Getting Acquainted with Groups and Individuals:
Information Seeking, Social Uncertainty and Social Network Sites

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Abstract

This study examined whether the relationship between information-seeking and social uncertainty differed when information was sought about a specific individual (e.g. a new housemate) or a group (e.g. a group of new housemates). An online experiment recruited 488 first-year undergraduates in the weeks immediately before starting a new university. Four information-seeking strategies (Ramirez, Walther, Burgoon & Sunnafrank, 2002) successfully modeled how students sought information about each other using Social Network Sites. Whereas an interactive strategy predicted lower social uncertainty about individuals than groups, a passive strategy predicted higher social uncertainty for individuals and lower social uncertainty for groups. Findings are discussed in the context of impression formation, specifically Entitativity (Hamilton & Sherman, 1995).

Introduction

Social Network Sites (SNSs) are saturated with multi-authored and rich cues compared to more traditional computer-mediated communication technologies (e.g. e-mail, chat) that tend to involve dyadic interaction and fairly reduced cues. Consequently, SNSs provide social science researchers with exciting opportunities to evolve existing theories of impression formation.

Substantial research has examined impression formation in online environments, particularly during initial interactions when people experience high social uncertainty about their new relational partners (e.g. new housemates, new coursemates, new workmates; Graham, Gosling & Wilson, 2012). In early relationships, for example, people tend to be doubt and lack confidence about their impressions of their new friends or acquaintances (Clatterbuck, 1979). People tend to doubt their own ability to accurately predict the behaviour and attitudes of those new partners. Consequently, early relationships tend to be characterized by pe-

riods of social uncertainty about each other. As people gain more information about their new acquaintances or friends, however, they will become much more socially certain: people will gain confidence in their impressions of their new acquaintance or friend, including their ability to predict the behaviour and attitudes of that acquaintance.

Research suggests that Internet users tend to adopt four strategies to seek information about each other: passive, interactive, active and extractive strategies (Berger, 1979; Ramirez, Walther, Burgoon & Sunnafrank, 2002). These strategies have been applied to contemporary online settings including Social Network Sites (Antheunis, Valkenburg & Peter, 2011) and online dating sites (Gibbs, Ellison & Lai, 2011).

A passive information-seeking strategy involves unobtrusively observing a social target (e.g. viewing Facebook photographs or status updates; Antheunis, Valkenburg & Peter, 2002). An interactive information-seeking strategy involves direct interaction with a target (asking questions; reciprocal self-disclosure; Gibbs, Ellison & Lai, 2011). An active information-seeking strategy involves proactively eliciting information without direct interaction with a target (asking a third party about a counterpart). An extractive information-seeking strategy involves retrieving information about target from a database (Facebook Search; Ramirez et al., 2002). Theoretically, these strategies have the ability to reduce social uncertainty by providing relevant information to make a person more confident in their impressions of a new acquaintance (e.g. a new housemate, new coursemate).

For any of the four strategies to be effective in reducing social uncertainty about others, the strategy must access cues pertinent to forming an impression. Research in traditional offline environments, however, suggests that impression formation processes may differ according to the target perspective: whether the impressions are formed about *individuals* or *groups* (Hamilton & Sherman, 1995). Furthermore, Hamilton and Sherman suggest that entitativity can account for the differences in impressions about indi-

viduals and impressions about groups. Entitativity namely refers to the extent to which an individual or group is perceived to be a coherent, unitary entity. Entitativity is considered to range on a continuum, with groups generally considered less entitativacious (less unitary) than individuals (Hamilton & Sherman, 1999). However, some groups may be considered more entitavacious than others (Hamilton, Sherman & Lickel, 1998). For instance, a group of housemates may be considered more of a unitary group than a general population of university students.

The proposition that impressions about individuals differ from impressions about groups, however, remains relatively unexamined within contemporary online environments such as SNSs (or for that matter any online environment). Similarly, no research has directly explored similar questions using a proxy for impression formation; namely, the relationship between using information-seeking strategies on SNSs and social uncertainty. The limited research that has been conducted involving SNSs suggests that only an interactive strategy predicted lower social uncertainty when seeking information about a newly acquainted *individual* (Antheunis, Valkenburg & Peter, 2010). Despite the strategies being applicable to *groups*, however, no research has compared whether the findings are replicated when seeking information about groups (nor groups with differing levels of entitativity). Consequently, the current study examined whether *the relationships between information-seeking strategies and social uncertainty were influenced by whether a person is considering a specific individual or a group (referred to as target perspective)*. As a sub-focus, the study also examined *the extent to which the four information-seeking strategies were used on an SNS*.

The current study utilised a naturally occurring scenario: incoming undergraduate students meeting each other on SNSs in the weeks prior to starting university. Previous research indicates that students seek information about each other via SNSs in the weeks before starting university, and will likely not have previously met (Alemán & Wartman, 2009). This provides a useful opportunity for initial impression formation.

Method

An independent measures online experiment used an online questionnaire to examine whether the relationships between information-seeking strategies and social uncertainty were influenced by target perspective (a general group, a specific individual, or a specific group).

Participants and sampling method

Four hundred eighty eight incoming undergraduates (285 female, 157 male, 6 declined to answer) completed an online questionnaire in the weeks immediately prior to be-

ginning an undergraduate degree at one of 25 UK universities, recruited through the social networking presences for their new university.

Most students were aged 17 to 23 years (96.65%; mean: 18.82 years; SD: 3.44) originating from the United Kingdom (n=380) rather than elsewhere within Europe (46), outside Europe (19) or omitting an answer (3).

The sample was roughly equivalent to the current student demographic at UK universities (UCAS, 2012). All students used Facebook, representative of its' dominant penetration within the UK, with fewer using Twitter (57.23%) and other SNSs (16.04%).

Procedure and Materials

Students were randomly allocated to one of four target perspectives, which determined the social targets about whom students complete the questionnaires. Broadly, each social target was either a specific individual, a specific group or a general group with whom students would likely have interacted in the weeks prior to starting university. Specifically, these social targets were: a specific housemate of their choosing (81) and a specific coursemate of their choosing (51), housemates as a group (84), coursemates as a group (79), and the general type of people at university (n=153), Housemates and coursemates were chosen given students interact with those groups most prior to arrival at university (Alemán & Wartman, 2009). The social targets offered different levels of coherence and unity, matching Hamilton and Sherman's (1995) concept of entitativity. For example, a specific housemate is likely perceived as more coherent and unified (entitativacious) than a group of housemates who in turn are likely perceived as more coherent and unified than the general university population as a group.

Students were asked to consider the social target indicated in the perspective to which they were assigned (e.g. a specific housemate; a group of housemates). Firstly, students retrospectively rated the extent that they used 16 information-seeking techniques to find out about that social target in the previous weeks. Techniques were aligned to passive, active, interactive or extractive strategies (Table 1; Cronbach's $\alpha>.764$). Techniques were created based on previous research (Antheunis, Valkenburg & Peter, 2010), operational definitions (Ramirez, Walther, Burgoon & Sunnafrank, 2002), informal discussions with SNS experts and users, and an unpublished exploratory study. The wording of each item was aligned to 'him/her' or 'them', dependent on the social target being considered.

Next, students rated their social uncertainty about the same target. Specifically, students were asked to rate how confident they were in their impressions of the social target, and their confidence in accurately predicting that target's behaviour and attitudes. (CLUES7; Clatterbuck, 1979; $\alpha=.906$). Finally, trait anxiety (Ree, French, Mac-

Leod & Locke, 2008; α=.876) and University worries (social and academic; Mattanah, Ayers, Brand & Brooks, 2011; α=.902) were assessed to control for their theoretical effects on both information seeking and social uncertainty.

Table 1
Information seeking techniques aligned to strategies

Strategy	Technique
Passive	1. Read messages that they posted in an area that anybody else can see (i.e. in a group, event, hashtag) 2. Looked at their profile pictures or buddy pictures 3. Looked at their tagged photos 4. Read comments that they have written on their photos 5. Looked at content that they have shared on their own profile page or account (i.e. status updates, wall posts, shared links) 6. Looked at their listed preferences (e.g. their likes/dislikes, hobbies, activities, About me/them sections) 7. Looked at a list of your mutual friends 8. Looked at public messages or other content that their friends have sent or written about them
Active	9. Sent a message to one of their friends asking about them (only online) 10. Identified mutual friends online, then asked your mutual friends about them offline (i.e. face-to-face, phone)
Interactive	11. Asked them questions about themselves in an area where other people can see what you've asked (i.e. in a group, event, hashtag) 12. Asked them questions about themselves in a private area (i.e. private/direct message or private chat) 13. You told them things about yourself first, and they replied by telling you things about themselves
Extractive	14. Searched for information about them using the social network site's search (i.e. internal search that only includes results from that site itself) 15. Searched for information about them using a general social engine (i.e. Google; Bing; Yahoo) 16. Searched for and read messages/content that they have posted on a different social network

After data collection, Confirmatory and Exploratory Factor Analyses were conducted on separate splits of the data in order to assess the validity of the four-strategy model of information seeking. CFA indicated that a model distinguishing between passive, active, interactive and extractive strategies provided a good fit to the data, $\chi2(50)=267.691$, $p<.001$, RMSEA=.047 (90% CI: .042 - .052; p=.817). The four-strategy model was replicated in the EFA and an earlier separate pilot study.

Results

A multi-group Structural Equation Model was created to examine the relationships between social uncertainty and each of the four information-seeking strategies (passive; active; interactive; interactive) plus indicator measurement error. These relationships were compared between the four target perspectives, each of which varied broadly on the entitativity spectrum; specific individuals (a specific housemate; a specific coursemate) were considered more coherent than specific groups (housemates as a group; coursemates as a group) who in turn are considered more coherent than a general group (the university population)

The model produced an acceptable fit to the data across the four perspectives, $\chi2(50)=267.691$, $p<.001$, RMSEA=.047 (95% Confidence Interval: .042 to .052; *p*=.817). The Structural Equation Model also accounted for the theoretical influence of trait anxiety and university worries on social uncertainty. The model was bootstrapped for 10,000 samples to account for issues of data normality associated with moderation analysis (Hayes, 2009).

Usage of information seeking strategies

A passive information seeking strategy was used more by students and at a greater frequency than (in descending order), interactive then active and then finally extractive strategies (see Table 2)

Table 2
Comparison of frequencies for Information seeking strategies (n=488).

Strategy	% of students using at least one technique within that strategy	Mean usage	SD
Total	89.79%	1.29	0.71
Passive	89.08%	1.74	1.02
Active	55.99%	0.30	0.75
Interactive	71.13%	1.34	1.17
Extractive	36.62%	0.29	0.46

Note: Mean refers to the scale used to measure the usage of a technique whereby (0=never; 5=all the time).

The most frequently used information seeking technique involved reading messages by a future university counterpart posted in a public area (Technique 1; M=3.45; SD=1.11), and looking at their profile pictures (Technique 2; M=2.95; SD=1.10) or tagged photos (Technique 3; M=2.31; SD=1.27). Other information seeking techniques were much less frequently used although all techniques were used across the sample (.03<M<2.00; SD<1.73).

Active and extractive strategies and social uncertainty

For all target perspectives, active and extractive strategies failed to predict social uncertainty.

Passive strategy and social uncertainty

For a passive strategy, it was expected that an interactive strategy would predict lower social uncertainty only for groups but not for specific individuals. Biased-corrected, bootstrapped confidence intervals were tested whether the relationships differed between target perspectives (e.g. individual vs. groups). Confidence intervals are considered superior than standard SOBEL tests and non-bootstrapped confidence intervals (Hayes & Scharkow, in press; Hayes & Preacher, in press).

A passive strategy predicted higher social uncertainty for *specific individuals*, such as a specific housemate (B=-2.595, p=.001; p=.384; 95% CI: -5.631 to -.336) and specific coursemate (B=-0.445, p=.005, 95% CI: -0.07 to 0.202). Conversely, a passive strategy predicted lower social uncertainty for *specific groups*, such as a group of housemates (B=.233, p=.004; 95% CI: 0.077 to 0.380). Confidence intervals indicated that although the relationship for groups of coursemates trended in the same direction, the relationship neared but did not meet statistical significance (B=0.089, p=.392, 95% CI: -0.07 to 0.202).

Irrespective of the direction, the confidence intervals also indicated that the relationship between a passive strategy and social uncertainty was stronger for specific individuals than specific groups.

Interactive strategy and social uncertainty

The influence of target perspective was slightly different between an interactive strategy and social uncertainty: an interactive strategy predicted lower social uncertainty for both specific individuals and specific groups, although the relationship was stronger for a *specific individual* than *specific groups*. For example, an interactive strategy predicted lower social uncertainty for a specific housemate (B=4.004, p=0.001, 95% CI: 0.96 to 7.83) than a group of

housemates (B=0.191, p=.009, 95% CI: 0.058 to 0.371). Similarly, an interactive strategy predicted lower social uncertainty for specific coursemates (B=-0.622, p=.001, 95% CI: -0.07 to 0.202) than groups of coursemates (B=0.220, p<.001, 95% CI: 0.151 to 0.000).

Neither passive nor interactive strategies predicted social uncertainty for a *general group*, namely a *general university population* (passive: B=0.147, p=.230, 95% CI: -0.104 to 0.296; interactive: B=0.04, p=.780, 95% CI: -0.156 to 0.233). Although the above relationships differed significantly from a specific individual and a general group, there was insufficient evidence for significant differences between a group of individuals and a general university population.

Discussion

The current study is the one of the first to place target perspective between information-seeking and social uncertainty, either online environment or in any environment. Findings are consistent with the proposition that impression formation processes differ dependent on *whether a person is considering a specific individual or a group*. Whereas a passive strategy predicted higher social uncertainty for specific individuals and lower uncertainty for specific groups, an interactive strategy predicted lower social uncertainty for specific individuals more than specific groups. For a general group, there was no relationship between any strategy and social uncertainty.

Target perspective

Existing SNS research purports that only interactive strategies are linked to lower social uncertainty (Antheunis, Valkenburg & Peter, 2011; Gibbs, Ellison & Lai, 2011). However, the current study suggests that those findings require amendment and cannot be directly extended to information seeking about groups.

Active and extractive strategies were not useful in any target perspective. The active finding is likely caused by the infrequency with which students used that strategy. The finding is consistent with existing SNS (Antheunis, Valkenburg & Peter, 2010) and research on other contemporary social media (Gibbs, Ellison & Lai, 2011). Additionally, the information gleaned from extractive strategies was likely redundant having already been learnt through the passive strategy. Conceptually, the extractive strategy matches the passive strategy. However, the confirmatory factor analysis suggested that the strategies were different. Conceivably, the strategies may be separated in the factor analysis because the strategies access the same content but through different routes (e.g. accessing through a Facebook

group for the passive strategy, but accessing by Facebook search for the extractive strategy).

The passive and interactive findings are concordant with the notion that impression formation relies on different cues for different target perspectives; i.e. whether the impressions are formed about individuals or groups. The findings are consistent with the theory that the effect of target perspectives on impression formation is situated on a continuum (namely, the entitativity continuum). As target perspectives were staggered, specific housemates are likely perceived as more entitavacious than groups of housemates. The reliance of cues through passive or interactive strategies may shift along the continuum, with greater coherence associated with an interactive strategy and less coherent associated with more reliance on a passive strategy.

Strategies appeared only useful for predicting social uncertainty about relatively specific individuals and specific groups, but not for a broad group (the general type of people at university). Again, the finding supports the proposition that the influence of target perspective on impression formation is based on the extent that social targets are considered coherent, unified entities (namely, entitativity). This further supports Hamilton and Sherman's (1995) proposition that entitativity influences impression formation. For example, a specific housemate is likely perceived as more coherent and unified (more entitavacious) than a group of housemates who in turn are likely perceived as more coherent and unified than the general university population as a group.

Offline research suggests that advance information can influence a person's expectation of coherence and unity within a social target, which then influences impression formation (McConnell, Sherman & Hamilton, 1997). Although only examined in offline environments, the findings could be applicable to the design and marketing of online environments. For example, some online dating websites advise daters to present and get to know each other's core self. Other dating websites encourage users to present a diverse, multifaceted self. Given the finding in the current study, the different expectations of coherence and unity may activate different impressions formation processes. Future research should examine how online environments can encourage more accurate impressions and more enjoyable experiences by manipulating user expectations of coherence about social targets.

Additionally, the influence of target perspective on impression formation may be encultured rather than hard-coded (Hamilton & Sherman, 1996; 1999; Spencer-Rodgers, Williams, Hamilton, Peng & Wang, 2007). Consequently, future research should compare whether the effects found in the current study are mirrored between different cultures or between SNSs with differing cultural demographics (e.g. Chinese heavily use RenRen SNS, Jap-

anese heavily used Mixi SNS, and Americans heavily use Facebook SNS; Wikle & Comer, 2012).

Findings from the current study are likely applicable to other scenarios of motivated information-seeking about individuals (e.g. online dating; Gibbs, Ellison & Lai, 2011; social browsing; Lampe, Ellison & Steinfield, 2006) and groups (e.g. finding out about new colleagues via an SNS). However, it is unclear whether the findings could be extended to information seeking about corporate organisations given ambiguity of whether consistency and unity are expected within those organisations. Additionally, the current study focused on information seeking about housemates and coursemates, although we recognise that incoming students find and interact with many other university groups on an SNS in the weeks prior to starting university (e.g. coursemates; Alemán & Wartman, 2009). In the current study, findings indicate trivial differences between information-seeking strategies and social uncertainty as a function of the affiliation, namely housemates compared to coursemates. Further research is required, however, to determine whether the affiliation mitigates any influence of target perspective.

General use of information-seeking strategies

Passive information seeking strategies were used more than interactive and then active then extractive information seeking strategies. The findings suggests that a four-strategy model of information seeking proposed by Ramirez et al. (2002) is appropriate to model information seeking amongst students in the weeks prior to university.

Additionally, the comparative usage of the strategies mirrors the only other studies examining information seeking strategies with contemporary Internet technologies, specifically SNSs (Antheunis, Valkenburg & Peter, 2010) and online dating websites (Gibbs, Ellison & Lai, 2011).

There are various user-related factors that could explain differences in selection of information seeking strategy. For example, efficiency is considered a possible factor in strategy selection (Antheunis, Valkenburg & Peter, 2010). Students may perceive passive strategies as more efficient than other strategies. The explanation is warranted based on SNS users often having a central profile page, which provides a central source containing a large amount of information about them (boyd, 2008; Zhao, Grasmuck & Martin, 2008). Comparatively, active and interactive strategies may be perceived as providing less and more slowly accessible information compared to passive strategies.

Effortfulness is another possible factor in strategy selection (Ramirez, Walther, Burgoon & Sunnafrank, 2002). Students may perceive passive strategies as less effortful than other strategies due to self-presentational concerns: active and interactive strategies involve direct interaction with another person. During direct interaction, people ex-

perience high levels of self-presentational concern (Gangestad & Snyder, 2000; Gudykunst, 1985; 2005; O'Sullivan, 2000). These self-presentational concerns are likely to be particularly heightened with anticipated future interaction (Ellison, Heino and Gibbs, 2006) as would be the case amongst students due live and study together. Passive strategies may have relatively few self-presentational concerns as the students' information seeking actions are not detectable to other people, including the counterpart about whom the information is being sought (Westerman, Van Der Heide, Klein & Walther, 2008).

Technique availability may also explain why active information seeking was relatively unused. Students may have few (or no) mutual acquaintances due to not having any immediate overlap in friendship groups. Consequently, students may not have the opportunity to use strategies that require mutual acquaintances, such as active strategy.

Although the explanations are theoretically and empirically justified, the current study is insufficient to differentiate between the explanations. Indeed, the selection of technique and strategies to find out information about another person on an SNS is very under-researched. More data is required regarding the number of mutual acquaintances between student, and undergraduate perceptions about each strategy relating to efficiency and effort.

Limitations

Although the current study used self-report questionairres, the timing of these questionairres may help to deflect problems relating to the retrospective nature of the study. Namely, the questionairres were asking students to assess their use of information seeking and social uncertainty during the weeks prior to starting university. Consequently, students would have been rating events and experiences that were relatively fresh in memory.

Inevitably, however, the self-report nature of the study means that there may be a degree of error in students' assessment of their information-seeking use and social uncertainty. Pragmatically, pairing server logs with a measure of social uncertainty may problematic but not impossible and therefore might provide a useful avenue for future research. Similarly, mock Facebook environments might help to provide access to other processes that influence impression formation (e.g. attention, memory) that were not considered in the current study.

The current study was intentionally focusing on a naturalistic scenario, therefore a high level of control over variable was difficult to achieve. One benefit of a naturalistic scenario is higher ecological validity, insofar that the findings are arguably more representative of a non-contrived and everyday environment (as opposed to a clinical and contrived lab experiment task). However, a trade off of the naturalistic scenario is that the study will lack control over some variables. Although the current study may supplement the more controlled research, future research could focus upon achieving greater control over variables that are likely to influence impression formation in SNSs (e.g. negativity bias; e.g. Skowronski & Carlston, 1989).

Concluding comments

Using a naturally occurring scenario, the current study highlighted that in the weeks near-immediately before arriving at university, many students use information seeking strategies to find out about each other. These strategies mirror previous research, with the undergraduates demonstrating the use of passive, active, interactive and extractive strategies. The four strategies were each used, though the passive then interactive strategies were used more than the active and extractive strategies.

These strategies were differentially related to social uncertainty about future university acquaintances, differing dependent on target perspective. The findings offer are interpreted as being consistent with the notion that target entitativity influences impression formation, an idea which has not been previously applied to online environments. Future studies should focus on examining the extent to which the proposed explanations could account for the differences in use of techniques, and the extent to which differences in impression formation can be enacted through entitativity.

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