Nice to Know You: Familiarity and Influence in Social Networks.

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Abstract

Advertisers on Social Network Sites often use recommendations by others in a user’s networks to endorse products. While these familiar others are hypothesized to be more effective in influencing users than unfamiliar others, there is a catch: familiarity does not necessarily ensure similarity to the familiar person, a potential problem because the combination of familiarity and dissimilarity has been hypothesized to lead to lowered compliance. In an experiment (N = 44), we test people’s compliance to similar and dissimilar familiar others in an online environment: we show that in both cases, familiarity leads to increased compliance. The work highlights the importance of familiarity on influence and suggests that gaining familiarity even in situations of dissimilarity is effective.

1. Introduction

Most users of Social Networking Sites (SNS) frequently encounter new connections: new friends are suggested by the SNS itself and new people are encountered in online spaces such as blogs or forums. Many of these new connections were previously unfamiliar to users. SNS services use these new connections and older ones to advertise products and services that are ostensibly recommended by or used by others in one’s social network. The general reasoning behind this compliance-gaining strategy is that people are inclined to listen to people they “like” [11], a property implicitly assumed to be true of one’s connections on a SNS.

Cialdini [11] refers to “liking” as one of the “six weapons of influence” and reviews the overwhelming evidence that people are indeed inclined to listen to others that they like. This, and other similar work [24], has led to the enormous interest of marketers in social media campaigns and social advertising in which existing links in one’s social network are used to promote products or services. Thus, (product) recommendations or calls to action coming from a familiar other selected from one’s own social network are expected to be more effective than general appeals or appeals made by unfamiliar others. These so-called social recommendations are currently fairly commonplace [29,[30], and often direct measures of interpersonal similarity are at the core of these recommendations [3].

Liking—as promoted by Cialdini [11]—is not easily established, however, and being “linked” in a social network might be too loose a criterion to predict actual interpersonal liking up to a level that it indeed increases the persuasiveness of an appeal. New links, which are relatively unfamiliar to users, are likely to be less influential than older, familiar links. In this article, we determine whether increasing familiarity indeed leads to increased influence and thus a potential for more effective social recommendations.

Closely connected to the literature on the effects of familiarity on people’s perception of each other and the influence people exert over each other is the literature on similarity. The Similarity Attraction Effect [10,18] states that people like people that are similar to them in background, occupation, personality, or a host of other traits and states. This would lead one to believe that both similarity as well as familiarity both increase liking. However, evidence to the contrary also exists: (see [19]) shows that liking might decrease when increasing familiarity with dissimilar others. Hence familiarity and similarity do not operate independently.

In the remainder of this article, we first review the literature on both familiarity and similarity and their effects on compliance. This literature leads us to hypothesize that familiarity will have a positive effect on the influence people exert over each other—and thus compliance to requests made by “friends” in SNS’s only in cases that the connection is similar to oneself. Next, we describe an experiment to test whether compliance to a familiar other is indeed higher than to an unfamiliar other, and we separate both the similar and dissimilar case. The results show that gaining familiarity, even in situations of dissimilarity, is better than gaining nothing at all. However, in line with work by Norton et al. [19] we do find the effects of familiarity to be lower in cases of dissimilarity. We discuss the implications of this finding for the design of advertisements in SNS’s. Surprisingly we also observe another effect: similarity judgments towards
unfamiliar others seem to “carry-over” from previous experiences in the SNS. While speculative based on the current experiment we try to explain this observation and identify means of further examining this interesting similarity carry-over effect.

2. Literature Review

The idea that showing recommendations from one’s links (friends) in SNS’s leads to increased compliance, and thus a higher likelihood of a success of an influence attempt is motivated by two principles of influence Cialdini [11], namely “liking” and “consensus”. First, one’s friends in a SNS are presumably people we like, and hence through the principle of liking the effectiveness of influence attempts is increased. Second, people do as others do [13]. Thus, providing social recommendations is likely to increase their influence. This second principle, that of consensus, is however largely studied as an effect of the behavior of many on the behavior of one. While this is also actively used in SNS’s—e.g. 80% of your friends downloaded this app—we focus on the first principle in which recommendations from a single friend are supposed to increase compliance.

Liking is often referred to as a mixture of interpersonal similarity and familiarity. We like people that we interact with frequently and we like those people that are similar to us [24]. Both of these are implicitly assumed by SNS’s that use friend recommendations to promote applications, advertisements, or products. In the next sections we review the evidence that both familiarity and similarity increase liking, and therefore lead to more effective influence appeals as well as examine the interaction between familiarity and dissimilarity.

2.1 Familiarity and Influence.

The effect of familiarity, often operationalized by the number of times people have been exposed to each other, seems straightforward: familiarity breeds liking, a position supported by decades of research in psychology [19,17]. This effect of familiarity has been explained via the mere exposure effect [31]. This states that the mere exposure to a novel stimulus is a sufficient condition for the enhancement of our attitudes towards it [6,14]. The mere exposure effect has been found not just towards objects, but also towards people: people start to like others more by merely being exposed to them [7,22,26].

One of the most convincing examples of the effect of familiarity through mere exposure is an experiment by [22]. The researchers recruited subjects for an experiment to taste different liquids. However, the experiment was arranged in such a way that participants either encountered other participants frequently or infrequently during the experiment. When participants were asked to evaluate their fellow participants, they felt more attracted to others they had encountered more often during the experiment.

2.2 Similarity and Similarity Interactions.

The effects of similarity are well known and after numerous replications in multiple domains, using different similarity manipulations, Berger [4] proclaimed that the Similarity Attraction Effect (SAE) is “one of the most robust relationships in all of the behavioral sciences.” Of particular relevance to the current research is that experimental studies demonstrate that participants like fictitious partners more when they answer items more similarly on a questionnaire [23,10].

Increased liking, leads to increased compliance to requests made by similar others. For example, people are more inclined to donate to a charity when the one requesting the donation is more similar to them [11]. Even a similar sounding name can have significant behavioral effects: When finding a wallet with an ID card with a similar sounding name to their own, participants were more likely to return the wallet to the lost-and-found than participants encountering a dissimilar name [9,11].

A key feature of SAE studies is that they tend not to manipulate familiarity. In fact, most studies of the effects of similarity vs. dissimilarity severely limit the interactions between people, thereby keeping familiarity constant (e.g. [8,18,7]). Norton et al. [19] did perform a series of studies on the effects of discovering dissimilarity while gaining familiarity. Their studies demonstrate that when increased familiarity is accompanied by the discovery of dissimilarity, peoples’ liking of others actually decreases: familiarity breeds contempt. This latter finding might be problematic for the use of relatively dissimilar ties in social networks to support influence appeals: If people are more negative towards dissimilar familiar others than to those who are unfamiliar, selecting these individuals to promote an appeal might have an adverse effect.

2.3 Hypothesis

Based on the literature reviewed above, we derive two separate hypotheses. First, consistent with the studies by Cialdini [11] we expect familiarity to increase influence in social networks.
$H_1$: Familiarity leads to increased influence in SNS’s.

However, based on the evidence provided by Norton et al. [19], familiarity in the case of dissimilarity might significantly reduce the effect of similarity. Hence, within the group of familiar people one’s links in a social network the influence of similar ties will be much larger than the influence of dissimilar ties.

$H_2$: Dissimilarity leads to a decreased influence amongst familiar ties as compared to familiar similar ties.

3. Method

3.1 Procedure and Measures

A somewhat elaborate procedure was necessary to test the above hypothesis. Figure 1 gives an overview of the setup of the current experiment.

![Figure 1. Overview of the procedure of the experiment and the number of respondents in each condition.](image)

3.1.1. Introduction (t=1). Prior to the study, participants were invited to participate in the study via an online registration system. After arrival to the experimental location, a classroom at the university, participants were assigned to a computer. After providing informed consent, participants were informed about the process of the experiment by a message on the computer screen. Participants were told that another group of participants was participating at another location at that same moment, and that they would be collaborating in the online environment (SNS) with someone from the other group.

We recruited participants from a list of university students registered for an introductory research methodology course. While open to graduate students, the majority of recruited students consisted of undergraduates in both communication and computer science programs. We recruited a total of 52 participants during the spring quarter (32 female; 20 male). The mean age of participants was 20.94 years (SD = 2.21).

3.1.2. Similarity Manipulation (t=2). After filling in the informed consent, participants were asked to specify their first name, age, and their gender. A message appeared stating that participants had to wait for the other participants to join the online environment. After 12 seconds, this screen disappeared and another waiting screen depicted: “We are now linking you to another participant. Please wait one moment…” Participants were then matched with an ostensibly same-gender (females: Maria; males: John) partner1. Their (fictitious) partner was introduced using the name and an age. The age of the partner was randomly one year older or one year younger than that of the participant. None of the participant’s names corresponded to the names of their partners.

In this second part of the experiment, similarity was manipulated. To do so we used a procedure called I-sharing [21]. Our participants were asked to respond to questions such as “If Colin Powell were a sea creature, he would be a:” with the answer categories: “Hammerhead shark”, “Crab”, “Dolphin”, and “Octopus”. After providing the answer to the question, participants were shown the answer given by their partner. I-sharing is known to lead to a feeling of sharing an experience with a previously unfamiliar other and thus increases judgments of similarity towards the other person.

Following previous research [21], the task consisted of 12 items, each with four response categories. In the low similarity condition, the simulated answers given by the fictitious partner of the participant corresponded twice over twelve trials (below chance): in trial 4 and trial 10. On the other trials, their partner chose a random option dissimilar to the option chosen by the participant. In the high similarity condition, the answers corresponded 8 times out of twelve (above chance; trials 2, 3, 4, 6, 8, 9, 10, 12) with the other four trials presenting a random option dissimilar to the option chosen by the participant.

Directly after the I-Sharing procedure participants were asked to evaluate their partner. Participants rated both perceived social connectedness to their partner—using the 17-item Social Connectedness scale [29]—and liking of their partner using the Inclusion of the Other in the Self scale (IOS) [1]. The social connectedness scale (Cronbach’s α = 0.94) consisted of items addressing the feelings of closeness and shared thoughts between the participant and their partner. The
IOS is a single item measure that asks participants to select the image that best describes “your relationship with your partner” on a seven-point pictorial scale. The evaluations of their partner were only used to check the effect of the I-Sharing manipulation.

3.1.3. Familiarity Manipulation (t=3). In the third part of the experiment, immediately after the similarity manipulation, participants were told that they would either be coupled to the same partner or to a different partner for a subsequent task. Participants were again shown a message that stated they had to wait for the computer to assign partners. Half of the participants were assigned to the familiar condition and thus to the same partner as in the second part of the experiment. The other half of the participants was assigned to the unfamiliar condition in which a new, same gender, partner—Jane (females) or Marc (males)—was introduced to them. On a second screen, participants were again told that they had been either coupled to the same partner or to a new partner: the (new) names of their partner was frequently repeated during the next task to make sure that the manipulation was clear to the subjects.

The introduction of a new partner for half of our participants at this point in the experiment creates the combination of either similarity (N = 11) or dissimilarity (N = 11) within the familiar group as well as a group of unfamiliar others (N = 22).

3.1.4. Dilemma Task (t=4). After the familiarity manipulation, participants proceeded with a dilemma task which was designed to measure the influence of the fictitious partner on the participant. Prior to the task, the computer ostensibly determined who would answer the questions first; the participant or their fictitious partner. In all cases, the partner in fact was selected to answer first. We used four dilemmas derived from Lee & Nass [16], which present small scenarios of people deciding whether to take either a risky option (e.g., a risky surgery) or a safe option (e.g., live with the minor pain caused by the current condition). Participants were asked to advise the actor in the dilemma to take the risky or the safe option using a seven-point scale: (1) “Definitely take the risky option” to (7) “Definitely take the safe option”.

Before providing their own answer, participants were shown the answer given by their fictitious partner. Individual differences in risk-seeking tendency between participants were addressed by partners alternating choices between risk-averse and risk seeking. Thus, for all participants, their partner chose 6 (“should take the risky option”) on the first dilemma, 2 (“should take the safe option”) on the second, 7 (“should definitely take the risky option”) on the third, and 1 (“should definitely take the safe option”) on the fourth dilemma.

During this task participants sequentially responded to the four dilemmas after being shown the response given by their partner. Participants were told that their response was subsequently shown to their partner and as such the distance between the proposed score by the partner and the actual score by the participant can be interpreted as a behavioral measure of public compliance: To what extend do participants adapt their own decision based on the decision provided by their partner?

The compliance index is given by:

\[ \bar{x}_i = 8 - \frac{1}{4} \sum_{j=1}^{4} |x_{ij} - Suggestion| \]

where subscript i denotes the participant and j denotes one of the four dilemma tasks. Thus, for each participant the average distance between their own choice and the proposed choice by the partner was computed. This average deviance score is then mirrored to be interpreted as a compliance score: A high score on this index indicates a large influence of the choices made by the participant’s partner.

3.1.5. Suspicion. The experiment ended with three open-ended questions. We asked participants what they thought the goal of the experiment was, whether anything was unclear, and whether they had any concluding remarks. These questions were used to assess participants’ suspicion of deceit. Participants reporting strong suspicion—those reporting or questioning in one way or another that their ostensible partner was not real or was simulated (8 out of 52)—were removed from the final analysis. After the experiment participants were debriefed by the experimenter and rewarded with experimental participation credits. The average duration of the experiment was 45 minutes. Our final sample was comprised of 44 participants, 28 female (63.6%) and 16 male (36.4%). The mean age of the final sample was 21.07 years (SD = 2.35).

4. Results

4.1. Similarity Manipulation Check (t=2)

To check our manipulation of similarity, we compared participants’ evaluations of their partners both on Liking as well as Connectedness. Table 1 shows that high similarity participants consistently scored significantly higher on the Social Connectedness scale, the Sharing Thoughts subscale, and the Liking measure than did low-similarity
participants. These findings suggest that perceived similarity toward others in the online environment was successful manipulated.

Table 1. Comparisons of attitude towards partner in the low-similarity and high-similarity conditions

<table>
<thead>
<tr>
<th>Measure</th>
<th>Dissimilar M (SD)</th>
<th>Similar M (SD)</th>
<th>T (df)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOS (Liking)</td>
<td>1.91 (0.56)</td>
<td>3.09 (1.44)</td>
<td>3.61</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Connectedness</td>
<td>2.09 (0.75)</td>
<td>3.34 (1.07)</td>
<td>4.05</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

4.2. The effects of Familiarity

To test both H$_1$ and H$_2$ a nested analysis of variance was conducted in [R] using the aov package in which familiarity was the first nesting, and similarity was added as a second nested level. The results are presented in table 2. From the ANOVA it is clear that Hypothesis One is confirmed: there is a significant effect of familiarity on compliance, such that compliance in the familiar condition, $M = 5.65$, $SE. = 0.14$ is significantly higher than that in the unfamiliar condition, $M = 5.14$, $SE. = 0.20$, $F(1, 40) = 5.07$, $p < .01$. (see Figure 2).

Table 2. Results of the nested ANOVA of familiarity and similarity on influence.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Df</th>
<th>Sum of Squares</th>
<th>F-Value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familiarity</td>
<td>1</td>
<td>2.88</td>
<td>5.07</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Similarity</td>
<td>2</td>
<td>3.73</td>
<td>3.29</td>
<td>&lt; .05</td>
</tr>
<tr>
<td>Residuals</td>
<td>40</td>
<td>22.69</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3 presents the nested structure of the data. On the left is the compliance score to unfamiliar others. Towards the right, first the compliance score to familiar dissimilar others, and the the compliance score to familiar similar others is presented. It is clear that compliance to similar others is higher, $M = 5.91$, $SE. = 0.15$, than that dissimilar others, $M = 5.39$, $SE. = 0.22$, $F(2, 40) = 3.29$, $p < .05$. This latter result supports H$_2$: partly in line with the results presented by Norton et al. (2007), we find the effect of familiarity is largely decreased in cases of dissimilarity.

A surprising finding, however, is the fact that the dissimilar familiar others $M = 5.39$, $SE. = 0.22$ have an influence score that is slightly higher than that of unfamiliar others $M = 5.14$, $SE. = 0.20$. Even though these two conditions do not differ from each other significantly, $p > .05$, it is interesting to see that even in the case of dissimilarity, familiarity does seem to increase influence. The ANOVA results for the tests of both H$_1$ and H$_2$ are presented in Table 2.

4.3. Similarity spill over?

The above analysis confirms H$_1$ by showing that familiarity indeed increases influence in SNS’s. Also, in line with the work presented by Norton et al. [19] we find a smaller effect of familiarity in cases of dissimilarity, supporting H$_2$. This smaller effect of familiarity in cases of dissimilarity however does not cause a reversal of the effect. Thus, even in cases of dissimilarity, gaining familiarity is better than gaining nothing at all.
It is interesting to surmise high applicability of typical experimental judgments about each other \[5,25\], thus, both similarity shows how judgments of it. From an applied point of view, these results highlight the opportunity that SNSs have to increase influence amongst ties: By selecting others that are not just familiar (picked from one’s friends list) but rather those who are similar and familiar, influence is increased. SNSs often have access to information that can be used to both select others based on interpersonal similarity as well as to highlight such similarity. Actively using similarity cues in conjunction with the common familiarity cues is likely to result in larger influence, and subsequently larger effects of, for example, advertising campaigns. Thus, both similarity information as well as familiarity information should be used as parameters in social recommendations. It however remains a question for designers of such systems to adequately feedback similarity information to users.

5. Discussion

By creating an artificial setting in which participants experienced a mediated interaction with (ostensibly) partners, we were able to separately examine the effects of both familiarity as well as similarity on the influence people exert over each other. Based on earlier findings, we hypothesized that while overall familiarity as gained by previous interactions will lead to increased influence, this would not be true in the case of dissimilarity between two people interacting in a virtual environment.

Our results show that references to similar others who are familiar to the user is can be very effective as a means of social recommendations in SNSs. When the other is dissimilar, the effects of familiarity are much more muted but still tend positive. This finding justifies the common use of familiarity cues and thus the use of familiar others by advertisers and other persuaders in SNSs: there is potential benefit and no downside risk. That is, while the effect of the familiarity cue can be increased by actively searching for similarities, the effect of familiarity in cases of dissimilarity still tends positive (albeit not statistically significant).

The results presented here are of practical and theoretical importance. Theoretically it is interesting to examine the interplay of similarity and familiarity in SNS’s because, strangely, reality seems to have conformed to previous experimental methods used to examine both familiarity and similarity. A well-known critique of the work on the SAE is that it only holds in laboratories in which participants are only exposed to a very limited set of information about each other \[5,25\], limiting external validity. Ironically, SNSs provide the environments that are created in typical experimental studies of SAE, thereby ensuring high applicability of the results.

From an applied point of view, these results highlight the opportunity that SNSs have to increase influence amongst ties: By selecting others that are not just familiar (picked from one’s friends list) but rather those who are similar and familiar, influence is increased. SNSs often have access to information that can be used to both select others based on interpersonal similarity as well as to highlight such similarity. Actively using similarity cues in conjunction with the common familiarity cues is likely to result in larger influence, and subsequently larger effects of, for example, advertising campaigns. Thus, both similarity information as well as familiarity information should be used as parameters in social recommendations. It however remains a question for designers of such systems to adequately feedback similarity information to users.

5.1. Similarity Spill over

In addition to adding to the literature on the effects of similarity and familiarity in SNS’s, our data analysis revealed a promising area for future work. When our participants interacted with an unfamiliar partner, the previous interactions within the interactive environment seemed to influence compliance. The result is surprising in that it shows how judgments of similarity towards others in an SNSs might spill over to judgments about new ties in that same SNS.

This interesting hypothesis can be related to an offline phenomenon. When a person meets someone else in a particular context and discovers similarities, this might lead the person to assume that everyone in the context is similar, increasing the positivity of the context and everyone in it. A similar principle is possibly at play in SNS’s.
5.2. Implications

The results described in this paper have implications for the design of interactive systems that reach beyond the optimization of social recommendations in SNSs. Over the last decade more and more scholars and designers have been concerned with persuasive technologies, technologies intentionally designed to change the attitudes and behavior of users [15,12]. Similarity and familiarity cues are often used in persuasive applications, some of which are currently commercially available [27].

To create effective persuasive applications designers should, based on the results presented above, be cautious with their use of persuasive attempts that derive from the principles of familiarity and consensus without considering similarity. Our work highlights that while such cues are likely effective, dissimilarity between the user of a persuasive application and the referenced individuals or groups used to increase compliance might make these attempts less effective. As Norton et al. [19] shows, in the long-run, such dissimilarity might even be counter-effective. It is thus relevant for designers of persuasive technologies who use social influence principles (which many do, see e.g. [2,20]) to be aware not only of previous interactions between users, but also the interpersonal similarity between a user of a technology and the referenced target.

Our last result shows that, within interactive environments such as SNSs perceptions of similarity or dissimilarity based on interactions with others might influence the perception of newly encountered users. This highlights the importance of similarity cues in persuasive technologies that support a community of users: if dissimilarity to the target user is prominent within the online environment, this is likely to negatively affect the performance of persuasive technologies.

5.3. Limitations & Future work

In the experiment presented here, we used measures of social connectedness and liking only to show the expected effects of similarity-attraction after our i-Sharing manipulation. A more elaborate study incorporating social connectedness and liking measured both during as well as after a compliance task might be desirable to estimate potential interaction effects of similarity and familiarity. This would enable a closer link of this work to the classic SAE and Familiarity experiments. Our choice not to do so in this study was informed by the idea that connectedness or liking measures during the experiment in turn influence perceptions of similarity and familiarity, while we believe our compliance measure is less likely to have this confound because it is less salient. Additional studies using both measures in combination with our presented manipulation of both similarity as well as familiarity would be helpful to further examine this difference.

Another limitation in this study is the order in which similarity and familiarity are manipulated. Even though the order used in this experiment corresponds to a number of real life situations—such as meeting new people at a conference—we have not shown that for a single individual changing familiarity over time led to increased compliance. While this is a logical extension of our results because the unfamiliar and familiar groups did not differ in any other respect, it remains a challenge to operationalize a familiarity gain with respect to a specific partner while not disclosing additional similarity or dissimilarity information.

6. References


