replicated the results again using total tie strength, that is, the sum of the two dyad members' contributions to tie strength, as the dependent variable (not in table).

H2: Event History Analysis

Overview

Our prior tests of H2 had aggregated dyadic events over each dyad's entire life span, without distinguishing the predicted effect of self-disclosure on tie strength from a possible reverse causal effect. To more closely examine causality, we conducted an event history analysis (DuWors & Haines, 1990; Tuma & Hannan, 1984). We restructured the dataset by dividing dyads' life spans into time intervals

Table 2
Demographic Self-Disclosure Related to Tie Strength (Study 1, H2)

	DV = Contribution to Tie Strength by Self-Discloser		DV = Contribution to Tie Strength by Dyad Partner	
	<i>B</i> (<i>SE</i>)	Signif.	<i>B</i> (<i>SE</i>)	Signif.
Model 1: Self-disclosure including about dyadic dissimilarity → Tie strength				
Self-disclosures across demographics	0.42 (0.10)	$p < .001$	0.27 (0.11)	$p = .02$
Share of self-disclosures about dyadic dissimilarity	−0.32 (0.41)	$p = .44$	−0.19 (0.36)	$p = .60$
Self-disclosure across demographics × share about dyadic dissimilarity	0.12 (0.18)	$p = .50$	0.003 (0.19)	$p = .99$
Model 2: Self-disclosure including about minority status → Tie strength				
Self-disclosures across demographics	0.51 (0.09)	$p < .001$	0.32 (0.06)	$p < .001$
Share of self-disclosures about minority status	0.67 (0.59)	$p = .25$	0.69 (0.60)	$p = .24$
Self-disclosures across demographics × share about minority status	−0.26 (0.33)	$p = .42$	−0.40 (0.26)	$p = .12$

Note. Results were obtained with negative binomial models. Standard errors were corrected for clustering on both dyad members. All variables were dyad-specific.

punctuated by posts, such that each dataset entry constituted a time interval between two consecutive posts in the dyad or between the last post and the end of the observation period. Because a single self-disclosure post could disclose multiple demographics, we avoided ambiguity by creating a separate time interval for each self-disclosure. In other words, intervals that followed self-disclosure of two or three demographics in the preceding post (no posts disclosed more than three) were treated as two or three intervals of equal length.

The resulting dataset contained 4,672 intervals. Shorter intervals meant that tie-strengthening events (posts) occurred at a higher rate. Support for H2 would be indicated if the intervals ended (i.e., the next posts occurred) sooner when they were preceded by a self-disclosure than when they were not, even if that self-disclosure revealed dyadic dissimilarity or minority status. Self-disclosure was coded as involving dyadic dissimilarity if the dyad partner revealed being different on the demographic. The coding of minority status corresponded to the information that group members could glean from others' past self-disclosures, which nearly always meant that self-disclosures of being male or unemployed were coded as revealing minority status. In brief periods when past self-disclosures were showing that women or employed were in minority, we coded minority status accordingly. If no one had self-disclosed gender or employment, or when self-disclosures were showing a 50–50 gender or employment distribution, all dyad members were coded as nonminority on the respective demographic.

Analyses and results

We plotted Kaplan–Meier failure estimates to describe each dyad's event history. The plots show the cumulative probabilities that an interval ended because one dyad partner sent a post to the other, that is, the dyad experienced a tie-strengthening event. We used Cox regression to test the significance of the self-disclosure effects. Because posts that contained self-disclosures tended to be longer, Cox regression controlled for the character count in the previous post, to avoid confounding self-disclosure with the quantity of communication.

The event history analysis provided further support for H2. It showed that dyadic ties strengthened at higher rates when preceded by any type of demographic self-disclosure. Figure 3a illustrates the basic finding: Ties strengthened faster, that is, the next post in the dyad occurred sooner, if the prior post by either dyad member contained a demographic self-disclosure. No visible difference emerged within the first minutes after the post, when dyad partners reacted to its principal content. The difference emerged later, evidencing that dyad partners restarted dormant conversations more quickly after posts that contained a self-disclosure compared to posts that did not. Cox regression confirmed that the effect of self-disclosure versus no self-disclosure (visualized as the gap between the lines) was significant (Hazard ratio = 1.27, $p < .001$).

Figure 3b compares the probabilities of tie strengthening across three types of intervals: after no self-disclosure, self-disclosure of dyadic

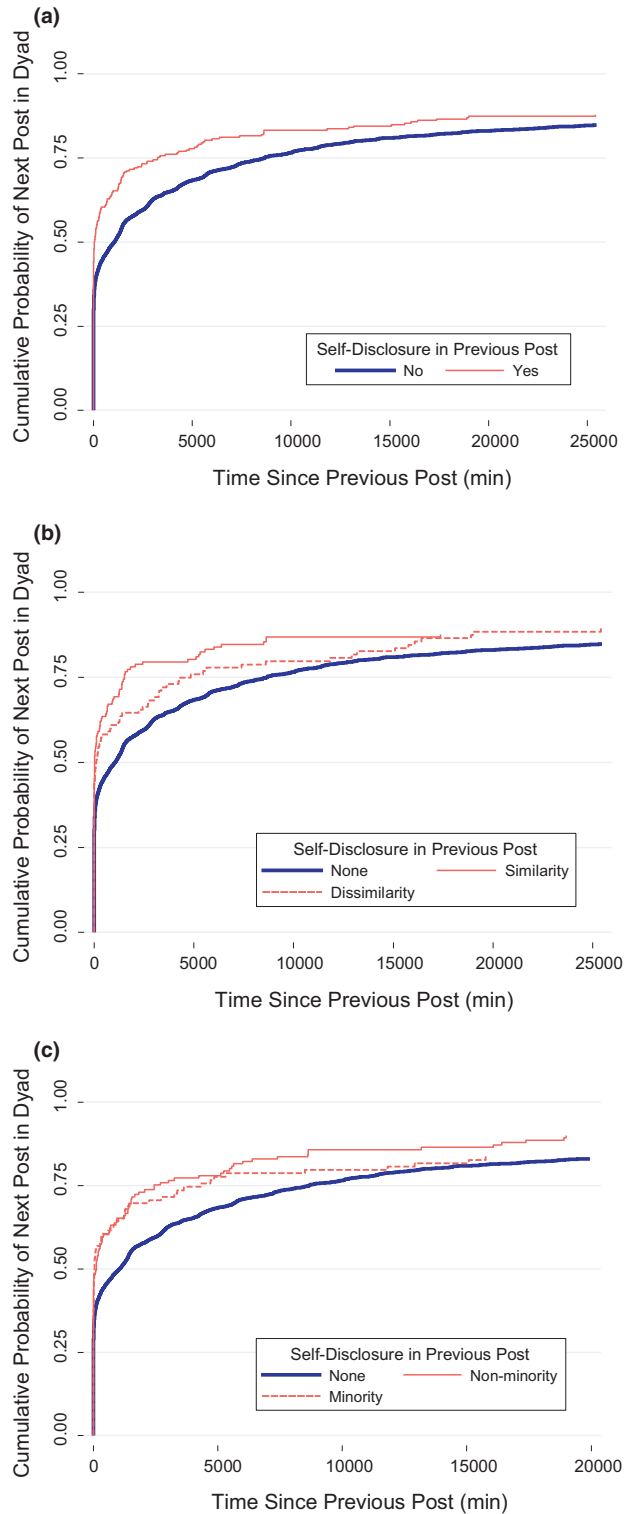


Figure 3. Kaplan–Meier plots of probabilities of tie strengthening in next post (Study 1, H2). (a) Tie strengthening from self-disclosure of demographic in previous post. (b) Tie strengthening from self-disclosure of dyadic dissimilarity in previous post. (c) Tie strengthening from self-disclosure of minority status in previous post.

dissimilarity, and self-disclosure of dyadic similarity, in the preceding post. Ties strengthened at higher rates when preceded by a post that included either a dissimilarity or similarity self-disclosure, as compared to no self-disclosure, although a similarity post hastened tie strengthening more than a dissimilarity post. Cox regression showed that both types of self-disclosure hastened tie strengthening compared to a no self-disclosure post ($HR = 1.34$, $p < .001$ and $HR = 1.23$, $p = .04$, respectively). Figure 3c shows that ties strengthened at higher rates when preceded by a post that included either a minority or nonminority status self-disclosure, as compared to no self-disclosure. Cox regression confirmed that self-disclosure of nonminority status hastened tie strengthening relative to a no self-disclosure post ($HR = 1.31$, $p < .01$). For self-disclosure of minority status, the effect was marginally significant ($HR = 1.22$, $p = .06$) but not significantly different from self-disclosure of nonminority status ($\chi^2 = 0.30$, $p = .59$).

H3: Methods and Results

Overview

H3 predicted that tie strengthening from self-disclosure of demographics would mediate to increase the self-discloser's goal attainment, irrespective of the individual's dyadic dissimilarity or minority status. We tested this hypothesis with Hayes PROCESS Macro for SPSS, version 3.2.01, Model 4 (Hayes, 2013). The binary outcome assessed via logistic regression, goal attainment, indicated whether the individual had quit smoking. The main predictor variable was the individual's self-disclosures across the four demographics. The mediator was the strength of the individual's ties across all dyad partners. We also tested rival moderated mediation models using Hayes Model 8, with the moderator being the average share of the individual's self-disclosures about dyadic dissimilarity or about minority status. All predictor variables were measured at the individual level because goal attainment (quitting smoking) was an individual-level outcome.

Measures

One week after the online support group started, members set a target date to quit smoking. Goal attainment by the self-discloser was recorded (1) if the individual consistently reported not smoking during the past week in surveys at 7, 30, and

60 days after their target quit date; otherwise, goal nonattainment (0) was recorded. Of 118 individuals, 36 attained the goal and 67 did not; the others provided no goal attainment information and were treated as missing for this analysis. Demographic self-disclosure was measured as the count of demographics that each individual self-disclosed, across the four demographics (0–4). The strength of the individual's ties was measured as the total count of posts exchanged between the individual and all dyad partners. The average share of the individual's self-disclosures about dyadic dissimilarity or minority status was calculated by summing self-disclosures of dissimilarity or minority across demographics and dyad partners and dividing by the total count of self-disclosures.

Results

The main mediation test (Hayes Model 4) supported H3. It showed that an individual's demographic self-disclosures related positively to the individual's overall tie strength (direct effect = 1.43, $t = 9.74$, $p < .001$) and the individual's overall tie strength related positively to the individual's goal attainment of quitting smoking (direct effect = 0.003, $Z = 2.83$, $p < .01$). Tie strength mediated the positive relationship of self-disclosure on quitting (indirect effect: $B = 0.0038$; 95% CI 0.0015, 0.0080). Additionally, using univariate logistic regression, we found a marginal direct and positive relationship between an individual's demographic self-disclosures and quitting ($-2LL = 2.67$, $p = .10$). Next, using Hayes Model 8, we included as the moderator the average share of self-disclosures about dyadic dissimilarity, but there was no moderating effect (index of moderated mediation = -0.0028 , 95% CI -0.0375 , 0.0100). Finally, we included as the moderator the average share of self-disclosures about minority status, but again there was no moderating effect (index of moderated mediation = 0.0090, 95% CI -0.0026 , 0.0339).

Study 2

Overview

Given that Study 1 was an uncontrolled field study, we sought verification of its results in controlled laboratory experiments. Study 2 tested H1a–c (Figure 1) by manipulating demographic difference, measuring the perceived relational costs of self-disclosure, measuring self-disclosure inhibition, and conducting mediation tests. Specifically, we

investigated whether people who were placed in situations of dyadic dissimilarity and/or minority status on a demographic would perceive the relational cost of poor social integration if they self-disclosed that demographic, and whether this would result in self-disclosure inhibition.

The research design was a 2×2 factorial with two fixed and randomized binary factors: the participant's demographic dissimilarity versus similarity to a dyad partner and the participant's demographic minority versus nonminority status in the group. We used marital status as the demographic in this and our other two laboratory experiments. Marital status was the most frequently self-disclosed demographic in our field study, so we used it to conduct a conservative test of self-disclosure inhibition.

Methods

Participants

We recruited 544 participants from MTurk, screening for U.S. residents who were Facebook users and therefore more likely to participate in online social support groups. Participants were 41.5% female, 68.0% married, and 80.9% Caucasian, and 73.3% reported using social media for at least 1 hr daily.

Manipulations

We wanted this laboratory study to mirror our field study, so the posts we created were based on real ones we had observed in our online support groups (see Appendix). However, we studied a weight loss rather than a quit-smoking context because participants were more likely to relate to it. The cover story stated: "Imagine you have joined an online community of people who have just started an online weight loss program. The program provides daily instructions for diet and exercise. The program started on Monday, and now, it is Tuesday. Members of the online community are just getting to know each other. Here are recent posts. Please read each post carefully."

Participants then saw eight posts from a weight loss support group by eight separate group members who had ambiguous usernames which disguised their demographics. A perceivable majority on marital status was created in the group by the posts randomly indicating that six of the eight members were either married or unmarried. Participants then saw a ninth post which contained a self-disclosure of

marital status, which randomly revealed that this member was either married or unmarried, and they were told they were in conversation with this last poster, the dyad partner. Considering the participant's own marital status, we then classified each participant as being dissimilar or similar to the dyad partner, and as having minority or nonminority status in the group as a whole, on marital status (Avery et al., 2008; Naylor et al., 2012; Ragins et al., 2007; Riordan & Shore, 1997).

Measures

We measured self-disclosure inhibition by asking: "When replying to this group member, how likely are you to disclose your marital status?" The scale ranged from 1 (extremely unlikely) to 7 (extremely likely) and was reverse-coded for analyses. We measured self-disclosure as a likelihood rather than a behavior because, in an experiment, interaction was found to be too transitory to induce unprompted self-disclosure. We measured the perceived relational cost of self-disclosure of poor social integration as follows (two items, $\alpha = .88$): "Consider your marital status. If you tell the community members your marital status . . . Will this online community (as a whole) relate to you less/more? 1 = substantially less, 2 = moderately less, 3 = slightly less, 4 = no difference, 5 = slightly more, 6 = moderately more, 7 = substantially more. Will you fit in worse/better with this online community (as a whole)? 1 = substantially worse, 2 = moderately worse, 3 = slightly worse, 4 = no difference, 5 = slightly better, 6 = moderately better, 7 = substantially better." Both items were reverse-coded for analyses such that 1 = substantially better fitting in or relating and 7 = substantially worse fitting in or relating.

Results

Tests of H1a–b

We conducted 2 (dyadic dissimilarity) \times 2 (minority status) omnibus ANOVAs. Consistent with H1a, dyadic dissimilarity as compared to similarity elicited self-disclosure inhibition ($F(1,540) = 33.36$, $p < .001$; $M = 3.92$ vs. 2.96), and also minority as compared to nonminority status elicited self-disclosure inhibition ($F(1,540) = 4.23$, $p = .04$; $M = 3.61$ vs. 3.27). There was no dyadic dissimilarity \times minority status interaction effect on self-disclosure inhibition ($F(1,540) = 0.10$, $p = .75$). Supporting H1b, there was a higher perception of a relational cost of a self-disclosure if it revealed dyadic

dissimilarity rather than similarity ($F(1,540) = 25.69$, $p < .001$; $M = 3.82$ vs. 3.26) or if it revealed minority rather than nonminority status ($F(1,540) = 94.61$, $p < .001$; $M = 4.08$ vs. 3.00), with no dyadic dissimilarity \times minority status interaction ($F(1,540) = 1.46$, $p = .23$). See Figure 4.

Tests of mediation (H1c)

We then tested H1c, the perception of a relational cost of self-disclosure as mediating self-disclosure inhibition. We used Hayes PROCESS Macro for SPSS, Model 4, with 5,000 bootstrap samples. The results were supportive. Dyadic dissimilarity, by evoking the perception of a relational cost of self-disclosure, produced self-disclosure inhibition (indirect effect = 0.2589, 95% CI 0.1403, 0.3997). Likewise, minority status, by evoking the perception of a relational cost of self-disclosure, yielded self-disclosure inhibition (indirect effect = 0.5771, 95% CI 0.4064, 0.7682).

Study 3

Overview

Study 3 was a controlled experiment to retest H2a, positing that self-disclosure would enhance the self-discloser's contribution to tie strength, regardless of it being self-disclosure of a demographic difference or not. We manipulated whether the participant self-disclosed a demographic to a dyad partner, the participant's dissimilarity to the dyad partner, and the participant's minority status, and measured the outcome of tie strength. Thus, the research design was a 2 \times 2 \times 2 factorial with three fixed and randomized binary factors: the participant's demographic self-disclosure (present vs. absent), dyadic dissimilarity versus similarity to the dyad partner, and minority versus nonminority status in the group. We examined the effect of self-disclosure on the length of the post written by the individual to the dyad partner, and whether this effect was moderated by the individual's dyadic dissimilarity or minority status, predicting no moderation. Consistent with study 2, we used marital status as the demographic.

Methods

Participants

We recruited 374 participants from MTurk, screening for U.S. residency and users of Facebook,

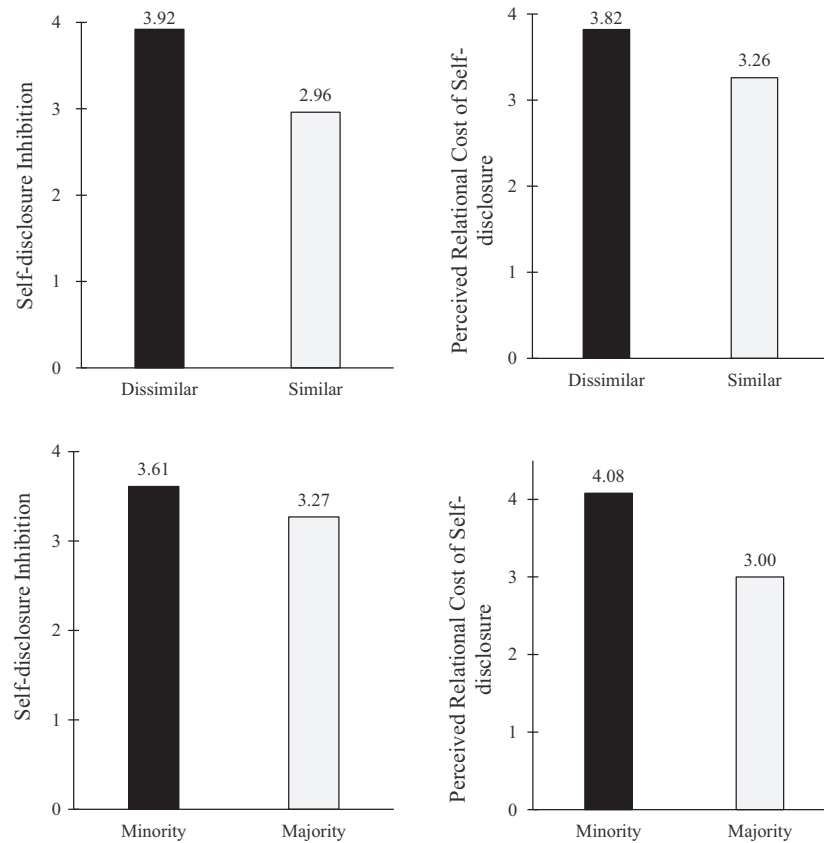


Figure 4. Dyadic dissimilarity and minority status related to self-disclosure inhibition and perceived relational cost of self-disclosure (Study 2, H1a–b).

Note. All differences significant $p < .05$

as in Study 2. The participants were 53.7% female, 55.1% married, and 80.5% Caucasian, and 66.3% reported using social media for at least 1 hr daily. The data were collected in two waves. The data collection wave was included as an added factor in all analyses but there were no significant main effects or interaction effects. Likewise there were no statistically significant demographic differences between waves, for example, 58.1% of participants were married in wave 1 and 50.7% in wave 2 ($\chi^2 = 2.02$, $p = .16$).

Manipulations of dyadic dissimilarity and minority status

Participants were shown the same cover story as in Study 2, and the same eight posts from an online support group that were randomized to convey that the majority of group members were either married or unmarried. Then, participants read a ninth post from a dyad partner randomized to self-disclose being either married or unmarried. In addition, participants were randomized to self-disclose ($N = 197$)

or not self-disclose ($N = 177$) their marital status to the dyad partner. Finally, using participants' own marital status, we coded their dyadic dissimilarity or similarity to the dyad partner, and minority or non-minority status in the group on marital status.

Manipulation of demographic self-disclosure

To manipulate demographic self-disclosure in a manner that was consistent with our field study, we returned to our field study data to determine when demographic self-disclosures had occurred in the online support groups. We found that 80.3% of self-disclosures occurred when members were discussing how their demographics related to their goal pursuit (coding reliability 92.1%). For instance, members self-disclosed their marital status while discussing how a spouse who smoked would affect their quitting, or how they were quitting for their immediate family.

Hence, to mirror a typical online support group in which demographic self-disclosures primarily occurred during discussions of goal pursuit, we

used the following self-disclosure prompt: "Please tell this last group member about your own personal marital status, and how you feel your own marital status might affect your weight loss. Also, explain why you feel this way. Write as much as you would like, but write at least 2–3 sentences in the box below." To avoid confounding, and to create comparable involvement, we asked participants in the no self-disclosure condition to discuss an issue that might affect their goal pursuit of weight loss using similar wording: "Please tell this last group member a scientific fact about weight loss, and how you think this scientific fact might affect your weight loss. Also, explain why you think this way. Write as much as you would like, but write at least 2–3 sentences in the box below."

Outcome measure

The above manipulation of self-disclosure had also established a tie between the participant and the dyad partner. To measure the participant's subsequent contribution to that tie, we asked each participant to write an additional post to the dyad partner: "Please write something else to this member." Tie strength was measured as the word count in this additional post (Gilbert & Karahalios, 2009; Rooderkerk & Pauwels, 2016).

Confound measure

To check whether our manipulation of self-disclosure had inadvertently influenced participants' level of involvement, in the second round of data collection, we asked "How involving or engaging was it for you to write the posts to the group member?" (1 not involving to 5 very highly involving).

Results

Manipulation and confound checks

First, we checked our self-disclosure manipulation. We found that all participants who were asked to write about their marital status did so, and their self-disclosed marital status truthfully reflected what they reported in our study survey. Likewise, all participants who were asked to write about factual information did so, with none discussing marital status. Next, we examined whether our self-disclosure manipulation which had established a tie between the participant and the dyad partner had inadvertently affected the number of words written while initially establishing that tie. A one-factor ANOVA

verified that our self-disclosure manipulation had no confounding effect on the number of words written at that point, that is, during tie formation ($F(1,372) = 0.91, p = .34; M = 44.48$ vs. 46.59). This finding also suggested that participants' involvement was comparable across self-disclosure conditions. Furthermore, in our second data collection wave, we measured involvement, and a one-factor ANOVA verified that our self-disclosure versus no self-disclosure manipulation had not affected participants' involvement in the task ($F(1,150) = 1.20, p = .28; M = 3.34$ vs. 3.51).

Test of H2a

Using a 2 (self-disclosure) \times 2 (dyadic dissimilarity) \times 2 (minority status) omnibus ANOVA, we tested H2a, which posited that demographic self-disclosure would enhance the self-discloser's contribution to tie strength with the dyad partner, even if they were demographically dissimilar from the dyad partner or had minority status in the group. The results were supportive. We observed the expected main effect of the participant's self-disclosure on tie strength ($F(1,366) = 11.89, p < .001$). Moreover, when a participant self-disclosed a demographic, their subsequent tie-strengthening post to their dyad partner was longer in terms of word count than when the participant did not self-disclose the demographic ($M = 19.96$ vs. 15.54 words).

There was no self-disclosure \times dyadic dissimilarity interaction effect ($F(1,366) = 1.36, p = .24$) or self-disclosure \times minority status interaction effect ($F(1,366) = 0.11, p = .75$), and no three-way dyadic dissimilarity \times minority \times self-disclosure interaction effect ($F(1,366) = 0.14, p = .71$). Likewise, as anticipated, there was no main effect of dyadic dissimilarity ($F(1,366) = 0.01, p = .99$) or minority status ($F(1,366) = 0.01, p = .95$), and no dyadic dissimilarity \times minority status interaction effect ($F(1,366) = 0.16, p = .69$). Relative to those who did not self-disclose ($M = 15.66$), self-disclosers wrote more to their dyad partner, regardless of whether they were dyadically dissimilar ($M = 20.70$) or similar ($M = 19.18$) to this partner, and regardless of whether they had minority ($M = 19.82$) or nonminority status ($M = 20.20$) in the group. Figure 5 shows the mean post lengths as word counts across the experimental conditions.

Study 3 Posttest

In a Study 3 posttest, we investigated whether demographic self-disclosures needed to be

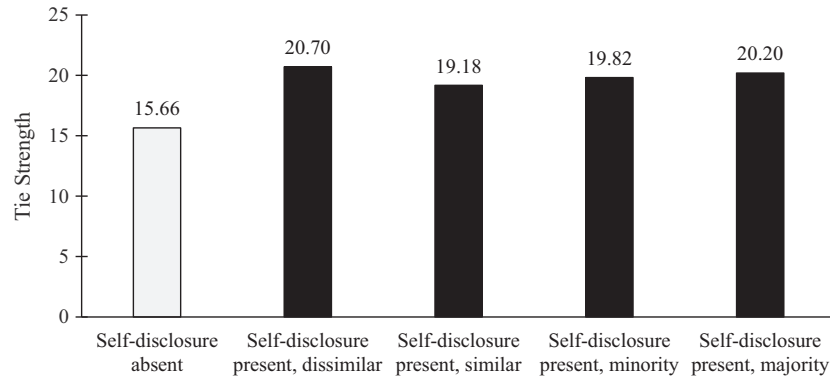


Figure 5. Demographic self-discloser's contribution to tie strength (Study 3).
 Note. All differences significant versus self-disclosure absent $p < .01$

contextually relevant to online support groups to elicit tie strengthening. In this posttest, we decontextualized the self-disclosure prompt to “Please tell this last support group member about your own marital status” whereas our original contextualized prompt had encouraged the type of self-disclosure observed in online support groups “Please tell this last group member about your own personal marital status, and how you feel your own marital status might affect your weight loss.” We measured tie strength and involvement as in Study 3. We found the decontextualized self-disclosure, and no self-disclosure conditions were comparable on involvement ($M = 3.34$ vs. 3.48 , $F(1,368) = 2.27$, $p = .13$). The decontextualized self-disclosure and no self-disclosure conditions were also comparable on tie strengthening ($M = 20.11$ vs. 19.21 , $F(1,368) = 0.42$, $p = .52$), perhaps because friendliness and openness were not conveyed.

Study 4

Overview

Study 4 reinvestigated H2b by testing whether, if demographic self-disclosure occurred in an online support group, a participant who was asked to respond to the last poster would contribute more to their tie strength, relative to if no self-disclosure had occurred. We used posts from real COVID online support groups on Facebook which we joined, one group having 20.8k members (<https://www.facebook.com/groups/CV19supportgroup>) and the other having 20.2k members (<https://www.facebook.com/groups/longcovid>). We found numerous posts to the groups that contained spontaneous self-disclosures of employment or student status, but primarily about being employed and

trying to work during COVID. Using these real COVID support group posts, we created a set of self-disclosure posts and a matched set of no self-disclosure posts that were otherwise identical.

Our research design involved one factor with two conditions, demographic self-disclosure present versus absent, and participants were randomly assigned to condition. After reading six self-disclosing or non-self-disclosing posts, participants were asked to respond to the last post, and the dependent variable was their contribution to tie strength based on the length of their response. In the self-disclosure condition, the first five posts disclosed that the poster was employed, but the last poster self-disclosed being a student and hence had minority status. Also, the vast majority of our participants were employed and therefore dissimilar to the last poster.

Methods

Participants

We recruited 148 participants from MTurk. They were 58.1% male, 84.5% employed, 13.5% students, 70.3% Caucasian, and 77.7% reporting use of social media for at least 1 hr daily. Most (71.6%) reported using 1–3 social media platforms, 22.3% reported using 4–7 platforms, 5.4% reported using more than 7 platforms, and 0.7% were nonusers.

Manipulations

Participants were shown the following cover story: “Imagine you have recently joined a new covid-19 online support group for those who have had covid, or know someone who has, or are worried about getting it. Members of this new support

group are just getting to know each other. Here are their recent posts. Please read each post carefully." Participants then saw six posts from six different members of a COVID support group. In the self-disclosure condition, five members self-disclosed being employed while the sixth self-disclosed being a student. In the no self-disclosure condition, these demographic self-disclosures did not occur but the content was otherwise identical and the word count was identical. The posts were taken virtually verbatim from the COVID support groups on Facebook cited earlier. In the self-disclosure condition, the last poster to whom the participant responded stated:

- "My class has 8 other students in it and none of them wear a mask or social distance enough. I am trying to protect myself and not get sick. So yesterday I go to school and I noticed someone had a mask on so I said wow your wearing a mask and they said they're wearing it because they have a fever of 100.5. So I'm thinking they should quarantine and take a test before they can come back but they are back at the school today. I didn't even ask if they got tested I am so frustrated. I can use advice right now."

In the no self-disclosure condition, "students" was replaced with "people" and "to school" was replaced with "there." (See Appendix for details.)

Outcome measure

We invited participants to respond to the post by the sixth group member using the prompt: "Imagine you decide to respond to this last group member. How might you respond to this last member? Please type your response to this member below." Tie strength was measured as the word count in this response.

Results

A one-factor ANOVA found the hypothesized main effect for self-disclosure on tie strength ($F(1,146) = 5.23, p = .02$). When demographic self-disclosure had occurred, the response to the last poster was longer as compared to when no self-disclosure had occurred ($M = 40.01$ vs. 29.99 words). The positive self-disclosure versus no self-disclosure effect held even when we only included the nonstudent participants who were dyadically dissimilar to the last poster who was a student ($F(1,126) = 3.95, p < .05, M = 40.90$ vs. 31.28 words). To summarize,

demographic self-disclosure versus no self-disclosure in an online support group for COVID caused participants to write more in their response to the last poster, strengthening their tie.

General Discussion

Summary of Aims, Findings, and Contributions

This research studied online support groups, in which consumers seek peer support to pursue valued activities and behaviors. Online support groups tend to have wide geographic reach and to be open and inclusive; as a result, their membership is often demographically diverse (Lieberman et al., 2005). Demographic differences have been identified as a reason for tie weakness in online support groups (Centola, 2011; Centola & van de Rijt, 2015; Lieberman et al., 2005; Naylor et al., 2012; Thelwall, 2009). Hence, it has been argued that administrators may want to configure online support groups to include demographically similar members (Centola, 2010, 2011; Centola & van de Rijt, 2015) or try to minimize disclosure of demographic differences (Naylor et al., 2012; Ren et al., 2007). Our aim was to examine the possibility that, rather than demographic differences inhibiting tie formation in online support groups, it may be the lack of self-disclosure of demographic differences that is the inhibiting factor.

Our findings indicate a striking discrepancy between people's perceptions of self-disclosure effects and the reality in online groups. Online group members tended to refrain from self-disclosing demographics when they were dyadically dissimilar from interaction partners, or when they had minority status in the group, due to the perceived relational cost of poor social integration. Poor social integration would undermine the strengthening of their ties to other group members. However, contradicting this intuition, we found that when members did spontaneously self-disclose demographic differences during their online discussions about goal pursuit, they formed stronger ties: They wrote more and longer posts to others, and others posted more in reciprocation. Moreover, stronger ties related to a higher likelihood of attaining the well-being goal, that is, abstaining from smoking. Thus, members' concerns about self-disclosing demographic differences were unfounded; instead of weakening ties, self-disclosure of demographic differences actually resulted in stronger ties which produced health benefits.

Our study extends homophily theory (Lazarsfeld & Merton, 1954; Marsden, 1987, 1988; Reagans, 2005, 2011; Verbrugge, 1977) to the increasingly common online settings where demographic traits must be self-disclosed to be known. We show that, in online support groups, when demographic self-disclosures naturally occur during ongoing contextualized discussions, the familiar patterns of similarity breeding connection and differences dividing may not hold. Our online support group members' ties strengthened not only when they self-disclosed demographic commonalities but also when they self-disclosed differences.

Managerial Implications

Our work identifies practical recommendations for addressing the failure of ties to strengthen, which afflicts demographically diverse online support groups (Centola, 2011; Centola & van de Rijt, 2015; Lieberman et al., 2005). Whereas past work has suggested that self-disclosure online is high, as compared to face-to-face settings (Antheunis et al., 2007; Belk, 2013; Tidwell & Walther, 2002), our findings indicate that, in demographically diverse online support groups, self-disclosure may actually be lower than is needed for optimally supporting group members' social ties and goal attainment. Hence, administrators of online support groups may want to think of creative ways to encourage spontaneous self-disclosures of demographics that will not elicit reactance. For instance, administrators may encourage members to post selfie photographs and videos and personal daily stories, similar to Snapchat and Instagram Stories. In addition, administrators of online support groups may want to directly combat members' concerns about self-disclosing demographic differences by explaining to them that any self-disclosures will help them to form stronger online ties and facilitate goal attainment.

Administrators of online support groups may also want to tackle dyadic dissimilarity and minority status directly, the two factors that we found to deter demographic self-disclosure and thus hinder ties from strengthening. To address reluctance to self-disclose on account of dyadic dissimilarity, organizers may want to facilitate the discovery of demographically similar partners, through member searches or buddy systems (Centola & van de Rijt, 2015; Ren et al., 2007, 2012). To counteract reluctance to self-disclose due to minority status, organizers may want to consider creating homogeneous

subgroups on certain key demographics, if this is both feasible and desirable (Lieberman et al., 2005).

Future Research Directions and Limitations

Past research has found that consumers refused to self-disclose their demographic information to marketers if they perceived an inadequate payback (Forman et al., 2008; Moon, 2000; White, 2004). We studied self-disclosures to other consumers, not marketers. Unlike prior studies of consumer-to-consumer online interaction which tended to observe self-disclosure reciprocation (Desjarlais et al., 2015; Forman et al., 2008), we observed nonreciprocation when people were demographically different. Hence, we recommend that future research examine self-disclosure avoidance and nonreciprocity in other consumer-to-consumer and workplace online contexts, including collaborative learning groups, knowledge-sharing communities, and networks of practice. Self-disclosure avoidance may be more common than the literature suggests and may adversely affect the performance of consumer groups and organizations that depend on online interaction and collaboration. We also recommend more research on approaches to encourage demographic self-disclosure in online support groups, especially demographically diverse ones. Researchers may want to examine if making online self-disclosures of demographics mandatory will strengthen ties or counterproductively weaken them. Overall, we hope that by demonstrating that online support group members misperceive the costs of self-disclosing demographic differences, and underestimate the benefits, we will draw more attention to this paradox.

Our research has some limitations. We did not study highly stigmatized self-disclosures such as a transgender sexual orientation. Nor did we study highly politicized self-disclosures such as attitudes toward controversial public figures or protest movements. Moreover, our data on the behavioral outcomes from self-disclosures were correlational. We welcome future research that will overcome these limitations.

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Appendix

Methodological Details Appendix

Study 1 Survey Measures and Dyad Formation Coding

Demographic measures

What is your gender? 1: Female 2: Male. *What is your employment status?* 1: Employed 2: Unemployed 3: Retired 4: Full time housemaker 5: Student. Responses 2–5 were aggregated. *What is your marital status?* 1: Married 2: Live with intimate partner 3: Divorced 4: Separated 5: Widowed 6: Single, never married. Responses 1–2 were aggregated, and responses 3–6 were aggregated. *What is your age?* (Fill in the blank). Age similarity was coded if two dyad members were less than 5 years apart, and dissimilarity was coded if they were 5 or more years apart.

Goal attainment measure

Goal attainment, defined as sustained quitting of smoking, was assessed using surveys that asked: (a) How many cigarettes have you smoked in the past 7 days? and (b) Have you puffed on a cigarette within the past 7 days? Members were asked to complete surveys at 7, 30 and 60 days after their quit date. Attainment of the sustained quit-smoking goal was coded (1) if the individual responded to all three surveys and consistently reported no smoking. Nongoal attainment was coded (0) if the individual failed to respond to one or more surveys or reported smoking at least once.

Dyad formation measure (examples)

If sender 03 sent a post to member 05, the dyad was 03–05. If sender 03 sent a post to members 06 and 07, the dyads were 03–06 and 03–07. If sender 03 did not specify any intended recipient, but coders determined from the timing and content that sender 03 intended to communicate with member 10, the dyad was 03–10. If a sender sent a message to the online support group at large, without specifying an intended recipient, no dyad was coded. Likewise, if a sender sent a message to the “study administrator” who sent daily reminders to post, no dyad was coded.

Study 2 Survey for Representative Conditions

Condition 11: Majority: Married (1), Dyad Member: Married (1)

Welcome. This survey will ask you about using social media. It should take about 3–5 min to complete. Be assured that all your answers will be kept confidential.

1. What is your marital status? 1. Married, 2. Single.
2. If single, check one. 1. Single, never married, 2. Separated, 3. Divorced 4. Not applicable I am married.
3. Please type in the number of years you have been married or type ‘single’ if you are not currently married.

Imagine you have joined an online community of people who have just started an online weight loss program. The program provides daily instructions for diet and exercise. The program started on Monday and now it is Tuesday. Members of the online community are just getting to know each other. Here are recent posts. Please read each post carefully.

- adjfkl: “I am married and I am doing this program for myself and to encourage my spouse to lose weight”
- ikelk: “Married too. I tried this program before and I lost weight but I gained it back. I hope this time I will keep it off”
- ooollk: “After getting married, I have been gradually gaining weight. Now I need to lose at least 10 pounds to get back to how I used to be”
- aaa3a: “I am excited about this opportunity. I am hoping to lose a lot of weight by summer so I look good in my bathing suit I love to swim”
- njelkj: “I’m married and my spouse isn’t very supportive of my losing weight but I hope this program will help me”
- lowed1: “I’ve never done anything like this before and I’m not sure I can do it. Does anyone else feel not quite ready?”
- zaadc: “I am married and my spouse is doing this program with me, so I will have a lot of support, with all of you helping me too!!!”
- aslek11: “Being married makes it hard for me because I feel a lot of stress. I am nervous and excited at the same time?!? I need to lose 20 pounds!”

- tyi9983: "What are others' weight loss goals? I am married and doing this program with my spouse. We both want to lose 10 pounds"

Imagine you decide to respond to this last community member.

4. When replying to this community member, how likely are you to disclose your marital status? 1. Extremely unlikely, 2. Moderately unlikely, 3. Slightly likely, 4. Neither unlikely or likely, 5. Slightly likely, 6. Moderately likely, 7. Extremely likely

Consider your marital status. If you tell the community members your marital status. . .

5. Will this online community (as a whole) relate to you less/more? 1 = substantially less, 2 = moderately less, 3 = slightly less, 4 = no difference, 5 = slightly more, 6 = moderately more, 7 = substantially more.
6. Will you fit in worse/better with this online community (as a whole)? 1 = substantially worse, 2 = moderately worse, 3 = slightly worse, 4 = no difference, 5 = slightly better, 6 = moderately better, 7 = substantially better.

Please provide your demographics.

7. What is your gender? 1. Male, 2. Female.
8. What is your age?
9. Which one best represents your ethnicity? 1. White Non-Hispanic, 2. Hispanic/Latino, 3. African-American/Black, 4. Asian, 5. Other.
10. What is your employment status? 1. Employed, 2. Unemployed, 3. Homemaker, 4. Retired, 5. Student.
11. On average, how much time do you spend daily on social networking sites? 1. Less than 1 hr, 2. 1-3 hr per day, 3. 4-6 hr per day, 4. More than 6 hr per day.

Condition 00: Majority: Single (0), Dyad Member: Single (0)

Welcome. This survey will ask you about using social media. It should take about 3-5 min to complete. Be assured that all your answers will be kept confidential.

1. What is your marital status? 1. Married, 2. Single.
2. If single, check one. 1. Single, never married, 2. Separated, 3. Divorced 4. Not applicable I am married.

3. Please type in the number of years you have been married or type 'single' if you are not currently married.

Imagine you have joined an online community of people who have just started an online weight loss program. The program provides daily instructions for diet and exercise. The program started on Monday and now it is Tuesday. Members of the online community are just getting to know each other. Here are recent posts. Please read each post carefully.

- adjfkl: "I am single and I am doing this program for myself and to encourage my best friend to lose weight."
- ikelk: "Single too. I tried this program before and I lost weight but I gained it back. I hope this time I will keep it off."
- ooolke: "I'm single and my family isn't very supportive of my losing weight but I hope this program will help me."
- aaa3a: "I am excited about this opportunity. I am hoping to lose a lot of weight by summer so I look good in my bathing suit I love to swim."
- njelkj: "Always been single, but I have been gradually gaining weight. Now I need to lose at least 10 pounds to get back to how I used to be."
- lowed1: "I've never done anything like this before and I'm not sure I can do it. Does anyone else feel not quite ready?"
- zaadc: "I am single and my friend is doing this program with me, so I will have a lot of support, with all of you helping me too!!!"
- aslek11: "Being single makes it hard for me because I feel a lot of stress. I am nervous and excited at the same time?!? I need to lose 20 pounds!"
- tyi9983: "What are others' weight loss goals? I am single and doing this program with my friend. We both want to lose 10 pounds."

Imagine you decide to respond to this last community member.

4. When replying to this community member, how likely are you to disclose your marital status? 1. Extremely unlikely, 2. Moderately unlikely, 3. Slightly likely, 4. Neither unlikely or likely, 5. Slightly likely, 6. Moderately likely, 7. Extremely likely.

Consider your marital status. If you tell the community members your marital status. . .

5. Will this online community (as a whole) relate to you less/more? 1 = substantially less, 2 = moderately less, 3 = slightly less, 4 = no difference, 5 = slightly more, 6 = moderately more, 7 = substantially more.
6. Will you fit in worse/better with this online community (as a whole)? 1 = substantially worse, 2 = moderately worse, 3 = slightly worse, 4 = no difference, 5 = slightly better, 6 = moderately better, 7 = substantially better.

Please provide your demographics.

7. What is your gender? 1. Male, 2. Female.
8. What is your age?
9. Which one best represents your ethnicity? 1. White Non-Hispanic, 2. Hispanic/Latino, 3. African-American/Black, 4. Asian, 5. Other.
10. What is your employment status? 1. Employed, 2. Unemployed, 3. Homemaker, 4. Retired, 5. Student.
11. On average, how much time do you spend daily on social networking sites? 1. Less than 1 hr, 2. 1–3 hr per day, 3. 4–6 hr per day, 4. More than 6 hr per day.

Study 3 Participants and Survey for Representative Conditions

Study 3 participants, wave 1 (59%)

We recruited 222 participants from MTurk, screening for U.S. residency and Facebook users. They were 57% female, 58.1% married, and 77.9% Caucasian, and 66.7% reported using social media for at least 1 hr daily.

Study 3 participants, wave 2 (41%)

We recruited 152 participants from MTurk, screening for U.S. residency and Facebook users. They were 48.7% female, 50.7% married, and 84.2% Caucasian, and 65.8% reported using social media for at least 1 hr daily.

Study 3 participants, aggregated (100%)

We recruited 374 participants from MTurk, screening for U.S. residency and Facebook users. They were 53.7% female, 55.1% married, and 80.5% Caucasian, and 66.3% reported using social media for at least 1 hr daily.

Condition Self-disclosure 11: Majority: Married (1), Dyad Member: Married (1)

Welcome. This survey will ask you about using social media. It should take about 5 min to complete. Be assured that all your answers will be kept confidential.

1. What is your worker ID?
2. What is your marital status? 1. Married, 2. Single.

Imagine you have joined an online community of people who have just started an online weight loss program. The program provides daily instructions for diet and exercise. The program started on Monday and now it is Tuesday. Members of the online community are just getting to know each other. Here are recent posts. Please read each post carefully.

- adjfkl: "I am married and I am doing this program for myself and to encourage my spouse to lose weight"
- ikelk: "Married too. I tried this program before and I lost weight but I gained it back. I hope this time I will keep it off"
- ooollke: "After getting married, I have been gradually gaining weight. Now I need to lose at least 10 pounds to get back to how I used to be"
- aaa3a: "I am excited about this opportunity. I am hoping to lose a lot of weight by summer so I look good in my bathing suit I love to swim"
- njelkj: "I'm married and my spouse isn't very supportive of my losing weight but I hope this program will help me"
- lowed1: "I've never done anything like this before and I'm not sure I can do it. Does anyone else feel not quite ready?"
- zaadc: "I am married and my spouse is doing this program with me, so I will have a lot of support, with all of you helping me too!!!"
- aslek11: "Being married makes it hard for me because I feel a lot of stress. I am nervous and excited at the same time?!? I need to lose 20 pounds!"

Imagine you decide to respond to this last community member.

- tyi9983: "I have been married for 12 years and I am doing this program with my

spouse. We both need to lose at least 10 lbs! We plan to cut calories, cut out late night snacks and do more cardio. My spouse has a health problem and needs to take it easy so we plan to walk our dogs together every day for 30 minutes"

3. Please tell this last community member about your own personal marital status, and how you feel your own marital status might affect your weight loss. Also, explain why you feel this way. Write as much as you would like, but write at least 2–3 sentences in the box below.
4. **Please write something else to this member.**
5. (QUESTION ADDED IN DATA COLLECTION WAVE 2) How involving or engaging was it for you to write the post to the community member? **1 not involving, 2 somewhat involving 3 moderately involving 4 highly involving 5 very highly involving.**
6. What is your gender? 1. Male, 2. Female.
7. What is your age?
8. Which one best represents your ethnicity? 1. White Nonhispanic, 2. Hispanic/Latino, 3. African-American/Black, 4. Asian, 5. Other.
9. What is your employment status? 1. Employed, 2. Unemployed, 3. Homemaker 4. Retired, 5. Student.
10. On average, how much time do you spend daily on social networking sites? 1: Less than 1 hr per day, 2: 1–3 hr per day, 3: 4–6 hr per day, 3: More than 6 hr per day.

Condition Self-disclosure 00: Majority: Single (0), Dyad Member: Single (0)

Welcome. This survey will ask you about using social media. It should take about 5 min to complete. Be assured that all your answers will be kept confidential.

1. What is your worker ID?
2. What is your marital status? 1. Married, 2. Single.

Imagine you have joined an online community of people who have just started an online weight loss program. The program provides daily instructions for diet and exercise. The program started on Monday and now it is Tuesday. Members of the online community are just getting to know each other. Here are recent posts. Please read each post carefully.

- adjfkl: "I am single and I am doing this program for myself and to encourage my best friend to lose weight."
- ikelk: "Single too. I tried this program before and I lost weight but I gained it back. I hope this time I will keep it off."
- ooollke: "I'm single and my family isn't very supportive of my losing weight but I hope this program will help me."
- aaa3a: "I am excited about this opportunity. I am hoping to lose a lot of weight by summer so I look good in my bathing suit I love to swim."
- njelkj: "Always been single, but I have been gradually gaining weight. Now I need to lose at least 10 pounds to get back to how I used to be."
- lowed1: "I've never done anything like this before and I'm not sure I can do it. Does anyone else feel not quite ready?"
- zaadc: "I am single and my friend is doing this program with me, so I will have a lot of support, with all of you helping me too!!!"
- aslek11: "Being single makes it hard for me because I feel a lot of stress. I am nervous and excited at the same time?!? I need to lose 20 pounds!"

Imagine you decide to respond to this last community member.

- tyi9983: "I have been living alone for 12 years but I am doing this program with my neighbor. We both need to lose at least 10lbs! We plan to cut calories, cut out late night snacks and do more cardio. My neighbor has a health problem and needs to take it easy so we plan to walk our dogs together every day for 30 minutes."
3. Please tell this last community member about your own personal marital status, and how you feel your own marital status might affect your weight loss. Also, explain why you feel this way. Write as much as you would like, but write at least 2–3 sentences in the box below.
 4. **Please write something else to this member.**
 5. (QUESTION ADDED IN DATA COLLECTION WAVE 2) **How involving or engaging was it for you to write the post to the community member? 1. not involving, 2. somewhat involving, 3. moderately involving, 4. highly involving, 5. very highly involving.**

6. What is your gender? 1. Male, 2. Female.
7. What is your age?
8. Which one best represents your ethnicity? 1. White Nonhispanic, 2. Hispanic/Latino, 3. African-American/Black, 4. Asian, 5. Other.
9. What is your employment status? 1. Employed, 2. Unemployed, 3. Homemaker, 4. Retired, 5. Student.
10. On average, how much time do you spend daily on social networking sites? 1: Less than 1 hr per day, 2: 1–3 hr per day, 3: 4–6 hr per day, 3: More than 6 hr per day.

Condition No Self-disclosure 11: Majority: Married (1), Dyad Member: Married (1)

Welcome. This survey will ask you about using social media. It should take about 5 min to complete. Be assured that all your answers will be kept confidential.

1. What is your worker ID?
2. What is your marital status? 1. Married, 2. Single.

Imagine you have joined an online community of people who have just started an online weight loss program. The program provides daily instructions for diet and exercise. The program started on Monday and now it is Tuesday. Members of the online community are just getting to know each other. Here are recent posts. Please read each post carefully.

- adjfkl: "I am married and I am doing this program for myself and to encourage my spouse to lose weight"
- ikelk: "Married too. I tried this program before and I lost weight but I gained it back. I hope this time I will keep it off"
- ooollke: "After getting married, I have been gradually gaining weight. Now I need to lose at least 10 pounds to get back to how I used to be"
- aaa3a: "I am excited about this opportunity. I am hoping to lose a lot of weight by summer so I look good in my bathing suit I love to swim"
- njelkj: "I'm married and my spouse isn't very supportive of my losing weight but I hope this program will help me"
- lowed1: "I've never done anything like this before and I'm not sure I can do it. Does anyone else feel not quite ready?"

- zaadc: "I am married and my spouse is doing this program with me, so I will have a lot of support, with all of you helping me too!!!"
- aslek11: "Being married makes it hard for me because I feel a lot of stress. I am nervous and excited at the same time?!? I need to lose 20 pounds!"

Imagine you decide to respond to this last community member.

- tyi9983: "I have been married for 12 years and I am doing this program with my spouse. We both need to lose at least 10 lbs! We plan to cut calories, cut out late night snacks and do more cardio. My spouse has a health problem and needs to take it easy so we plan to walk our dogs together every day for 30 minutes"

3. Please tell this last community member about a scientific fact about weight loss, and how you feel this fact might affect your weight loss. Also, explain why you feel this way. Write as much as you would like, but write at least 2–3 sentences in the box below.
4. Please write something else to this member.
5. (QUESTION ADDED IN DATA COLLECTION WAVE 2) How involving or engaging was it for you to write the post to the community member? **1. not involving, 2. somewhat involving, 3. moderately involving, 4. highly involving, 5. very highly involving.**
6. What is your gender? 1. Male, 2. Female.
7. What is your age?
8. Which one best represents your ethnicity? 1. White Nonhispanic, 2. Hispanic/Latino, 3. African-American/Black, 4. Asian, 5. Other.
9. What is your employment status? 1. Employed, 2. Unemployed, 3. Homemaker, 4. Retired, 5. Student.
10. On average, how much time do you spend daily on social networking sites? 1: Less than 1 hr per day, 2: 1–3 hr per day, 3: 4–6 hr per day, 3: More than 6 hr per day.

Study 4 Survey

Self-disclosure Condition

Imagine you have recently joined a new covid-19 online support group for those who have had

covid, or know someone who has, or are worried about getting it. Members of this new support group are just getting to know each other. Here are their recent posts. Please read each post carefully.

- I got covid from someone at work. But I am back at work now and cleared by my Dr. I am not contagious. I only told family about it but someone told a mutual friend who saw me working. The mutual friend said I was spreading covid and endangering etc. It's just sad what fear over this virus will drive people to do.
- A friend from my work is in the hospital recovering from COVID. I hear he may have permanent lung damage and his stomach is a mess. He is one of my closest friends from my work. Has anyone out there been this sick and has a recovery story they can share? I need all the info I can get as hearing about my friend is completely heartbreaking. I pray for everyone having to deal with this horrible virus.
- I'm post-covid going on week 15 tomorrow. I had around 3 weeks of feeling pretty good again. Lots of energy and keeping up with my work. But then on Monday I got a mild fever for the first time since I first got sick. Muscles ache too. I've had extreme exhaustion all week. I'm so fed up. I'm about to have the busiest week at my work that I've had in a month and there's no way to get out of it. I also hate to sound like a hypochondriac. To top it off today a person at work was saying she doesn't think I've had it, and that people are over-reacting and think they've had it when they haven't! Sorry I just had to get that off my chest.
- Got in the car to drive to my work . . . headed in the wrong direction . . . really had to concentrate to figure out how to get there . . . used GPS to help. Also missed a Zoom meeting for work today by an hr . . . again due to confusion. Very uncomfortable about my troubles with executive functioning . . .
- I'm a worker with COVID who obviously has been barred from returning to work until I test negative. Work is upset with me because they suspect I went to a party. I did no such thing I'm scared enough that I'm going to hurt my fellow workers.
- My class has 8 other students in it and none of them wear a mask or social distance enough. I am trying to protect myself and

not get sick. So yesterday I go to school and I noticed someone had a mask on so I said wow your wearing a mask and they said they're wearing it because they have a fever of 100.5. So I'm thinking they should quarantine and take a test before they can come back but they are back at the school today. I didn't even ask if they got tested I am so frustrated. I can use advice right now.

1. Imagine you decide to respond to this last group member. How might you respond to this last member? Please type your response to this member below. TEXT BOX.
2. What is your employment status? 1. Employed, 2. Not Employed.
3. What is your student status? 1. Student, 2. Not a Student.
4. What is your gender? 1. Male, 2. Female.
5. What is your age? (type in).
6. Which one best represents your ethnicity? 1. White Non-Hispanic, 2. Hispanic/Latino, 3. African-American/Black, 4. Asian, 5. Other.
7. How many social networking sites do you use regularly, e.g., at least once a week on average? 1. None, 2. 1-3, 3. 4-7, 4. More than 7.
8. On average, how much time do you spend daily on social networking sites? 1. Less than 1 hr, 2. 1-3 hr per day, 3. 4-6 hr per day, 4. More than 6 hr per day.

No Self-disclosure Condition

Imagine you have recently joined a new covid-19 online support group for those who have had covid, or know someone who has, or are worried about getting it. Members of this new support group are just getting to know each other. Here are their recent posts. Please read each post carefully.

- I got covid from someone I know. But I am back to myself now and cleared by my Dr. I am not contagious. I only told family about it but someone told a mutual friend who saw me somewhere. The mutual friend said I was spreading covid and endangering etc. It's just sad what fear over this virus will drive people to do.
- A friend from my area is in the hospital recovering from COVID. I hear he may have permanent lung damage and his stomach is a mess. He is one of my closest friends from my area. Has anyone out there been this sick and

has a recovery story they can share? I need all the info I can get as hearing about my friend is completely heartbreaking. I pray for everyone having to deal with this horrible virus.

- I'm post-covid going on week 15 tomorrow. I had around 3 weeks of feeling pretty good again. Lots of energy and keeping up with my life. But then on Monday I got a mild fever for the first time since I first got sick. Muscles ache too. I've had extreme exhaustion all week. I'm so fed up. I'm about to have the busiest week of my life that I've had in a month and there's no way to get out of it. I also hate to sound like a hypochondriac. To top it off today a person I know was saying she doesn't think I've had it, and that people are over-reacting and think they've had it when they haven't! Sorry I just had to get that off my chest.
- Got in the car to drive to do things . . . headed in the wrong direction . . . really had to concentrate to figure out how to get there . . . used GPS to help. Also missed a Zoom meeting for something today by an hour . . . again due to confusion. Very uncomfortable about my troubles with executive functioning . . . I'm a person with COVID who obviously has been barred from returning to life until I test negative. People are upset with me because they suspect I went to a party. I did no such thing I'm scared enough that I'm going to hurt my fellow citizens.
- My building has 8 other people in it and none of them wear a mask or social distance enough. I am trying to protect myself and not get sick. So yesterday I go to there and I noticed someone had a mask on so I said wow your wearing a mask and they said they're wearing it because they have a fever of 100.5. So I'm thinking they should quarantine and take a test before they can come back but they are back in the building today. I didn't even ask if they got tested I am so frustrated. I can use advice right now.

Measures: same as above

Initial Study 2—Removed from Final Paper as Required by Review Team

Overview

We initially conducted the following study as our Study 2, to test H1c that demographic

dissimilarity and minority status would result in self-disclosure inhibition due to the perceived relational cost of self-disclosure. We measured the posited mediator, the perceived relational cost of self-disclosure, by considering what in retrospect were two extreme relational costs: social isolation (not being talked to, i.e., weak ties) and social rejection (not being liked). We found that both dissimilarity and minority status resulted in weak but statistically significant increases in perceptions of social isolation and social rejection, and self-disclosure inhibition. However, the Hayes mediation tests were not supportive, indicating that perceptions about these extreme relational costs of social isolation and social rejection did not mediate the effects on self-disclosure inhibition. Therefore, in the current Study 2, we measured a more immediate and less extreme relational cost, and weak social integration, that is, not fitting in with others and others not relating to you. The results of the current Study 2 are fully supportive including the Hayes mediation tests (see main paper). However, we report this initial Study 2 for completeness.

Methods

Design. The research design was a 2 × 2 factorial with two fixed and randomized binary factors: the participant's demographic dissimilarity versus similarity to a dyad partner and the participant's demographic minority versus nonminority status in the group.

Participants. We recruited 462 participants from MTurk, screening for U.S. residents who were Facebook users and therefore more likely to participate in online social support groups. Participants were 56.1% female, 59.5% married, and 78.8% Caucasian, and 68% reported using social media for at least 1 hr daily.

Manipulations. We wanted this laboratory study to mirror our field study, so the posts we created were based on real ones we had observed in our online support groups (see Study 2 survey above). However, we studied a weight loss rather than a quit-smoking context because participants were more likely to relate to it. Participants were shown eight posts in a weight loss support group by eight members who had ambiguous usernames which disguised their demographics, as in our field study. A perceivable majority on marital status was created in the group, by the posts randomly indicating that six of the eight members were either married or unmarried. Participants then saw a ninth post which contained a self-disclosure of marital status,

which randomly revealed that this member was either married or unmarried, and they were told they were in conversation with this member, the dyad partner. Considering the participant's own marital status, we then classified each participant as being dissimilar or similar to the dyad partner, and as having minority or nonminority status in the group as a whole, on marital status.

Measures. We measured self-disclosure inhibition by asking: "When replying to this group member, how likely are you to disclose your marital status?" The Likert scale ranged from 1 (extremely unlikely) to 7 (extremely likely) and was reverse-coded for the analysis. We measured the proneness to self-disclose as a perceived likelihood rather than as a behavior because interaction in such an experiment was found to be too transitory to induce unprompted acts of self-disclosure. We also measured the two perceived relational costs of self-disclosure, being ignored ("Are you concerned that the group members might not talk to you as much, if you disclose your marital status?") and being rejected ("Are you concerned that the group members might not like you as much, if you disclose your marital status?"). The Likert scales for both questions ranged from 1 (not at all concerned) to 7 (extremely concerned).

Results

Test of H1. We ran 2 (dyadic dissimilarity) \times 2 (minority status) omnibus ANOVAs. Dyadic dissimilarity as compared to similarity elicited self-disclosure inhibition ($F(1,458) = 31.80$, $p < .001$; $M = 4.15$ vs. 3.10), and minority as compared to nonminority status elicited self-disclosure inhibition ($F(1,458) = 4.11$, $p = .04$; $M = 3.81$ vs. 3.44), with no interaction ($F(1,458) = 0.60$, $p = .44$). Moreover, there was a higher perceived relational cost of being ignored if the self-disclosure revealed dyadic

dissimilarity rather than similarity ($F(1,458) = 6.29$, $p = .01$; $M = 2.36$ vs. 2.01) or minority rather than nonminority status ($F(1,458) = 15.42$, $p < .001$; $M = 2.46$ vs. 1.91), with no interaction ($F(1,458) = 0.55$, $p = .46$). Also, there was a higher perceived relational cost of being rejected if the self-disclosure revealed dyadic dissimilarity rather than similarity ($F(1,458) = 6.22$, $p = .01$; $M = 2.30$ vs. 1.95) or minority rather than nonminority status ($F(1,458) = 13.26$, $p < .001$; $M = 2.38$ vs. 1.87), with no interaction ($F(1,458) = 0.08$, $p = .77$).

Tests of Mediation. We tested for mediation as posited by H1c using Hayes PROCESS Macro for SPSS, Model 4, with 5,000 bootstrap samples, but the results were not supportive. Even using a 90% confidence interval, dyadic dissimilarity was not found to elicit self-disclosure inhibition due to the perceived relational cost of dyadic dissimilarity (indirect effect = 0.0285, 90% CI -0.0064, 0.0759). Likewise, minority status was not found to elicit self-disclosure inhibition due to the perceived relational cost of minority status (indirect effect = 0.0552, 90% CI -0.0028, 0.1292).

However, using a 90% confidence interval and Model 6 for serial mediation, we found some speculative evidence that dyadic dissimilarity elicited self-disclosure inhibition due to the perceived relational cost of being ignored then rejected (indirect effect = 0.0615, 90% CI 0.0022, 0.1458) and that minority status evoked self-disclosure inhibition due to perceived relational cost of being ignored then rejected (indirect effect = 0.1073, 90% CI 0.0126, 0.2202).

We suspect the mediation results were weaker in this initial Study 2, because we measured social isolation and social rejection which are extreme costs of self-disclosing a demographic difference. In redone Study 2, we measured poor social integration which is a more immediate and readily understood cost.