

FYI: Communication Style Preferences Underlie Differences in Location-Sharing Adoption and Usage

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ABSTRACT

In a mixed-methods study on adoption of location-sharing social networks (LSSN), we discovered that variations in adoption and usage behavior could be explained by one's predisposition to communicate in a certain style. Specifically, we found that certain individuals prefer a communication style we call FYI (For Your Information). FYI communicators like to infer availability and to keep in touch with others without having to interact with them, which is the predominant style in current LSSN. Using structural equation modeling on a U.S. nationwide survey (N=1021), we show how the FYI communication style predicts the adoption of LSSN while also showing a negative effect on one's desire to call someone on the phone. Moreover, we find that FYI declines significantly with age. In a follow-on survey (N=180), we refine the FYI construct and show that it affects users' level of disclosure and participation in social media. Furthermore, we show that it completely mediates the effect of certain Big-5 personality traits on social media participation and LSSN usage. The results suggest that to cater to a wider segment of the population, LSSN (and arguably any social media) should support an active communication style.

Author Keywords

Location Sharing; Social Media; Communication Style; Personality Traits; Disclosure; Adoption; Survey; Structural Equation Modeling.

ACM Classification Keywords

H.1.2 [Models and Principles]: User/Machine Systems – *software psychology*; H.5.m. J.4 [Social and Behavioral Sciences]: *Psychology*; K.4.1.

General Terms

Human Factors, Measurement, Theory, Verification.

INTRODUCTION

Research shows that social media use can benefit existing

relationships, build new ones, and lead to improved psychological well-being [12]. However, relatively little is known about who is and who is not using social media [6], and even among social media users not all ways of using social media have been found to lead to the same benefits [7]. Many scholars have focused on individual differences that might explain variations in how people utilize social media [11, 32]. A number of studies have investigated connections to personality traits [26] such as the Big Five. However, not all studies find an effect of personality, and those that do seem to disagree as to which personality traits have an effect on which behaviors [1, 31, 33, 34].

Our research focuses on a specific type of social media, location-sharing social networks (LSSN). LSSN such as Foursquare or Google Latitude allow individuals to share their location with family and friends. In a three-phase study, we examined determinants of LSSN usage frequency and behaviors. Phase one of the study consisted of interviewing LSSN users, non-adopters, as well as those who had abandoned LSSN. Through grounded theory analysis of that data, we found that the most active users had a preferred *communication style* that we call *FYI* (a common abbreviation of “for your information”). FYI communicators preferred to learn others' whereabouts, availability, or recent activity by reading updates on social media; they avoided phone calls and direct interaction with the other person. Those high in FYI also were more actively engaged and more comfortable sharing on various social media and LSSN. Those low on FYI were either avoiding these media, or reluctantly using them but drastically limiting their sharing and activities. We observed that FYI communicators tended to be younger, while older interviewees preferred an opposite, more interactive communication style such as calling others directly. We found that this FYI communication style was the strongest predictor of LSSN adoption as well as disclosure behavior.

In phase two, we thus hypothesized that preference for FYI communication leads to increased LSSN usage, and that FYI decreases with age. To test these hypotheses, we administered a nationwide geographically balanced survey (N=1021). We found that FYI indeed has a substantial positive effect on use of LSSN and that it completely mediates the effect of age on LSSN use.

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In phase three, we further explored the impact of FYI by expanding our original survey and deploying it to an additional sample of participants (N=180). The improved survey contained more robust measures of the FYI construct, measures for the Big-5 personality traits, and new constructs to evaluate the external validity of FYI. This survey confirmed the model identified in phase two, and provided additional insights. First, the FYI construct can be separated into two highly correlated but distinct constructs: People have slightly different preferences for FYI style communication when it comes to seeing *others'* location versus sharing their *own* location. Nonetheless, when it comes to attitudes about and usage of LSSN, only the FYI preference for sharing one's own location has an effect. We also show that FYI communicators are much better at utilizing existing social media features to signal contextual cues, which leads to increased participation and disclosure. Finally, we find that extraverts are more likely to have an FYI communication style than those who have an introverted personality.

Our findings illustrate the importance of considering users' communication style when designing and studying social media. While personality does have an effect on usage behavior and adoption *via* communication style, it is not a good direct predictor of usage behavior and adoption. This may shed some light on why personality effects are inconsistent across social media studies. The effects of age and parenthood are similarly mediated. Rather than focusing on these indicators, we urge designers and researchers to focus on communication style, an underlying cause for limited participation and non-use.

RELATED WORK

This work lies at the intersection of several research areas, including research on social media use and non-use, location-sharing social networks, personality traits, communication style traits, and computer-mediated communication.

Social Media Non-Use, Non-disclosure

Social Media studies have mostly focused on understanding social media users [6]. However, studying non-use is important for understanding who is being left out and who is purposefully avoiding a technology and why [35]. More recently, scholars have studied how people may temporarily disengage, limit disclosure, or permanently leave a service [2, 13, 41]. Some studies shed light on various external or situational motivations for social media abandonment [2]. Others concentrate on individual differences such as personal beliefs or personality [40]. Still others show how usage patterns evolve over time and how technology does not adequately support these transitions [4]. Furthermore, although social media use is increasing among older adults, they still lag greatly behind younger users [24].

To ensure our insights are based on both users and non-users, we included interviewees who explicitly chose not to adopt LSSN, those who abandoned, as well as those who were not heavy users, in phase one of our study. This is in

addition to heavy users and those who wanted to use but had platform constraints. Thus, our grounded theory is generalizable to those who do not use social media as well as those who do.

Location Sharing Social Networks

Sharing one's location can be useful for coordination, showing caring, safety, awareness, or conveying context [3]. LSSNs are social networking services dedicated to helping people share their whereabouts with others. They allow location sharing in various ways such as continuous real-time broadcasts, explicit check-ins, or location requests. Now that a majority of Americans have adopted smartphones, many have the opportunity to use location-sharing social networks, but only 10% have [36]. Much of the location-sharing literature attributes this to privacy concerns [17, 19, 23, 39]. Research has tried to address these concerns by coming up with better heuristics for location disclosure. Studies have established that the *who*, *when*, and *why* of a location request are all important determinants of disclosure [10]. More recent work suggests that relationship closeness is enough to determine whether location should be shared with a specific person [45]. Others evaluate risks versus benefits [20, 39]. Although much work has been done in laboratory settings or as field trials with recruited participants, the recent proliferation of commercially available location sharing social networks has allowed some scholars to investigate naturalistic use in domestic, social, and other everyday settings [5, 16, 28].

Understanding the barriers to LSSN uptake may give us insight into aspects that could also play a role in the adoption and usage of other social media.

Personality and Social Media

Researchers studying social media adoption and individual differences have often examined connections to one of the most widely used personality taxonomies, the Big-5 personality traits. The Big-5 consists of traits that are abstractions of the most common personality facets in various trait taxonomies throughout the literature [18]. The traits are extraversion, agreeableness, conscientiousness, emotional stability, and openness to new experiences. Often more specific traits will be more useful for a specific context (e.g. shyness, communication style) but the Big-5 captures the broadest spectrum of personality traits. Studies have found different traits to have different effects on social media use, size of friend lists, disclosure, and other behaviors [1, 33]. Most commonly, studies have found a positive connection between social media use and extraversion [11, 31, 34]. Nonetheless, other studies have found no effect [19] or even that extraverts are less likely to disclose or spend time online [7]. In light of these contradicting results, the literature does not give us clear direction as to the connection between personality traits and social media use. Thus, we decided to control for all of the Big-5 personality traits in the third phase of our study.

Communication Style

In studies of offline communication attitudes and behaviors, communication styles are stable individual predispositions that have been linked to personality traits [29]. Willingness to use verbal communication has been used to predict attitudes and behaviors across a variety of situations such as likelihood of occupying leadership positions, initiating new relationships, and academic performance [9, 29]. Scholars have found that communication style traits can be more productive for understanding offline communication behavior than focusing on personality traits such as introversion [27, 29]. Similarly, recent research explaining people's social media activity suggests that personality traits may be overshadowed by an individual's desire to communicate [33]. These insights from the literature are in line with our observation that a person's communication style greatly influences whether and how that person uses social media such as location-sharing social networks.

With the advent of social media, scholars have noted new ways of consuming and sharing information, and for learning out about others without requiring real-time, verbal, or physical interaction [7, 38]. Existing communication style constructs assume verbal or physical interaction (e.g. [27]). Thus we realized that we needed to develop a new communication style construct that focuses on this new type of communication. One of the contributions of this work is to introduce a measure of this online communication style.

Computer Mediated Communication

To evaluate the external validity of FYI, we turned towards theories that highlight key differences between face-to-face (FtF) communication and computer-mediated communication [21, 25, 30]. A common theme that emerges is that in FtF interaction, participants use many nonverbal cues to signal the true meaning of their message. In fact, nonverbal cues can in certain cases contribute more towards understanding than even the content of the message itself. Cues provide a context from which common understanding can occur in order to interpret a message. In FtF interaction, these nonverbal cues are enacted through the physical body [8]. However in online interactions, people must adopt new ways of signaling these cues, whether it is through features explicitly designed into the software [37] or through user-developed tactics to communicate these additional cues [44]. Although signaling tactics are different online than off, they are able to compensate for cues that cannot be expressed online, and are even superior in some aspects [42]. Furthermore, it stands to reason that someone comfortable with communicating through social media would be adept at signaling such nonverbal cues that are the key to successful communication. This, in turn, should lead to higher levels of engagement and disclosure. Therefore, we created a construct to represent one's ability to *Signal* cues to others as well as constructs to represent more (*Involved*) or less (*Limited*) participation in social media.

THE STUDIES

We conducted our research in three phases. We grounded our insights on real observations, extended our findings by surveying a more general population, and confirmed and refined those insights in a follow-on survey.

Hypotheses Development: Qualitative Analysis

We analyzed interview transcripts of 21 people who had made an adoption decision about whether to use a location-sharing social network, Google Latitude. 7 of them were currently using the application, 4 had abandoned it, 3 were planning to use it in the future once platform constraints were removed, and 7 had decided against using it. Their average age was 28 (21 to mid 40's), 4 were females, and the interviewees had a variety of occupations. Interviewees' attitudes towards and social pressures surrounding the proper way to use Latitude are reported elsewhere [28]; here we focus our analysis of the data on predictors of location-sharing adoption and use, which we now report for the first time. As part of the interviews, people were asked to discuss their use of social media in general. Participants varied widely in their social media use: from none, to using only Facebook and instant messaging, to using a myriad of popular and lesser known services. Our analysis comprised open-coding, purposeful sampling and constant comparison to produce grounded theory. See [28] for the complete interview procedures.

A strong theme emerged in our analysis: Several interviewees were FYI communicators: they wanted to find out how others were doing and what their current status was, but did not want to ask them directly. They asserted that sharing location "is better; [it's knowing] without calling and disturbing [others]" (P3). Conversely, these interviewees also did not want others to initiate interactions: "I'd rather just share with them, 'Hey, here's where I am'. I could share without them actually calling me." (P2) Consequently, LSSN provided a wealth of information that allowed these interviewees to make inferences without verbal interaction. They welcomed a flood of information in support of this: "How is more information a bad thing?" (P4) These sentiments appeared to drive positive evaluations of LSSN, and often also applied to other social media such as Facebook and Twitter. FYI communicators generally wanted others to know their status without having to tell them: "I think it's neat for them to see that [I'm] working late tonight. I don't tell them, 'Hey, by the way, I'm staying late.'" (P1)

At the other end of the spectrum, we noticed interviewees who did not like the FYI communication style. They were bothered by—and did not want to bother others with—too much information: "I think people abuse Twitter and Facebook...status update doesn't mean I want to know exactly what you're doing at all times of every day...it's too much information." These individuals clearly preferred calling others or otherwise interacting with them directly, rather than passively reading about them on social media: "I know some people use [Facebook] to go to people's profiles and

just check them out... I don't do that at all." They viewed LSSN as a less desirable way to communicate: "Isn't all this a case of you're trying to invent some fancy tool when really a much simpler tool solves the problem, right? Which is [to] give her a call."

Based on these insights, we hypothesized that preference for FYI communication would impact adoption and use of LSSN. We further noticed that FYI communicators tended to be younger, while those who preferred to call others were older. Hence we further hypothesized that younger people would prefer FYI communication and thus, FYI would mediate the effect of age on LSSN use (i.e. age → FYI → LSSN use).

Generalization: Nationwide Survey

We deployed a geographically balanced U.S. survey that included items based on these qualitative insights. In the spring of 2011, we advertised the survey in 13 popular Craigslist cities (covering all census-defined geographic regions and sub-regions). Respondents had to be 18 years or older and have lived in the U.S. for at least 5 years. After eliminating survey responses that failed at least two of seven quality checks (e.g. improbable completion times, reverse-coded items), we had 1532 valid responses. To be more nationally representative, responses were normalized by their respective regional metropolitan population size. 79.0% of respondents used social media at least weekly, 54.0% owned smartphones, 66.6% were female, education levels were in line with the U.S. internet population, and mean age was 35.5 (range 18-73). We randomly split these responses into two samples, one for this analysis (N=1021), and one held in reserve (N=511) for future analyses.

We developed a multi-item scale to measure FYI using the most commonly observed attitudes, as presented in the previous section (labeled P1-P4). Table 1 lists the survey items, which were rated on a 7-point scale (Disagree strongly, Disagree moderately, Disagree slightly, Neutral, Agree slightly, Agree moderately, Agree strongly).

#	Item
P1	I want others to know how I'm doing without having to tell them.
P2	I want others to know where I am without them having to bother me by asking.
P3	I want to know where others are without having to bother them by asking.
P4	More information is always good.

Table 1. Questionnaire items for FYI factor

Respondents indicated whether they use LSSN and how often (More than once a day, Once a day, Several times a week, Once a week, Less than once a week, Never/Not applicable). To capture usage attitudes that hadn't been carried out due to platform constraints, we also included

controls to account for intention to use LSSN: "If you are offered the opportunity to use a new location-sharing service, please indicate the extent to which you agree or disagree with the following: 'I will use the location-sharing service'". Moreover, because people had widely varying feelings towards calling others, especially in regards to locating them, we included the item: "To find out where someone is, I would rather call them than use a location-sharing service." Both items used the same 7-point scale as the FYI factor. Other control variables included: age, gender, education, geographical region, smartphone ownership, having an unlimited data plan, marital/relationship status, and parental status.

Results

First we checked the reliability and validity of the measurement model for FYI using confirmatory factor analysis. All factor loadings are significant at the $p < .001$ level and the Average Variance Extracted (AVE) was 0.50, which indicates a satisfactory level of convergent validity. Cronbach's alpha was 0.80, which indicates good internal reliability.¹

We constructed a structural equation model with age, FYI, Intention to use LSSN and actual LSSN usage (collectively referred to as LSSN), preference for calling rather than using LSSN, and smartphone ownership. We also included the effect of control variables on LSSN, FYI, and Rather Call. We estimated this model using a weighted least squares estimator (WLSM). This estimator treats indicators as ordered categorical variables, and thus does not assume normality of our 6- and 7-point scales. To ensure robust results, we conducted a split test analysis by randomly splitting the sample in half and running the model on each subsample, eliminating all effects that were not significant in either subsample. Then we tested this pruned model (Figure 1) on the full sample. The resulting fit indices are within accepted cut-off values ($\chi^2(28) = 75.933, p < 0.001$; $CFI = 0.993$; $RMSEA = 0.041 [0.030, 0.053]$; $WRMSR = 0.740$).² More importantly, all modeled effects are highly significant.

The final model (Figure 1) shows that FYI has a significant effect on Intention to use LSSN (it explains 57% of the variance in LSSN usage intentions), which in turn has a large impact on actual usage (intention fully mediates the effect of FYI on actual usage). FYI also has a big effect on desire to call others, but in the negative direction.

¹ A loading > 0.7 is considered high and > 0.4 medium. Commonly accepted cutoff values for the reliability and validity indices are AVE > 0.5, Cronbach's alpha > 0.7.

² A significant chi-square indicates that there is some misfit, but this metric is known to be sensitive to large sample sizes such as ours. Thus one can consider alternative indices which have the following accepted cut-off values: $CFI > 0.96$, $RMSEA < 0.05$ (within [0.00, 0.10]), $WRMSR < 0.95$

The model further shows that age has a negative effect on FYI and that the effect of age on LSSN is fully mediated by this communication style. Similarly, the effect of being a parent on LSSN is also fully mediated by FYI, but in the positive direction; respondents who have children are more likely to be FYI communicators.

Lastly, the model shows that the use of location-sharing social networks is greatly influenced by smartphone ownership. Furthermore, older adults are doubly unlikely to use location-sharing social media, because they are not inclined to use the FYI communication style and less likely to own the smartphone necessary to use LSSN.

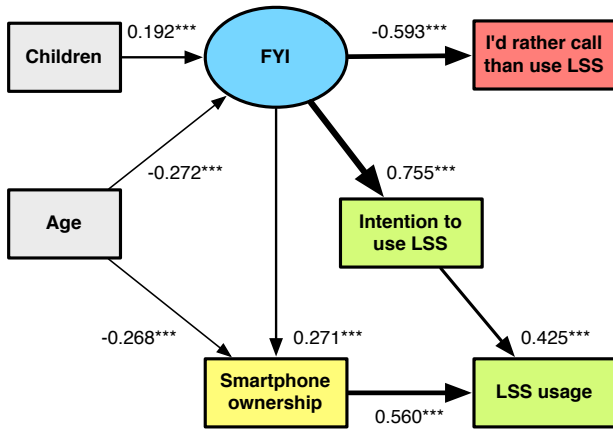


Figure 1. FYI mediates the effect of Age and Parental status on intention to use LSSN. Standardized effect sizes, *** indicates $p < 0.001$

Confirmation and Refinement: Expanded Survey

To further explore the FYI communication style, we decided to run an expanded study with 180 participants from Amazon Mechanical Turk. Requirements to participate were the same as in the previous study. 88.3% of respondents used social media at least weekly, 76.7% owned smartphones, 41.7% were female, education levels were in line with the U.S. internet population, and average age was in the early thirties (range 18-69).

This study replicated the previous study: we included the same measures, but we made some improvements. Our first improvement was the construction of a more robust measurement of the FYI construct. Given the just barely acceptable concept validity of this construct in the previous study, we hypothesized that the FYI communication style actually consisted of two (highly correlated) sub-constructs: usage of the FYI-style by *me* to communicate *my* location, and appreciation of the FYI style when used by *others* to communicate *their* location. For each of these two factors we developed four indicators (all measured on the original 7-point scale), three of which were retained after running a CFA (construct validity measures are in the table captions):

#	Item
M1	Others should be able to get my location when they feel they need it.
M2	I want others to know where I am, without my having to bother to tell them.
M3	I would prefer to share my location with everyone in case anyone wants it.

Table 2. Items for FYI-style for my location
AVE = 0.601, Cronbach's alpha = 0.76

#	Item
O1	Rather than wait for others to tell me where they are, I would like a way to know someone's location whenever I need it.
O2	I want to know where others are without having to bother them by asking.
O3	It would be useful to me if others would make their location available to everyone.

Table 3. Items for FYI-style for others' location
AVE = 0.655, Cronbach's alpha = 0.81

We also introduced a measurement criterion to test the external validity of our FYI construct. We hypothesized that users who prefer the FYI communication style would be more adept at "signaling" the contextual cues needed to understand an online communication (this serves the function that nonverbal cues do in offline communication) [30]. In turn, signaling leads to greater participation and disclosure in social media. Qualitative insights from phase one support this hypothesis. Active LSSN users often expressed confidence in using social media to convey their availability and current activities, describing various tactics for doing so. Signaling could be achieved by engaging with FYI style features (e.g. broadcast status updates, type in a status field). Conversely, those who were concerned about others misunderstanding their status or current activities often limited their social media activity and shared very little (i.e., they would have *Limited Participation* and less *Involved participation*). These three constructs were measured with the following indicators (all 7-point scales):

#	Item
S1	I find that posting updates about myself is an effective way to keep others informed.
S2	Others get a good idea of whether I am free or busy using my online posts or status.
S3	Social Media poorly captures how or what I am doing.

Table 4. Items for Signaling
AVE = 0.549, Cronbach's alpha = 0.77

#	Item
L1	I limit how I use social media because I worry about what others will do.
L2	I limit my activity on social media to keep others from interacting with me.

Table 5. Items for Limited Participation
AVE = 0.655, Cronbach's alpha = 0.74

#	Item
I1	I share everything on social media because I am not worried about who will see it.
I2	I never hold back on what I say or do with others online.

Table 6. Items for Involved Participation
AVE = 0.703, Cronbach's alpha = 0.74

Additionally, we improved on the single item measurement of a users' intention to use LSSN by using four 7-point scale items which all converged as the same factor:

#	Item
T1	In the next year, I see myself using a location-sharing social network (LSSN).
T2	In the next year, I see myself using a LSSN that uses continuous, real-time location-sharing (i.e. look up where someone is in real time).
T3	In the next year, I see myself using a LSSN that uses check-ins to share my location (i.e. user shares location each time they decide to check in).
T4	In the next year, I see myself using a LSSN that uses request-based location sharing (i.e. location is only shared when someone responds to a request).

Table 3. Items for Intention to use LSSN
AVE = 0.868, Cronbach's alpha = 0.92

Finally, we used Gosling's 10-item version of the Big-5 personality scale, in which participants judged on a 7-point scale to what extent pairs of personality traits applied to them [14]. Only Extraversion ("Extraverted, enthusiastic" and not "Reserved, Quiet") and Emotional Stability ("Calm, emotionally stable" and not "Anxious, easily upset") had significant effects in our final model.

Results

We constructed a structural equation model with the Big Five personality constructs, FYI (both for my location and others' location), LSSN intention to use, actual LSSN usage, preference to call rather than use LSSN, smartphone

ownership and control variables. We also included Signaling as an outcome of FYI, and Involved and Limited Participation as outcomes of Signaling. We estimated this model using a weighted least squares estimator (WLSM). To ensure robust results, we used the same structure as the previous study for the replicated constructs. We then pruned non-significant effects from the model, resulting in the model presented in Figure 2. The resulting fit indices are within accepted cut-off values, with the exception of RMSEA, which is still within reasonable bounds ($\chi^2(191) = 323.77, p < 0.001; CFI = 0.975; RMSEA = 0.062 [0.050, 0.074]; WRMSR = 0.924$). More importantly, all modeled effects are highly significant.

The final model (Figure 2) has the same basic structure as the previous model (Figure 1), with an additional negative effect of intention to use LSS on calling rather than using LSS (an effect that makes theoretical sense; LSSN users do not have to call other users to learn their location).

As hypothesized, FYI increases Signaling (it explains 29.4% of the variance in Signaling), which in turn increases Involved Participation and decreases Limited Participation. We also found that the Emotionally Stable personality trait is negatively related to the appreciation of the FYI style for others' location. However the Extravert personality trait is positively related to the usage of the FYI style for the users' own location.

Finally, note that all effects are driven by the usage of the FYI style for my location. Although the appreciation of the FYI style for others' location is highly correlated with using FYI for my location, it does not have its own effect on Signaling, intention to use LSS, and smartphone ownership.

DISCUSSION

Our results posit the FYI communication style as a main determinant of LSSN usage. Conversely, this suggests that one of the reasons why location-sharing social networks do not attract certain people is that they do not support more proactive communication styles. FYI fully mediates the effect of personality, age, and parental status on LSSN use intention and signaling behavior. Social media researchers and designers should therefore investigate whether behavioral differences associated with other demographics can also be explained in terms of communication style differences. Moreover, LSSN researchers should identify the communication style preferences of their target users: studies of college students or young professionals may produce very different results than studies with forty-somethings or retirees. This is especially important because research shows that age and major life transitions (e.g. becoming a parent) can trigger changes in personality traits such as communication style [15]. For example, parents may exhibit a higher level of FYI than those without children because they try to keep up with their offspring [24].

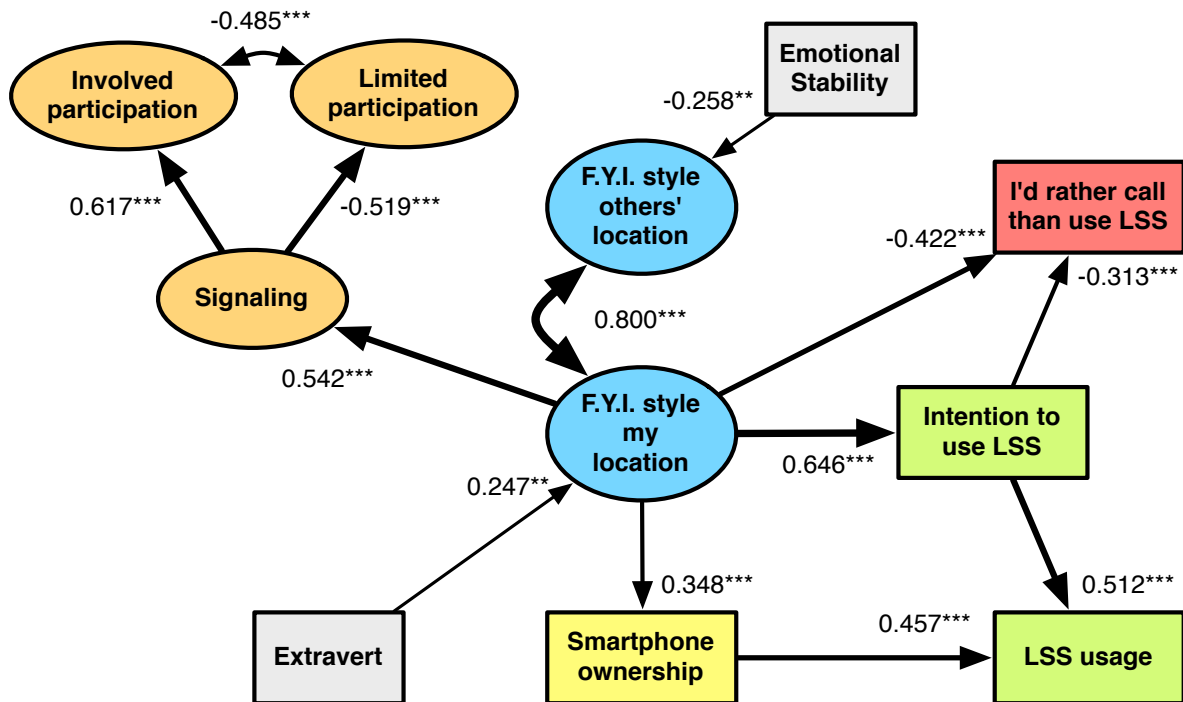


Figure 2. The phase 3 model confirms the model of phase 2 and shows that FYI is a combination of two highly correlated FYI factors. Those who are Anxious prefer FYI style communication to learn others' location, while Extroverts prefer a FYI communication style to share their own location. Moreover, those who have an FYI communication style are more likely to use Signaling, which leads to more Involvement and less Limited participation. (standardized effect sizes, *** indicates $p < 0.001$, ** $p < 0.01$)

The Big-5 personality traits are high-level constructs under which more specific dispositions are subsumed [18]. In the case of location-sharing social media, it seems that communication style is one of these more specific dispositional measures. Researchers focusing on individual differences in LSSN usage may consider communication style as a more direct predictor than more general personality traits. This is in line with offline communication studies that find it more fruitful to use communication style dispositions rather than high-level personality traits such as extraversion [27, 29]. This may also explain the inconsistent effects of personality traits found in the literature. Various studies that link extraversion to social media use [1, 31, 33, 34] can be reevaluated in light of our findings that the effect of extraversion is completely mediated by communication style. Perhaps for a number of these studies, communication style may indeed be a mediator.

The negative effect of FYI on phone communication implies that FYI communicators oppose more interactive and verbal communication. This may explain why young people, who are more likely to be FYI communicators, are calling their friends less as social media use is on the rise [22]. Conversely, it suggests that more interactive communicators (“interactive” being the opposite of FYI) are much better supported by the telephone than LSSN. Our qualita-

tive data suggests that interactive communicators also sought to gain the benefits of online social connections, but were turned off by the style of interaction. To reach out to these interactive communicators, LSSN could support more interactive location-sharing features rather than supporting one-way broadcasts as the predominant mode of “communication”. For example, an LSSN could offer a feature that allows someone to send a “location disclosure offer”, which only reveals location if the friend engages, thereby making the interaction a mutual activity rather than a one-way broadcast (where it is uncertain whether and how others are engaging).

Our model also shows that FYI communicators are able to signal cues to help others understand context and availability, and this leads to much more uninhibited participation and disclosure. Signaling is much like using nonverbal cues in FtF interactions that give context to help others interpret a message [25, 30]. Going back to our interview data, we see that individuals would signal in a variety of ways, including signing on or off to indicate availability, or utilizing status updates and fields to give context to their current activities. We also notice that many who drastically limited their social media participation opposed using status updates or status fields for signaling availability and context. Without a more interactive co-construction of

context between communicators, those who were low on FYI did not like the prospects of misinterpretation or annoying others with a status update. This suggests that along with more interactive features, interactive communicators also need more interactive signaling features. Rather than signaling by sending status updates or by setting status fields, active communicators may prefer to integrate signaling features into directed communications, as happens in FtF interactions. For example, if we extend the idea of interactively sharing location via a “location offer”, the offer could include context as to the purpose of the location offer (e.g. to meet up, to keep in touch, to show availability for conversation). By conveying the context of a given offer, both participants may understand the meaning of the offer.

Although we depict FYI as a single communication style, our final model demonstrates that there is a slight difference in preference for FYI communication when it comes to sharing my own location versus learning others’ location. The high correlation between these two constructs shows that people tend to expect or prefer the same communication style regardless of whether it is for their own or others’ location. Nonetheless, it is only attitude towards sharing one’s own location that actually drives usage and signaling behavior. Researchers thus do not necessarily need to measure a user’s attitudes towards learning others’ information, especially since FYI style for my location may serve as a good proxy.

Even though more than half of U.S. adults now own smartphones [36], our model shows that smartphone ownership is still a significant barrier to LSSN use. In fact, it has almost as big of an influence as usage intentions. This is a reminder that, perhaps unlike other web-based social media, platform constraints are still a major adoption barrier for location-sharing social networks.

FUTURE AREAS FOR RESEARCH

The FYI style is supported, and perhaps even encouraged, by many social media such as LSSN. To create systems that appeal to a broader audience, LSSN designers should support a wider variety of communication styles. To accomplish this, we must understand which features support these communication styles. We are actively investigating what types of technological features particularly support (or conflict with) different communication style.

Much work in Computer-Mediated Communications considers the *circumstances* in which different types of media are useful or appropriate [43]. Our work suggests that it is equally important to determine *for whom* those media are appropriate. Future research could shed further light on the topic by investigating how *circumstance* and *for whom* interact in media selection.

Moreover, studying additional populations could lead to a better understanding of media choice and online user behaviors. Cross-comparisons of studies and populations would allow us to understand to what extent FYI commu-

nication style mediates the effects of other factors that are said to influence social media usage and adoption.

Based on our qualitative data, we believe that the effects of communication style may extend beyond LSSN. In particular, the FYI style seemed to extend to Facebook, Twitter, and other social media. Future research should further investigate whether communication style preferences are indeed prevalent in the use of these and other social media. In our qualitative data, we saw a positive association of FYI with using various other social media. This suggests that there may be a higher-level generic FYI factor (not related to a particular social medium), as well as potential FYI factors for various other social media. Like our LSSN-specific FYI factor, these FYI factors could help explain differences in preferences for various social media for different demographics and personalities. These differences may even generalize to differences between populations and cultures.

CONCLUSION

In this paper we found that one reason why younger people and extraverts are more inclined to adopt location-sharing social networks is because they have a preference for FYI communication: they would rather infer availability and social information about others from social media than interact with them in person. This preference explains their usage intention for location-sharing social networks, as well as their disinclination to communicate through phone calls. It can also explain why heavy LSSN and social media users are more effective at signaling their availability and activity, which leads them to engage more fully and share more freely.

By identifying this communication style disposition as a major determinant of adoption and usage patterns, this work highlights the type of people who are benefiting from social media such as LSSN. At the same time, it also distinguishes the people who are being left out. Older individuals, introverts, and others who are not FYI communicators will be left behind if social media features continue to emphasize FYI style communication. Given that over half the variance of LSSN usage intention is explained by the FYI communication style, we believe this is *the* key factor that social media scholars should focus on in addressing adoption and level of participation. By studying location-sharing social networks, our study takes an initial step towards understanding the impact of communication style on people’s social media use. We urge researchers to continue the investigation into various existing and new social media.

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