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Weak-Tie Support Network Preference, Health-Related Stigma, and Health Outcomes in Computer-Mediated Support Groups

Kevin B. Wright & Stephen A. Rains

Although computer-mediated support groups have been argued to be beneficial for individuals coping with health-related stigma, few studies have explored how communication processes may moderate perceptions of stigma and health outcomes. Increasing our understanding of the relationships among these variables may help to inform social support interventions for individuals facing stigmatized health issues. Drawing from the optimal matching model, the reported study examined the relationships among strong-tie/weak-tie support network preference and health-related stigma for stress and depression among members of health-related computer-mediated support groups. The results indicated that health-related stigma was positively associated with preference for weak-tie support, and preference for weak-tie support was found to moderate the relationship between stigma and both stress and depression. The implications of the findings for the role of on-line weak-tie network supportive relationships in reducing stigma and its application to developing support-focused health interventions and segmenting potential intervention participants are discussed.

Keywords: Weak Tie; Support Network; Health-Related Stigma; Health Communication; computer-mediated communication

In recent years, social support researchers have become increasingly interested in the capabilities of computer-mediated communication for supplementing (and sometimes replacing) traditional face-to-face social support networks (Rains & Keating, 2011; Turner, Grube, & Meyers, 2001; Wright & Miller, 2010). The concept of support

Kevin B. Wright is at the Department of Communication, George Mason University. Stephen A. Rains is at the Department of Communication, University of Arizona. Correspondence to: Kevin B. Wright, Department of Communication, Saint Louis University, Xavier Hall 300A, St. Louis, MO, 63108, USA E-mail: kbwright@ou.edu

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network preference within computer-mediated contexts—involving the degree to which one prefers social support from people who are interpersonally close (i.e., strong ties) or more distant (i.e., weak ties)—appears to be an important variable in the process of social support mobilization (Wright & Miller, 2010; Wright, Rains, & Banas, 2010). Scholars have known for decades that the support, validation, and assistance we receive from our social network members can have a positive influence on our mental and physical health (see Berkman & Syme, 1979; Cohen, 1988; Cutrona & Suhr, 1992). In addition, there is considerable evidence that people differ in their preference for strong-tie versus weak-tie social support in both face-to-face and computer-mediated contexts (Adelman, Parks, & Albrecht, 1987; Walther & Boyd, 2002; Wright & Bell, 2003) depending upon the type of support they are seeking. However, with the advent of computer-mediated social support, researchers have become interested in assessing the degree to which on-line supportive relationships (including weak ties) are linked to positive health outcomes (Rains & Young, 2009; Shaw, Hawkins, McTavish, Pingree, & Gustafson, 2006).

Health-related stigma is a significant problem that many individuals facing health concerns have to deal with on a daily basis (Herek & Glunt, 1988). Health-related stigma is defined in this project at the individual level involving an individual's perception that her or his health condition represents a mark of discredit (Goffman, 1963). A plethora of deleterious outcomes have been linked with health-related stigma ranging from reductions in the size of individuals' support networks and problems discussing health concerns with others to reduced compliance with treatment recommendations and increased health problems (Rosman, 2004; Vanable, Carey, Blair, & Littlewood, 2006). Two noteworthy consequences of perceived health-related stigma, which also serve as the outcome variables examined in this study, are stress and depression (Riggs, Vosvick, & Stallings, 2007; Vanable, Carey, Blair, & Littlewood, 2006; Wolitski, Pals, Kidder, Courtenay-Quirk, & Holtgrave, 2008). Stress and depression represent general indicators of one's health status and coping resources that are applicable across a range of specific health conditions. Moreover, stress and depression have been linked to a multitude of health problems, including alcohol and substance abuse, increased usage of tobacco products, anxiety and related mental-health problems, reduced immune system functioning, and increased physical-health problems (Ernst & Cacioppo, 1998; Duncan, Hart, Scoular, & Bigrigg, 2001).

For individuals who perceive their health condition to be stigmatized, computer-mediated support groups may be an important avenue to acquire coping resources such as access to on-line weak ties and weak-tie support (Wright & Bell, 2003; Wright et al., 2010). Weak ties offer several advantages relative to strong ties such as family and friends, including being less judgmental and more objective, offering unique information, and a reduced potential for role conflict (Wright & Miller, 2010). Applied communication researchers (and applied scholars from other disciplines) have become increasingly interested in computer-mediated support groups as a way to supplement (or replace) traditional face-to-face support networks as part of a broader health intervention (Houston, Cooper, & Ford, 2002; Shaw et al., 2006). The growth of health-related computer-mediated support groups in recent years and their use in

formal interventions makes it important for researchers to evaluate if and how characteristics of weak-tie support might help mitigate some of the deleterious outcomes of health-related stigma. Such evidence would be useful for developing computer-mediated support interventions for people who feel stigmatized by members of their face-to-face social networks due to their health condition. Interventions could be structured to encourage the development of a community of weak ties. Moreover, it may be possible to use preference for weak-tie support as an individual difference factor to segment potential intervention participants and identify individuals who would be most likely to benefit from the support intervention.

Drawing from the optimal matching model of social support (Cutrona & Russell, 1990), the purpose of the current study was to examine the implications of strong-tie/weak-tie support network preference and health-related stigma for stress and depression among members of health-related computer-mediated support groups. Toward that end, we examine literature on the optimal matching model, strong-tie/weak-tie network preference, and health-related stigma. Next, we advance several hypotheses stemming from this body of theory/research, followed by a report of a study conducted by the researchers to test these hypotheses. Finally, we provide a discussion of the theoretical implications and potential applications of the study findings for computer-mediated support interventions.

Social Support and the Optimal Matching Model

Perceived social support has been linked to reductions in mental and physical health symptoms, reduced depression and stress, and increases in one's sense of well-being (Lett et al., 2007; Wills & Shinar, 2000). However, people often differ in terms of the types of support they find useful due to factors such as the context of the stressful situation they are facing, their perceived coping skills, and their relationship with the support provider (Cutrona & Russell, 1990). The optimal matching model (Cutrona & Russell, 1990) suggests that matching the specific type of support offered with the dimensions of a stressor (e.g., desirability, controllability, life domain, and duration of consequences) produces the most positive outcomes. More generally, the model is grounded in the notion that a match between the needs of support seekers and the resources/abilities of support providers is important in terms of coping with the many relational challenges associated with communicating social support. For example, if an individual is seeking emotional support and validation for a health concern and he or she perceives that members of his or her support network have competently listened, expressed empathy, and acknowledged the severity of the issue, then this would be considered an example of an optimal match between the support seeker and support providers.

People tend to make decisions regarding approaching potential supporters based on the perception that members of their network will be able to meet their specific need(s) for support as well as their relational needs. Cutrona and Russell (1990) contend that optimal matches in supportive episodes may lead to more positive perceptions of relational partners and the type of support that is being offered, and this, in turn, may ultimately influence positive health outcomes. Yet it is also possible

that a recipient of support may perceive some types of support negatively (which is often the case among strong ties who react negatively to stigmatized health conditions), and this may negate the positive effects of the supportive attempt, or it may actually have a negative impact on health or quality of life (Dakof & Taylor, 1990; Dunkel-Schetter & Wortman, 1982). There is evidence to suggest that weak ties accessed via computer-mediated communication might be particularly valuable when strong ties are unable or unwilling to provide support. Rains and Keating (2011), for example, found that the health bloggers in their sample who received the least social support from their friends and family most benefited from the support provided by blog readers. Their findings underscore the potential utility of weak ties accessed via computer-mediated communication as a source of social support.

Weak-Tie Support Network Preference and Computer-Mediated Support

The concept of support network preference within computer-mediated contexts appears to be an important variable in the process of social support mobilization (Wright & Miller, 2010; Wright et al., 2010). There is evidence that people differ in their preference for strong-tie versus weak-tie social support in both face-to-face and computer-mediated contexts depending upon the type of support they are seeking and characteristics of their weak-tie and strong-tie social networks (Adelman et al., 1987; Walther & Boyd, 2002; Wright & Bell, 2003). Weak ties consist of individuals who do not have a close personal relationship, but rely on one another for social support. Support from weak ties often differs from (and is sometimes perceived as more useful than) support offered among stronger ties such as friends and family (Adelman et al., 1987; Granovetter, 1973). Wright and Miller (2010) identify several key characteristics of weak-tie support. Relative to strong ties, weak ties can provide access to diverse points of view and information, present less risk associated with disclosing information, offer more objective feedback, and require less role obligation such as reduced pressure on the support receiver to reciprocate information and assistance. They developed a measure of strong-tie/weak-tie support preference to make it possible to empirically assess the degree to which an individual prefers support from weak ties.

Computer-mediated networks appear to be a particularly useful resource for connecting to weak ties and weak-tie support (Rains & Keating, 2011; Walther & Boyd, 2002; Wright & Bell, 2003). Indeed, Wright and colleagues (Wright & Miller, 2010; Wright et al., 2010) highlight preference for weak tie support as one factor motivating individuals to use computer-mediated support groups. Members of computer-mediated support groups represent a unique coping resource because they are facing or have faced the same health condition, but tend to lack the shared history and competing interests found in close personal relationships. These characteristics of computer-mediated support group members increase the potential that support seekers will receive relatively objective feedback and novel information as well as empathy and understanding. Wright and Miller (2010) found that computer-mediated support group members dealing with sensitive health problems were more

likely to prefer weak-tie support than undergraduate students who were not dealing with sensitive health problems/issues.

Health-Related Stigma

Drawing upon Goffman's (1963) original notion of stigma, a number of social scientists have extended this concept into the area of health (Berger et al., 2005; Herek & Glunt, 1988; Link et al., 1992). Smith (2011, p. 455) refers to stigma as "a leading barrier to health promotion, treatment, and social support for those facing health challenges." Stigma involves the possession of a discrediting mark that is recognized among a social group (Goffman, 1963). Berger, Ferrans, and Lasley (2001) conceptualize health-related stigma as one's awareness of the potential for social disqualification, reduced opportunities, and changes in self-perception. They operationalize health-related stigma as a multidimensional construct involving negative social consequences, concerns with disclosing one's illness status, negative self-image, and concerns with public attitudes about one's illness.

Stigma is a social construct and, as a result, is not an objective feature of a particular health condition. Stigma is created through the interactions of the stigmatized and stigmatizers and may evolve over time (Meisenbach, 2010; Smith, 2007). Health-related stigma has important implications for communication and interaction with others. In her theory of stigma communication, Smith (2007) notes that stigma can lead to social withdrawal and social rejection. Indeed, individuals with stigmatized health conditions report that members of their social network often avoid talking about their condition, avoid contact with them, and express less empathy toward them compared to people without a stigmatized health condition (Hebl, Tickle, & Heatherton, 2000; Rush, 1998). Moreover, individuals with stigmatized health conditions may face challenges making disclosures about their health (Greene, 2009). Steuber and Solomon (2011), for example, reported that stigma-related concerns with disclosure were negatively associated with the revelation of information about infertility among men in their sample.

Health-related stigma is also associated with a range of deleterious health outcomes (Rosman, 2004; Sirey et al., 2001; Vanable et al., 2006). Although there are several different perspectives about the effects of stigma on health, one line of thought is that stigmatization may contribute to chronic stress and thereby threaten or diminish well-being (Link & Phelan, 2006; Miller & Major, 2000). In this project, we focus on perceived stress and depression. Both depression (Vanable et al., 2006) and perceived stress (Riggs et al., 2007; Wolitski et al., 2008) have been shown to be associated with health-related stigma and serve as valuable indicators of the degree to which stigma is taxing one's coping resources. Additionally, stress and depression have been linked to other significant health problems ranging from alcohol and substance abuse to reduced immune system functioning (Ernst & Cacioppo, 1998; Duncan et al., 2001).

Hypotheses

Although relatively few researchers have used the optimal matching model (Cutrona & Russell, 1990) to investigate computer-mediated support in general or weak-tie support preference (see Eichhorn, 2008; Turner et al., 2001 for exceptions), the studies that have been conducted suggest that this perspective may help to provide important insights into the needs of individuals who seek computer-mediated support and the outcomes of support seeking. The optimal matching model suggests that perceived health-related stigma may be positively associated with preference for weak-tie support. As previously noted, stigma involves a reduced sense of self-worth, the potential for social rejection, and/or a reluctance to discuss one's illness (Berger et al., 2001; Rosman, 2004; Vanable et al., 2006). Each of these elements of stigma may make weak ties a particularly attractive support resource. Weak ties are distinct from strong ties in that they may represent reduced risk associated with disclosure, fewer role obligations, and a more objective perspective of one's circumstances (Adelman et al., 1987; Wright & Miller, 2010). As such, it seems plausible that individuals who perceive their illness to be stigmatizing may have a greater preference for weak-tie support.

H1: Perceived health-related stigma is positively associated with preference for weak-tie support.

Beyond preferring weak ties, the optimal matching model of social support (Cutrona & Russell, 1990) suggests that a preference for weak-tie support may help mitigate some of the deleterious outcomes associated with stigma among members of computer-mediated support groups. Most relevant to this project, stigma has been linked with stress and depression in previous research (Riggs et al., 2007; Vanable et al., 2006; Wolitski et al., 2008). Social support may serve to foster improvements in one's psychosocial well-being (Fenlason & Beehr, 1994; Lieberman & Goldstein, 2005; Wright, Rosenberg, Egbert, Ploeger, Bernard, & King, in press), particularly in cases where there are problems obtaining adequate support within traditional networks (Rains & Keating, 2011; Wright & Bell, 2003). As such, it seems plausible that preference for weak-tie support might moderate the relationships between stigma and both stress and depression among members of computer-mediated support groups. The deleterious consequences of stigma may be mitigated among support group members who prefer weak ties. The unique concerns of stigmatized individuals related to social rejection, a reluctance to disclose, and decreased feelings of self worth may be most effectively met by weak ties who may offer more objective feedback, reduced role obligation, and less risk associated with disclosure. In short, the stigma-related needs and concerns of computer-mediated support group members may be better met among members who have a greater preference for weak ties than members who do not have as strong a preference for weak ties and, thus, members with a greater preference for weak ties will be less subject to the deleterious consequences of stigma in the form of depression and stress.

H2: Perceived health-related stigma is positively associated with (a) depression and (b) stress.

H3: Preference for weak-tie support moderates the relationships between perceived health-related stigma and (a) depression and (b) stress. The relationships between health-related stigma and both depression and stress are weaker among individuals who have a relatively greater preference for weak-tie support.

Method

Respondents

Respondents were recruited from 40 computer-mediated support groups dedicated to one or more specific health conditions. The consent of the administrator for each group was first secured, and then a brief description of the study, invitation to participate, and a link to the online questionnaire were posted to each support group. A total of 135 respondents completed the questionnaire. Respondents ranged in age from 19 to 85 ($M = 51.90$, $SD = 13.23$). Respondents were more likely to be female (75%; $n = 101$) and white (95%; $n = 128$). Respondents reported visiting support groups about one or more health topics including, but not limited to: Addison's disease, Alzheimer's disease, bipolar disorder, bulimia, cancer, diabetes, depression, epilepsy, gout, hepatitis, infertility, joint replacement, prostate cancer, rheumatoid arthritis, and weight-loss surgery.

Measures

Preference for weak-tie support was measured using Wright and Miller's (2010) weak-tie/strong-tie support network preference scale, which contains four dimensions: comfort, risk, utility, objectivity. The 19-item measure evaluates the degree to which respondents prefer support from weak or strong ties. Sample items representing each of the four dimensions of the measure include: "I feel comfortable discussing my problems with close friends and family" (reverse scored), "It is less risky to discuss my problems with people who are not as intimate with me as close friends and family members," "I find people who don't know me very well see things more objectively than my family and close friends," and "People who don't know me very well are less likely to pass judgment on me." Ratings were made on a 5-point scale with the anchors (1) *strongly disagree* and *strongly agree* (5). All 19 items were combined to form a single measure of respondents' preference for weak-tie support ($M = 3.08$, $SD = .67$, $\alpha = .92$).

Health-related stigma was measured using 15 items representing the personalized stigma, disclosure concern, and negative self-image dimensions of the HIV stigma scale (Berger et al., 2001). All items were adapted to be applicable to a range of health conditions. Sample items from each of the three subscales include: "I have lost friends due to telling them I have my health condition," "I am very careful whom I tell about my health condition," and, "I feel I'm not as good as others because of my health condition." Ratings were made on a five-point scale with the anchors *strongly disagree*

(1) and *strongly agree* (5). The three subscales were strongly correlated ($r = .49$ to .65). Items from the three subscales were combined to form a single measure representing the degree to which respondents perceived their self-with-illness to be stigmatized ($M = 2.46$, $SD = .93$, $\alpha = .95$).

Perceived stress was assessed using 10 items from the global measure of perceived stress (GMPS) scale (Cohen, Kamarck, & Mermelstein, 1983). The GMPS evaluates the amount of stress one experienced during the previous month. Sample items include: "In the last month, how often have you found that you could not cope with all the things that you had to do," and, "In the last month, how often have you felt nervous and stressed?" Ratings were made on a 5-point scale with the anchors *never* (1) and *often* (5). All 10 times were combined to form a single measure representing respondents' level of perceived stress during the prior month ($M = 2.69$, $SD = .75$, $\alpha = .91$).

Depression was evaluated with the 21-item Beck depression inventory (BDI; Beck, Steer, & Brown, 1996). Sample items include: "I don't feel like doing regular activities or things I used to do," and "I would say I am depressed." Ratings were made on a 5-point scale with the anchors *never* (1) and *often* (5). All 21 items were combined to form a single measure representing respondents' level of depression during the previous month ($M = 2.16$, $SD = .82$, $\alpha = .95$).

Control Variables

Granted prior research demonstrating the influence of age (e.g., Mirowsky & Ross, 1992), sex (e.g., Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993), and health status (e.g., Stewart et al., 1989) on depression or stress, these three variables were included as control variables in the analyses. Respondents self-reported their *age* ($M = 51.90$, $SD = 13.23$) and *sex* (75% female). *Health status* was measured using a single item from the medical outcomes study short form (SF-8; Ware, Kosinski, Dewey, & Gandek, 2001). Respondents reported their overall health during the previous week on a six-point scale with the anchors *very poor* (1) and *excellent* (6) ($M = 3.34$, $SD = 1.27$).

Results

Preliminary Analyses

Confirmatory factor analyses (CFAs) were conducted for the measures of depression, stress, stigma, and preference for weak-tie support. Following the recommendations made by Hu and Bentler (1999), model fit was determine to be acceptable when the comparative fit index (CFI) value was greater than or equal to .96 and the standardized root mean-squared residual (SRMR) value was less than or equal to .10. The fit indices demonstrate that the measures of depression, χ^2 ($df = 189$) = 482.63, $p < .01$, CFI = .96, SRMR = .06, stress, χ^2 ($df = 34$) = 83.41, $p < .01$, CFI = .97, SRMR = .05, stigma, χ^2 ($df = 87$) = 178.52, $p < .01$, CFI = .97, SRMR = .08, and preference for weak-tie support, χ^2 ($df = 146$) = 287.61, $p < .01$, CFI = .96, SRMR =

.07, adequately fit the sample data. In addition to the CFAs, the data were inspected for univariate and multivariate outliers. No outliers were detected.

Health-Related Stigma as a Predictor of Weak-Tie Preference

Hypothesis 1 forwarded that health-related stigma predicts preference for weak-tie support. A single regression model was constructed to test this hypothesis. Respondents' age, sex, and health status were entered in the first block of the model as control variables. Stigma was entered in the second block of the model. Preference for weak-tie support served as the outcome variable.

The results of the model support Hypothesis 1. The control variables explained 7% of the variance in preference for weak-tie support. After accounting for the variance explained by the control variables, health-related stigma was a significant predictor of preference for weak-tie support, $\beta = .58$, $t = 6.90$, $p < .01$. Adding health-related stigma in the second block of the model explained an additional 25% of the variance in preference for weak-tie support, $\Delta F\ (1,\ 128) = 47.67$, $p < .01$. The final model with both blocks included was significant, $F\ (4{,}128) = 15.11$, $p < .01$, $R^2 = .32$.

Health-Related Stigma, Weak-Tie Support Preference, Depression, and Perceived Stress

Hypotheses 2(a) and (b) predicted that health-related stigma is positively associated with depression and stress. Hypotheses 3(a) and (b) predicted that preference for weak-tie support moderates the relationship between health-related stigma and both depression and stress. Hypotheses 2 and 3 were tested using two regression models; the only difference between the two models was the outcome variable (i.e., depression or stress). The control variables (age, sex, health status) were entered in the first block of both models. In the second block, health-related stigma and weak-tie support preference were entered. The third block of the models consisted of the interaction between stigma and weak-tie support preference. Health-related stigma and weak-tie support preference were mean-centered prior to constructing the interaction term in order to mitigate multicolinearity and facilitate the interpretation of interaction effects (Aiken & West, 1991).

The results, which are reported in Table 1, demonstrate support for Hypotheses 2(a) and (b). After accounting for the variance explained by the control variables, health-related stigma was positively associated with depression and stress. These results, however, are qualified by significant interaction effects. Consistent with Hypotheses 3(a) and (b), the interaction between health-related stigma and weak-tie support preference was significant for stress and depression. The SPSS macro created by Hayes and Matthes (2009) was used to decompose the interactions. The associations between health-related stigma and both depression and stress were computed at one standard deviation above and below the mean level of weak-tie support preference. The results are illustrated in Figures 1 and 2. The unstandardized beta coefficients indicate that, when preference for weak ties was relatively low,

Table 1 Health-related stigma and weak-tie preference as predictors of depression and stress.

	Outcome variables					
	Depression			Stress		
	β	t	ΔR^2	β	t	ΔR^2
Block 1			.23*			.24*
Age	−.21*	−2.59		−.31*	−3.69	
Sex (female = 0)	0.07	0.86		0.02	0.27	
Health status	−.39*	−5.07		−.35*	−4.52	
Block 2			.15*			.12*
Stigma	.48*	5.1		.45*	4.68	
Weak-tie preference	−0.08	−0.96		−0.11	−1.29	
Block 3			.02*			.02*
Stigma × weak-tie preference	−.16*	−2.26		−.14*	−1.95	

Note: All variables in Blocks 2 and 3 were mean-centered. The results for each block are reported when that block was added to the model. Model summaries: depression, F (6, 126) = 14.23, $p < .05$, $R^2 = .41$; stress, F (6, 125) = 12.80, $p < .05$, $R^2 = .38$.*$p \leq .05$.

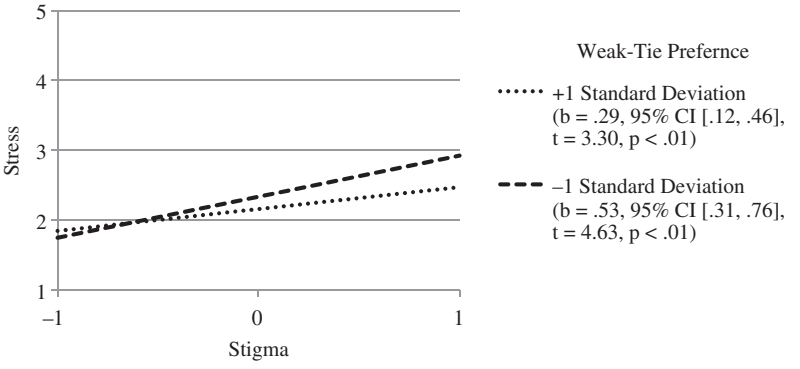

Figure 1. Moderating effect of weak tie preference on stigma and stress.

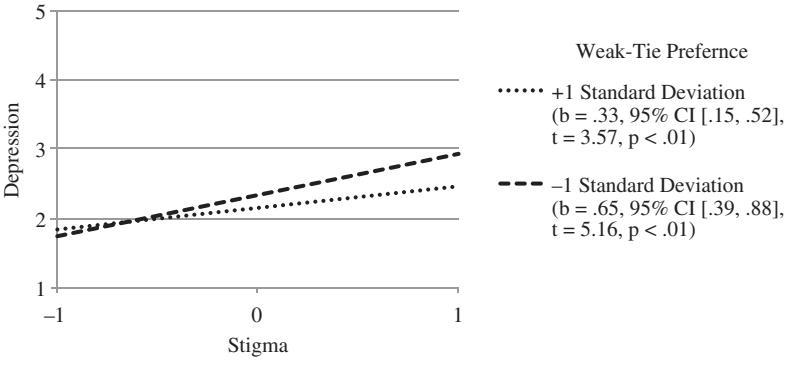

Figure 2. Moderating effect of weak tie preference on stigma and depression.

perceived stigma was positively associated with both stress and depression. When preference for weak ties was relatively high, the associations between stigma and both depression and stress were smaller, but still statistically significant.

Discussion

The purpose of the current study was to examine the impact of strong-tie/weak-tie support network preference on health-related stigma, stress, and depression among members of health-related computer-mediated support groups. This section discusses the study findings, implications for health practitioners, and limitations and directions for future research.

Consistent with the optimal matching model (Cutrona & Russell, 1990), perceived health-related stigma was positively associated with preference for weak-tie support. The more that respondents in the sample felt stigmatized, the greater their preference for weak ties. It seems likely that the reduced sense of self-worth, potential for social rejection, and/or reluctance to discuss one's illness associated with stigma may make weak ties a potentially attractive resource. Weak ties may represent a less risky outlet for disclosure with fewer role obligations and a more objective perspective of one's circumstances. The finding that perceived health-related stigma was positively associated with preference for weak-tie support is consistent with what previous researchers have argued and found in the weak-tie support literature (Adelman et al., 1987; Wright & Bell, 2003; Wright & Miller, 2010). For example, several researchers have found that individuals who use computer-mediated support groups often perceive deficiencies in their traditional support networks due to feelings of being unfairly judged, discomfort communicating about illness, and the perception that closer ties often lack objectivity and the ability to provide adequate information about their illness (Wright, 2002; Wright & Miller, 2010). The results of this study suggest that perceptions of health-related stigma are another factor that may motivate individuals to prefer and seek support from weak ties. The finding that health-related stigma is positively associated with both stress and depression is also consistent with previous research (Riggs et al., 2007; Vanable et al., 2006; Wolitski et al., 2008). Yet the present study also extends prior research by providing empirical evidence that a preference for weak ties might ameliorate these two negative outcomes of stigma. Preference for weak-tie network support moderated the relationships between stigma and both stress and depression. The associations between stigma and depression and stress were weaker among respondents who had a relatively greater preference for weak-tie support. These findings demonstrate that a preference for weak-ties may buffer some of the deleterious outcomes of stigma among members of computer-mediated support groups.

The significant interactions between preference for weak-tie support and both depression and stress are consistent with the optimal matching model framework (Cutrona & Russell, 1990). When individuals are able to balance both their desire for adequate social support and their relational concerns in supportive situations by interacting with others who help meet these needs such as weak ties in computer-

mediated support groups, it is more likely to lead to more positive (or less negative) outcomes than in situations when there is not an optimal match between support needs and the characteristics of support providers. Through their participation in computer-mediated support groups, individuals who have a greater preference for weak-tie support are able to capitalize on the availability of potential weak ties. The results suggest that dimensions of weak-tie support (i.e., increased objectivity, reduced judgment, and fewer role obligations) might be particularly valuable in offsetting communication-related challenges faced by individuals who perceive their health condition to be stigmatized such as feeling misunderstood and embarrassed.

Implications for Health Interventions

The findings from this study have important implications for developing health interventions related to computer-mediated support groups and, more generally, Internet-based social support. First, the results suggest that preference for weak ties might be used as an individual difference variable to isolate individuals who could most benefit from a computer-mediated, support-based intervention. The associations between stigma and both depression and stress were weakest among individuals who had a greater preference for weak ties. Although health-related stigma was still associated with these deleterious outcomes among individuals who had a greater preference for weak ties, the associations were weaker than among individuals who preferred strong ties. This finding suggests that computer-mediated interventions that are designed to provide access to previously unknown others who are coping or have coped with the same health condition would be most efficacious among individuals who prefer weak-tie support.

A second set of implications regarding the study findings may shed light on the development and design of computer-mediated health interventions. The Comprehensive Health Enhancement Support System (CHESS; Shaw et al., 2006) is an example of a computer-mediated health intervention that includes a support group component in which participants are able to communicate with others in the intervention who are coping with the same illness. Although there is evidence to suggest the efficacy of interventions involving a support group component (for a review, see Rains & Young, 2009), the results of this study suggests some ways in which these interventions might be made even more effective. In particular, it could be valuable promote and capitalize on the weak-tie role and function of intervention participants. Participants could be primed to make salient the benefits of weak ties and the role of group members as weak ties. For example, in presenting the discussion component, group members could be informed and reminded that everyone in the discussion group is coping with the same health condition and, as a result, the group is a unique resource for information and support relative to friends and family who may not understand one's illness experiences. Additionally, intervention participants could be encouraged to behave as effective weak ties. Participants, for example, could be reminded to provide others with non-judgmental and objective feedback during group discussions. Through making clear the weak-tie

function served by intervention participants and encouraging participants to behave as effective weak ties when interacting with others, it may be possible to improve the efficacy of computer-mediated interventions.

Limitations

The findings from this study should be considered in light of a few limitations. First, although depression is discussed as an outcome of health-related stigma in this project, it is possible that respondents coping with depression may have felt stigma as a result of being depressed. To examine the potential impact of respondents coping with depression, we dropped the 8 respondents from the sample who reported that depression support groups were among the types of groups they primarily visit and re-conducted the analyses. None of the results related to the hypotheses changed. Readers can be confident that the results of this project are not an artifact of respondents coping with depression. Second, the sample was predominately composed of female respondents. Although all respondents participated in a computer-mediated support group about a specific health condition, males were underrepresented in the sample. Future studies would benefit from conducting purposive samples of computer-mediated support groups targeting male (e.g., prostate cancer groups) and female participants (e.g., breast cancer groups) for the purpose of detecting potential sex differences in weak-tie support preference as well as stigma.

Conclusion

Health-related stigma has been demonstrated to negatively affect a variety of health outcomes, including stress and depression. Moreover, people living with health-related stigma often appear to have difficulty obtaining adequate social support from members of their traditional social networks. With the advent of computer-mediated support groups, individuals can now be conveniently connected to others who share similar health issues and related stigma. The results of this study offer evidence that perceptions of health-related stigma are associated with preference for weak-tie support and that weak-tie support preference moderates the relationships between stigma and both stress and depression among computer-mediated support group members. Future research exploring health-related stigma, weak-tie support, and health outcomes is essential to better understand the implications of these factors in coping with illness and to aid practitioners in developing more effective computer-mediated health interventions.

References

Adelman, M. B., Parks, M. R., & Albrecht, T. L. (1987). Beyond close relationships: Support in weak ties. In T. L. Albrecht & M. B. Adelman (Eds.), *Communicating social support* (pp. 126–147). Newbury Park, CA: Sage.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, London, Sage.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for Beck depression inventory-II*. San Antonio, TX: Psychological Corporation.

Berger, B. E., Ferrans, C., & Lashley, F. R. (2001). Measuring stigma in people with HIV: Psychometric assessment of the HIV Stigma Scale. *Research in Nursing and Health*, *24*, 518–529.

Berger, M., Wagner, T. H., & Baker, L. C. (2005). Internet use and stigmatized illness. *Social Science & Medicine*, *61*, 1821–1827.

Berkman, L. F., & Syme, L. S. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents. *Journal of Epidemiology*, *109*, 186–204.

Cohen, S. (1988). Psychosocial models of the role of support in the etiology of physical disease. *Health Psychology*, *7*, 269–297.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*, 385–396.

Cutrona, C. E., & Russell, D. W. (1990). Type of social support and specific stress: Toward a theory of optimal matching. In B. R. Sarason, I. G. Sarason, & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 319–366). Oxford: John Wiley & Sons.

Cutrona, C. E., & Suhr, J. A. (1992). Controllability of stressful events and satisfaction with spouse supportive behaviors. *Communication Research*, *19*, 154–174.

Dakof, G. A., & Taylor, S. E. (1990). Victim's perceptions of social support: What is helpful from whom? *Journal of Personality and Social Psychology*, *58*, 80–89.

Duncan, B., Hart, G., Scoular, A., & Bigrigg, A. (2001). Qualitative analysis of psychosocial impact of diagnosis of *Chlamydia trachomatis*: Implications for screening. *BMJ*, *322*, 195–199.

Dunkel-Schetter, C., & Wortman, C. B. (1982). The interpersonal dynamics of cancer: Problems in social relationships and their impact on the patient. In H. S. Friedman & M. R. DiMatteo (Eds.), *Interpersonal issues in health care* (pp. 69–100). New York: Academic Press.

Eichhorn, K. C. (2008). Soliciting and providing support over the Internet: An investigation of online eating disorder groups. *Journal of Computer-Mediated Communication*, *14*, 67–78.

Ernst, J. M., & Cacioppo, J. T. (1998). Lonely hearts: Psychological perspectives. *Applied and Preventive Psychology*, *8*, 1–22.

Fenlason, K. J., & Beehr, T. A. (1994). Social support and occupational stress: Effects of talking to others. *Journal of Organizational Behavior*, *15*, 157–175.

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. New York: Simon & Schuster.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, *78*, 1360–1380.

Greene, K. (2009). An integrated model of health disclosure decision-making. In T. Afifi & W. Afifi (Eds.), *Uncertainty and information regulation in interpersonal contexts: Theories and applications* (pp. 226–253). New York: Routledge.

Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods*, *41*, 924–936.

Hebl, M. R., Tickle, J., & Heatherton, T. F. (2000). Awkward moments in interactions between nonstigmatized and stigmatized individuals. In T. F. Heatherton, R. E. Kleck, M. R. Hebl, & J. G. Hull (Eds.), *The social psychology of stigma* (pp. 273–306). New York: Guilford.

Herek, G., & Glunt, E. K. (1988). An epidemic of stigma: Public reactions to AIDS. *American Psychologist*, *43*, 886–891.

Houston, T. K., Cooper, L. A., & Ford, D. E. (2002). Internet support groups for depression: A 1-year prospective cohort study. *American Journal of Psychiatry*, *159*, 2062–2068.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*, 1–55.

Kessler, R. C., McGonagle, K. A., Swartz, M., Blazer, D. G., & Nelson, C. B. (1993). Sex and depression in the national comorbidity survey I: Lifetime prevalence, chronicity, and recurrence. *Journal of Affective Disorders*, *29*, 85–96.

Lett, H. S., Blumenthal, J. A., Babyak, M. A., . . . Schneiderman, N. (2007). Social support and prognosis in patients at increased psychosocial risk recovering from myocardial infarction. *Health Psychology*, *26*, 418–427.

Lieberman, M. A., & Goldstein, B. A. (2005). Self-help on-line: An outcome evaluation of breast cancer bulletin boards. *Journal of Health Psychology*, *10*, 855–862.

Link, B., Cullen, F., Mirotznik, J., & Stuening, E. (1992). The consequences of stigma for persons with mental illness: Evidence from the social sciences. In P. Fink & A. Tasman (Eds.), *Stigma and mental illness*. Washington, DC: American Psychiatric Press, Inc.

Link, B. G., & Phelan, J. C. (2006). Stigma and its public health implications. *Lancet*, *367*, 528–529.

Meisenbach, R. J. (2010). Stigma management communication: A theory and agenda for applied research on how individuals manage moments of stigmatized identity. *Journal of Applied Communication Research*, *38*, 268–292.

Miller, C. T., & Major, B. (2000). Coping with stigma and prejudice. In T. F. Heatherton, R. E. Kleck, M. R. Hebl, & J. G. Hull (Eds.), *The social psychology of stigma* (pp. 243–272). New York: Guilford Press.

Mirowsky, J., & Ross, C. E. (1992). Age and depression. *Journal of Health and Social Behavior*, *33*, 187–205.

Rains, S. A., & Keating, D. M. (2011). The social dimension of blogging about health: Health blogging, social support, and well-being. *Communication Monographs*, *78*, 511–534.

Rains, S. A., & Young, V. (2009). A meta-analysis of research on formal computer-mediated support groups: Examining group characteristics and health outcomes. *Human Communication Research*, *35*, 309–336.

Riggs, S. A., Vosvick, M., & Stallings, S. (2007). Attachment style, stigma and psychological distress among HIV+ adults. *Journal of Health Psychology*, *12*, 922–936.

Rosman, S. (2004). Cancer and stigma: Experience of patients with chemotherapy-induced alopecia. *Patient Education and Counseling*, *52*, 333–339.

Rush, L. L. (1998). Affective reactions to multiple social stigmas. *Journal of Social Psychology*, *138*, 421–430.

Shaw, B. R., Hawkins, R., McTavish, F., Pingree, S., & Gustafson, D. H. (2006). Effects of insightful disclosure within computer-mediated support groups on women with breast cancer. *Health Communication*, *19*, 133–142.

Sirey, J. A., Bruce, M. L., Alexopoulos, G. S., Perlick, D. A., Raue, P., Friedman, S. J., & Meyers, B. S. (2001). Perceived stigma as a predictor of treatment discontinuation in younger and older outpatients with depression. *American Journal of Psychiatry*, *158*, 479–481.

Smith, R. A. (2007). Language of the lost: An explication of stigma communication. *Communication Theory*, *17*, 462–485.

Smith, R. A. (2011). Stigma, communication, and health. In T. L. Thompson, R. Parrott, & J. F. Nussbaum (Eds.), *Handbook of health communication* (pp. 455–468). Thousand Oaks, CA: Sage.

Steuber, K. R., & Solomon, D. H. (2011). Factors that predict married partners' disclosures about infertility to social network members. *Journal of Applied Communication Research*, *39*, 250–270.

Stewart, A. L., Greenfield, S., Hays, R. D., Wells, K., Rogers, W. H., Berry, S. D., et al. (1989). Functional status and well-being of patients with chronic conditions: Results from the medical outcome survey. *Journal of the American Medical Association*, *262*, 907–913.

Turner, J. W., Grube, J. A., & Meyers, J. (2001). Developing an optimal match within on-line communities: An exploration of CMC support communities and traditional support. *Journal of Communication*, 231–251.

Vanable, P. A., Carey, M. P., Blair, D. C., & Littlewood, R. A. (2006). Impact of HIV-related stigma on health behaviors and psychological adjustment among HIV-positive men and women. *AIDS and Behavior*, *10*, 473–482.

Walther, J. B., & Boyd, S. (2002). Attraction to computer-mediated social support. In C. A. Lin & D. Atkin (Eds.), *Communication technology and society: Audience adoption and uses* (pp. 153–188). Cresskill, NJ: Hampton Press.

Ware, J., Kosinski, M., Dewey, J., & Gandek, B. (2001). *How to score and interpret single-item health status measures: A manual for users of the SF-8 health survey.* Lincoln, RI: QualityMetric Incorporated.

Wills, T. A., & Shinar, O. (2000). Measuring perceived and received social support. In S. Cohen, I. G. Underwood, & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and social scientists* (pp. 86–135). New York: Oxford University Press.

Wolitski, R. J., Pals, S. L., Kidder, D. P., Courtenay-Quick, C., & Holtgrave, D. R. (2008). The effects of HIV stigma on health, disclosure of HIV status, and risk behavior of homeless and unstably housed persons living with HIV. *AIDS Behavior*, *13*, 1222–1232.

Wright, K. B. (2012). An examination of similarity, network convergence, and availability of emotional support as predictors of strong-tie/weak-tie support network preference on Facebook. *Southern Communication Journal*, *77*, 1–14.

Wright, K. B. (2002). Social support within an on-line cancer community: An assessment of emotional support, perceptions of advantages and disadvantages, and motives for using the community. *Journal of Applied Communication Research*, *30*, 195–209.

Wright, K. B., & Bell, S. B. (2003). Health-related support groups on the Internet: Linking empirical findings to social support and computer-mediated communication theory. *Journal of Health Psychology*, *8*, 37–52.

Wright, K. B., & Miller, C. H. (2010). A measure of weak-tie/strong-tie support network preference. *Communication Monographs*, *77*, 502–520.

Wright, K. B., Rains, S., & Banas, J. (2010). Weak-tie support network preference and perceived life stress among participants in health-related, computer-mediated support groups. *Journal of Computer-Mediated Communication*, *15*, 606–624.

Wright, K. B., Rosenberg, J., Egbert, N., Ploeger, N., Bernard, D. R., & King, S. (in press). Communication competence, social support, and depression among college students. A model of Facebook and face-to-face support network influence. *Journal of Health Communication.*