

Social Media Use and the Acceptability of Telepsychological Services in Rural Populations

Ryan N. Reed, Erick C. Messler,
Terrance E. Coombs, and Randal P. Quevillon
The University of South Dakota

Rural communities tend to be underserved by the psychological and medical communities, often due to the lack of available specialty services in the area. When seeking mental health services, rural communities face additional ethical concerns, such as increased stigma, confidentiality concerns, and dual relationships. As such, the use of telehealth and telepsychological services has been seen as a positive alternative means to provide mental health services to rural or remote areas. The aim of this research was to examine the effects of social media use and population size on the perceived effectiveness of, and openness to, telepsychological services. Two hundred forty-one undergraduate students at a small Midwestern university completed an online survey in the fall semester of 2012. The questionnaire included measures of sociodemographics, rurality, computer use, social media use, and attitudes toward telehealth services. Hierarchical regression analysis was conducted to examine the relationship between social media use, population size, and acceptability of telehealth services. Results indicated increased positive attitudes toward telehealth with increases in social media use and decreases in population size. The current study suggests social media technology use and population size has a significant effect on attitudes toward telehealth services. Therefore, as social media use continues to grow and technological advances become more prevalent in rural areas, positive perceptions of telehealth services may increase in rural areas.

Keywords: rural, telehealth, telepsychology, social media use

Rural areas are often underserved by the medical and psychological communities (Schopp, Demir, & Glueckauf, 2006; Yellowlees, Marks, Hilty, & Shore, 2008). The difficulty in reaching this population is the confluence of many factors, including the shortage of professional services in the area, geographical isolation, as well as ethical concerns such as increased stigma and worries about confidentiality (Brownlee, Graham, Doucette, Hotson, & Halverson, 2010; Dyck & Hardy, 2013). Studies have indicated the lack of mental health care in

rural settings as a major concern, and have emphasized a need for both mental health information and mental health care in rural and remote areas (Hoolahan, Grosvenor, Kurtz, & Kelly, 2007). Similar to religion, socioeconomic status, or gender, rurality is a sociocultural factor, influencing attitudes and decisions. As such, rurality has an influence on attitudes toward various aspects of medical treatment and care (Yellowlees et al., 2008). With the ever-growing awareness of the underserved mental health needs of a rural population, the concept of telehealth has grown exponentially.

Telehealth, or using communication through information technology to deliver services, is often cited as a possible means of reaching those in rural areas. Telehealth has been shown to be relatively effective in rural areas for delivering psychological and medical services (Brownlee et al., 2010; Finkelstein, 2011; Swinton, Robinson, & Bischoff, 2009). It has been shown to have a positive effect in multiple

This article was published Online First December 16, 2013.

Ryan N. Reed, Erick C. Messler, Terrance E. Coombs, and Randal P. Quevillon, Department of Psychology, The University of South Dakota.

Correspondence concerning this article should be addressed to Erick C. Messler, Department of Psychology, The University of South Dakota, 414 E. Clark Street, Vermillion, SD 57069. E-mail: messler.erick@gmail.com

settings, such as hospitals, clinics, prisons, and even in training of rural based clinicians (Schopp, Johnstone, & Reid-Arndt, 2005).

The utilization of telepsychological services is beneficial to rural areas for several reasons. The most common benefits are decreased concern about the stigma of seeing a psychological provider, not having to travel long distances to receive services, and provision of services to an underserved population (Hoolahan et al., 2007; Van Allen & Roberts, 2011). Additionally, telehealth has benefits for the psychologists who use it in practice, including a reduced risk of incidental encounters when working with rural clients and increased efficiency of clinical settings (Brownlee et al., 2010; Van Allen & Roberts, 2011).

Young adults are the leading users of smart technologies and social media. They are quick to pick up new means of interacting, such as text messaging, rather than talking on the phone (Doarn et al., 2008). In one study, adolescents reported social media as being their second highest source of out-of-school learning, only behind radio (Lariscy, Reber, & Paek, 2010). Pakyurek, Yellowlees, and Hilty (2010) found that children and young adults often report feeling comfortable with telepsychiatry, although the reason for this is not clear. The possibility exists that younger adults' familiarity and high rate of use with technology and social media may influence their perceptions of the effectiveness of telehealth.

Rural residency is negatively associated with computer access and use (Stern, Adams, & El-sasser, 2009; Yellowlees et al., 2008). When rural residents do have access to computers, up to two thirds report using a dial-up (vs. DSL, cable, or wireless modem) connection, which is negatively related to the number of activities participated in online. Stern and colleagues (2009) additionally found that rural residents are 33% less likely to utilize Internet technology to assist in making major decisions, and significantly less likely to use the Internet for economic assistance.

When health practitioners were asked what percentage of their population used the Internet for information related to health, practitioners in rural areas provided the lowest estimates (Avery et al., 2010). However, this lack of technological use is not strictly related to patients but also to clinicians. Utilization of social media tools significantly differs based on the size of the community, with urban communities leading,

followed by suburban, large-town, and rural communities.

Part of the difficulty in implementing new technologies in rural communities is a lack of basic awareness of how rural communities use them (Gilbert, Karahalios, & Sandvig, 2008). The literature reveals two main reasons for this lack of awareness: a perceived lack of competence in technology use, and a lack of overall exposure to new technologies. Sanders et al. (2012) cited the "requirements for technical competence and operation of equipment" as one of the main barriers to participation in telehealth, and Ryan, Kobb, and Hilsen (2003) stressed the importance of the need for telehealth technology to be easy to use. When users of a technological health system are inexperienced with the technology itself and do not feel competent using it, the design and function of the system becomes flawed (Schopp et al., 2006).

Recent studies have demonstrated a fear of new technology to be a primary reason for not wanting to utilize telehealth technology (Day, Demiris, Oliver, Courtney, & Hensel, 2007). A lack of knowledge or awareness of the capabilities of telehealth services and devices can lead to a lack of willingness to even try this method of service delivery (Mann, Belchior, Tomita, & Kemp, 2007). Additionally, a reluctance to meet new people over the Internet has been found in rural populations (K. A. Larson, 2007).

The long-term progress of telehealth relies on its acceptability among patients (Schopp et al., 2006). While we cannot as easily control the dissemination of new technologies within rural areas, we can work to maximize the acceptance and adoption of telehealth services (Jarvis-Selinger, Chan, Payne, Plohman, & Ho, 2008). Demiris, Speedie, and Finkelstein (2001) found a statistically significant increase in positive attitudes toward a telehealth system due to simple exposure to the system over time. To further investigate this paradigm, the current study looks to empirically examine the relationship between social media use, rurality, and the acceptability of telehealth services.

Method

Participants

The sample ranged in age from 18 to 40 years ($M = 19.24$, $SD = 2.09$). Women ($n = 174$) comprised 72.2% of the sample; 91.3% were

White and 8.7% were non-White or did not wish to respond. Ten participants (4.1% of the sample) identified themselves as Hispanic or Latino. Regarding year in school, 53.9% of the sample was freshmen ($n = 130$), 27.8% of participants were sophomores ($n = 67$), 12.4% were juniors ($n = 30$), and 5.8% were seniors ($n = 14$). Independent-samples t tests showed no significant variability on outcomes by age, year in school, ethnicity, or gender. Hometown population estimates ranged from 150 to 415,000 ($M = 33,383.71$, $SD = 65705.18$; see Table 1).

Measures

The questionnaire consisted of basic demographic questions (such as age, ethnicity, and

year in school), a numerical estimate of hometown population, the Attitudes Toward Seeking Professional Psychological Help scale (ATSPPH; Fischer & Turner, 1970), the Computer Aversion, Attitudes, and Familiarity Index (CAAFI; Schulenberg, Yutrzenka, & Gohm, 2006), a Social Media Use Frequency scale, measures of weekly social media log-ins and minutes spent logged in, and a modified ATSPPH to reflect telepsychological services.

The Social Media Use Frequency scale queried respondents as to their overall frequency of social networking site (Facebook, Myspace, Twitter, etc.) in the past 90 days, with a 7-point Likert scale ranging from 0 = *not at all* to 7 = *more than once per waking hour*. The tele-

Table 1
Descriptive Analysis

Characteristic	Participants ($n = 241$)			
	n	%	M	SD
Gender				
Male	67	27.8		
Female	174	72.2		
Year in school				
Freshman	130	53.9		
Sophomore	67	27.8		
Junior	30	12.4		
Senior	14	5.8		
Do you consider yourself Hispanic or Latino?				
Yes	10	4.1		
No	231	95.9		
Racial group				
White	220	91.3		
Non-White/Do not wish to respond	21	8.7		
Age			19.24	2.09
GPA			3.38	0.48
Population				
0–499	19	7.88		
500–999	31	12.86		
1,000–4,999	58	24.07		
5,000–9,999	17	7.05		
10,000–99,999	88	36.51		
100,000–499,999	28	11.62		
500,000–10,000,000	0	0.00		
ATSPPH			47.47	11.52
Telehealth-modified ATSPPH			30.18	4.61
CAAFI			158.29	22.90
Social media use frequency			3.31	1.22
Weekly social media logins			43.13	56.01
Weekly minutes logged in to social media			298.90	397.69

Note. GPA = grade point average; ATSPPH = Attitudes Toward Seeking Professional Psychological Help scale; CAAFI = Computer Aversion, Attitudes, and Familiarity Index.

health-modified ATSPPH took the 12 questions from the ATSPPH reflecting service use and exchanged “telepsychotherapy” for “psychotherapy” to reflect attitudes toward utilization of telehealth.

Prior to answering any questions regarding telehealth services, participants were asked to read the American Psychological Association (2012) definition of telepsychology to ensure adequate understanding of the questions. Due to several findings indicating a correlation with openness to telehealth and educational background, participant grade point average (GPA) was included as a controlled factor (Sorenson, 2008; Yellowlees et al., 2008).

Procedure

The institutional review board at the Midwestern university where the study took place approved the study protocol. Participants were recruited online through the university research pool (SONA). Participants provided informed consent and received course credit for participation. Survey responses were saved in a text file and then downloaded in SPSS for analysis. The consent form data were stored in a file separate from the questionnaire data to ensure anonymity.

Results

Descriptive and Bivariate Statistics

Composite scores for GPA ranged from 2.00 to 4.00 ($M = 3.38$, $SD = 0.48$). Composite scores for ATSPPH ranged from 13 to 84 ($M = 47.47$, $SD = 11.52$). Composite scores for the

modified ATSPPH ranged from 17 to 60 ($M = 30.18$, $SD = 4.61$). Composite scores for CAAFI ranged from 82 to 210 ($M = 158.29$, $SD = 22.90$). Social media use frequency ranged from 1 to 7 ($M = 3.31$, $SD = 1.22$). Weekly social media logins ranged from 0 to 420 ($M = 3.38$, $SD = 0.48$). Weekly minutes logged in to social media ranged from 0 to 2,900 ($M = 298.90$, $SD = 397.69$). Table 1 provides a descriptive analysis of the data. The results of the correlation analysis are presented in Table 2. As shown, 11 of the 28 correlations were statistically significant, and three of 28 were greater than .30.

Hypothesis

To control for the effects of overall attitude toward psychotherapy, computer abilities, and education, a hierarchical regression was used, with social media use frequency and population predicting the telehealth-modified ATSPPH, controlling for overall attitudes toward psychotherapy (ATSPPH), computer abilities (CAAFI), and GPA. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity.

Table 3 shows the R^2 and ΔR^2 associated with the added variables of population and social media use. The ΔR^2 associated with adding these variables (beyond the predictive control of computer attitudes, attitudes toward psychotherapy, and GPA) is 0.036. Using a proportional reduction in error interpretation for R^2 , information provided by the added variables reduces our error in predicting attitudes toward telepsychological services by 3.6%. Although this is a relatively small addition, the change is signifi-

Table 2
Correlations Between Variables

Variable	1	2	3	4	5	6	7	8
1. GPA	—	-.07	-.08	-.04	.05	-.06	-.07	-.09
2. Population		—	.14*	-.18*	.08	.11	.16*	.06
3. ATSPPH			—	-.35**	.14*	.12	-.04	-.00
4. Modified ATSPPH				—	-.10	.06	-.10	.00
5. CAAFI					—	.15*	.18**	.15*
6. Social media use						—	.44**	.30**
7. Weekly logins							—	.53**
8. Weekly minutes								—

Note. $N = 241$. For gender, 1 = men and 2 = women. GPA = grade point average; ATSPPH = Attitudes Toward Seeking Professional Psychological Help scale; CAAFI = Computer Aversion, Attitudes, and Familiarity Index.

* $p \leq .05$. ** $p \leq .01$.

Table 3
Regression Analysis: Telehealth-Modified ATSPPH
Predicted From Social Media Use Frequency
and Population

Variable	B	SEB	β	p	R^2
Step 1					.128
GPA	-.596	.585	-.062	.310	
CAAFI	-.009	.012	-.045	.471	
ATSPPH	-.139	.025	-.348	.000	
Step 2					.146
GPA	-.600	.578	-.063	.300	
CAAFI	-.011	.012	-.053	.392	
ATSPPH	-.138	.025	-.344	.000	
Population	.000	.000	-.145	.018	
Social Media Use	.524	.232	.138	.025	

Note. $N = 241$. Step 1, $F(3, 337) = 11.53$, $p < .001$, $R^2 = .13$; Step 2, $\Delta R^2 = .04$, $\Delta F(2, 335) = 5.02$, $p = .007$; full model, $F(5, 335) = 9.16$, $p < .001$, $R^2 = .15$. GPA = grade point average; ATSPPH = Attitudes Towards Seeking Professional Psychological Help scale; CAAFI = Computer Aversion, Attitudes and Familiarity Index.

cant. The probability of the F statistic (5.019) for the change in R^2 associated with the addition of the predictor variables to the regression analysis containing the control variables is $p < .01$, less than or equal to the level of significance of $p = .05$. As such, there is a statistically significant improvement in the prediction of attitudes toward telepsychological services through measurement of hometown population and social media use.

Of interesting note for the literature are the findings related to the predictive validity of GPA and computer attitudes. With regard to GPA, there was no significant improvement in prediction ability, $t(238) = -1.039$, $p = .300$. Additionally, computer attitudes and aversion did not significantly predict attitudes toward telepsychological services, $t(238) = -.858$, $p = .392$.

Discussion

In recent years, due to an increased awareness of the lack of professional mental health services in rural areas, technological advances that increase possibilities, and a large influx of veterans from Operation Iraqi Freedom and Operation Enduring Freedom, telehealth and its applications have seen a large growth in psychological research. However, much about telehealth and how to increase its effectiveness and

acceptability among patients is unknown. The aim of the current study was to increase understanding of the factors that lead to increased perceived effectiveness and patient openness to telepsychological services. In particular, it examined how social media use—an increasingly popular mark of our current cultural climate—and rurality can predict perceptions of telehealth for mental health services.

The CAAFI, social media use frequency, and weekly minutes logged in to social media were positively associated. Not surprisingly, college students with positive attitudes toward, and familiarity with, computers were showing increased social media use, regardless of how it was operationalized. Population was positively correlated with attitudes toward psychotherapy. This finding was consistent with previous research that has highlighted the effects of stigma in rural areas (J. E. Larson & Corrigan, 2010; Mullin & Stenger, 2013). Interestingly, population was negatively related to attitudes toward telepsychological services. Perhaps college students from rural and frontier areas have a better understanding of the barriers to psychological services that exist in these communities, and thus a greater appreciation for the role that telehealth could play in overcoming them.

The current study showed statistically significant predictive validity of both population size and social media use on perceptions of telehealth, while accounting for attitudes about computers, perceptions of psychological services in general, and GPA. In effect, the study suggests that people are more skeptical of telehealth mental health services the more urban their population is, and less skeptical of telehealth mental health services with increased social media use. Attitudes toward telehealth did not appear to be affected by gender, age, or ethnicity.

A limitation of the study is that no attempt was made to acquire information about past experiences with mental health or telehealth services, which may influence perceptions of the services, as shown by Demiris and colleagues (2001). However, exposure to telehealth in any population is quite low, leading to more favorable generalizability of the results. Additionally, participants in the current study may not be representative of typical rural populations. For example, the respondents used were young, highly educated, and probably

came from higher socioeconomic families. Although this study points to important factors in attitudes toward telehealth, generalizations to other populations should be made with caution. Future research should investigate social media use and the acceptability of telepsychological services with “less convenient” rural populations.

Conclusions

The current study suggested some effect of social media technology use and population size on attitudes toward telehealth services. Therefore, as social media use continues to grow and technological advances become more prevalent in rural areas, positive perceptions of telehealth services may increase in rural areas.

Although telehealth offers many advantages and benefits in providing mental health services to underserved populations, it should not be mistaken for the “magic bullet” method of treatment delivery. Limited access would still be an issue in need of attention, even if all doctors’ offices, clinics, rural hospitals, and tertiary care centers had increased bandwidth and highly trained and skilled staff (Doarn et al., 2008).

Telehealth does provide clinicians a means for managing financial risks and burdens to both the health care provider and the patient. These burdens include those inherent in providing health care to underserved populations such as rural patients. As the interest and implementation of telehealth continues to grow and expand, both internal and external collaboration are needed (Maheu, Pulier, McMenamin, & Posen, 2012). Along with further collaboration, an added technology push, as well as opportunistic exploitation, is needed for the telehealth movement to become sustainable (Singh, Mathiassen, Stachura, & Astapova, 2010).

References

- American Psychological Association. (2012). *Guidelines for the practice of telepsychology*. (Draft – Released for public comment on July 27, 201). Retrieved from http://apacustomout.apa.org/commentcentral/commentcentralPDF/Site26_Telepsychology%20Guidelines%20Draft_July_2012_posted.pdf
- Avery, E., Lariscy, R., Amador, E., Ickowitz, T., Primm, C., & Taylor, A. (2010). Diffusion of social media among public relations practitioners in health departments across various community population sizes. *Journal of Public Relations Research*, 22, 336–358. doi:10.1080/10627261003614427
- Brownlee, K., Graham, J. R., Doucette, E., Hotson, N., & Halverson, G. (2010). Have communication technologies influenced rural social work practice? *British Journal of Social Work*, 40, 622–637. doi: 10.1093/bjsw/bcp010
- Day, M., Demiris, G., Oliver, D. B., Courtney, K., & Hensel, B. (2007). Exploring underutilization of videophones in hospice settings. *Telemedicine and e-Health*, 13, 25–31. doi:10.1089/tmj.2006.0023
- Demiris, G., Speedie, S. M., & Finkelstein, S. (2001). Change of patients’ perceptions of telehomecare. *Telemedicine Journal and e-Health*, 7, 241–248. doi:10.1089/153056201316970948
- Doarn, C. R., Yellowlees, P., Jeffries, D. A., Lordan, D., Davis, S., Hammack, G., . . . Kvedar, J. (2008). Societal drivers in the applications of telehealth. *Telemedicine and e-Health*, 14, 998–1002. doi: 10.1089/tmj.2008.0111
- Dyck, K. G., & Hardy, C. (2013). Enhancing access to psychologically informed mental health services in rural and northern communities. *Canadian Psychology*, 54, 30–37.
- Finkelstein, S. M. (2011). Perception, satisfaction, and utilization of the VALUE home telehealth service. *Journal of Telemedicine and Telecare*, 17, 288–292. doi:10.1258/jtt.2011.100712
- Fischer, E. H., & Turner, J. L. (1970). Orientations to seeking professional help: Development and research utility of an attitude scale. *Journal of Consulting and Clinical Psychology*, 35, 79–90. doi: 10.1037/h0029636
- Gilbert, E., Karahalios, K., & Sandvig, C. (2008). *The network in the garden: An empirical analysis of social media in rural life*. Retrieved from <http://social.cs.uiuc.edu/people/gilbert/pub/chi08-rural-gilbert.pdf>
- Hoolahan, B., Grosvenor, J., Kurtz, H., & Kelly, B. (2007). Utilizing technology to raise mental health literacy in small rural towns. *Learning in Health and Social Care*, 6, 145–155. doi:10.1111/j.1473-6861.2007.00158.x
- Jarvis-Selinger, S., Chan, E., Payne, R., Plohman, K., & Ho, K. (2008). Clinical telehealth across the disciplines: Lessons learned. *Telemedicine and e-Health*, 14, 720–725. doi:10.1089/tmj.2007.0108
- Lariscy, R. W., Reber, B. H., & Paek, H. J. (2010). Examination of media channels and types as health information sources for adolescents: Comparisons for black/white, male/female, urban/rural. *Journal of Broadcasting & Electronic Media*, 54, 102–120. doi:10.1080/08838150903550444

- Larson, J. E., & Corrigan, P. W. (2010). Psychotherapy for self-stigma among rural clients. *Journal of Clinical Psychology, 66*, 524–536.
- Larson, K. A. (2007). *The social construction of the internet: A rural perspective*. Department of Communication Studies, University of Kansas, Lawrence.
- Maheu, M. M., Pulier, M. L., McMenamin, J. P., & Posen, L. (2012). Future of telepsychology, telehealth, and various technologies in psychological research and practice. *Professional Psychology: Research and Practice, 43*, 613–621. doi:10.1037/a0029458
- Mann, W. C., Belchior, P., Tomita, M. R., & Kemp, B. J. (2007). Older adults' perception and use of PDAs, home automation system, and home health monitoring system. *Topics in Geriatric Rehabilitation, 23*, 35–46. doi:10.1097/00013614-200701000-00006
- Mullin, D., & Stenger, J. (2013). Ethical matters in rural integrated primary care settings. *Families, Systems, & Health, 31*, 69–74. doi:10.1037/a0031860
- Pakyurek, M., Yellowlees, P., & Hilty, D. (2010). The child and adolescent telepsychiatry consultation: Can it be a more effective clinical process for certain patients than conventional practice? *Telemedicine and e-Health, 16*, 289–292. doi:10.1089/tmj.2009.0130
- Ryan, P., Kobb, R., & Hilsen, P. (2003). Making the right connection: Matching patients to technology. *Telemedicine Journal and e-Health, 9*, 81–88. doi:10.1089/153056203763317684
- Sanders, C., Rogers, A., Bowen, R., Bower, P., Hirani, S., Cartwright, M., . . . Newman, S. P. (2012). Exploring barriers to participation and adoption of telehealth and telecare within the Whole System Demonstrator trial: A qualitative study. *BMC Health Services Research, 12*, 220–231. doi:10.1186/1472-6963-12-220
- Schopp, L. H., Demiris, G., & Glueckauf, R. L. (2006). Rural backwaters or front-runners? Rural telehealth in the vanguard of psychology practice. *Professional Psychology: Research and Practice, 37*, 165–173. doi:10.1037/0735-7028.37.2.165
- Schopp, L. H., Johnstone, B., & Reid-Arndt, S. (2005). Telehealth brain injury training for rural behavioral health generalists: Supporting and enhancing rural service delivery networks. *Professional Psychology: Research and Practice, 36*, 158–163. doi:10.1037/0735-7028.36.2.158
- Schulenberg, S. E., Yutrzenka, B. A., & Gohm, C. L. (2006). The computer aversion, attitudes, and familiarity index (CAAFI): A measure for the study of computer-related constructs. *Journal of Educational Computing Research, 34*, 129–146. doi:10.2190/45B4-GMH7-GEQB-T1H1
- Singh, R., Mathiassen, L., Stachura, M. E., & Astapova, E. V. (2010). Sustainable rural telehealth innovation: A public health case study. *Health Services Research, 45*, 985–1004. doi:10.1111/j.1475-6773.2010.01116.x
- Sorenson, J. F. L. (2008). Attitudes toward telehealth use among rural residents: A Danish survey. *National Rural Health Association, 24*, 330–335.
- Stern, M. J., Adams, A. E., & Elsasser, S. (2009). Digital inequality and place: The effects of technological diffusion on internet proficiency and usage across rural, suburban, and urban counties. *Sociological Inquiry, 79*, 391–417. doi:10.1111/j.1475-682X.2009.00302.x
- Swinton, J. J., Robinson, W. D., & Bischoff, R. J. (2009). Telehealth and rural depression: Physician and patient perspectives. *Families, Systems, & Health, 27*, 172–182. doi:10.1037/a0016014
- Van Allen, J., & Roberts, M. C. (2011). Critical incidents in the marriage of psychology and technology: A discussion of potential ethical issues in practice, education, and policy. *Professional Psychology: Research and Practice, 42*, 433–439. doi:10.1037/a0025278
- Yellowlees, P., Marks, S., Hilty, D., & Shore, J. H. (2008). Using e-Health to enable culturally appropriate mental healthcare in rural areas. *Telemedicine and e-Health, 14*, 486–492. doi:10.1089/tmj.2007.0070

Received April 18, 2013

Revision received September 27, 2013

Accepted October 24, 2013 ■