Investigating Antecedents to the Experience of Flow and Reported Learning Among Social Networking Site Users

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Using an online survey (N = 888), this study investigated if the experience of flow mediated the influence of perceived social networking site credibility and social capital affinity (the sense of community and likeness felt for people online) on perceived focused and incidental knowledge gain among social networking sites users. The findings indicated that flow acted as a partial mediator in this context. However, social capital affinity strongly predicted perceived social networking site credibility and flow. Both perceived social networking site credibility and flow were predictors of perceived focused learning while social capital affinity was a strong, direct predictor of perceived incidental knowledge gain in this sample.

People visit social networking sites to interact with others and to glean news about people who they know offline and/or online. As well, it is possible to learn about opinions, current affairs, innovations, and media events of all types via social networking sites. Thus, users visit with the goal of focused knowledge gain but, in the process, may obtain unlooked for knowledge. Incidental knowledge gain involves information acquired by chance. It is unexpected, random, or accidental, discovered in connection with or resulting from an activity. The Pew Research Foundation (2013a) reported that, on Facebook, news consumption is a common, but incidental experience. Most U.S. adults do not go to Facebook seeking news, instead, the majority get news when they are on Facebook for other reasons. Incidental learning has long been a focus of education research (e.g., Marsick & Watkins, 2001); however, little research has addressed the processes underlying such forms of learning via social networking sites. Thus, one goal of the current study is to investigate antecedents to both focused and incidental knowledge gain among social networking site users. The antecedents of interest are flow (intense

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engagement in and enjoyment of an activity), social capital affinity (the sense of community and likeness felt for people online), and perceived social networking site credibility. The role of flow is investigated as a possible mediator between social capital affinity, perceived social networking site credibility, and knowledge gain. The theoretical rationale for, plus definitions of, the model and pertinent research about the focal variables are discussed next.

Theoretical Model: Person States as Antecedents

Cultivating engagement with digital media is a strong focus for media profession-als and content generators because of the potential for positive outcomes for both individuals and organizations. In the current study, the concept of flow takes center stage. Flow is more than just involvement and engagement. Flow is said to occur when "the experience is so enjoyable that people will continue to do it even at great cost, for the sheer sake of doing it" (Cskikszentmihalyi, 1990, p. 4). According to its original conceptualization, flow comprises six dimensions: Concentration (focused attention); perceived control; the activity is spontaneous; distorted sense of time; loss of self in the activity; and autotelic experience (an end in itself) (Csikszentmihalyi, 1977).

At first glance, it might seem surprising to place flow in the social media do-main—a context that is, perhaps, regarded as superficial and not all that engaging. However, it is important to consider several issues relating to the social networking site phenomenon. Belonging to a social networking site (especially Facebook) is ubiquitous. Users spend considerable amounts of time viewing their news feed, generating content, and reading and/or interacting with user generated content. The potential to "get lost" in all of this content is clear. According to Pew Research, (2013b), 40% of respondents visit Facebook multiple times a day. The majority (78%) access their news feed via mobile phone. As well, 67% of mobile phone owners check their phone for messages, alerts, or calls even when they do not notice their phone ringing. The assumption, then, is that people like social networking sites, they enjoy interacting with them, and doing so is often an end in itself. Thus, the experience of flow is both possible and probable. Also, as demonstrated below, there is ample evidence of its potency online. In terms of outcomes, the correlation between flow and learning online has been well-documented (see Ghani, 1995 as an early example), but little research has addressed flow and learning in the context of social networking sites.

Perhaps of most interest though (and potentially of most utility) are the antecedents to flow among social networking site users. Several models examining antecedents to online flow have been proposed (e.g., Finneran & Zhang, 2002; Ghani, 1995; Skadberg & Kimmel, 2004). Few have included antecedents such as the influence of user attributes (e.g., traits and states), the overall goals involved in usage, and new media genre. Finneran and Zhang (2003) argued that prior research exhibits ambiguities in the conceptualization of flow and inconsistencies between flow

models. As a result, they debated whether the adoption of *traditional* flow theory is appropriate without re-conceptualization to consider the uniqueness of new media environments.

Their PAT model integrated the characteristics of *person* (user trait or state attributes), *artifact* (online genre) and *task* (goal), and the relationships between them which they considered contributed to flow. Thus PAT, in part, suggests that flow is preceded by a person state that is conducive to absorption, time distortion, and loss of self-consciousness; the online genre has characteristics of vividness and responsiveness; the task is goal-oriented, autonomous, enables variety; and there is a clear fit between task and the online genre. Arguably, these components interact when people use social networking sites.

In this study, user perceptions about social networking site credibility and social capital affinity are of interest as person states and antecedents to flow. Logically, a person who does not regard the content on a social networking site as credible is unlikely to become engaged by it. By contrast, if a user feels affinity with others on a social networking site then he or she is more likely to experience flow. Additionally, affinity with those on a social networking site will potentially increase the perception that the site and the content posted there is credible. Perceptions about others online and site credibility may also directly influence learning. This is because it is improbable that someone would learn anything if the site was not considered credible and he or she felt no affinity with those who posted content there.

Below these concepts and their interrelationships are discussed in more detail.

Flow Theory and Research

Flow is a concept that has been identified throughout history and across cultures. Buddhism and Taoism speak of a state of mind very much resembling the idea of flow—the action of inaction, or doing without doing. As part of the positive psychology movement, Csikszentmihalyi (1977) introduced flow theory to explain why people engage in actions that do not appear to have specified outcomes other than aesthetic ones. Flow, as more recently conceptualized, is an affect-based response to types of pursuit that involve intense engagement, enjoyment, and high psychological arousal (Mauri, Cipresso, Balgera, Villamira, & Riva, 2011). Flow occurs when a clear goal and feedback is involved, and when the challenge provided by the activity is balanced with the skill to accomplish it (Mauri et al.).

Flow is associated with an array of activities in research using diverse methodologies, and employing observational, self-report, and physiological measures (Weber, Tamborini, Westcott-Baker, & Kantor, 2009). For example, using an experiment, Guo and Poole (2008) assessed antecedents of flow in online shopping, instituting a test of Csikszentmihalyi's original formulation of flow. Subjects were randomly assigned to one of eight pre-selected Web sites and asked to find something they were interested in purchasing. Data were collected via questionnaires presented by a series of pop-up screens 6 to 8 minutes after subjects started browsing. Results

showed that Web site complexity affects flow through the mediating effects of three flow preconditions: a clear goal, feedback, and a balance of challenge and skill.

Choi and Baek (2011) investigated factors that influenced flow and learning via virtual worlds among sixth grade students. Students were directed to undertake self-directed and cooperative activities in *BKworld*, a learning environment based on *Second Life*. Factor analysis revealed that two of the most telling characteristics of virtual worlds reported by students were interactivity and representational fidelity. These were also the most significant predictors of flow and learning. A variety of forms of interactivity is available via social networking sites and, as well, social networking sites are known to be highly salient in the daily lives of many users.

Overall, social networking site users are privy to many types of content, providing ample opportunity to experience flow. Mauri and colleagues (2011) investigated whether Facebook elicits a psycho-physiological pattern in users. The researchers compared responses to exposure to slides of natural panoramas (relaxation), the subject's personal Facebook account, and a mathematical task (stress). Analysis indicated that the Facebook experience was significantly different from the stress and relaxation conditions on the psycho-physical measures used (skin conductance, blood volume pulse, electroencephalogram, electromyography, respiratory activity, and pupil dilation). The data revealed that Facebook use can evoke a state characterized by high positive valence and high arousal which the authors interpreted as the experience of flow.

Two potential antecedents to flow are investigated in the present research—perceptions about social capital affinity and site credibility.

Social Capital Affinity

Social capital is the aggregate of resources which are linked to a durable network of relationships of mutual acquaintance and recognition (Bourdieu, 1985). Putnam (2000) described bridging social capital as created through heterogeneous networks, with the majority of connections being weak ties. Bonding social capital comprises groups of strongly connected individuals such as family members and close friends. Whereas bridging social capital involves a wide range of diversity, bonding social capital is linked to social support—a characteristic of strong ties (Adler & Kwon, 2002; Burt, 2000). Bridging social capital requires only that a connection exists; it is not about close friendship (Ellison, Lampe, Steinfield, & Vitak, 2011). Research has examined bridging social capital with regard to social media such as Facebook (for a summary see Ellison et al., 2011). It is through such connections that users acquire new information and interact with people they would not ordinarily meet (Granovetter, 1973). Social networking sites involve passive use, but also instrumental use which is interactive in nature. This entails connection, communication, and, sometimes, identification with online others. A survey conducted in China (Chang & Zhu, 2012) is relevant to the current study in that the results showed that perceived bridging and bonding social capital had different roles in building users'

satisfaction and continuance intention. Perceived bridging social capital (weak ties to other users) exerted a strong influence on users' satisfaction and continuance intention, but perceived bonding social capital had no influence. Flow influenced users' satisfaction, but not continuance intention. Arguably, then, weak ties with others online impact user experiences of and responses to social media.

Walther et al. (2011) argued that: ''Social identification and peer group influence in computer-mediated communication should be a useful element in explaining a variety of influence effects in the new technological landscape'' (p. 25). Social networking sites allow an unparalleled ease of access to peers with whom users can identify. This form of identification is linked to bridging social capital and results in social capital affinity. The concept of affinity is defined here as sympathy marked by community of interest, and likeness based on casual connection. Therefore, social capital affinity is the sense of community and likeness felt for people online who are weak ties. Social capital affinity is the identity dimension of bridging social capital. If people identify with peers online and/or possess shared goals or perspectives, then such perspectives may be very potent and may also increase engagement with activities available on social networking sites. However, social capital affinity should not be confused with the concept of subjective norm. Fishbein and Ajzen (1975) recognized that behavioral intentions are affected by perceived social pressure to perform a behavior. Social capital affinity is not about social pressure, but is a loose sense of identity with communities of weak ties. In the present study it is hypothesized that the sense that other online users participate in, recommend, or discuss activities will heighten the flow experience.

H_1: There will be a positive relationship between social capital affinity and flow.

Zhou, Li, and Liu, (2010) showed that trust is an important predictor of flow. Trust is one facet of credibility. Therefore, perceptions about online credibility are discussed next.

Online Credibility

Research conducted by Metzger and colleagues (e.g., Flanagin & Metzger, 2007; Metzger & Flanagin, 2013) indicates that credibility perceptions differ across Web site genres: news organization Web sites are rated highest in terms of message, sponsor, and overall site credibility, and personal Web sites lowest; typically, ecommerce and special-interest sites are rated in the middle. Metzger and Flanagin (2013) identified five aspects of online credibility: Accuracy, authority, objectivity, currency, and coverage of the information and/or its source. Accuracy is the degree to which an online source is verifiable and error free. Authority is judged by attending to who authored the information, the author's credentials and qualifications, and whether the site is recommended as trustworthy. Objectivity involves identifying the motives behind the site content, whether there is a commercial or other agenda involved.

Currency relates to whether the content is up-to-date, and coverage refers to the depth of information provided.

Often scholars assume that people rigorously assess credibility, and that individuals work alone to form credibility assessments. But in their research program about Internet credibility, Metzger and colleagues determined that two of the most important influences on credibility assessments are cognitive shortcuts (e.g., simplicity of use, features) and the opinions of others. An important dimension of digital media is the ability to connect with others easily because of convenience and availability. Thus, group and social engagement are crucial to credibility assessment, especially in the area of endorsement (Metzger & Flanagin, 2013). It is particularly likely that this applies in the case of social networking sites where relational connection is paramount. Therefore, in this study, it was hypothesized that social capital affinity would be positively related to perceptions of social networking site credibility. As well, it was assumed that perceptions of social networking site credibility would enhance engagement with social networking sites so that perceived credibility would be positively related to flow.

H_2: There will be a positive relationship between social capital affinity and perceived credibility.

H_3: There will be a positive relationship between perceived credibility and flow.

For this investigation, perceived learning from social networking sites is a focus; thus, a brief review of research related to online learning is merited.

Learning and Flow

With regard to Facebook, Ellison and colleagues (2011) determined that information is easily obtained from social networking site friends, and also that resources are provided to others via posts and messaging. As such, among college students on Facebook, social information seeking is second only to maintaining relationships as a motivation for use. Users view, share, and follow-up on user generated content. Packiam-Alloway and Alloway (2012) investigated social networking site engagement effects on cognitive and social skills by testing participants' working memory, attentional skills, and levels of social connectedness. Results showed that activities on Facebook and YouTube predicted memory test performance. Active social networking site users were more accurate, did not focus their attention exclusively on the target stimuli, and were less likely than passive users to ignore distracter stimuli. Their engagement with social networking sites seemed to be exploratory and they allocated similar importance to various streams of information. This suggests that high engagement with social networking sites such as Facebook may lead to both looked for and unlooked for information.

Research shows that flow often mediates learning—being related to both perceived knowledge gain and actual knowledge gain. Rossin, Ro, Klein, and Guo

(2008) investigated the relationship between students' experiences of flow and learning in an online management course. There was a positive relationship between flow and perceived learning, perceived skill development, and also student satisfaction. Ryu and Parsons (2012) showed that flow resulting from collaborative work assists learning via mobile devices. In a simulated training program, the control group members worked individually, two other groups of participants used mobile phones, one group had instant messaging, and photo upload and the other had time-delayed photo Internet upload. The group with instant messaging functioned best on learning outcomes, leading the authors to conclude that social flow made a positive difference to the quality of learning.

Skadberg and Kimmel (2004) conducted a study assessing Web site visitors' flow experience while browsing. Web site users experienced a sense of time distortion, enjoyment, and telepresence. When the participants experienced flow, they learned more about the Web site content and learning was related to changes in attitudes and behavior. Browsing a Web site with the goal of information seeking is markedly different from visiting a social networking site. However, there are some similarities. As Skadberg and Kimmel point out, the outcomes from browsing Web sites are dependent on interactions between content, users' individual differences, and system design and performance. This is also true of social networking site users' experiences. Skadberg and Kimmel concluded that the close relationship between flow and Web site attractiveness and interactivity demonstrates that, in the online environment, flow is associated not only with information retrieval, but also with situational interaction. The authors contended that this encourages visitors' engagement and participation because it is more informal, spontaneous, and non-sequential—all of which are social networking site features.

Based on the above research findings, it was assumed that flow would predict both focused and incidental knowledge gain.

H_4: Flow will be positively related to perceived focused and incidental knowledge gain.

To determine the mediating role of flow, it was also hypothesized that both social capital affinity and perceived credibility would be positively associated with focused and incidental knowledge gain. This is because credible information may aid learning and also because social capital affinity was expected to be positively related to perceived credibility

H_5: Social capital affinity will be positively related to perceived focused and incidental knowledge gain.

H_6: Credibility will be positively related to perceived focused and incidental knowledge gain.

The hypothesized relationships are summarized in Figure 1.

Figure 1
Model
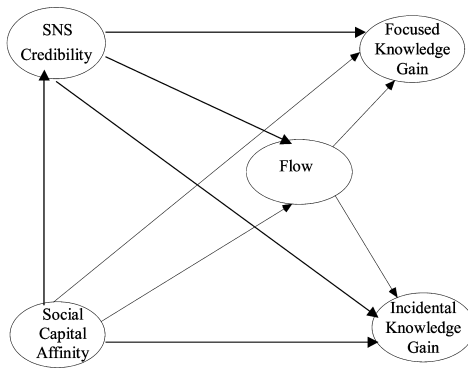
Method

To maximize external validity in this essentially exploratory study, data were collected via an online survey. Although important, online flow studies employed survey design (e.g., Ghani & Deshpande, 1994; Trevino & Webster, 1992), this methodology is open to criticism for its lack of ecological validity when measuring complex constructs. Other naturalistic methodologies may better capture the nuances of flow, but too, they are not without shortcomings. Experience sampling method involving subjects periodically reporting activities and their state is still self-report. Also, in studies where this method was employed using questionnaire pop-ups on screen (e.g., Guo & Poole, 2008) there was a risk that subjects' flow state was disrupted. Other forms of empirical observation involve physiological tests (Mauri et al., 2011) or neurological observation via MRI (Weber et al., 2009). While these methods provide empirical evidence, it is not clear that this is evidence of flow because, assuming Csikszentmihalyi's definition, flow is characterized by six dimensions. As such, evidence of all six is hard to ''see'' or physically detect. And typically, these procedures take place in non-naturalistic settings involving small samples. In sum, this underscores the need for a multi-methodological approach to flow research.

In this study, data were collected using the crowd-sourcing tool, Amazon Mechanical Turk (AMT). Studies indicate that AMT is approximately representative of U.S. Internet users, generally exceeding the representative properties of convenience samples (e.g., Paolacci, Chandler, & Ipeirotis, 2010). Several studies delineate the advantages of AMT to garner participants. For example, Shapiro, Chandler, and Mueller (2013) conducted a study using AMT, partly to assess the reliability and validity of participant reports about psychiatric disorders. The authors found that respondents were generally honest, and criterion validity was demonstrated ''by replicating associations between psychopathology and established demographic predictors (e.g., unemployment)'' (p. 5). However, Chandler, Mueller, and Paolacci

(2013) showed that some AMT workers are likely to participate across multiple related experiments, and repeat their participation in studies. Interestingly, they also determined that the quality of the data produced by AMT workers is high, with convincing internal and test-retest reliability.

It was doubtful that participants in the current research had encountered similar studies, (unlike those described by Chandler and colleagues [2013], where experimental designs were a focus), and, thus, could not be aware of its intent a priori. But in an attempt to maximize the advantages of AMT as a participant source, while minimizing the problems associated with them, respondents were screened as follows. Participants had to be at least 18 years old, living in the United States, access the Internet each day, and also access their favorite social networking site sometimes, often, almost always, or always. Also, respondents were compensated only 25 cents for a completed survey, which meant that the remuneration was less attractive than many more lucrative activities. Too, participants were informed prior to entering the questionnaire that they would be paid only once for the survey. The total sample amounted to 931; however, 43 cases were deleted because of substantially incomplete surveys. Therefore, the valid sample was 888. The age range was 18–72; M = 31.28, SD = 10.42. See Table 1 for the demographic breakdown.

Research Design

Survey and Measures. In addition to demographic variables, e.g., age, sex, and race, several scales were used to measure the variables of interest. All scale items were closed-ended and participants responded on a 5-point range (e.g., 1 = *strongly disagree*; 5 = *strongly agree*). Each scale was tested for internal consistency using Cronbach alpha and composite reliability. Discriminant validity was assessed using the square root of the average variance extracted. The scales were pilot-tested with 465 undergraduate students; some item modifications were made to improve reliability.

Social Networking Site Credibility. Five items were taken from Flanagin and Metzger's (2007) online credibility scale. These items posted a high reliability of .87 (M = 3.36; SD = .88). However, one item (authoritative) was deleted because it cross-loaded with another variable in the model. Participants were asked how much they agreed that their favorite social networking site is: *Trustworthy, believable, reliable, and accurate.*

Social Capital Affinity.

Four items were, in part, adapted from Williams (2006) and Ellison, Steinfield, and Lampe (2007) bridging social capital scales such that they reflected affinity with *weak* ties in a social network. These items posted high reliability of .83 (M = 3.82; M = .78): "Interacting with people visiting this social networking site makes me feel like part of a community"; "When visiting this social networking site, hearing what

Table 1
Demographics (N = 888)

What is Your Favorite Social Networking Site?	
Facebook	71.4%
Twitter	13.2%
Instagram	3.8%
Pinterest	3.7%
Google+	2.8%
Tumbler	1.7%
Reddit	1.4%
Other (Respectively: Linkedin, MySpace, Vine, Plurk, Orkut, Foursquare, Organic SNSs Embedded in Gamer Hardware)	2.0%
Gender	Female 49%
Age	Range 18–72; M = 31.28, SD = 10.42
(18–34)	74%
(35–49)	17%
(50–64)	7%
65+	1%
Race (n)	720 Caucasian
	103 Hispanic
	82 African-American
	76 Asian
	16 Native American
	10 Pacific Islander
	14 Multi-ethnic/Other

others say enhances the experience''; ''Communicating with the people visiting this social networking site raises points of interest for me''; ''Being with people on this social networking site makes me want to follow-up on things.''

Flow.

Involvement and engagement are major dimensions of flow; however, the concept encompasses other facets such as concentration, autotelic experience, and perceived control. Taking into account the confines of the methodology, and the form of analysis, the flow scale approximated these dimensions as far as possible. Six items were chosen based on Jackson and March's (1996) flow scale. The items showed high reliability, posting a Cronbach's alpha of .89 (M = 3.42; SD = .83).

The items were: "I have feelings of total concentration when visiting this social networking site"; "When visiting this social networking site, I really enjoy the experience"; "I become totally involved when visiting this social networking site"; "I feel focused on what I am doing while visiting this social networking site." "I know how well I'm doing while visiting this social networking site, I feel highly engaged while visiting this social networking site."

Perceived Focused Knowledge Gain.

Four items were used to measure reported focused knowledge gain from social networking sites. These items were indirect measures of reported knowledge gain as opposed to objective measures of knowledge gain. This scale showed very good reliability in the pilot study and in the current study. Cronbach's alpha was .90 (M = 3.52; SD = .97). The focused knowledge gain items were: "I often learn something I need to know when visiting this social networking site"; "This social networking site effectively communicates what I need to know"; "This social networking site helps me learn what I need to know"; "This social networking site provides the information I am looking for."

Perceived Incidental Knowledge Gain.

Four items were used to measure reported incidental knowledge gain from social networking sites. The items posted high reliabilities in both the pilot test and the current study. Cronbach's alpha was .91 (M = 3.97; SD = .82). The reported incidental knowledge gain items were: "I enjoy learning new things by accident when visiting this social networking site"; "I often learn interesting things that I was not looking for when visiting this social networking site"; "Sometimes I learn something new that wasn't intended when visiting this social networking site"; "When visiting this social networking site, I sometimes get a bit distracted by new information I wasn't looking for."

In order to show levels of parallelism and criterion validity, tests were conducted to assess relationships between the study scales and two other potential correlates. In this case, attention to social networking sites (Laczniak, Muehling, & Grossbart, 1989; alpha = .90) and social networking site features (Chiang & Su, 2011; alpha = .73) were of interest. This is because attention is one of several components of flow; thus, it is reasonable to expect attention to post a strong correlation with the flow scale, but remain distinct from it. Additionally, in prior research (e.g., Skadberg & Kimmel, 2004), site features (especially interactivity) have acted as antecedents to flow. Attention was strongly related to flow ($r = .64$, $p < .001$) with all the flow indicators related to the indicators of attention. However, the square root of the average variance extracted was considerably higher for attention than any of the correlations between the scales. Similarly, the site features scale was related to flow ($r = .48$, $p < .001$), but again showed a high level of discriminant validity. Intercorrelations between scales and discriminant validity are summarized in Table 2.

Table 2
Correlations: Scales and Discriminant Validity

Measures	1	2	3	4	5	6	7
Attention to SNS	**.90**						
1. SNS Features	.43**	**.77**					
2. SNS Credibility	.40**	.44**	**.83**				
3. Social Capital Affinity	.50**	.55**	.55**	**.75**			
4. Flow	.64**	.48**	.51**	.58**	**.72**		
5. Focused Knowledge Gain	.45**	.48**	.54**	.55**	.55**	**.84**	
6. Incidental Knowledge Gain	.38**	.45**	.40**	.56**	.44**	.57**	**.84**

Note. Diagonal elements represent the square roots of average variance extracted; SNS = Social Networking Site. **$p < .01$.

Results

Latent variable analyses were conducted using Amos Graphics. First, the latent variables were subject to a confirmatory factor analysis (the measurement model) for the purposes of assessing measurement properties. All of the scales were tested in one over-all model. The model generally showed good fit to the data ($\chi^2 = 567.37$, df = 192, $p < .01$; $\chi^2/df = 2.96$, RMSEA = .047, TLI .96, ILI .97, Parsimony-adjusted NFI .79). However, the Chi-square statistic was significant. This was attributed to the large sample size in this case. If the sample size is large then even small differences between the model and the data result in statistical significance. There were some cross-loadings, most notably between the variable, "this social networking site is authoritative" (credibility) and "feelings of total concentration" (flow). As mentioned, the authoritative variable was deleted, without any decrease in scale reliability. Less than 4% of the correlations between the standardized residuals were significant. However, the overall fit was good. Deletion of other variables did not improve the fit, or change the outcome of the tests.

Next convergent validity was examined for each latent item. According to Fornell and Larcker (1981), convergent validity is demonstrated when all item indicators possess a significant t-value, demonstrate reasonably robust factor loadings (i.e., >.50), show an average variance extracted (AVE) coefficient in excess of .50, and have a composite reliability coefficient in excess of .70. The current data broadly indicated convergent validity. The factor loadings, means, standard deviations, and composite reliabilities are shown in Table 3.

Model Testing

The proposed model showed good fit to the data ($\chi^2 = 540.02$, df = 191, $p < .01$; $\chi^2/df = 2.81$, RMSEA = .045, TLI .97, ILI .97, Parsimony-adjusted NFI .79). All of the

Table 3
Measurement Model: Item Loadings

	Loading	Mean	SD
SNS Credibility			
Composite Reliability = .87			
This SNS is:			
Trustworthy	.71	3.11	1.14
Accurate	.87	3.35	1.01
Believable	.85	3.41	1.02
Reliable	.73	3.57	0.98
Social Capital Affinity			
Composite Reliability = .83			
Being With People on This SNS Makes me Want to Follow-Up on Things	.70	3.70	1.00
Hearing What Others Say on This SNS Enhances the Experience	.72	3.86	0.92
Communicating with People on this SNS Raises Points of Interest for Me	.76	3.98	0.86
Interacting With People on This SNS Makes me Feel Like Part of a Community	.79	3.75	1.03
Flow			
Composite Reliability = .89			
On this SNS:			
Completely Involved	.76	3.23	1.14
Enjoy the Experience	.90	3.76	0.92
Feelings of Total Concentration	.70	2.98	1.15
Focused on What I am Doing	.70	3.38	1.09
Know How Well I'm Doing	.62	3.65	0.94
Highly Engaged	.82	3.53	1.06

(*continued*)

relationships were statistically significant, as hypothesized (Figure 2). Additionally, Sobel tests for the hypothesized mediated relationships were statistically significant, indicating that flow did act as a mediator in this context (see Table 4). Sobel tests calculated as follows:

$$z = \frac{ab}{\sqrt{(b^2 SE_a^2) + (a^2 SE_b^2)}}$$

However, the direct path from perceived credibility to focused knowledge gain was similar to that from flow ($\beta = .34$). Perhaps more noteworthy was the strength of the path from social capital affinity to incidental knowledge gain ($\beta = .44$).

Table 3
(*Continued*)

|	Loading	Mean	SD
Perceived Focused Knowledge Gain			
Composite Reliability = .86			
This SNS Effectively Communicates What I Want to Know	.74	3.58	1.01
I Often Learn Something I Need to Know on This SNS	.78	3.51	1.15
This SNS Provides the Information I am Looking for	.90	3.53	1.09
This SNS Helps me Learn What I Want to Know	.91	3.45	1.12
Perceived Incidental Knowledge Gain			
Composite Reliability = .88			
On this SNS:			
I Sometimes Learn Interesting New Things by Accident	.77	4.13	0.85
I am Pleased how Often I Learn Something Unexpected	.86	3.78	1.03
I Often Learn Interesting Things That I was not Looking for	.88	3.93	0.96
Sometimes I Learn Something New That I Didn't Intend to Learn	.86	4.04	0.85

It appears that, although flow is related to both types of perceived knowledge gain, it is not a full mediator of perceived credibility or social capital affinity in this sample. Perceived credibility stands as an equally serviceable correlate of focused knowledge gain and social capital affinity is revealed as a strong predictor of incidental knowledge gain. Also, in this sample at least, it is clear that both perceived credibility (R^2 = .18) and, especially flow (R^2 = .52) are telling products of social capital affinity in the social networking site domain. Plus, the variance explained in perceived focused and incidental knowledge gain is considerable (R^2 =

Table 4
Sobel Tests

Mediation	Test	Standard Error
Credibility-Flow-Focused Knowledge	5.62***	.018
Credibility-Flow-Incidental Knowledge	3.26**	.016
Social Capital Affinity-Flow-Focused Knowledge	5.85***	.027
Social Capital Affinity-Flow-Incidental Knowledge	3.31**	.023

**p < .001; ***p < .0001.

Figure 2
Structural Model
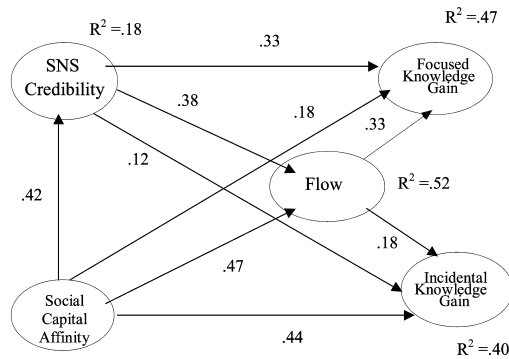
Note. All paths: $p < .001$.

.48 and $R^2 = .40$ respectively). This confirms that perceived social networking site credibility, social capital affinity, and flow are potent predictors of perceived focused and incidental knowledge gain.

Discussion

Marsick and Watkins (2001) rather prophetically commented that "given the distributed, asynchronous nature of technology-facilitated interactions, more may be learned incidentally by learners reading between the lines" (p. 32). As well, they make reference to incidental learning as the "karma in the walls and halls" of an organization or context (p. 27). In the current study, the antecedents to focused and incidental knowledge gain were investigated. Arguably, social networking sites provide the virtual equivalent of real life walls and halls with an added level of randomness and diversity of content available on/in them. Approximately 73% of online adults in the United States use social networking sites (Pew Research, 2013b). Therefore in terms of opportunities to learn, social networking sites offer unprecedented levels of interaction with online others who, although weak ties, may exert strong influences upon each other. From an educational, as well as a business, perspective it is important to understand the processes that facilitate knowledge gain in this context.

This study sought to determine whether perceived credibility and social capital affinity are significant predictors of perceived focused and incidental learning from social networking sites. The mediating role of flow was also assessed. Several conclusions can be made based on the findings. Flow was not a full mediator of perceived credibility and social capital affinity in this case. The results indicated that social capital affinity is a strong predictor of both flow and perceived credibility. As a result, it may be that affinity and connection via social networking sites lead

to flow primarily as an end in itself—an autotelic experience. This is not surprising since the motivation for most social networking site subscribers, especially those on Facebook, is relational. Clearly, high levels of weak connection engender a form of engagement which is pleasurable, intense, and focused. Also, it appears that interaction with others on social networking sites likely signals the perception that such sites are credible: that is, trustworthy and reliable. This is, perhaps, an implicit endorsement—if others with whom one identifies are on Facebook then the site itself is worthy of notice. Even though there is no guarantee that material posted there is credible, there is always the opportunity to critique it. This then brings to the foregrounds the strong relationship between social capital affinity and perceived incidental learning. A strong sense of connection/interaction with others on social networking sites relates to unlooked for knowledge. People learn random things from random people.

It is certainly possible to learn something by chance without being heavily engaged in a process (Metzger & Flanagin, 2013). In the current context, where connection with others prevails, flow appears less influential. In other Internet domains the flow experience may be a more powerful mediator/predictor of incidental learning (e.g., online video games—where participants play for several hours). Both flow and credibility were predictors of perceived focused learning. On reflection, this appears consistent. If participants believe social networking sites are credible, then it can be expected that they will go there to seek information. As well, the flow experience obtained while visiting a social networking site should facilitate the goal of information seeking.

Conclusion

Based on this study, social capital affinity is a strong predictor of perceived credibility, flow, and of perceived incidental learning from social networking sites. When in the company of social networking site others, participants reported that they felt more confidence in the credibility of and felt intense engagement with their favorite social networking site, plus they reported learning more by chance. This speaks to the power of community online and lends support to the value of the strength of weak ties. For those interested in conveying any type of message via social networking sites, this is a lesson to be well-learned: Foster affinity, connection, and interaction among those who visit social networking sites. Affinity with others on social networking sites provides a conduit to an optimal experience—flow—which, along with perceived social networking site credibility, predicts perceived knowledge gain from social networking sites.

Limitations and Further Research

The study has three main limitations. First, the sample was non-random and participants were overwhelmingly young and White. This is potentially problematic

because research (Pew Research, 2013b) shows that there is an increasing presence of older cohorts on social networking sites. These cohorts may behave in significantly different ways via social media. Also, African-Americans and Latinos are more likely to access the Internet and social media via mobile devices, tend to subscribe to Twitter more, and may use social networking sites for different reasons and in differing ways. That said, other research (e.g., Barker, 2012; Lee, 2012) indicates that, although age and racial groups differ in terms of frequency, and type of access, the way that they use social networking sites does not differ greatly. Also, the millennial cohort, which dominates social networking site use, is well represented in this study.

Second, although perceived credibility appears to hold an important place in the outcome, inspection of the scale mean shows that it is only slightly above the midpoint on the 5-point scale. This suggests that the participants did not regard social networking sites as particularly credible. This could be related to the way that credibility was measured. Both the Cronbach and composite reliabilities were high, but the face validity of the credibility scale should be improved to more closely represent credibility issues associated with social networking sites; that is, the credibility of content generated there. Relatedly, the measures of focused and incidental knowledge gain were indirect in that the data were self-reported. What participants actually learned was not measured. However, prior research shows that self-reported perceptions relative to knowledge gain are strongly tied to objectively measured learning outcomes (Owston, & Murtha, 2013). Obviously, what was learned is important to know; but possibly, the fact that participants reported that they learned *anything* is as important. But future research should determine what type of content is available on social networking sites; whether there are differences in type of content based on age and race; and exactly what people learn there.

Third, this was a correlational study which means that causal relationships cannot be established. Therefore, future research will address this shortcoming by using experimental studies to investigate if credibility perceptions, social capital affinity, and flow really do precede learning and, indeed, other outcomes.

Despite these limitations, overall the findings have something important to say. Community, belonging, and identification matter a great deal when it comes to social networking sites, not just as an end in itself, but because this type of affinity has important implications for how people think, feel, and behave. This loose online camaraderie is, perhaps, key to a variety of telling attitudes and behaviors providing a fruitful area for research.

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