

Social Capital from Online Social Media is Associated with Visiting a Healthcare Practitioner at Least Once a Year Among College Students

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Abstract

Objective: Social capital is positively associated with healthcare access such as healthcare practitioner visits. There does not appear to be any literature on social capital through online social media and its association with healthcare access such as healthcare practitioner visits. This paper studies the relationship between social capital through online social media use and healthcare practitioner visits. **Methods:** Data were analyzed from 663 participants in New York City in 2017 with exposure to social media prescription medication advertisements from social media (e.g., Facebook, Twitter, LinkedIn, Instagram, YouTube). The main predictor variable was visiting a healthcare practitioner at least once a year. Outcome variables were bonding social capital and bridging social capital from online social media. **Results:** Those who visited a healthcare practitioner at least once a year had greater mean bonding social capital and bridging social capital from online social media than those who did not visit a healthcare practitioner at least once a year. Multivariate linear regression analyses showed a similar pattern for not visiting a healthcare practitioner at least once a year (bonding social capital: $b=-5.31$, $SE=1.68$, $p=0.002$; bridging social capital: $b=-3.27$, $SE=1.55$, $p=0.04$). **Conclusions:** Government organizations, healthcare practitioners, and healthcare organizations should continue marketing and disseminating health education for young adults through online social media. This public health online social media health education is likely to be considered bonding social capital and/or bridging social capital by young adults and this may be associated with more young adults visiting healthcare practitioners at least once a year.

Introduction

A commonly used definition for social capital is features of social organizations where individuals work together to improve society's efficiency through trust, social networks, and norms.¹ Greater levels of trust from these social organizations are associated with greater efficiency.² Social capital is not only in face-to-face settings but also in online settings where social capital is positively associated with attitudes about that online environment.³

Bonding and bridging are two categories of social capital. Bonding social capital is defined as the relationships between people who share close bonds with each other such as close relatives and friends.¹ Bridging social capital is defined as the relationships between people who share loose ties with each other such as casual friends and coworkers.¹ Bonding and bridging social capital can occur online as well as in person. Social media networking websites are associated with increased bonding social capital in an online social media environment and are associated with increased bridging social capital in an offline in-person environment.⁴ Bonding and bridging do not always have different associations for a particular area of focus. Both bonding and bridging can be present and have similar associations for a particular area of focus.⁵ In the literature review below we review the relationship of social capital with the three topics of self-perceived health, healthcare access, and social media.

Social Capital & Self-perceived Health

Bonding and bridging social capital are studied regarding self-perceived health. Bonding social capital is consistently positively associated with better self-perceived health.⁶⁻⁹ Bridging social capital has differing findings regarding its association with better self-perceived health. Some report that bridging social capital is positively associated with better self-perceived health,⁹ some report that bridging social capital is negatively associated with better self-perceived health,^{6,7} and some report that bridging social capital does not have any association with self-perceived health.⁷ This literature suggests that social capital is relevant for understanding health issues experienced by people.

Social Capital & Healthcare Access

In addition to the relevance of social capital for self-perceived health, it would be useful to understand if social capital impacts healthcare access. One can have a health concern but not necessarily have access to healthcare to treat the health concern. For general healthcare access, social capital of participating in social organizations was positively associated with Chinese migrants having public health services of established health records and receipt of health education information.¹⁰ For physician visits and days hospitalized, there are mixed findings. Social capital of trust and people willing to help each other were each not associated with elderly Japanese refraining from visiting a doctor when medical care was needed.¹¹ A broad measure of social capital was negatively associated with doctor visits and days hospitalized during the last two years of a person's life among elderly Medicare patients in the United States.¹² Social capital of belonging to the community was positively associated with Canadians having general practitioner physician visits and negatively associated with nights hospitalized.¹³ Social capital of frequency of religious service attendance, tangible social support, and affection each had mixed findings where one analysis showed a negative association with general practitioner physician visits and another analysis showed no association.¹⁴ Among Canadian immigrants, social capital of frequency of religious service attendance, community belonging, tangible social support, and affection were each not associated with general practitioner physician visits.¹⁵ Among Canadian non-immigrants, social capital of tangible social support was positively associated with general practitioner physician visits, social capital of affection was negatively associated with general practitioner physician visits, and social capital of frequency of religious service attendance and community belonging were each not associated with general practitioner physician visits.¹⁵

Social Capital and Online Social Media

In addition to the relationship of social capital with health and healthcare access, social capital can impact communication through online social media. A systematic review reports that the most frequent reason for online social media use is to seek and share health-related information.¹⁶ Another systematic review on social media use in healthcare reports that all relevant retrieved articles reported that patients used social media for information support of useful or needed health information.¹⁷ Communication on online social media is positively associated with both bonding and bridging social capital.¹⁸ General use of online social media is not associated with social capital in the community while online social media use for news is positively associated with social capital in the community.¹⁹ In longitudinal analyses, online social media social capital more strongly predicts offline social capital than offline social capital predicts online social media social capital.²⁰

Online Social Media

There are a number of points to keep in mind when studying online social media. First, content on online social media is not always accurate and this inaccurate content can be called “fake news.” The fake news content often appears as credible. Confirmation bias of the attitude that the news is consistent with one’s worldview is the main factor for acceptance of fake news.²¹

Second, advertisements on online social media can have enhanced acceptance if the advertisements are targeted to be congruent with the consumer’s psychological personality.²²

Third, the influence of online social media may differ depending upon the culture of the area studied. For example, those that identify most with mainland American culture have a greater network size on online social media and more often share photos on online social media than those who identify most with Asia-Pacific culture.²³

The literature reviewed above shows that 1) bonding social capital is positively associated with better self-perceived health while the pattern for bridging social capital is mixed for its association with self-perceived health, 2) there are mixed findings for the association of social capital with healthcare access such as physician visits, and 3) online social media is positively associated with social capital. This literature suggests that social capital is potentially relevant for understanding self-perceived health issues experienced by people that can involve the need for healthcare access. However, there does not appear to be any literature on social capital through online social media and its association with healthcare access such as healthcare practitioner visits. From a theoretical perspective, it would be useful to understand the relationship of social capital through online social media and healthcare access. Online social media use is a common activity. Social capital through online social media may have a different pattern for healthcare access than from what has been previously studied for the relationship of social capital with healthcare access. The findings from this study can benefit future studies as future research regarding online social media and healthcare access can use this study as the foundation for what is known about the topic. In addition to theory, there is applied relevance. It is a common practice to see a healthcare practitioner for an annual physical examination²⁴ or annual wellness visit.²⁵ As social capital can impact healthcare access, it would be useful to understand whether social capital through online social media is associated with healthcare access of this common practice of an annual visit to a healthcare practitioner.

Our overall research question is whether bonding or bridging social capital through online social media is positively associated with an annual visit to a healthcare practitioner (whether primary care or specialty care) among college students. It is important to study both types of social capital. These are two distinct types of social capital that potentially can have different associations with an outcome. Also, previous research on social capital often studies both types of social capital.^{6,7,9} First, we hypothesize that bonding social capital through online social media is positively associated with an annual visit to a healthcare practitioner. Second, we hypothesize that bridging social capital through online social media is positively associated with an annual visit to a healthcare practitioner.

Methods

Participants

The study design was a cross-sectional survey using convenience sampling. This study design was chosen as this allowed the researchers to access a large sample size of potential respondents

open minded to completing a survey. There were 950 undergraduate college students from a New York City public college who were asked to complete the survey. All undergraduate students were eligible to complete the survey and there were no formal exclusion criteria. Of these students, 41 declined to participate and 88 surveys were considered not valid due to substantial non-completion of content. The response rate of 86.4% for the 821 completed surveys was calculated as $821/950 \times 100\%$. We then excluded 23 students above age 35 to allow for a more consistent traditional college-age sample. We also excluded 131 individuals who had no exposure to prescription medication advertisements on social media and four people who did not answer the social capital questions. Data were analyzed from 663 participants who indicated exposure to prescription medication advertisements on social media from one or more of the following social media platforms of Facebook, Twitter, Snapchat, Instagram, Google+, Tumblr, Pinterest, LinkedIn, and YouTube. We included those with exposure to prescription medication advertisements on social media as these advertisements encourage consumers to discuss the prescription medication advertised with their healthcare professional. This is also a sample that is aware of and has exposure to healthcare topics on social media. Such a sample would potentially be useful for generalizing to understand the impact of social media with other types of healthcare focused advertisements and for consumers visiting a healthcare professional.

The sample obtained is representative of the college population as the race/ethnicity percentages of the 663 participants in our sample are similar to the race/ethnicity percentages reported by the college for the college population. The anonymous surveys were completed in classrooms and lecture halls where students were asked to complete the paper survey and then surveys were distributed to all students present. The principal investigator trained the one student research assistant on survey data collection. Some data collection sessions had both the principal investigator and student research assistant present for data collection. Most of the data collection sessions were conducted independently by the student research assistant. Students typically had no prior relationship with the principal investigator or student research assistant and could easily decline to participate. Informed consent was obtained. Ethical approval to conduct this study was obtained from the college Institutional Review Board and was conducted consistent with the Declaration of Helsinki. Surveying occurred in September and October 2017.

Measures

Demographic variables consisted of age (years), sex (man/woman), and self-reported race/ethnicity (white, African American, Hispanic, Asian/Asian American, South Asian [India, Pakistan, surrounding areas], other). These variables were included as these are important variables for understanding sample characteristics and are typically included in studies conducted in the United States. Self-perceived health had categories of excellent, very good, good, and fair/poor. Fair and poor were grouped together because there was a small number of participants in those categories. Healthcare visit information was obtained by asking about the last time participants saw a doctor, a nurse practitioner, or a physician's assistant where participants talked about a health condition or concern of their own. Participants were informed to exclude emergency room visits from this question. Healthcare visit had two categories of either less than or equal to once a year or greater than once a year. The one year dividing point was chosen as it is a common practice to see a healthcare practitioner for an annual physical examination²⁴ or annual wellness visit.²⁵

Outcome Variables

Social Capital

Social capital was measured with a scale measuring online social capital of bonding and bridging.²⁶ The measure has several strengths. It was developed from a sample of people from all the states in the United States which includes our current sample of those from similar cultural background in the United States. The scale is reliable and valid with the original development study reporting Cronbach alpha reliability for the bonding scale of 0.90 and for the bridging scale of 0.84. The scale is also used by others to measure online social capital (e.g.²⁵).

Bonding

The bonding scale had 10 items. A sample item is, “There are several people on my online social network that I trust to help solve my problems.” The response scale ranged from 1=strongly disagree to 7=strongly agree. The total score was calculated by adding all 10 items. We changed two reversed items to be in the same direction as the other items. We also modified “online” to “on my online social network.” There were six people that omitted one item and one person that omitted two items. The mean for each person was used to impute the missing values to allow for the scale to be included for that person.

Bridging

The bridging scale had 10 items. A sample item is, “Interacting with people on my online social media network makes me feel like part of a larger community.” The response scale ranged from 1=strongly agree to 7=strongly disagree. The total score was calculated by adding all 10 items. We modified “online” to “on my online social network.” There were 14 people that omitted one item. The mean for each person was used to impute the missing values to allow for the scale to be included for that person.

Statistical Analysis

Descriptive statistics of mean and standard deviation were used for the continuous variables. Percentage and frequency were used for the categorical variables. Analysis of variance compared health care visits with the social capital measures of bonding and bridging. Multivariate linear regression analyses were conducted for bonding social capital and bridging social capital. All analyses used IBM SPSS Version 25.²⁷ All p-values were two-tailed with alpha level for significance at $p \leq 0.05$.

Results

Table 1 shows the sample characteristics. The mean age was slightly above 22 years and the percentage of women was slightly more than half. In terms of race/ethnicity, slightly less than one-third of the sample was white. The second-largest racial group was Asian Americans who were slightly more than one-fifth of the sample. Almost half of the sample perceived their health as very good whereas less than one-tenth of the sample believed they were in fair/poor health. Lastly, 15.7% visited their healthcare practitioner less frequently than once a year.

Cronbach alpha reliability for the bonding scale was 0.94 and for the bridging scale was 0.93.

Table 1. Characteristics of the Sample

Variable	Mean (SD) or # (%)
<i>Demographics</i>	
Age (years)	22.3 (3.70)
Sex (women)	348 (52.5)
Race/ethnicity	
White	204 (30.8)
African American	89 (13.4)
Hispanic	100 (15.1)
Asian/Asian American	142 (21.4)
South Asian	59 (8.9)
Other	67 (10.1)
Missing	2 (0.3)
<i>Health</i>	
Self-perceived Health	
Excellent	122 (18.4)
Very good	283 (42.7)
Good	210 (31.7)
Fair/Poor	48 (7.2)
Healthcare Visit	
≤ 1 year	559 (84.3)
> 1 year	104 (15.7)

Note: SD=standard deviation

Table 2 shows the mean comparison between healthcare visits and social capital from online social media. In both bonding and bridging social capital, those who visited a healthcare practitioner at least once a year had higher mean scores than those who did not visit their healthcare practitioner at least once a year.

Table 2. Mean Comparison Between Healthcare Visits and Social Capital From Online Social Media

Variable	≤ 1 year Mean (SD) (n=559)	> 1 year Mean (SD) (n=104)	p-value
Bonding	39.8 (15.89)	33.8 (15.16)	<0.001
Bridging	44.3 (14.34)	40.2 (14.90)	0.01

Note: SD=standard deviation

Table 3 shows the linear regression analysis for bonding social capital from online social media. Those who visited their healthcare practitioner less often than once a year were significantly

associated with lower levels of bonding social capital. In addition, higher age was associated with significantly lower levels of bonding social capital.

Table 3. Linear Regression Analysis for Bonding Social Capital From Online Social Media

Variable	b (SE)	p-value
<i>Demographics</i>		
Age (years)	-34.63 (9.18)	< 0.001
Sex (women)	-1.24 (1.23)	0.31
Race/Ethnicity		
White	Reference	
African American	-3.71 (1.98)	0.06
Hispanic	-2.36 (1.91)	0.22
Asian/Asian American	2.90 (1.74)	0.10
South Asian	0.48 (2.36)	0.84
Other	-1.68 (2.22)	0.45
<i>Health</i>		
Self-perceived Health		
Excellent	Reference	
Very Good	1.52 (1.68)	0.37
Good	-2.39 (1.81)	0.19
Fair/Poor	-3.72 (2.71)	0.17
Healthcare Visit (> 1 year)	-5.31 (1.68)	0.002
Constant	87.58 (12.47)	< 0.001

Note: b=unstandardized beta, SE=standard error

Table 4 shows the linear regression analysis for bridging social capital from online social media. Those who visited their healthcare practitioner less often than once a year were significantly associated with lower levels of bridging social capital. Higher age was significantly associated with lower levels of bridging social capital. Asian Americans were significantly associated with greater levels of bridging social capital. Lastly, those who perceived their health as very good were significantly associated with greater levels of bridging social capital.

Table 4. Linear Regression Analysis for Bridging Social Capital From Online Social Media

Variable	b (SE)	p-value
<i>Demographics</i>		
Age (years)	-21.15 (8.51)	0.01
Sex (women)	0.85 (1.14)	0.46

Race/Ethnicity		
White	Reference	
African American	0.40 (1.84)	0.83
Hispanic	0.84 (1.77)	0.64
Asian/Asian American	3.16 (1.61)	0.050
South Asian	2.52 (2.19)	0.25
Other	2.68 (2.05)	0.19
<i>Health</i>		
Self-perceived Health		
Excellent	Reference	
Very Good	3.11 (1.56)	0.046
Good	0.35 (1.68)	0.84
Fair/Poor	-2.72 (2.51)	0.28
Healthcare Visit (> 1 year)	-3.27 (1.55)	0.04
Constant	69.47 (11.56)	< 0.001

Note: b=unstandardized beta, SE=standard error

Discussion

Consistent with our hypotheses, those who visited a healthcare practitioner at least once a year had greater bonding and bridging social capital from online social media than those who did not visit a healthcare practitioner at least once a year. In addition, the multivariate analyses showed that higher age was significantly associated with lower levels of both bonding and bridging social capital from online social media. Asian Americans were significantly associated with greater levels of bridging social capital from online social media. Lastly, those who perceived their health as very good were significantly associated with greater levels of bridging social capital from online social media.

We found that those who visited a healthcare practitioner at least once a year had greater bonding and bridging social capital from online social media than those who did not. We are not aware of any studies on bonding or bridging social capital as it relates to yearly healthcare practitioner visits. There are mixed findings regarding other types of social capital as it relates to health care practitioner visits. Some studies report general social capital¹² and religious social capital¹⁵ are not associated with healthcare practitioner visits. However, another study shows that social capital of belonging is positively associated with general practitioner visits.¹³ Our findings for bonding and bridging social capital from online social media are similar to studies about social capital of belonging. We know from a related concept of social support, that co-worker social support is positively associated with doctor visits.²⁸ We suggest that having a close connection with others through social capital from online social media is related to caring about one's health and visiting one's healthcare practitioner. This approach applies not only to close relationships through bonding social capital but also to relationships between other communities through bridging social capital.

We found that higher age was significantly associated with lower levels of bonding and bridging social capital from social media. A study of college students ages 18-25 shows that higher age is associated with increased levels of bonding and bridging social capital through social media.²⁹ Communication with family and friends on online social networks and self-concept of friendship building on online social networks are each positively associated with social media use among college students in their early 20s.³⁰ We suggest that the use of social media to foster social capital is more important among those in their early to mid 20s than to those in their late 20s and early to mid 30s.

We found that Asian Americans were significantly associated with greater levels of bridging social capital from online social media. Religious Asian American college students were positively associated with cross-racial interaction, a form of bridging social capital.³¹ Our findings among all Asian Americans for online social media are similar to this pattern. Asian Americans typically prefer coping approaches that use a collectivistic orientation where the focus is on the group rather than on the individual.³² Bridging social capital is for those who share loose ties with each other. We suggest that Asian Americans due to their collectivistic approach have a greater desire to have higher levels of bridging social capital from online social media than other racial/ethnic groups. This collectivistic approach may be the mechanism for Asian American use of online social media as a platform to establish new bridging social capital relationships with others.

We found that those who perceived their health as very good were significantly associated with greater levels of bridging social capital from online social media. There are mixed findings for the association of bridging social capital with self-perceived health where some report a positive association,⁹ some report a negative association,^{6,7} and some report no association.⁷ Our findings for bridging social capital from online social media are similar to those who report a positive association. Buddies in online support groups are positively associated with goal attainment for health behaviors.³³ We suggest that the mechanism of the positive association of perceiving their health as very good with bridging social capital from online social media is that this bridging social capital from online social media provides additional buddies that leads to a healthier lifestyle and greater perceptions of better health.

Limitations

This study has several limitations. First, this study was only from those college students ages 18-35 years and these patterns may differ among those from different age groups. Future research should study this topic among other age groups. Second, this study was collected with hard copy surveys. It is possible that an online method of data collection may have connected with different participants and there may have been different findings.

Conclusions and Public Health Implications

In conclusion, we found that those who visited a healthcare practitioner at least once a year had greater bonding and bridging social capital from online social media than those who did not visit a healthcare practitioner at least once a year. This study adds to theory that social capital through online social media is positively associated with healthcare access. This study has potential implications for public health policy. First, online social media marketing of healthcare visits may be of interest to young adults. Second, government organizations, healthcare practitioners, and healthcare organizations should continue marketing and disseminating health education for

young adults through online social media. This public health online social media health education is likely to be considered bonding social capital and/or bridging social capital by young adults and this may be associated with more young adults visiting healthcare practitioners at least once a year. Regular visits to a healthcare practitioner are likely to result in a healthier population.

This study has public health relevance to Delaware. Prior research in Delaware found that online social media was the most frequently used source for seeing advertisements, flyers, and/or infomercials for a public health campaign about protection from ticks and tick-borne diseases.³⁴ Also, obesity, alcohol use, and cigarette use are topics that can be discussed at an annual healthcare visit. In Delaware, hospitalized adult patients differ by location regarding obesity, cigarette use, and alcohol use. Wilmington and Bear has almost half of patients hospitalized with obesity as compared to approximately one-third in Northwest New Castle County, and North Wilmington.³⁵ Wilmington has more than one-quarter hospitalized with alcohol use disorder as compared to percentages of 16% or less in Bear, Northwest New Castle County, and North Wilmington.³⁵ In New Castle County, the greatest portion of current cigarette smokers live in Wilmington.³⁶ Public health online social media messages regarding obesity, alcohol use, and cigarette use can target different communities with messages tailored to the health concerns of the community. Lastly, Delaware has the My Healthy Community data portal that reports statistics and provides information on many health topics.³⁷ Public health practitioners can track the location of searches for particular health topics and target different communities with online social media messages tailored to the particular health concerns of the community. A public health approach in Delaware with online social media messages targeted to different health needs of different communities can likely to be considered bonding social capital and/or bridging social capital by young adults in these communities. This may be associated with more young adults in Delaware visiting healthcare practitioners at least once a year and resulting in improved health for these young adults due to counseling and interventions by these healthcare practitioners.

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