Translation

Examining the interactions on SNS that result in meetups among high school adolescents[1,2]

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Abstract

The purpose of this study was to examine how high school adolescents interact with a person of the opposite sex acquainted through SNS and what kind of the interactions result in meeting him or her in real life. A total of 207 high school adolescents who had experienced meeting in someone of the opposite sex acquainted through SNS reported their SNS interactions before the meetup. Results showed that the successive interaction about a common subject such as local being the same and hobbies led to meeting the person in real life. In addition, results showed that high school adolescents met in person not when he or she wanted to see them but when they want to see him or her. Based on these results, future contents of crime prevention education are discussed.

1. Introduction

The number of social networking service (SNS) users has increased every year, reaching 72.16 million (72.1% penetration rate) by the end of 2017 (ICT Research Institute, 2018). Since it is an online service that helps maintain interpersonal relationships, build new ones, and develop interests (Kawaura, Sakata, & Matsuda, 2005), it can be beneficial if used effectively.

However, recent years have seen a social problem involving minors getting into trouble because of face-to-face interactions with members of the opposite sex whom they have met via SNSs. The National Police Agency (2018) reported an overall increase in the number of children who have been victimized by crimes facilitated by SNS, which necessitates certain measures (Koide, 2008; Ogata, 2014). To conceptualize these measures, one needs to clarify the reasons minors engage in face-to-face interactions with members of the opposite sex whom they meet on SNSs.

Many studies have focused on individual traits regarding these reasons. For example, Hanai and Oguchi (2005) examined the relation between loneliness among dating site users and their participation in dating sites and found that those with higher levels of loneliness used dating sites for relationship-building. Caplan (2003) and McKenna, Green, and Gleason (2002) also found that individuals who are more lonely preferred to communicate with their Internet acquaintances, including those of the same sex, and were more likely to meet them face-to-face. Takahira (2009) also suggested that individuals who have poorly adapted to social life and lacked social resources are more willing to form new interpersonal relationships online.

As previously described, several studies have investigated the relation between individual traits and meetups with opposite-sex Internet acquaintances. To obtain further information, it is useful to focus on SNS interactions because their content is believed to determine the occurrence of a face-to-face meeting. For example, Hashimoto, Chiba, Amano, and Horikawa (2015) found that the most common reason high school girls stop interacting with male acquaintances on SNSs is that "the topic was boring" (42.5%), followed by "many sexual and dirty topics" (38.0%). On the other hand, their top reason for interacting with people they meet on SNSs, including those of the same sex, was that they have "common interests and preferences" (75.7%). Kato (2013) also analyzed high school girls' experiences of meeting others via the Internet, focusing on their states of mind. The results showed that despite having negative feelings about being acquainted with a partner via the Internet, they found a "positive reason" (e.g., interaction about a common interest) through their interactions with the individual, leading to face-to-face meetings.

Several other studies have been conducted on interactions leading up to face-to-face meetings (Baker, 2000; Walther, 1996), and more research is being done regarding the relation between the content of SNS interactions and face-to-face meetings. However, such an interaction process has not been sufficiently explained; it remains unclear what kinds of interactions with opposite-sex strangers begin on SNSs and how these interactions lead to face-to-face meetings (or not). Since SNS interactions are assumed to continue before a face-to-face meeting with an opposite-sex acquaintance, it is necessary to examine not only the substance of these interactions but also how

they lead to face-to-face meetings. This study extends our knowledge on the reasons why minors meet face-to-face with opposite-sex SNS acquaintances and may also serve as a resource for devising appropriate crime prevention measures. Therefore, this study explores the process of SNS interactions (i.e., how these interactions lead to face-to-face meetings with opposite-sex acquaintances) among high school students, because 95% of them own and use smartphones (Cabinet Office, 2019).

2. Methods

2.1. Participants and procedures

The survey, which was outsourced to Macromill Inc., was conducted from December 22 to 27, 2014. A preliminary survey was sent to 46,300 registered participants who reported that they were high school or college students. Of the 5,000 who responded, 4,103 (1,242 males and 2,861 females; M_{age} = 16.9, SD_{age} = 0.92) stated that they were currently in high school or college. The survey was then distributed to 325 high school and college students who have met face-to-face with members of the opposite sex with whom they were acquainted through SNSs, and 223 sent back their responses. A total of 207 high school and college students (112 females and 95 males; M_{age} = 17.1, SD_{age} = 0.85) participated in the survey. This study obtained approval from the research ethics committee of the institution to which the authors belonged.

2.2. Measures
2.2.1 SNS used on first contact

The respondents were asked to recall their most memorable experiences meeting a stranger of the opposite sex through SNSs and to freely describe the first time they contacted or were contacted by these individuals.[4]

2.2.2 Content of messages on first contact

In an open-ended questionnaire, the participants then indicated the kind of messages they received or sent at the time of their first contact.

2.2.3 Invitations from interactions

As for invitations resulting from their interactions, the respondents were asked to provide multiple responses to the following categories: "being asked for contact information (e-mail address or phone number)," "asking for contact information," "being asked to meet in real life," "asking to meet in real life," "telling his or her contact information," "being told interaction partner's contact information," or "none of the above occurred."

2.2.4 Details of interactions prior to invitations

Those who responded with "none of the above occurred" were asked to freely describe the kind of interaction that occurred before such invitations were made.

2.2.5 Face-to-face experiences

They were then asked if they actually met with the opposite-sex individual they had been in contact with.

3. Results

A total of 194 individuals were analyzed, 13 of which were excluded as their answers were incomplete.

3.1 Type of SNS used on first contact

There were 14 different types of SNSs through which the respondents had initial contact with their acquaintances. The most frequently mentioned SNS was Twitter (n = 100, 51.5%). SNSs that were mentioned by more than one person included LINE (n = 23, 11.9%), chat sites (n = 10, 5.2%), BBSs (Bulletin Board Systems) such as LINE BBS (n = 10, 5.2%), Facebook (n = 8, 4.1%), Skype (n = 7, 3.6%), Ameba (n = 7, 3.6%), and GREE (n = 6, 3.1%) and mixi (n = 6, 3.1%).[5]

3.2 Classification of contact content, rate of acceptance of invitations during the contact, and rate of actual meetings

Free descriptions were classified according to the contents of the first contact and interactions until the invitation. The first author and a graduate student, who did not know the purpose of the study, performed the kind of KJ method to classify the responses based on the similarity of the descriptions (Kawakita, 1986). This generated 12 categories for the first-contact content and 10 categories for the content of interactions prior to the invitation (Table 1). For the former, the most common category was "Greetings (nice to meet you, etc.)" while for the latter, the top category was "Common interests (common hobbies, etc.)." Many responses were categorized under "other/ none/don't remember" because most of them fell under "none/don't remember"; an example of a response under "other" was "yes."

The rate of those who reported invitations that occurred during interaction is shown in Table 2. The most commonly reported experience was "being asked to meet in real life." About 10% of the respondents reported receiving no invitations while 122 (62.9%) reported actually meeting their contacts.

Table 1. Content of SNS interactions with the opposite sex

Categories	Examples	Rates	
First contact　(n = 194)			
Greetings	Nice to meet you.	40.2%	(78)
Common topics	We are from the same hometown.	28.9%	(56)
Invitations	Would you like to meet me?	8.8%	(17)
Self-introductions	I am XX.	6.7%	(13)
Chatting	We had a chat.	6.2%	(12)
Expression of favor	You are so pretty.	5.7%	(11)
Use of BBS	I saw your posting on BBS.	5.7%	(11)
Approaching	Let's talk.	5.2%	(10)
Contact exchange	We'll exchange contact information.	2.1%	(4)
Other/none/don't remember		19.6%	(38)
Interactions prior to the invitation (n = 168)			
Common interests	Common hobbies.	50.0%	(84)
Personal information	Age.	40.5%	(68)
Gossip	Conversation about everyday events.	22.0%	(37)
Interpersonal relationships	Conversation about friends.	10.7%	(18)
Personal topics	Consultation.	7.7%	(13)
Hope for friendship	Would you like to go to a concert?	7.1%	(12)
Imagination	Where would you go if you did meet me?	3.0%	(5)
Other/none/don't remember		16.7%	(28)

Note. The figures in parentheses correspond to the number of people described in the category.

3.3 The interaction process leading up to the face-to-face meeting

Hayashi's quantification Method III (Method III) was used to examine the kinds of interactions that resulted in face-to-face meetings with

Table 2. Rate of invitations that occurred during the contact

Options	Rates	
Being asked for contact information	44.3%	(86)
Asking for contact information	20.1%	(39)
Being asked to meet in real life	53.6%	(104)
Asking to meet in real life	26.8%	(52)
Telling contact information	33.5%	(65)
Being told interaction partner's contact information	30.9%	(60)
None of the above occurred	12.4%	(24)

Note. The figures in parentheses correspond to the number of people described in the category.

opposite-sex SNS acquaintances.

When each category of the content of the first contact and the interaction until the invitation was selected, the date was quantified as 2, and when not selected, it was 1. In this case, "Contact exchange" and "Imagination" were excluded from the analysis, as well as "Other," "Don't remember," and "None" because of the small number of descriptions. Participants who did not provide data on a category for either the content of their first contact or the interaction until the invitation were excluded from the analysis as well.

Next, the invitation choices that arose from the interactions were regarded as categories, quantified as 2 if each category was selected and 1 if it was not. In that case, "None of the above occurred" was excluded from the analysis.

Finally, whether or not the two parties actually met was quantified using a score of 2 if they did and 1 if they did not. For the 21 categories included in the analysis through the above procedure, the 1, 2, and 3 axes of category scores were calculated using Method III. The eigenvalues were 0.12, 0.10, and 0.09, in that order. Cluster analysis (Ward's method) was also

performed using the calculated category scores up to three axes, and four clusters were extracted[6] (Figure 1).

The first cluster consisted of "Greetings," "Self-introductions," "Personal information," "Gossip," "Personal topics," "Being asked for contact information," and "Being asked to meet in real life." The second cluster had "Common
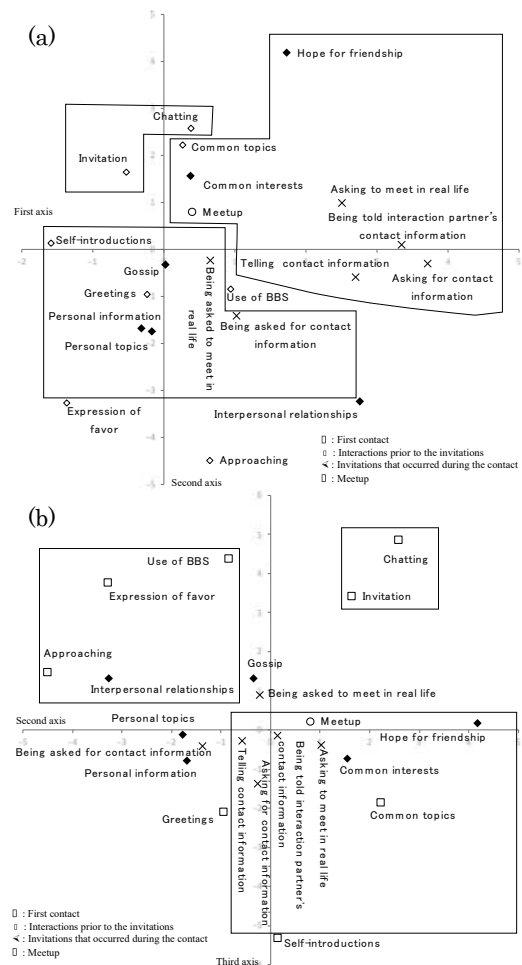

Figure 1. Plot of the category score of the content of the interaction by Hayashi's quantification methods III—(a) plots of the first–second axes and (b) the second–third axes. Enclosures (or no enclosures) indicate the same cluster.

topics," "Common interests," "Hope for friendship," "Asking for contact information," "Asking to meet in real life," "Telling contact information," "Being told contact information," and "Meetup." The third cluster contained "Invitation (first contact)" and "Chatting." The fourth cluster consisted of "Expression of favor," "Use of BBS," "Approaching," and "Interpersonal relationships."

4. Discussion

This study examined high school students' interactions with their opposite-sex SNS acquaintances and how they ended up meeting these individuals in real life.

4.1 Rate of high school students who met face-to-face with opposite-sex SNS acquaintances

The pilot survey showed that 7.9% of high school and college students met face-to-face with their opposite-sex SNS acquaintances. Hashimoto et al. (2015) reported that about 20% of high school girls (n = 554) engaged in such face-to-face meetings, a difference of more than 10% from the present study. However, the results for the interaction contents were similar to those of previous studies (Hashimoto et al., 2015; Kato, 2013), suggesting that the following discussion about interaction contents and processes are valid for this study.

4.2 Contents of SNS interactions

The classifications of the interaction contents indicated that actions on SNSs evolved in the same way as those in offline heterosexual relationships. In other words, the results showed that SNS interactions begin with friendship conversations such as "Greetings" or "Common topics" and then gradually proceed to deeper contents such as "Interpersonal relationships" or "Personal topics." This is similar to how offline romantic behaviors develop, starting with friendly conversations that progressively become more in-depth (Matsui, 2006).

4.3 Process of SNS interactions leading to face-to-face meetings

In our study of interactions that result in face-to-face meetings, we generated four clusters. The results suggest the following typical interaction process on SNSs.[7]

The first cluster consisted of the first-contact content, the interaction content prior to the invitation, and the invitation that occurred during contact. This means the typical process begins with a greeting (e.g., Nice to meet you.) and a self-introduction (e.g., I am XX.), and then the invitation to meet is received through personal information (e.g., age), gossip (e.g., daily life stories), and personal topics (e.g., consultation), in which the person is asked to provide their contact information and meet with their interaction partner. The second cluster had the first-contact content, the contact content up to the invitation, and the invitation between contacts and also included the "Meetup" category. In other words, the typical process starts with a common topic (e.g., We're from the same hometown.) followed by a discussion of common interests (e.g., common hobbies) and hope for friendship (e.g., Would you like to go to a concert?), which then leads to an invitation such as requests for contact information, being given contact information, providing contact information, and asking to meet physically. Finally, real-life meetups occur. The third cluster

contained only the first-contact content; that is, the typical process begins with an invitation (e.g., Would you like to meet?) and a chat (e.g., We had a chat.) but did not proceed with the subsequent interactions. The fourth cluster consisted of the first-contact content and the interaction content prior to the invitation. The typical process begins with an expression of favor or compliment (e.g., You are so pretty.), use of BBS (e.g., I saw your posting on BBS.), and an approach (e.g., Let's talk.), followed by efforts toward interpersonal relationships (e.g., conversation about friends). Among these typical processes, the second one resulted in physical meetups, indicating that face-to-face meetings were induced by the parties' consistent interaction on a common subject, such as being from the same hometown and having the same hobbies.

Some studies (Hashimoto et al., 2015; Kato, 2013) have also suggested that common interests and preferences are important reasons for meeting physically. The present study obtained similar results, suggesting that it is especially important to continue conversations about common interests and preferences.

This may be because the topics they have in common with one another lead to interactions in which they discover similarities, which have been shown to influence interpersonal attraction (Rubin, 1973). Research has examined the impact of similarity on the formation of friendships and romantic relationships in existing social networks such as schools (Nakamine, 2015; Rubin, 1973). Given the differences between SNSs and such existing social networks, the results showed that similarity affects not only friendships and romantic relationships formed at school and other places but also face-to-face meetups with opposite-sex SNS acquaintances. However,

cluster analysis has certain limitations regarding reproducibility. Therefore, to test the generalizability of this study's results, future research may examine whether an individual's awareness of "similarity" is linked to face-to-face meetings and other factors.

In the second process, the participants wanted to meet their interaction partners (i.e., they asked for the person's contact information or asked to meet them). It was suggested that they were meeting not because they were invited but rather because they wanted to do so.

4.4 A reflection on crime prevention education

Crime prevention education is one of the measures to prevent problems caused by physical meetups with heterosexual SNS acquaintances (Koide, 2008; Ogata, 2014). So far, conducting crime prevention education has been focused on prohibition in which minors are informed of the risks of face-to-face meetings with opposite-sex SNS acquaintances and encouraged to avoid doing so (Koide, 2008; Nishimura, Murakami, and Fuji, 2014; Sugano, 2011). However, based on this study's results, physical meetups were promoted by consistent interactions about common topics, and the participants met with the partners they wanted to meet, which suggest that minors engage in physical interactions with their partners as a result of their own choices and that they may not think it is dangerous (or they are hedging their risk). According to Reyna and Farley (2006), minors (teens) do not perceive such risk, but in fact engage in risky behaviors because while they view these behaviors as risky, they also judge them as more beneficial. This study's results are consistent with those of Reyna and Farley (2006). In light of these findings, crime prevention education will need to take a

new form and let go of its prohibitive nature.

4.5 Limitations and future studies

This study has three limitations. First, the participants were registered panelists of a survey company. It has been pointed out that the respondents of a web-based survey that uses a survey company's registered panelists may be a limited group, as they prefer simple interpersonal relationships, have a high affinity for the Internet, and so on (Yoshimura, 2001). Therefore, it is necessary to be cautious about whether this study's findings can be applied to high school and college students who are not registered monitors. Second, the coverage, duration, and frequency of interactions were not sufficient. For example, although Hashimoto et al. (2015) showed that while interactions involved sexual and "dirty" content, with the participants being asked to send pictures, such content was not found in the present study. It is not possible to examine how long and how many times they interacted with their partners. By covering the content of the interactions to some extent and examining their processes in detail, including duration and frequency, it would be possible to completely understand the reasons for face-to-face meetings. Third, the survey included only high school and college students who have met their opposite-sex SNS acquaintances; hence, the content of their interactions may be different from those of high school students and college students who have never met their respective partners.

Finally, it would be beneficial to conduct a survey of cases in which face-to-face meetings with opposite-sex SNS acquaintances have actually caused trouble. Focusing on high school students who have had such experiences may help clarify the interaction process that is likely to cause trouble. This may be done by examining the kind of interactions that have occurred and how long they have been interacting on SNSs when they decided to meet physically. In addition, interviews may be conducted to clarify what kinds of trouble they encountered during these face-to-face meetings, what they thought about when they decided to meet physically (e.g., the risk of engaging in such meetups), and what they should have focused on during the meeting (e.g., bringing along a third attendant). This would help reduce unpleasant incidents caused by face-to-face meetings between minors and their opposite-sex SNS acquaintances, enabling them to enjoy the benefits of heterosexual relationships that originate from SNS interactions. Future research on these issues will be important for Japan, where SNSs will become increasingly popular.

Notes

1. This study was conducted with a 2013 grant from the Japan Internet Safety Promotion Association.
2. We would like to thank Prof. Yutaka Matsui of the University of Tsukuba for his guidance on this paper. We would also like to express our gratitude to Prof. Kei Fuji and Prof. Shintaro Yukawa, also from the University of Tsukuba, for their valuable comments on this paper. And, we would like to thank Enago (www.enago.jp) for the English language review.
3. Affiliation at the time of research.
4. All survey participants engaged in face-to-face meetings with their opposite-sex SNS acquaintances. However, the most memorable experiences of being acquainted with the opposite sex on SNS (outside face-to-face meetings) were requested at the time the questionnaire was answered; therefore, some participants stated that

they did not meet their opposite-sex acquaintances face-to-face. The reason for this inquiry was to clarify the interaction processes that led to the actual meeting and the nonmeeting.

5. Because this study did not aim to examine differences in interactions by type of SNS, and because only a few respondents mentioned SNSs other than Twitter, we did not include the type of SNS in our analysis.

6. When we checked whether coherence in Method III and cluster analysis differed between men and women, we found almost the same coherence, so we conducted a combined analysis for both sexes.

7. In a study on street interactions between men and women (Nakamine, 2015), male–female interactions were typified by Method III, and the process was inferred from that type of interaction. This study used this to interpret the clusters accordingly. Based on the point that Method III does not necessarily require the interpretation of axes (Matsui & Takamoto, 2018), we interpreted the domain rather than the axes in this study.

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